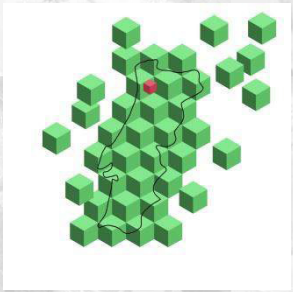

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Contents

What can cognitive neuroscience tell us about human development?*

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Abstract

The increasing availability of safe, noninvasive neuroimaging techniques has led to an explosion in cognitive neuroscience research on infants, children, and adolescents. Two justifications for this research are: (1) that neuroscience methods can tell us more about the mechanisms underpinning development than behavioural studies alone, and (2) that the insights gained will have a feed-forward impact on clinical and educational practice and policy. Given recent scepticism towards both arguments, this paper brings together examples from different fields within developmental cognitive neuroscience to discuss specific cognitive domains and both typical and atypical pediatric populations, using a variety of different neuroimaging technologies. The paper addresses the progress made in developmental psychology by the use of functional near-infrared spectroscopy (fNIRS), functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG) and electroencephalography/event related potentials (EEG/ERP) in both typical and atypical development. It is argued that cognitive neuroscience has provided new hypotheses that have served to drive the field forward and clarify developmental mechanisms, as well as neural markers for working memory training and for distinguishing behavioural scores "in the normal range" from their atypical neural underpinnings.

1. Introduction

To further our scientific knowledge of human development, there has been a recent explosion in the use of non-invasive neuroimaging techniques with infants, children and adolescents. For the scientist (and for the general public), there is something especially magical about coloured images of the human brain, as if at last we could get to see directly "inside the black box". But knowing that area X is activated ("lights up") tells us nothing about development, unless the neural data help to identify a mechanism, a new explanation or a new prediction beyond the behavioural measures. Sceptics actually doubt whether neuroimaging methods will tell us anything beyond the behavioural methods researchers have hitherto used, and question whether the findings from brain measurements will have any impact on clinical and/or educational practice that might improve the lives of children. In this paper, however, we will argue that the sceptics are wrong, and that, where behavioural methodologies have often yielded mere descriptions of development, these exciting new methodologies enable researchers to identify mechanisms of development and to show that behavioural scores often camouflage significant underlying neural differences. We will show that developmental cognitive neuroscience has generated new hypotheses about learning and training effects (e.g., how/why intervention works or fails in different aged children, e.g., Posner & Rothbart, 2005) leading to more informed intervention techniques. Neural data can be particularly relevant when considering identical behavioural scores across typically and atypically developing populations (Karmiloff-Smith et al., 2004). Even in the typically developing population, neural data often reveal individual differences, i.e., different brain circuits that underlie equivalent behaviour at different ages (Luna, Velanova, & Geier, 2010).

Recent studies of another developing group – the healthy ageing – have highlighted the importance of differentiating behavioural data from neural data. A comparison of language comprehension in young adults compared to healthy ageing adults yielded no differences between groups at the behavioural level (Tyler et al., 2009). By contrast, neuroimaging data from the same participants revealed significant differences between the younger and older adults. During the language comprehension tasks, younger adults activated the usual left

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hemisphere cerebral areas, a region which tends to atrophy in older adults. In the ageing brain, then, proficient language comprehension is different; it was shown to be sustained by compensatory bilateral frontotemporal and parietal activity, thereby offering a neural-level explanation for the surprising behavioural-level findings (Tyler et al., 2009).

Another example, again from healthy adults, concerns sensitivity to foreign language contrasts, but this time the deficits are seen at the behavioural level but not at the neural level. It had long been thought that the capacity to discriminate non-native phonemes disappears towards the end of the first year of life. Indeed, although 6-month-old infants can distinguish non-native contrasts, this ability is absent behaviourally from around 9-10 months when the infant comes to specialise in the phonemic repertoire of his/her native tongue (Werker & Tees, 1984). Indeed, like older infants, adults show no behavioural signs of distinguishing the non-native contrasts. However, using electrophysiological measures, Rivera-Gaxiola and colleagues demonstrated that their brains still register the phonemic differences (Rivera-Gaxiola, Csibra, Johnson, & Karmiloff-Smith, 2000), pointing to the potential for successful phonemic training even in adulthood.

The non-invasive methodologies illustrated in this paper are all suitable for use with children and come in two forms: they either have fine temporal resolution and detect direct changes in the electrophysiological activity in the brain, such as electroencephalography/event related potentials (EEG/ERP) or magnetoencephalography (MEG); or they are more indirect but have fine spatial resolution and detect the resultant haemodynamic changes in cerebral blood flow, such as functional magnetic resonance imaging (fMRI) and functional near-infrared spectroscopy (fNIRS). The two direct measures capture the millisecond temporal details of brain activity, whereas the two indirect methods take seconds, but are more accurate in terms of spatial location.

Here we discuss a selection of developmental studies using these various methodologies, as well as the new eye-tracking technology, to gain a deeper understanding of different facets of development: face processing, emotion regulation, attention training, executive control, auditory perception, language, and number. The technologies have all revealed neural differences which were not evident in the corresponding behavioural data, both in typical development and in several neurodevelopmental disorders.

2. Neurodevelopment of face processing in children: Evidence from functional near infra-red spectroscopy (fNIRS)

Functional NIRS has turned out to be a very cost-effective, portable neuroimaging technique that in the past decade has been increasingly used with developmental populations (Aslin & Mehler, 2005; Blasi et al., 2007; Csibra et al., 2004; Grossmann et al., 2008; Lloyd-Fox, Blasi, & Elwell, 2010; Lloyd-Fox et al., 2009; Shimada & Hiraki, 2006; Wilcox, Bortfeld, Woods, Wruck, & Boas, 2005). It provides good spatial resolution (although less precisely than fMRI), and good temporal resolution (although less precisely than electrophysiological techniques). It is in fact a good compromise between fMRI and electrophysiological techniques (Karmiloff-Smith, 2010). fNIRS takes advantage of the human skull which is almost transparent to NIR light in the spectrum of 700-900 nm (particularly in infants without hair), while oxygenated haemoglobin (oxy-Hb) and deoxygenated haemoglobin (deoxy-Hb) absorb light more strongly. Thus, differences in the absorption spectra of oxy-Hb and deoxy-Hb when the child sees/hears a stimulus allow the measurement of relative changes in haemoglobin concentration through the use of light attenuation at different wavelengths.

Lee and collaborators have used this methodology to assess the neural correlates of what is known as the other-race effect (Ding, Fu, & Lee, 2014). This refers to the fact that humans discriminate, recognize, and categorize the faces that they see typically in their environment (own-race faces) differently from those of the faces of other races not generally encountered in their surroundings (other-race faces). Extensive behavioural evidence from infants, children, and adults (Anzures et al., 2014; Hadley, Pickron, & Scott, 2015; Kelly et al., 2005, 2007; see Anzures et al., 2013 for a review) has identified a behavioural other-race face effect in that participants are faster and more accurate to process own-race faces than other-race faces. But this is not always the case. Some behavioural studies have revealed no differences in recognition accuracy when comparing own and other-race faces (e.g., Ding et al., 2014) or no developmental changes after 5 years of age (Anzures et al., 2014). So, does the brain show different neural processes for own- and other-race faces? And does this indicate that visual experience differentially shapes brain structure and function for face processing over developmental time?

While evidence exists on the differential neural correlates of own- and other-race face processing in adults (e.g., Balas, Westerlund, Hung, & Nelson, 2011; Liu, Harris, & Kanwisher, 2014; O'Toole & Natu, 2013; Senholzi & Ito, 2012; Vogel, Monesson, & Scott, 2012), little is known about whether and how the *developing* brain responds to own- versus other-race faces. To our knowledge, only one study has used fNIRS to assess face processing in school-aged children (Ding et al., 2014). None has examined the developmental changes in functional neural networks associated with the other-race effect in children.

Lee and collaborators examined the neural correlates of the other race effect developmentally in 139 children between the ages of 3 and 13 years, both behaviourally and using fNIRS (Hitachi ETG-4000 46 channels). Interestingly, the behavioural results produced no significant age-related effects nor significant differences in recognition accuracy (57% vs. 55%) between own- and other-race faces (F=1.63, p=.21). By contrast, the functional connectivity measures based on the fNIRS data yielded significant developmental neural network changes. First, posterior-to-frontal and left-right functional connectivity increased over developmental time. Second, Lee and collaborators discovered a number of significant race-by-age interactions. In some cases, e.g., the posterior-to-frontal functional connectivity for own-race faces increased with age but other-race connectivity did not change with age; in others, own-race connectivity increased with age but other-race decreased with age; and, finally, in yet other cases own-race connectivity decreased or did not change with age but other-race increased with age (unpublished data).

In summary, while the behavioral results pointed to rather limited or no developmental changes in own- and other-race face processing, the functional neural connectivity analyses revealed marked network differences between own- and other-race face processing at all ages, together with age-related changes in how the brain learns to differentiate own- versus other-race faces. This nicely illustrates how neural data can reveal developmental processes of change that behavioural data fail to uncover.

3. Using functional magnetic resonance imaging (fMRI) to study emotion processing and regulation in adolescents with and without conduct problems

Adolescence is a period of considerable physical, cognitive and social development, and it is thus unsurprising that research over the past decade has identified major changes in teenage brain structure and function (Casey, Getz, & Galvan, 2008; see also Blakemore & Mills, 2014, for a review). Here again, neural data from the period of adolescence has generated new hypotheses and a deeper understanding of this important period of development that had eschewed earlier behavioural data.

To elucidate the mechanisms underlying emotion processing and regulation in adolescence, Sebastian has made use of fMRI. One strand of her research has focused on conduct problems, i.e., antisocial behaviour, including aggression, destruction of property, theft and truancy (as defined in DSM-5); behaviours which often onset in adolescence or escalate relative to earlier childhood. Adolescents with conduct problems are a heterogeneous group, and one contributing factor is the level of co-occurring callous-unemotional traits (CU), i.e., a lack of guilt, empathy, and reduced emotional reactions. At the cognitive level, adolescents with conduct problems and high CU traits show poor recognition of fear/sadness and low reactivity to others' distress, while those with low CU traits show increased arousal and poor emotion regulation (Frick & Viding, 2009).

Viding, Sebastian et al. (2012) used fMRI to demonstrate that amygdala response to fearful faces presented very briefly (17ms) and below the level of conscious awareness can differentiate these two subtypes. Adolescents with conduct problems and high CU traits showed amygdala *hypo*-responsiveness relative to typically developing controls, while those with low CU traits showed *hyper*-responsiveness. These very basic and early differences in emotion processing style may contribute to subtle differences in behaviour between the two subgroups, e.g., reactive aggression seen in those with low CU traits and proactive aggression in those with high CU traits. The findings significantly extend our understanding of conduct disorders in adolescence which, according to Sebastian, points to a possible neural mechanism accounting for the effects observed at the behavioural level.

Sebastian and colleagues subsequently examined emotion regulation in adolescents with conduct problems (Sebastian et al., 2014). Emotion regulation is the monitoring, evaluation and modifying of emotional reactions in order to accomplish goals (Thompson, 1994). It encompasses both implicit emotion regulation (e.g., automatic regulation of distracting emotional cues) and explicit emotion regulation (deliberate attempts to modulate emotion) (Ochsner & Gross, 2005). Sebastian measured differences in reaction time during an implicit emotion regulation task, i.e., locating dots in faces which were either calm or fearful. Adolescents with conduct problems and low (but not high) CU traits were slower to react when their attention was drawn to fearful eyes than were controls, indicating poor implicit emotion regulation. Those with the slowest reaction times also showed the greatest amygdala response to fearful eyes, again identifying a mechanism by which emotional stimuli may be disproportionately influencing behaviour in this group. This may relate to emotion regulation deficits seen in everyday life (Eisenberg, Spinrad, & Eggum, 2010).

More generally, insights from neuroscience have also shaped our understanding of emotion regulation development in typical adolescence. Casey et al.'s (2008) developmental mismatch model suggests that limbic regions (the seat of emotional activity) have a steeper developmental trajectory than prefrontal cortical regions (the seat of cognitive control), and that this mismatch is greatest during adolescence. In other words, evidence on the differential maturity of brain regions during adolescence has shaped how scientists now think about the development of the cognitive functions that depend on this emotion regulation circuitry. Sebastian and colleagues have used this framework to explain differences between adolescents' and adults' neural responses to

social rejection. Adolescents showed significantly reduced activation of ventrolateral prefrontal cortex compared to adults (Sebastian et al., 2011), which may reflect immaturity of neural regulatory mechanisms. Sebastian is currently following up on these questions with a large-scale longitudinal behavioural study looking at emotion regulation and mental health in 11-16 year-olds. This is a clear example of how the discovery of important brain changes during adolescence has encouraged emotion regulation researchers to focus on this previously rather neglected age group (Adrian, Zeman, & Veits, 2011), helping scientists and, ultimately, clinicians, to better understand internalising and externalising symptoms during adolescence.

4. Using magnetoencephalography (MEG) to study the mechanisms of individual differences and training effects in childhood

Astle has been studying attentional control using MEG to distinguish between behavioural and neural measures, in particular to explore neural connectivity (Astle, Barnes, Baker, Colclough, & Woolrich, 2015; Barnes, Woolrich, Baker, Colclough, & Astle, 2015). Attentional control enables children to focus on relevant versus peripheral aspects of a task, thereby optimising their sensory processing. Understanding the neurophysiological processes underlying control mechanisms is of particular interest to developmentalists because these processes have a protracted developmental trajectory and because deficits in control processes are implicated in numerous neurodevelopmental disorders. They also constrain many abilities in educationally-relevant domains of cognition such as working memory.

The brain network for attentional control has now been well described in adults (Gregoriou, Gotts, Zhou, & Desimone, 2009). But what about developmental populations? Does the strength of connections across the attentional control network predict a child's cognitive abilities? And do changes in the strength of neural connections explain changes in cognitive ability that occur following intervention? Astle and his collaborators have focused on intrinsic electrophysiological connectivity and its relation to working memory capacity, asking whether training could change that relationship. Two groups of children were matched on IQ, age, and working memory prior to training. Then one group received intensive working memory training and the other a placebo version of the training. Astle established that it was possible to predict gains in working memory from individual changes in a participant's brain's resting state connectivity (Astle et al., 2015). Having identified these neural effects of training, Astle then proceeded to test *why* such connectivity changes corresponded to enhanced working memory performance.

Astle's argument runs as follows: fronto-parietal areas code information about ongoing task goals, and this information can be integrated with ongoing sensory/cognitive processes in functionally specific areas (e.g., V4, IT) via these connections. This integration allows for the regulation or optimisation of these processes, thereby enhancing working memory performance. Basically, it seems that the training yields better coordination between executive processes and the actual representational processes generated to solve a task. Examining the neural data even more closely, it became clear that the full explanation lay in the fact that neural oscillations can modulate local neuronal excitability and thereby provide a temporal structure for coordinating neural activity, known as 'phase-amplitude coupling' (Canolty et al. 2006; Haegens, Nacher, Luna, Romo, & Jensen, 2011; Jensen, Bonnefond, & VanRullen, 2012; Jensen & Colgin, 2007; Voytek et al. 2010).

Astle believes that cognitive neuroscience can help developmentalists in several ways. First, it can inform our understanding of the underlying physiological constraints that influence cognitive ability. Second, it can help us understand what underlies changes in ability. Thirdly, it can offer a physiological mechanistic basis for changes in performance after training.

5. Using different neuroimaging methodologies and eye-tracking technology across a wide range of neurodevelopmental disorders

A number of studies have now shown that behavioural scores "in the normal range" may be underpinned by atypical cognitive and neural processes. In the case of neurodevelopmental disorders, such "normal" behavioural scores have often been used to claim that selective deficits underlie an otherwise normal modular system (Clahsen & Temple, 2003). Such claims have been made, for instance, with respect to Williams syndrome (WS), a rare neurodevelopmental disorder caused by a microdeletion on chromosome 7. The syndrome presents with proficient face processing on certain standardized tests like the Benton and the Rivermead. Face processing scores in the normal range led several researchers to claim that face processing was intact in this otherwise impaired population (e.g., Bellugi, Wang, & Jernigan, 1994). However, subsequent measures of neural activity revealed that the WS face processing abilities were underpinned by neural processes that were very different from healthy controls (Grice et al., 2001; Karmiloff-Smith et al., 2004), suggesting that despite normal behavioural scores on some tasks, this domain actually required intervention because of a lack of neural specialisation for rapid face processing.

Researchers have also identified a lack of neural specialization in individuals with Down syndrome, in this case with respect to language (Losin, Rivera, O'Hare, Sowell, & Pinter, 2009). Losin et al. (2009) examined comprehension in a simple passive story-listening task. At the behavioural level, participants with Down syndrome scored at the same level as neurotypical controls. However, neural activation using fMRI across the two groups differed considerably. The controls activated classic receptive language areas and their brains showed differential activation for forward versus backward speech. By contrast, the Down syndrome group mainly activated parietal cortex and their brains yielded no differences between forward and backward speech. This is yet another example of how behavioural scores can camouflage deficits which can be revealed by neural measures.

Functional MRI was also used in a colour/word Stroop task targeting 7-11 year olds with obstructive sleep apnea syndrome, compared to neurotypical controls. Once again there were no differences between groups at the behavioural level in terms of accuracy. However, the neural signatures were very different. The individuals with obstructive sleep apnea syndrome had significantly greater neural recruitment of brain circuits implicated in cognitive control, conflict monitoring and attentional allocation (Kheirandish-Gozal, Yoder, Kulkarni, Gozal, & Decety, 2014).

At times, even when both accuracy and speed are identical across an atypical group and healthy controls, neural measures can yield significant differences. This was the case for a study of response inhibition using ERP with adolescents who had foetal alcohol syndrome. Although those with the syndrome were as accurate and fast as the neurotypical controls, the temporal patterns of their brain activity were slower in the early stages of processing, with no difference emerging between the sub-components of the task which were clearly differentiated in the brains of the controls (Steinmann et al., 2011).

In our own work, we have identified several instances of this discrepancy between behavioural scores and the underlying neural correlates (Karmiloff-Smith et al., 2004; D'Souza, Cole et al., 2015; D'Souza, D'Souza, Johnson, & Karmiloff-Smith, 2015; D'Souza et al., in prep.). For example, when infants and toddlers with Williams and Down syndromes were matched on the Mullen (an infant IQ-like measure), their different ERP responses to changes in pitch and speech allowed us to hypothesize very different developmental trajectories leading to their subsequent language acquisition (D'Souza et al., in prep.), which had implications for very different forms of intervention.

Finally, new eye-tracking technology is changing the way in which infant looking time data are being analysed. In the past, at best scientists could measure the length of time a child looked in one direction versus another on the screen. Nowadays researchers can measure the exact trajectory the child's eyes take across a stimulus. This makes it possible to differentiate total looking time from the looking trajectory itself, and has recently allowed us to differentiate sensitivity to number displays in infants with Down syndrome from those with Williams syndrome, despite their total looking times being similar. Indeed, in spite of equivalent total looking times, while those with Down syndrome moved their eyes rapidly across the whole screen, those with Williams syndrome stayed focused on one part of the display only (Karmiloff-Smith et al., 2012; see also D'Souza, D'Souza et al., 2015, for differences in face scanning between Down, fragile X, and Williams syndromes, and how these differences relate to language ability).

X. Concluding thoughts

Developmental neuroimaging is still in its infancy, but the above studies have illustrated its real strengths in uncovering mechanisms underlying behavioural scores, and in revealing deficits camouflaged in normal behavioural scores. We still have a long way to go. One concern for all the methods discussed is a truly developmental one, i.e., the fact of rapid brain growth, as well as changes in head shape/size during ontogeny, that must be taken into account in analyses that span developmental time. We cannot rely on adult templates. There is also a clear need for longitudinal studies of neural structure and function rather than only cross-sectional ones. However, our view is that these are particularly exciting times for developmental cognitive neuroscience.

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Combined impact of diurnal type and time of day on children's results in a battery of measurements probing reading abilities: Preliminary Results

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Abstract

The present work is part of a larger ongoing research project and it specifically aims to scrutinize whether diurnal-type (morningness- eveningness) and time-of-day have an impact (synchrony effect) on the results obtained by primary school children in standardized measures assessing reading skills and difficulties. Morning- and evening-type children attending the 2nd, 3rd or 4th grades were selected in a Portuguese "School Cluster" Using the Portuguese version of the Werner et al. (2009) Children Chronotype Questionnaire. The selected participants were randomly assigned to assessment sessions in the morning (9:00-10:30) or in the afternoon (16:00-17:30). There were 78 children (40 boys, 38 girls), 39 (50.0%) morning-type and 38 (50.0%) evening-type, 40 assessed in morning sessions and 38 in afternoon sessions. Reading abilities/difficulties were assessed using the Sucena & Castro (2011) battery ALEPE - Avaliação da Leitura em Português Europeu [European Portuguese Reading Assessment battery], by a single evaluator who was blind to each child diurnal-type. Comparing morning and afternoon sessions, morning-types mainly showed similar scores, both in terms of answer correctness and reaction times, excepting for significantly higher scores in three tests in the morning sessions. Evening-types showed similar scores in most tests for answer correctness, but in two tests they achieved significantly higher scores in the morning, and mean reaction times were consistently shorter in the morning in comparison to the afternoon sessions. In 5 out of the 7 ALEPE tests that yield reaction time scores, differences reached, or were close to, statistical significance ($p < 0.05$, or $p < 0.15$, respectively). In conclusion, in spite of evening types' performance seeming in most cases to be unaffected by time-of-day in a standardized battery of tests assessing reading abilities and difficulties, their shorter reaction times when tested in their non-optimal time-of-day (i.e., in the morning) indicates an asynchrony effect. Contrarily to our initial expectations, results obtained so far in evening-type children suggest that specific tasks may benefit from non-optimal moments, as indicated by recent evidence. Support: FCT/COMPETE/QREN – research project PTDC/PSI-EDD/120003/2010.

Keywords: morningness-eveningness, chronotype, children, time of day, optimal time, reading abilities/difficulties

Introduction

Time of day may have an impact on cognitive performances (e.g., [1], [2]). However, until recently, few studies have considered both diurnal type (morningness-eveningness) and time of day when examining the impact of temporal variables on performance. As Smith et al. [1] stated, time-of-day cognitive fluctuations and inter-individual differences of chronotype have been largely ignored by researchers and practitioners when assessing cognitive abilities. Moreover, studies on this specific topic seem particularly scarce in children.

The present work is part of a larger ongoing research project and it specifically aimed to scrutinize whether diurnal-type (morningness-eveningness) and time-of-day have an impact (synchrony effect) on the results obtained by primary school children in standardized measures assessing reading skills and difficulties.

Methods

1.1. Participants

Participants comprised a total of 78 primary school children (40 boys and 38 girls), 39 (50%) morning-type (21 boys and 18 girls) and 39 (50%) evening-type (19 boys and 20 girls), aged 7-10 yr-old (M=8.29, SD=1.00), in the 2nd, 3rd or 4th school years, with IQ scores within the normal range or higher (inclusion criteria: ≥85 points in the Wechsler Intelligence Scale for Children, 3rd ed. [WISC-III], Portuguese version [3]), and without known language disorders, learning difficulties, cognitive special education needs, or behavioural disturbances.

1.2. Instruments

As part of the larger research project, several tools were used in order to assess intelligence (e.g., WISC-III) and language (e.g., TIL). Measures directly relevant for the present work were the following ones:

- Children ChronoType Questionnaire (CCTQ) of Werner et al. [4] - Portuguese version [5, 6] to assess morningness-eveningness (diurnal type). Three chronotype measures may be retrieved from the CCTQ. The Morningness/Eveningness (M/E) scale (Cronbach alpha = .73) was the measure used in the present study to identify morning- and evening-types, using as cutoff points the 20th and 80th percentiles found in a large reference sample of Portuguese children (higher scores equates to higher eveningness).
- Sucena & Castro battery ALEPE [7] - Avaliação da Leitura em Português Europeu [European Portuguese Reading Assessment battery] to assess reading abilities/difficulties. This standardized battery was developed based on a sample of 6-10 yr-old children without learning disorders, and it aims to assess the main processes underlying reading (namely, phonological awareness, rapid naming, word knowledge, word reading, and pseudoword reading). Based on ALEPE results, one may characterize the reading level of a child respective to her/his age and school year. ALEPE also helps to identify some reasons that may be underlying a learning disorder or developmental dyslexia. It is composed of 12 tests, some of them computerized ones, either focused on written words processing, or on phonological processing. Raw scores are converted in percentile scores (higher values equating to better performance).

1.3. Procedures

The study was approved by the Portuguese General Education Direction of the Ministry of Education, and by the Director of the School "Cluster" were data were collected [In Portugal, a school cluster/"agrupamento de escola" is a group of public schools in the same parish, under the same Direction, offering all levels of education ranging from kindergarten up to 12th grade of high school].

The 80 participants were randomly selected from an initial pool of 261 M- and E-type students attending to the2nd to 4th school years of the School "Cluster", whose parents/tutors gave their consent for their participation in the research, and who had been previously identified using the M/E scale of the CCTQ. Then, 40 M types and 40 E types were randomly assigned to assessment sessions in the morning (9:00-10:30) or in the afternoon (16:00-17:30). From the 80 cases collected, 2 of them were excluded because they were meanwhile diagnosed with ADHD. From the 78 final participants, 40 (51.3%) were assessed in morning sessions, and 38 (48.7%) in afternoon sessions, half from each diurnal type. There were no sex, age or school year differences between M- and E-type children, nor between children tested in the morning or in the afternoon.

To prevent fatigue, the administration of the psychoeducational assessment tests was distributed by sessions in different days (one session dedicated to ALEPE, one session dedicated to WISC-III, and one session dedicated to collective measures of intelligence and language). Data collection ran from Tuesday to Friday, excluding Monday due to the disruption rhythm phenomena (activity/ rest) between the school week and the weekend (Testu et al., 2008).

ALEPE data were collected by the same trained evaluator, who was blind to each child diurnal type.

Results

As expectable, no significant mean differences were found between M-types and E-types performance on the ALEPE tests. Therefore, we focused on the analyses of interest, that is, the effect of time of day on ALEPE scores, for each diurnal type, cf. Table 1. M-types: Comparing morning and afternoon sessions, M-types showed similar scores in most tests both in terms of answer correctness and reaction times, and reached significantly higher mean scores in 3 ALEPE tests when assessed in the morning (their optimal time of day) than in the afternoon (a fourth non significant trend was also apparent). E-types showed generally similar scores in the two moments of the day for answer correctness, excepting that, surprisingly, mean scores were higher in the morning (non optimal time) than on afternoon sessions (optimal time) for the ALEPE tests of Simple Words Reading and Consistent Pseudowords Reading ($p<.05$), and non significant trends were found in other three tests (cf. Table 1). In the 7 ALEPE tests that yield reaction times, these were consistently shorter in the morning in comparison to the afternoon sessions, as indicated by higher percentile mean values, with mean differences reaching statistical significance in 3 tests ($p<.05$), and being near significance in 2 other tests ($p<.15$).

Table 1: Mean scores comparisons between morning versus afternoon assessment sessions

ALEPE scores (in pertenciles)	MORNING session M (SD)	AFTERNOON session M (SD)	*t*	df	*p* (2-tailed)
MORNING-TYPES	n = 20	n=19			
Metalinguistic phonological awareness of the phoneme	77.55 (38.47)	49.11 (44.16)	2.148	37	0.038*
Word Reading – consistent words	59.85 (35.50)	36.16 (34.17)	2.122	37	0.041*
Lowercase letters writing	78.00 (37.56)	33.53 (40.86)	3.541	37	0.001**
Lowercase letters reading	57.25 (43.22)	35.84 (39.39)	1.614	37	0.115
EVENING-TYPES	n=20	n=19			
Word reading – simple words	66.75 (37.47)	42.26 (31.97)	2.190	37	0.035*
Pseudoword reading– consistent pseudowords	61.40 (32.06)	32.84 (30.90)	2.830	37	0.007**
Pseudoword reading – total	45.15 (28.80)	30.53 (27.94)	1.608	37	0.116
Metalinguistic phonological awareness of the rhyme (CVC)	71.05 (34.10)	53.37 (37.41)	1.544	37	0.131
Uppercase letters Reading	81.20 (36.53)	60.58 (46.36)	1.538	34.22	0.133
Lowercase letters Reading	62.70 (41.68)	41.53 (40.70)	1.604	37	0.117
Reaction time - Word reading – inconsistent words	70.95 (23.11)	44.21 (37.99)	2.621	29.72	0.014*
Reaction time – total Word reading	68.70 (25.63)	48.37 (36.29)	2.012	32.24	0.053
Reaction time - Pseudoword reading - simple pseudowords	68.65 (29.58)	47.26 (33.51)	2.116	37	0.041*
Reaction time - Word reading – simple words	67.20 (26.72)	49.58 (35.49)	1.758	37	0.087
Reaction time - Pseudoword reading– total	69.20 (28.80)	49.89 (34.92)	1.888	37	0.067

*Only statistically significant (*p<0.05 or **p<0.01) and potentially relevant results (p< .15) are shown. ALEPE: Avaliação da Leitura em Português Europeu [European Portuguese Reading Assessment battery]. CVC: Consonant, Vogal, Consonant.*

Discussion

In this study we expected a better performance when the testing session schedules were in line with the children´s inner biological clock. Interestingly the results suggest both synchrony effects (M-types had better performances at their optimal moment) and asynchrony effects (E-types had better performances at their non-optimal moment) in some specific reading abilities tests. As Díaz-Morales & Escribano [8] concluded in their review, the effects of time-of-day need to be further investigated as they may not follow a pattern merely based on "synchrony and better performance". In fact, recent evidence suggest that implicit memory might be facilitated by more non-conscious, associative processing, and therefore would be better at non-optimal moments of the day when inhibition is lower.

In conclusion, in line with the hypothesis of facilitation resulting from lowered inhibition, it would seem that both M- and E-types could benefit not only from their optimal but also from their non-optimal moments, depending on the nature of the task at hand. However, it was not clear why synchrony effects emerged only in M-types and asynchrony effects emerged only in E-types. The present results should be regarded as preliminary, as further analyses and future research seems to be needed.

Probably, to understand the effects of time of day over performance on each diurnal type, it is necessary to consider the nature of the tasks, in other words, to specifically consider the basic cognitive processes and the level of control required to successfully perform each task.

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The issue of social competence in post-institutionalized Russian children: an Italian brief report study

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Abstract

Research has shown that most of Russian adoptees who have experienced institutionalization and early social deprivation encounter both general and specific difficulties during middle childhood and preadolescence. In this study we investigated the quality of social behaviors and the implementation of maladaptive behaviors of 66 Russian adopted children (males=47) aged between 8 and 13 years (mean=10.51 sd=1.29), paired with a control group of Italian non-adopted children. Several questionnaires were completed by parents and by children themselves. Parents filled out the CBCL 6/18 (Achenbach & Rescorla, 2001) and the CPRS-R:L (Conners, 2007). Children filled out the Aggressive Behavior Questionnaire (Little, Jones, Henrich & Hawley, 2003) and Prosocial Behavior Questionnaire (Caprara & Pastorelli, 1993). The results showed that, according to parents' reports, adopted children have more social difficulties with peers and they show more frequent maladaptive behaviors than non-adopted children. Conversely, adopted children were declared to be less aggressive than the control group.

Keywords: International adoption, institutionalized children, psychosocial deprivation, social functioning.

Introduction

International adoption is a phenomenon that affects thousands of children each year. In Italy, there has been a considerable increase of internationally adopted children, particularly from Eastern Europe, the majority of adopted children coming from the Russian Federation. In 2013, 730 Russian children were adopted in Italy, representing 25.8% of the total of international adoptions (CAI, 2013). Internationally adopted children have often lived within dramatic and deprived contexts. The research on international adoption outcomes outlined a very complex framework. General improvements in the development of adopted children, compared to those who remained in institutes was widely documented (McCall, 2013). Unfortunately, many adopted children keep on having serious difficulties in different areas: cognitive, emotional, social (Wiik, Loman, van Ryzin, Armstrong, Essex, Pollak & Gunnar, 2011; The Leiden Conference on Development and Care of Children without Parents Permanent, 2012). Many authors agree that the psychological vulnerability and the severity of the problems are the result of cumulative effects of several factors, especially related to pre-adoption events (Rutter & ERA study team, 1998; Miller, Chan, Tirella & Perrin, 2009; Juffer & van IJzendoorn, 2005). In fact, it is not uncommon that these children have experienced adverse experiences, trauma, maltreatment, abuse or neglect. The literature showed that among variables related to pre-adoption events, institutionalization has a very important role in determining the developmental problems typically found in adopted children (McCall, 2011; 2013; The St. Petersburg-US Orphanage Research Team, 2008). Psychosocial deprivation is probably the most common feature that is found in institution (McCall, 2011); the lack of adequate child-caregiver interactions, communication and responsiveness, contributes to the behavioral and psychological deficits of children who have spent the early stages of their life in such conditions (McCall, 2011; Rutter, Beckett, Castle, Colvert, Kreppner, Mehta et al., 2007; Rutter, Sonuga-Barke, Beckett, Castle, Kreppner, Kumšta et al., 2010).

Despite the presence of many international studies on this topic, in Italy few studies have been carried out to date that have addressed the outcome of adoptions, relating to the psychological and emotional functioning of these children.

Materials and Methods

1.1. Partecipants

This study investigated the social competence of 66 Russian adopted children (males=47; 71.21%) aged between 8 and 13 years (m=10.51 sd=1.29), matched for age, gender and socio-economic status with a control group of Italian non-adopted children (age: m=10.50; sd=1.30) raised in their biological families. The socio-economic status was estimated considering the educational qualification and the employment of both parents. The SES was mainly medium (56%) and high (36%).

Concerning adopted children in particular, they all had early experiences of social deprivation in their life in Russian Federation institutes. The age at adoption varied from 1.70 to 9.00 years (m=5.08; sd=1.69). The adopted children have been living in Italy since at least three years and they have passed from 2.45 to 8.89 years (m= 5.44; sd= 1.90) with their Italian adoptive family.

1.2. Procedure and Instruments

Children in the adopted sample were recruited by N.A.D.I.A. Onlus Association that is located in Verona, Italy. They met the following selection criteria: born in the Russian Federation, aged 9-12 years, adopted by an Italian family from minimum three years and a lack of certified severe cognitive or motor disabilities.

The control group of Italian children raised in the biological family was selected from a larger sample of 600 children enrolled in different schools in Lombardy, matching with the adopted children for age, gender and socio-economic level.

The study approach considers the point of view of multiple informants: both children and one parent were involved in the study, completing several questionnaires. Since a number of years, the majority of adopted children in Italy derive from the Russian Federation. In 2013, 730 Russian children were adopted in Italy, representing the 25.8% of the total of international adoptions (CAI, 2013).

Parents filled in some of the scales of the CBCL 6/18 (Achenbach & Rescorla, 2001; Aggressive Behavior, Rule-Breaking Behavior & Externalizing scales) and some of the scales of the CPRS-R:L (Conners, 2007; Social Problem & Oppositive Behavior scales). Children filled in the Aggressive Behavior Questionnaire (Little, Jones, Henrich & Hawley, 2003) and the Prosocial Behavior Questionnaire (Caprara & Pastorelli, 1993).

The Conners' and CBCL raw scores were converted to standardized scores, based on normative data by gender and age provided in the manuals; raw scores were considered for the aggressive and prosocial behavior questionnaires, since there are no normative data.

Results

Data analyses were conducted by the SPSS/22.0 software. The scores did not show a normal distribution. A series of Mann Whitney-U analyses t-tests were conducted to measure differences between groups.

TAB. 1. Comparison between the two groups scores about the quality of social relations and the implementation of maladaptive behaviors, according to the parents' evaluations.

	Adopted children		*Control group*		*p*
	M	*sd*	*M*	*sd*	
Aggressive Behavior	54.83	5.95	51.72	4.34	<.001
Rule-Breaking Behavior	54.82	5.90	51.87	3.56	<.001
Externalizing	53.81	8.65	46.45	8.88	<.001
Social Problems	59.62	15.04	48.48	8.27	<.001
Oppositive Behavior	52.44	13.20	47.92	9.39	.045

Tab. 2. Comparison between the two groups scores about aggressive and prosocial behavior. according to the children's evaluations.

	Adopted children		*Control group*		*p*
	M	*sd*	*M*	*sd*	
Aggressive Behavior	34.13	14.52	48.60	13.81	<.001
Prosocial Behavior	20.63	9.76	23.35	4.562	.864

Conclusions

The study investigated social competence in a group of adopted children coming from the Russian Federation. In particular, we considered social functioning in both positive and negative behavioral aspects and the quality of social relationships. Analyses concerning parents' reports showed that adopted children have more social difficulties with peers and they have more frequent maladaptive behaviors than non-adopted peers. In particular, the analyses carried out on parents' assessments indicate that adoptees, compared to the control group, are perceived as more oppositive, more aggressive and more prone to displaying externalizing and rule-breaking behaviors. Adoptees also showed more social problems than their peers raised in their biological families. These results are in line with the existing literature (Hawk & McCall, 2010; Rosnati, Montirosso & Barni, 2008). Some authors consider these behaviors as a specific effect of the psychosocial deprivation that adoptees experienced in institutions (Gunnar, van Dulmen & IAP Team, 2007).

On the contrary, analyses concerning children' reports showed that adopted children believe themselves to be less aggressive than children in the control group. As already suggested by Tarullo, Bruce & Gunnar (2007), the children may have expressed unrealistic assessments with respect to the frequency of their aggressive behaviors, in order to make a better impression. Alternatively they may have not reached an awareness of self yet, making it difficult to examine their own attitudes (Caprin, Ballarin, Benedan & Castelli, 2015). Further, the answers given by parents may be assumed to be negatively overestimated, concerning aggressive social behavior. Parents may in fact be biased by being aware of the past of their child and by possible experiences of parental stress (Deater-Deckard Smith, Ivy & Petril, 2005; Glover, Mullineaux, Deater-Deckard & Petrill, 2010; McGlone Santos, Kazama, Fong & Mueller, 2002).

Further, a series of analyses were conducted on the subsample of adopted children about the possible effect that age at adoption, length of institutionalization or time passed in the adoptive family may have had on social competence. Contrary to our expectations, no significant relationships were found. It is therefore possible to assume that late adoptions (after two years of age) or having spent at least 18 months in an institution during childhood may produce negative effects on the social competence of children. Hawk and McCall (2011) also estimated that this period of institution may be "critical" specifically for children coming from the Russian Federation.

The research is characterized by several strong points: first, it was decided to involve only children from the Russian Federation that had experienced psychosocial deprivation in institutions. This allowed us to have a homogeneous sample regarding pre-adoption events, those related to "institutionalization" in particular. In addition, this study was multi-informant considering not only the views of the parents, as often occurs in clinical outcomes of adoption studies, but also those of the adopted children. It was therefore possible to control both variability due to contextual factors and aspects related to the peculiarities of each informant (Deng, Liu & Roosa, 2004; Grietens, Onghena, Prinzie, Gadeyene, Van Assche, Ghesquière & Hellinckx, 2004). It would be necessary to enlarge the sample of the study and to add an additional source of information in order to investigate the aggressive behavior more extensively, as discrepancies between the assessments of parents and children were found. Finally, it is important to emphasize that the difficulties found in adopted children depend on several factors, related in particular to pre-adoption events (Rutter & ERA Study Team, 1998; Miller, Chan, Tirella & Perrin, 2009; Juffer & van IJzendoorn, 2005), since institutionalization plays a significant role (McCall, 2011, 2013. The St. Petersburg-US Orphanage Research Team, 2008). It is thus very difficult to distinguish the latter effects from those related to individual traumatic experiences or prenatal factors (Hawk & McCall, 2010; MacLean, 2003).

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Could temperamental factors explain individual differences in interrogative suggestibility?

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Abstract

Recently the interest in the ability of children to testify in legal contexts has increased. Consequently the issue of reliability of testimony in childhood and all those factors which could cause distortions has been highlighted. Interrogative suggestibility has been found to be an important distortion factor, which is in turn influenced by individual variables. In order to explain the phenomenon, we need to investigate the effects of variables related to individuality, such as socio-psychological factors. This study was designed to assess the relationships of memory and interrogative suggestibility with some temperamental measures by QUIT (Axia, 2002) in school-age children. Participants were 245 Italian children (121 males) ranging in age from 6 to 10 years, recruited from five primary schools in Milan (Italy). The age of 8 years was chosen to split the sample into two groups, since at this age some important cognitive changes happen (for example, ToM development). Analyses showed that only a few of the temperamental factors considered were associated with memory and a vulnerability to suggestive questions. The results will be presented and discussed as to their implications for future research and for their relevance in the context of child testimony.

Introduction

Over the past few decades interest in the ability of children to testify in court has increased. In the legal field it is important to ascertain if the memory, children's memory in particular, is accurate and precise enough, or if is vulnerable to suggestion and, as such, inaccurate or even incorrect up to the point of generating false memories. In fact it has long been known that the memory of the events is a dynamic and reconstructive process, not merely a reproduction of reality (Bartlett, 1932). Consequently, the reliability of the testimony in childhood and all those factors which could cause distortions has been highlighted. Interrogative suggestibility may be defined as the extent to which people are lead to accept messages, communicated during formal questioning, as the result of which subsequent behavioural responses are affected. Interrogative suggestibility needs a closed social interaction to be effective and it was found to be an important distortion factor, which is in turn influenced by individual variables. Previous studies showed that age is the main variable that affects interrogative suggestibility (Bruck & Melnyck, 2004), as the phenomenon is particularly frequent and intense in children. Neverthless, there are also significant individual differences in vulnerability to suggestive questions among children at the same age. In order to explain the phenomenon we need to investigate the effects of variables related to individuality, such as temperamental traits. The temperament of each person is expressed in behavioural tendencies that are present from birth, predominantly biological-genetic, but in constant interaction with the environment. These tendencies appear to be relatively stable in space and time (Kagan, 2011). This study was designed to assess the relationships of memory and interrogative suggestibility with some temperamental measures in school-age children.

1.1. Method

1.1.1. Participants

Participants were 245 Italian children (121 males) ranging in age from 6 to 10 years (m=8.113; sd=1.137), recruited from five primary schools in Milan (Italy). The age of 8 years was chosen to split the sample into two groups, since at this age some important cognitive changes happen: Group1 (G1) consisted of 110 children from 5.986 to 7.986 years (m=7.003 sd=.557), while Group2 (G2) consisted of 135 children from 8.040 to 10.019 years (m=9.018 sd=.516). The sample was primarily Italian and consisted of children from lower to upper middle class homes. All of the children included in the sample were intellectually within the normal

range, as shown by their scores in the Raven's Coloured Progressive Matrices (CPM) (1996), all of which were above the 25th Percentile.

1.1.2. Procedure and Instruments

The memory and suggestibility measures were obtained from the administration of the Bicocca Suggestibility Scales (BISS-B32; Caprin & Benedan, being validated). This test consisted of a short story with six pictures and two series of questions.

The event-memory quantity was measured by:

- Free-Recall: derived from the children's immediate free-narrative account of the story and represented the amount of information that the children recounted spontaneously after the story had been read out aloud to them. Since the story was composed by 49 informational units, scores could vary from 0 to 49.

- Cued-Recall: derived from the Interview about the story and represented the number of correct responses to non-leading questions. The range of possible scores was 0-16. Higher scores indicate a more accurate recollection of the story.

Three measures of suggestibility were obtained from the interview:

- Yield: obtained by adding the number of wrong answers to misleading questions prior to having been given negative feedback. The range of possible scores was 0-16. Higher scores indicate a greater vulnerability to succumb to leading questions.

- Shift: the extent to which the children made changes in their answers under pressure from negative feedback. The range of possible scores was 0-32. Higher scores indicate a greater propensity to shift answers as a result of negative feedback.

- Total Score: an overall suggestibility score computed by summing the Yield and Shift scores.

To assess children's temperament, the parents filled in The Italian Questionnaires of Temperament (QUIT for children aged 7-11 years – Axia, 2002). QUITs are instruments of indirect assessment of children's behaviour, in order to assess temperament. The questionnaire used in this study consisted of 54 items describing everyday situations that the child usually experiences. Parents have to choose on a Likert Scale from 1 ("almost never") to 6 ("almost always") how many times the child showed a specific behaviour during the last week. The Italian Questionnaires of Temperament (QUIT, Axia, 2002) assess six dimensions of temperament, but for the purposes of the study we investigated only four traits: *social orientation*, a particular attitude to caring for others; *inhibition to novelty*, the child's tendency to inhibit his responses to novel stimuli; *positive emotionality*, the positive emotional expressions manifested by the child; *negative emotionality*, the negative emotional expressions manifested by the child. These dimensions were created on the basis of international research on temperament and have proved particularly suited to the Italian context.

1.2. *Results*

The Descriptive Statistics of the memory, suggestibility and psycho-social measures are shown in Table1. An absence of questionnaires filled in by parents reduced the number of participants to 237.

Tab 1. Descriptive statistics of memory, suggestibility and psycho-social measures.

	G1			G2		
	N (%)	Range	m (ds)	N (%)	Range	m (ds)
FREE RECALL	110 (100)	2 – 33	17.18 (6.58)	135 (100)	13 - 41	25.94 (5.58)
CUED RECALL	110 (100)	9 – 16	13.48 (1.66)	135 (100)	11 - 16	14.81 (1.13)
YIELD	107 (97.3)	0 – 14	7.37 (3.57)	125 (92.6)	0 - 12	4.85 (3.14)
SHIFT	107 (97.3)	0 – 26	7.34 (4.59)	127 (94.1)	0 - 12	4.01 (2.82)
TOTAL SCORE	110 (100)	2 – 34	14.72 (6.70)	133 (98.5)	0 - 22	8.87 (4.92)
SOCIAL ORIENTATION	105 (95.45)	0.00 - 6.00	4.69 (0.74)	132 (97.78)	3.13 - 5.88	4.80 (0.65)
INHIBITION TO NOVELTY	105 (95.45)	1.00 - 5.00	2.65 (0.84)	132 (97.78)	1.00 - 6.00	2.51 (0.93)
POSITIVE EMOTIONALITY	105 (95.45)	2.20 - 6.00	4.60 (0.72)	132 (97.78)	2.13 - 6.00	4.68 (0.74)
NEGATIVE EMOTIONALITY	105 (95.45)	1.00 - 4.60	2.50 (0.69)	132 (97.78)	1.20 - 4.56	2.36 (0.74)

Preliminary analyses showed that memory and suggestibility measures did not differ in relation to gender (Free-Recall: t (233.918)=-.196, p=.845, d=.025; Cued-Recall: t (243)= -1.723, p=.086, d=.219; Yield: t

(243)=1.149, p=.252, d=0.146; Shift: t (243)=1.569, p=.118, d=.200; Total Score t (243)= 1.609, p=.109, d=.205), so the subsequent analyses were conducted on the collapsed data.

To check for the age effect on quantitative measures, a series of t-tests were conducted on the two age groups. Significant effects of age were found both in Free-Recall (t (242)= -11.254, p<.001, d=1.443) and Cued-Recall (t (185.082)=-7.127, p<.001, d=.947). Older children's scores were better than those of younger ones both in Free Recall and Cued Recall.

A significant difference between the age groups was also obtained for the interrogative suggestibility scores (Yield: t (243)=5.883, p<.001, d=.752; Shift: t (172.953)=1.569, p<.001, d=.889; Total Score: t (195.187)= 7.631, p<.001, d=1.006), indicating that overall younger children tended to be more suggestible than older ones. As a consequence of the overall results, the subsequent analyses of the entire sample were conducted controlling for age. The correlation values are shown in Table 2.

Tab. 2. Partial correlations of memory and suggestibility with psycho-social measures

		FREE RECALL	CUED RECALL	YIELD	SHIFT	TOTAL SCORE
SOCIAL ORIENTATION	r	.156*	-.018	.004	.047	.036
INHIBITION TO NOVELTY	r	-.169**	-.157*	-.001	.172**	.113
POSITIVE EMOTIONALITY	r	.023	.126	-.160*	-.121	-.170**
NEGATIVE EMOTIONALITY	r	.044	-.026	.060	.102	.099

*** = p<.001; ** = p<.010; * = p<.050

1.3. Discussion and conclusions

The main aim of this study was to investigate whether individual-differences in temperament may be related to children's memory and interrogative suggestibility.

In this investigation, memory and suggestibility were assessed by different measures. Considering the description that emerges from the results, it may be argued that some children gave complete and accurate reports, while others were far less reliable.

This study confirms the hypotesis that older children perform better than younger children both in Free and Cued recall tasks (Chae, Goodman, Mitchell & Qin, 2011; Chae & Ceci, 2005), as well as that younger children are more suggestible (Danielsdottir, Sigurgeirsdottir, Einarsdottir & Haraldsson, 1993). In fact, younger children tend to be more suggestible than older ones and adults. Preschoolers seem to be the most suggestible of all (Ceci & Bruck, 1993). The age is the individual difference factor mostly studied, but it is not the only one that may influence the suggestibility phenomenon.

Regarding temperamental factors, only few traits investigated were related to memory and suggestibility. In line with the results of Caprin, Benedan & Salerni (submitted), we found that Social Orientation was positively related to Free-Recall but not to Cued-Recall. This suggests that more sociable children tend to report more information than more introverted children, because their social skills make them feel at ease in a social situation such as a conversation. Neverthless, this trait does not affect their performance when they are interviewed by forced-choice questions. Interestingly previous studies that investigated Social Orientation did not find relation with memory (Burgwyn-Bailes, Baker-Ward, Gordon & Ornstein, 2001; Ward & Loftus, 1985). We found no relation between Social Orientation and suggestibility measures. Other studies (Burgwyn-Bailes et al., 2001; Trouvè & Libkuman, 1992) highlighted that extroverted individuals are more vulnerable to suggestibility than introverts. This result needs to be clarified by further investigations in the future.

Regarding Inhibition to Novelty, Cued and Free Recall were negatively correlated with this trait, so children with higher levels of inhibition were less accurate in their memory performances, as suggested by Schneider & Sodian (1991). Most of the studies failed to detect this relationship (Burgwyn-Bailes et al., 2001; Imhoff & Baker-Ward, 1999), except Geddie, Fradin & Beer (2000) who found a positive association with memory accuracy. Inhibition to Novelty was also positively associated with Shift. This finding suggests that the children who are more inhibited may be more susceptible to negative feedback and change their responses more easily. Also Kagan (1994) found that inhibited children were reluctant to oppose adult requests and he speculated that this could increase children's susceptibility to suggestibility in interrogative contexts. However, most previous research which investigated a similar dimension of adaptability did not consider Shift (Burgwyn-Bailes et al., 2001; Geddie et al., 2000; Shapiro & Purdy, 2005). Regarding Emotionality, previous study did not detect associations with memory performance, despite expectations to the contrary (Burgwyn-Bayles et al., 2001; Chae & Ceci, 2005; Geddie et al., 2000). Interestingly we found a positive correlation between Positive Emotionality

and Yield and Total Score, but not with Shift. Conversely, no correlation was found between Negative Emotionality and suggestibility measures. Previous studies with children generally investigated Emotionality as a global dimension and the findings are controversial. However, most of previous studies failed to detect relationships with suggestibility (Burgwyn-Bailes et al., 2001; Geddie et al., 2000). Chae and Ceci (2005) found a positive correlation between suggestibility and emotionality, which, however, did not provide a significant contribution to the variance of suggestibility.

In conclusion, the investigations on the role of psycho-social factors are still limited, but it is evident that some temperamental factors impact on how children react to the interview context and, consequently, on their memory accuracy and suggestibility. Some individual characteristics in children have a small but significant effect on suggestibility and on source monitoring errors (Shapiro & Purdy, 2005). Further research is needed to identify the most important individual psychosocial factors which contribute to being vulnerable to interrogative suggestibility. These studies will allow to identify children who are particularly susceptible to suggestibility, particularly in the forensic field. Awarenness of the phenomenon may favor a more thorough evaluation of the content of interviews and make it possible to identify the most appropriate methods of listening to children as witnesses.

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Understanding emotional dissimulation in children with intellectual disability and typically developing children

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Abstract

This study investigates the understanding of emotional dissimulation in children with intellectual impairment and typically developing children, as well as gender differences in this ability. This research extends the results of Gosellin, Warren & Diotte (2002), Perron & Gosellin (2007, 2009) with typically developed children, on intellectually disabled children, and also investigates gender differences. Fifty-six 10-11 years old children (28 boys, 28 with intellectual disability) were read short stories in which a main character expressed an emotion or hid an emotion from other characters (Josephs, 1994). Stories were designed to be either positive or negative.The participants were asked to identify the emotion felt by the main characters and to indicate the facial expressions they would display. Results show that typically developed children have a better understanding of emotional dissimulation for all stories, in particular for the negative stories, than children who are intellectually impaired. There are no gender differences for the positive stories, but, for the negative stories, boys are better in understanding emotion dissimulation. In conclusion, understanding emotional display rules is an important factor of school social adjustment, and intellectually impaired children need to be coached to appropriately display emotions, especially when integrated in a normal school. Also, further investigation of gender differences is needed, since the results from different studies fail to be consistent.

Keywords: intellectual disability, emotion understanding, emotion dissimulation

Introduction

Emotions are innate and universal. The universality of emotional facial expressions is the result of innate neural programs. Facial expressions are consequences of socialization during childhood and adolescence and they differ depending on the parenting style and culture. There are differences in emotion recognition and expression in different cultures, age and gender groups (Gosselin, 2005).

The first evidence of understanding of emotions was found early in representational thinking. Wellman, Harris, Banerjee and Sinclair (1995) observed that children at age two are talking about their emotions and about the emotions of others. Children do this to comment not only on present emotions, but also on past and future ones. Children of three years old understand the situations that can cause emotions, and facial expressions of emotions, they can understand that the same situation does not necessarily produce the same emotion to different people, and that it depends on the goals and preferences of that person. Such ability is considered to be indicative of a theory of mind about emotions (Harris, 2000).

By the age of four to five years old, understanding emotions is enriched with two new acquisitions. First, they realize that expectations and beliefs play an important role in determining emotions. When asked about the emotions of the protagonists of different stories, children take into account the beliefs and expectations of the protagonists (Wellman, Banerjee, 1991). Secondly, they begin to appreciate that emotional expression can be controlled and it is not always a valid indication of emotions felt by other people (Josephs, 1994).

The first research about the ability to distinguish between real and apparent emotion was conducted with school age children. Saarni (1979) demonstrated that six years old children were able to say when and why they would conceal their emotions in front of other people. Harris, Donnelly, Guz and Pitt-Watson (1986) presented to the participants stories in which children dissimulated their emotions in front of other characters.

Children tend to explain the discrepancy between real emotions and appearances (e. g. emotion dissimulation) by a change in the emotion felt by the character. For example, in a story, several children correctly identified the emotion of sadness of the main character, as a response to receiving a disappointing gift. When they were told that the character has a reason to hide the emotion of sadness, children motivated the

emotional display of happiness, which was used to mask sadness, by the fact that the protagonist smiled because he or she was happy, though seconds earlier mentioned that the main protagonist was sad because the gift was unattractive (Banerjee, 1997).

Happiness, sadness, fear and anger have different facial features, which allow a slight distinction among them. Recognition of facial expressions of happiness proved to be more important than the recognition of negative emotions (Denham & Couchoud, 1991). Expressions of happiness are the earliest to be recognized, later followed by sadness and anger. After them are fear and disgust. After developing their cognitive capacity along the second year of life, there are a number of secondary emotions that are not easily observed as facial expressions, but more in body language.

In addition to the display of a variety of emotional expressions, children learn to control their emotional experiences. Regulation refers to strategies used to adjust the emotional state to a comfortable intensity to achieve goals. For this, the child needs different cognitive skills, such as attention focused on change in situations or people, ability of thought suppression and behavioral inhibition, ability to plan and act to appease a stressful situation (Eisenberg & Spinrad, 2004). In all societies, there are rules for emotional display, specifying time, place and the right way of expressing emotions.

Since the first months of life, parents encourage children to suppress negative emotions, imitating their expressions of interest, happiness and surprise, and ignoring the anger and sadness. Boys receive more training than girls, largely because they find it more difficult to regulate negative emotion. Known difference based on gender is still promoted from an early age, girls are more emotionally expressive and boys are more controlled in emotionality. Probably due to social pressure to mask their emotions, school boys are less precise in describing their emotions. A study in Canada showed that after watching a video with emotional content, boys were not reporting the same feelings as they displayed with facial expressions (Strayer & Roberts, 1997).

Emotions are hidden for various reasons. Furthermore, children better understand the rules of the display when the stories mentioned that the protagonist intends to conceal emotions (Gnepp & Hess, 1986). Children justifying the use of emotional display rules by referring to concern about the feelings of others are considered by teachers, as helpful, cooperative and socially fit (Mc Dowell & Parke, 2000).

Denham and Couchoud (1991) argue that understanding emotions is strongly correlated with children's self-esteem, social skills and positive relationships with peers. Zuckerman and Przewuzman (1979) showed that children who are able to recognize emotions can adapt more easily in school than those who have difficulty with this task.

There are conflicting results regarding the identification of emotions abilities in individuals with learning difficulties. Singh, Oswald, Lancioni, Ellis, Sage and Ferris (2005) stated that such children have a basic cognitive processing, similar children without difficulties, for emotional perception and comprehension skills. Some research suggests that individuals with disabilities have more difficulty in processing emotional information than cognitive information (Braverman, Fein, Lucci & Waterhouse, 1989).

McAlpine, Kendall and Singh (1991) examined the skills of identifying emotion from 511 individuals with learning difficulties and found that the ability to decode facial expressions of emotion decreases with the diminished cognitive levels. Children with normal development benefit from an easier recognition of emotions, because cognitive processes operate at maximum potential, while impaired children have difficulty decoding of emotional expressions and the need for their dissimulation. In their case, their skill is more oriented on identifying positive and simpler emotions, than the complex and negative emotions, such as anger, fear, shame or disgust (Rojahn, Lederer & Tasse, 1995).

Type of emotion also plays a crucial role in the ability to identify emotions. Children with autism or impaired intellect are proficient in identifying positive and simple emotions, but have more difficulty in identifying negative emotions and complex ones (Rojahn, Lederer, & Tasse, 1995). Children tend to reproduce correctly the positive emotions such as happiness, much better than they reproduce negative emotions such as fear. In children with normal development, skills of emotion identification are not significantly affected by the type of emotion.

Materials and Methods

This study investigates the understanding of emotional dissimulation in children with intellectual impairment and typically developing children, as well as gender differences in this ability.

Hypotheses

1. Typically developed children recognize emotions dissimulation better than intellectually impaired children;

2. Emotion dissimulation is better recognized in positive stories compared to negative stories;

3. For the negative stories, typically developed children will recognize better emotion dissimulation than disabled children;

4. There are no gender differences in recognizing emotion dissimulation for positive stories but in the negative stories boys will recognize better emotion dissimulation.

Variables

The dependent variables are: gender, development type (typical/ intellectual disability), type of story (positive/ negative –within subjects). *The dependent variable* is recognition of emotion dissimulation, a repeated measure of emotional level: felt emotion and expressed emotion.

Participants and procedure. Fifty-six 10-11 years old children (28 boys, 28 with intellectual disability) were read short stories in which a main character expressed an emotion or hid an emotion from other characters (Josephs, 1994). Stories were designed to be either positive or negative, and described the main character as having a motivation to hide emotions. The participants were asked to identify the emotion *felt* by the main characters and to indicate the facial expressions they would *display* using an emotion thermometer and a series of schematic black and white drawings of faces displaying different emotional expressions. The higher scores of emotion indicate a more positive emotion and the lower scores a more negative emotion. The difference between these two measures of emotion (felt vs expressed) shows understanding of emotion dissimulation.

Results

First hypothesis, that typically developed children recognize emotions dissimulation better than intellectually impaired children, was confirmed. There is an interaction effect between the variable development type and emotional level (repeated measure) $F(1,52)=40.3$, $p<.001$ (Table 1). In the typically developed group, the difference between what the character of the story feels and what it expresses is bigger, than in the group of children with intellectual disability. That means that typically developed children are better in understanding emotion dissimulation than intellectually challenged children, result which is consistent with previous research (e.g. McAlpine, Kendall and Singh, 1991).

Table 1. Interaction effect between development type and emotional level

	Typical development M(*SD*)	Intellectual disability M(*SD*)
Felt emotion	6.57	5.97
	(.11)	*(.11)*
Expressed emotion	4.93	5.93
	(.12)	*(.12)*

The second hypothesis, that emotion dissimulation is better recognized in positive stories compared to negative stories, was confirmed. There is an interaction effect between the variable type of story and emotional level $F(1,52)=163.2$, $p<.001$ (Table 2). Although, at the level of expressed emotion, children correctly pointed out that the character would display positive emotions in positive stories, and negative emotions in negative stories, on the level of felt emotion, they all responded that the protagonist would feel happy. This is due to the way children motivate the emotion dissimulation through the change in the felt emotion (Banerjee, 1997; Josephs, 1994). This result is a combination of two factors: better understanding of positive emotion in general (Denham & Couchoud, 1991) and the confounding of felt and displayed emotions in the dissimulation of negative stories.

Table 2. Interaction effect between type of story and emotional level

	Positive story M(*SD*)	Negative story M(*SD*)
Felt emotion	6.17	6.36
	(.10)	*(.12)*
Expressed emotion	7.04	3.83
	(.13)	*(.14)*

Third hypothesis assumed that for the negative stories, typically developed children will recognize better emotion dissimulation, than disabled children. There is a three way interaction effect between type of story, development type and emotional level $F(1,52)= 21.90$, $p<.001$

In the negative stories, the difference between what the character feels, and what it shows is smaller in developmentally challenged group, than in typically developed group (Table 3).

In the positive stories, the difference between what the character feels and what it shows is bigger in developmentally challenged group, than in typically developed group (Table 4).

Participants with intellectual disability are better in recognizing dissimulation in positive stories and the typically developed participants are better in recognizing emotion dissimulation in negative stories. The third hypothesis is confirmed. These results are in line with previous studies stating that intellectually challenged children are better at identifying positive and simpler emotions, than complex and negative emotions, such as anger, fear, shame or disgust (Rojahn, Lederer & Tasse, 1995).

Table 3. Interaction effect between development type and emotional level in negative stories

	Typical development M(*SD*)	Intellectual disability M(*SD*)
Felt emotion	6.70	6.03
	(.24)	*(.24)*
Expressed emotion	3.37	4.29
	(.26)	*(.26)*

Table 4. Interaction effect between development type and emotional level in positive stories

	Typical development M(*SD*)	Intellectual disability M(*SD*)
Felt emotion	6.44	5.90
	(.22)	*(.22)*
Expressed emotion	6.50	7.58
	(.26)	*(.26)*

The fourth hypothesis assumes there are no gender differences in recognizing emotion dissimulation for positive stories, but in the negative stories boys will recognize better emotion dissimulation.

For the positive stories, the interaction effect between gender and emotional level is not significant. There are no gender differences in recognition of emotion dissimulation in positive stories $F(1, 52)=2.54$, $p=.11$.

For the negative stories, there is a significant interaction effect of gender and emotional level. There are gender differences in recognition of emotion dissimulation $F(1, 52)= 6.13$, $p=0.017$ (Table 5). The difference between felt and expressed emotion in negative stories is bigger for boys than for girls. That means that boys understand more the necessity of masking negative emotions than do girls. This result is in line with previous research regarding gender differences in understanding emotional display rules and different pathways of emotion socialization for boys and girls (Davis, 1995; Strayer & Roberts, 1997).

Table 5. Interaction effect between gender and emotional level in negative stories

	Male M(*SD*)	Female M(*SD*)
Felt emotion	3.82	3.96
	(.29)	*(.29)*
Expressed emotion	7.28	6.42
	(.19)	*(.29)*

Conclusions

All hypotheses of the present study were confirmed. Recognition of facial expressions of happiness in real settings proved to be more important than the recognition of negative emotions (Denham & Couchoud, 1991). Expressions of happiness are discriminated earliest, later followed by sadness and anger, as illustrated in present study. Positive emotions are easily identified by children regardless of their developmental level or their gender.

However, in negative stories, boys report more appropriate recognition of emotion dissimulation than girls, this being due to the fact that boys are more controlled in emotional display. Children of all ages find it difficult to react angry or annoyed than pleased (Lewis, Sullivan & Vasen, 1987). Social pressure urges children to build and maintain harmonious relations, to communicate positive emotions and to inhibit the negative ones.

Children with impaired intellect have the same patterns of response in the tasks of identifying emotion as children without disabilities, although they have slower reactions and make more mistakes. This is due to their inadequate vocabulary to express feelings which creates difficulties in recognizing own and others' emotions. Typically developed children perceive and remember the whole configuration of objects and events, and this ability to perceive and remember the whole face is the reason why they are better in recognizing facial expressions.

Children with cognitive disabilities may have deficiencies in the perception of faces as a coherent and a meaningful whole. Children with disabilities seem to have difficulty understanding and decoding social cues and emotions of others. They are proficient in identifying positive and simple emotions, but have more difficulty in identifying negative and complex emotions such as anger, fear, shame or disgust. Children with disabilities have better performance in tasks of labeling emotions, than in situational tasks involving interpreting emotions, because these labeling scenarios provide more specific indications, than do the situations that require interpretation. They label their emotions better and have better performance in descriptive tasks, than in tasks with interactive features.

Limitations. When, at the end of the study, children were asked what they thought about the questions and how they felt, most of the responses were: "It was like a play." It is therefore very possible that they were not motivated to find a good answer as they do in classroom tasks. Another limitation of this study is given by images used to serve as responses to stories. Other studies used photographs of children displaying a certain emotion. In this study were used schematic black and white drawings, which may led participants to believe is a game, a pretense play, because of less realistic stimuli. Further studies should use more realistic materials, such as photographs, or even videos. Moreover, children with learning disabilities were selected from a single center, where there is a higher probability of uniformity of a socialization pattern. The participants should be recruited from more diverse backgrounds.

In conclusion, understanding emotional display rules is an important factor of school social adjustment, and intellectually impaired children need to be coached to appropriately display emotions, especially when integrated in a normal school. Also, further investigation of gender differences is needed, since the results from different studies fail to be consistent.

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Internalizing and Externalizing symptoms in children who are rejected by peers

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Abstract

Studies have found that children who experience rejection are at risk for concurrent and/or later adjustment problems, with respect to social and emotional functioning. This study aimed to investigate possible links between social-status in school classes and symptoms related to internalizing and externalizing in childhood. Children were recruited in primary and secondary schools in Lombardy, Italy. 1094 participants were selected on the basis of the attribution of social-status by peers. Children's behavior and symptoms were assessed by their parents, teachers and by means of self-evaluations. The following measures were administered: the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001); the Conners Rating Scale-Revised (CRS-R; Conners, 1997); the Depression and Anxiety in Youth Scale (TAD; Newcomer, Barenbaum & Bryant, 1995) and the Form & Function Aggressive Behavior Questionnaire (Little, Jones, Henrich & Hawley, 2003). Results indicated that rejected children reported higher levels of internalizing symptoms, in particular depression and anxiety, as well as externalizing problems such as aggressiveness. Parents and teachers however, tended to only focus on externalizing behaviors, ignoring the internalizing symptoms.

Keywords: internalizing symptoms, externalizing symptoms, rejected children, middle childhood

Introduction

Children's peer relations provide unique and essential contributions to social and emotional development. Children and adolescents with problematic peer relations are at risk for later adjustment problems, with respect to social and emotional functioning (Rubin et al, 2009; Hecht et al., 1998; Newcomb et al., 1993). In fact, negative peer status during childhood is predictive of a variety of maladaptive outcomes in adolescence and adulthood (Rubin et al, 2009; Coie et al., 1992). Studies found an association between rejected children and externalizing problems, in particular, these children manifest higher levels of aggression (Lansford et al, 2007; Newcomb et al., 1993). Research also suggests that rejected and neglected children report more depressive symptoms than their peers (Hoglund et al, 2008; Cole & Carpentieri, 1990; Hecht et al., 1998).

Method

1.1.1. Aims

The study is part of an ongoing research project concerning the development of socio-emotional competence in schoolers. The study employs diverse perspectives, methods and informants. The informants were the children as well as their parents, teachers and peers. This study aims to investigate internalizing and externalizing symptoms in rejected children.

1.1.2. Participants

This study took place at primary and secondary schools (N=14) in Lombardy (Italy). From a total sample of 1308 participants, a subsample of 1094 participants was selected according to the attribution of their social-status by peers. The selected children were 334 males and 296 females, ranging in age between 7-13 years (Mean=10.04 sd=1.09), classified as Popular (P; N=293 age Mean=10.26 sd=1.07 males=193) Average (A, N=567 age Mean=9.96 sd=1.12 males=282.) and Rejected (R, N=234 age Mean=9.961 sd=.99 males=135). We report the analyses concerning Ps, As & Rs children.

1.1.3. Procedure and Instruments

The children's social status was assessed by means of a sociometric nomination measure. Children were asked to indicate three children with whom they preferred to spend a weekend and three with whom they would not like to do so. Sociometric nomination is a measure of social likeability, which reflects the extent to which children are liked or disliked by peers. Sociometric Status was identified by using "Walsh's Classroom Sociometrics" software. Children's internalizing and externalizing symptoms were assessed by means of specific questionnaires filled in by parents, teachers and children: the Child Behavior Checklist 6/18 (CBCL, Achenbach 1991); the Conners' Rating Scale-Revised (CPRS-R:L; Conners, 2007; the Depression and Anxiety Youth Scale (TAD - Newcomer, Barenbaum, & Bryant, 1995) and the Form & Function Aggressive Behavior Questionnaire (FFABQ, Little, Jones, Henrich & Hawley, 2003).

Concerning internalizing symptoms, both parents and teachers completed the anxiety-shyness scales (CPRS-R). Moreover parents filled in the anxious-depressed, withdrawn-depressed and internalizing scales of the CBCL. Finally, children completed the Depression and Anxiety Scales of TAD.

Concerning externalizing symptoms, both parents and teachers completed the Oppositive Behavior scales of the CPRS-R. Moreover parents filled in the Aggressive Behavior, Rule-Breaking Behavior & Externalizing scales of CBCL. Finally, children completed the Form & Function Aggressive Behavior Questionnaire. The Conners' and CBCL raw scores were converted into standardized scores, based on normative data by gender and age as provided in the manuals; raw scores were considered for the aggressive behavior questionnaire (FFABQ) and TAD, since there are no normative data.

Results

Data analyses were conducted by means of the SPSS/22.0 software. A series of ANCOVA were conducted to measure differences concerning status, gender and age on internalizing and externalizing symptoms using the different scales filled by parents, teachers and children. Principal study results concerning status effects are presented in two major sections: (1) internalizing and (2) externalizing symptoms score analyses. Although differences concerning gender, interactions and age were found, they will not be reported here.

2.1.1. Internalizing Symptoms Score Analyses

In order to check for Status & Gender effects on internalizing score-symptoms a series of 3 x 2 ANCOVAs (controlling age) were conducted on the following measures: *internalizing scale, anxious-depressed, withdrawn- depressed (CBCL-parents), anxiety-shyness* (CRS-R; parents and teachers) and *Anxiety & Depression* (TAD-children).

A main effect of status was obtained only for the scale *withdrawn- depressed* (CBCL II; status $F_{(2,1087)}=3.000$ $\rho=0.050$) in the adult reports. Specifically Tukey post-hoc comparisons indicated that overall A children tended to be more withdrawn and sad than P; No significant differences were found between Rs and Ps or A children.

Concerning the children's self-evaluations, a main effect of status was found on the *Anxiety Scale* ($F_{(2,605)}=7.807$ $\rho\leq0.001$) and *Depression* Scale scores ($F_{(2,605)}=6.720$ $\rho=0.001$). Tukey post-hoc comparisons indicated that Rs children declared to be more anxious than Ps ($\rho=0.005$) and Gs ($\rho\leq0.001$). No significant difference between Ps and A ($\rho=0.716$) was found. Finally Rs children stated being more depressed than Ps ($\rho=0.007$) and Gs ($\rho=0.005$). No significant difference was found between Ps & Gs ($\rho=1.000$).

2.1.2. Externalizing Symptoms Scores Analyses

In order to check for Status & Gender effects on externalizing score-symptoms a series of 3 x 2 ANCOVAs (controlling age) were conducted on the following measures: *the Oppositive Behavior scales* (CPRS-R-parents and teachers), *Aggressive Behavior*, *Rule-Breaking Behavior & Externalizing scales* (CBCL, parents), and *FFABQ total score* (children).

Main effects of status were obtained on all the considered scales: *Oppositive Behavior* (parents: $F_{(2,1043)}=3.396$ $\rho=0.034$; teachers: $F_{(2,1071)}=16.526$ $\rho\leq0.001$) *Rule-Breaking Behavior* ($F_{(2,1087)}=3.441$ $\rho=0.032$); *Aggressive Behavior* ($F_{(2,1087)}=4.853$ $\rho=0.008$), *Externalizing scale* ($F_{(2,1087)}=3.149$ $\rho=0.043$), *FFABQ total score* (children: $F_{(2,461)}=4.534$ $\rho=0.011$).

Tukey post-hoc tests evidenced that Rs children were more rule-breaking than Ps ($\rho=0.006$), while they did not differ from Gs ($\rho=0.461$), and were more aggressive than Ps ($\rho=0.007$) and Gs ($\rho=0.007$). In fact, the Rs children obtained higher scores on externalizing scale than Gs ($\rho=0.011$), but did not differ from Ps ($\rho=0.175$). Further, rejected children tend to be more oppositional accroding to their parents than Gs ($\rho=0.025$), although they did not differ from Ps ($\rho=0.062$). However, according to teachers, rejected children are more oppostional than both Gs ($\rho\leq0.001$) and Ps ($\rho\leq0.001$). Further, rejected children assessed themselves as more aggressive than Gs ($\rho=0.008$), while they did not differ with respect to Ps ($\rho=0.167$)

2.1.3. Discussion and Conclusion

The analysis of the CRS-R, CBCL, TAD & Form & Function Aggressive Behaviour Questionnaire scores of "Social Problems" confirmed that parents and teachers consider rejected children to be more problematic than their peers (Hoglund et al., 2008, Lansford et al., 2007; Hecht et al, 1998). However, the informants seemed to be biased: they tended to neglect internalizing symptoms and to focus on externalizing symptoms. On the contrary, rejected children considered themselves to be more anxious and depressed than the other children.

In conclusion, the rejected children category may be too broad. These children seem to be disliked by their peers because they are more anxious, depressed, oppositional, aggressive, and so on. Further, although more internalizing and externalizing symptoms were associated with peer rejection, it was not possible to predict the direction of the effect. In fact, symptoms may be considered both the result of their status, which in turn may cause peer rejection (Rubin, 1983).

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Empathy in the peer-group. When being empathic may be not enough to behave prosocially: A study among early-adolescents

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Abstract

We explored the relations between affective and cognitive components empathy and early-adolescents' prosocial behavior, when the effects of status among peers and prestige norms are controlled for. Prestige norms were also examined as possible moderators of the associations between empathy and prosocial behaviors. 925 Chilean fourth to sixth graders (49.9% girls) answered self-report scales assessing empathy, and peer-nomination items assessing cooperating and being nice (active and passive forms of prosocial behaviors), being popular, well-liked, admired, and cool. Prestige norms for the prosocial behaviors were computed as the average association of peer reported likeability, perceived popularity, coolness and admiration, with cooperating and being nice by classroom. Data were longitudinal. The affective component of empathy was associated to behaving prosocially, also after controlling for the effects of peer-group dimensions. Furthermore, among boys some prestige norms increased the strength of the association between cognitive empathy and behaving prosocially. Results are discussed in light of possibilities for the intervention to promote early-adolescents' prosocial behavior by focusing on the distinct components of empathy in association to peer-group dimensions.

Keywords: Empathy, peer relationships, prosocial behavior, adolescence

Introduction

Empathy has been defined as the ability 'to understand and share another's emotional state or context' [1]. As described in the definition, empathy is not a unique construct, but distinct affective and cognitive components of empathy can be distinguished, which are also characterized by differences in their developmental trends and levels across gender-groups [2]. In particular, Davis [3] identified several dimensions of empathic skills, including the cognitive abilities of *taking other's perspective*, which has been conceptualized as the tendency to spontaneously adopt the psychological point of view of others, and the affective component of feeling concern for other, which is named *empathic concern*.

In the literature, empathy has been proposed as a factor promoting prosocial behavior, but the associations between empathy and prosocial behaviors are likely to be more complex. For instance, when considering defending victims in bullying situations, which is an active form of prosocial behavior involving a possible risk for the agent, only the affective component of empathy has been found to be associated with behaving prosocially [4]; furthermore, it happened only for youths who had a high status as well-liked among classmates [4], probably because they felt to be supported by peers when taking side for the bullied peers.

With regards to the role of the peer context in promoting social conducts, several peer-group dimensions have been showed to be influential on the prosocial behavior. Social status among peers is especially relevant in explaining social dynamics [5]. With regards to status, different peer-status dimensions exist [5], which have different associations with peer-valued characteristics and social behaviors [6]. A first form of high status consists in being well-liked by peers, and there is consistent evidence that this high status position is associated positively to prosocial conducts and negatively to aggressive behavior [4]. A second relevant form of high status is being perceived by peers as *popular*, that is being perceived by peers as influential and relevant within the peer-group. This form of high status is associated with higher levels of prosocial behavior, but also of aggressive behavior [4] [5]. It has been suggested that both behaving prosocial conducts and behaving aggressions can be strategies to acquire and maintain a high position among peers, and, also, that some youths, who can be described as *bistrategic controllers*, can use both the types of conducts to control peers and keep

their status [7]. This a possible explanation of the found positive associations between high status as perceived popular with both prosocial conduct and aggression.

Among peer factors influencing individual's prosocial behaviors, increasing attention has been paid to informal norms, which are established and shared within the peer group. Norms can be descriptive (the average level of behavior showed by the individuals within the group), injunctive (attitudes and beliefs shared at the group level), and prestige norms (behavior showed by high status individuals within the group) [8] [9]. There is some evidence that norms set the stage for social behavior to occur, by creating a social context that normalizes, accepts, or even values these behaviors. Furthermore, prestige norms have been also showed to moderate the associations between individual characteristics (e.g., Machiavellianism) and the aggressive behavior [11], but the influence of this type of norms on the prosocial conducts has still not been explored. Also, prestige norms set by individuals who are high in status because they are admired or evaluated cool by peers, have not been investigated as possibly promoting social behaviors, including the prosocial conduct.

Based on this theoretical background we wanted to explore the possible interplay existing between empathic components and peer-context dimensions, i.e. forms of peer-status and prestige norms that are set by well-liked, popular, cool and admired peers, in fostering passive (being nice towards peers) and active (cooperation) forms of prosocial behavior. We hypothesized that cognitive (i.e., *perspective taking* skills) and affective (i.e., *empathic concern*) components of empathy are distinctly associated with forms of prosocial behavior. Moreover, we wanted to test the influence of empathy on prosocial behavior when relevant peer-context dimensions (i.e., peer-status, and prestige norms) are taking into account. Prestige norms for prosocial behavior were also supposed to moderate the effects of the empathic components on the prosocial behavior. Lastly, possible moderations by gender of the variable associations were examined.

Method

2.1. Participants and Procedure

Participants were 978 Chilean students (52.1% boys), who attended grades five, six, and seven of four schools in Santiago of Chile. Participants' families were mainly from Middle-low SES. Data were collected longitudinally in two waves from November 2013 to April 2014, with six months of interval.

2.2. Measures

Participants responded self- and peer-reports measures. Cognitive and affective empathic components were assessed by administering the *Perspective Taking* and the *Empathic Concern* subscales from the *Personal Reactivity Index* by Davis [3]. After performing a Confirmatory Factor Analysis (CFI .930, RMSEA .062) the final version of each subscale consisted of 4 items (sample items: *Empathic Concern*, "I often have tender, concerned feelings for people less fortunate than me", Cronbach's alpha .59; *Perspective Taking*, "I try to look at everybody's side of a disagreement before I make a decision"; Cronbach's alpha .70).

Two peer-nomination items assessed passive and active prosocial behaviors: *being nice with others, cooperating with others*, respectively. Four peer-nomination items were administered to assess four forms of status: *liked the most* as a measure of the well-liked status; *the most perceived popular*, assessing perceived popularity; *being cool* and *I would like to be like him/her* to assess coolness and admiration status, respectively. Same and cross-gender unlimited peer nominations of classmates were asked for all the six peer-nomination items. Then peer-nomination scores were standardized by class.

Prestige norms were assessed by computing the average association by classroom of the four peer-reported dimensions of status with *cooperating* and *being nice* [9]. Hence, for each form of prosocial behavior we obtained four prestige norms. The four prestige norms related to *being nice* were used as predictors of variation in the intercepts and slopes of *being nice*, while the prestige norms for cooperation were used as predictors of the *cooperating* variation. All the eight norms were used at the classroom (between) level.

2.3. Strategy of Analysis

Data were analyzed by performing Structure Equation Modeling, in which the two forms of prosocial behaviors (assessed at time 2) were specified as criterion variables. A first model was tested, which included only predictors (measured at time 1) at the within level: *perspective taking* and *empathic concern*; the status dimensions of *being well-liked*, and *perceived popular*; participants' age (assessed by the grade); the stability paths of the prosocial behaviors.

In a second step of analysis, we tested models in which the prestige norms (measured at time 1) were added to the first model, as between level predictors of variation in the intercepts of the two prosocial behaviors. Lastly, as third step of analysis, we tested cross-level interactions by adding the prestige norms as possible predictors of classroom variation in the slopes between the two empathic components and the two forms of prosocial behaviors. Due to the complexity of the models - especially for models at the second and third steps of

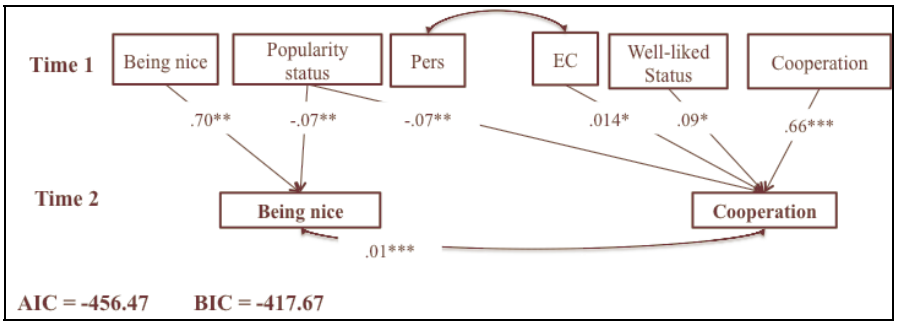
analysis - in specifying the tested models we used an optimization procedure: we combined a trimming procedure (a one by one remotion of the predictors) and single tests of separate models, each including one single predictor at the between level, in order to identify the best fitting and the most parsimonious models.

Then, as fourth step of analysis the models that were obtained as the best fitting and the most parsimonious, were tested in the gender groups separately, to examine possible moderations of the variable associations by gender.

Results

3.1. Overall Group

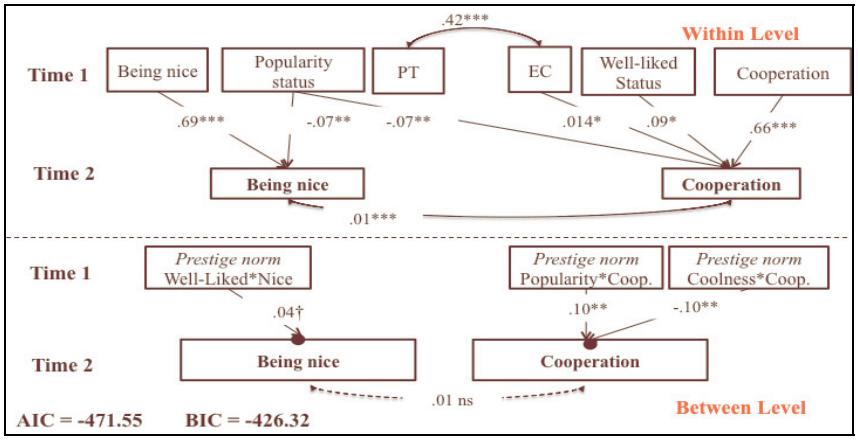
In first model, which included the predictors at the within level, only *empathic concern* was predicting *cooperating* significantly when the effects of age, stability paths, and status were controlled for (Fig. 1).



Note. * $p < .05$, ** $p < .01$, $p < .001$. PT: Perspective Taking. EC: Empathic Concern. Only significant paths are displayed.

Fig. 1. Model including only within-level predictors

When the prestige norms were added in the first model as predictors of the intercept variation of *being nice* and *cooperating*, *empathic concern* still predicted cooperation significantly. At the between-level the prestige norm of *being well-liked X being nice* predicted marginally *being nice*; the prestige norm of *being perceived popular X cooperating* predicted positively *cooperating*, while the prestige norms of *being perceived as cool X cooperating* predicted *cooperating* negatively (Fig. 2).

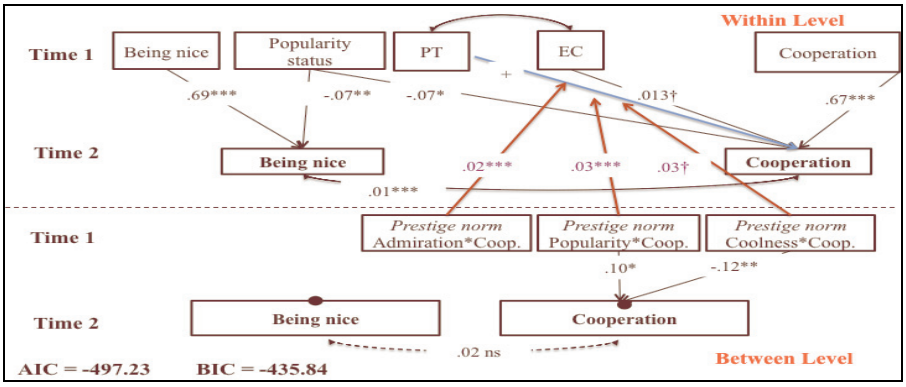


Note. * $p < .05$, ** $p < .01$, $p < .001$. PT: Perspective Taking. EC: Empathic Concern. Only significant paths are displayed.

Fig. 2. Model including within-level predictors, an norms as predictors of intercept variations of prosocial behaviors

In models in which we tested separately the moderations by prestige norms of the slopes between the empathic components and the prosocial behaviors, some prestige norms moderated the associations between *perspective taking* and *cooperating*. The unique model including predictors at the within level, prestige norms as predictors of intercept variations, and these significant slopes moderations by prestige norms obtained the best comparative indexes (AIC and BIC). Thus, this model was retained as the final. We found that prestige norms of *admiration X cooperating*, *perceived popularity X cooperating*, and (marginally) *coolness X cooperating*

moderated positively the positive association between *perspective taking* and cooperation. In other words, in classrooms in which the cooperation behavior was appraised and rewarded with classmates' admiration and attribution of status as perceived popular and cool, the cognitive component of empathy more likely promoted cooperating with others over time. In this model, *empathic concern* continued to predict (marginally) cooperation (Fig. 3).

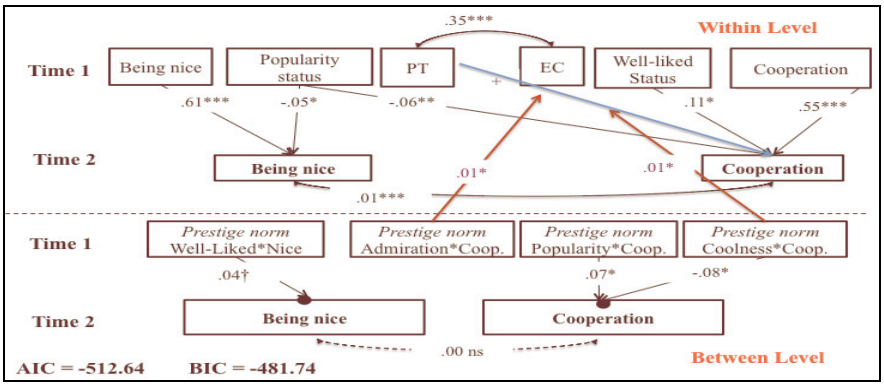


*Note. * p < .05, ** p < .01, p < .001. PT: Perspective Taking. EC: Empathic Concern. Only significant paths are displayed.*

Fig. 3. Model including within-level predictors, norms as predictors of intercept and slope variations of prosocial behaviors

3.2. Boys

When testing the models across gender groups separately, the best fitting and most parsimonious model for boys was the model including the crosslevel interactions, which is displayed in Fig. 3. Among boys (Fig. 4) neither *perspective taking* nor *empathic concern* were significantly associated with the prosocial behaviors (and it happened also when testing the model including only the within level predictors). Nevertheless, among boys, prestige norms were not only associated to variations in the intercepts of *being nice* and *cooperating*, but they also moderated the positive associations between *perspective taking* and *cooperating*: in classrooms in which at time 1 being cooperative was more strongly associated to higher admiration by classmates and higher status as cool, individual's perspective taking skills predicted an increase of cooperation over time.

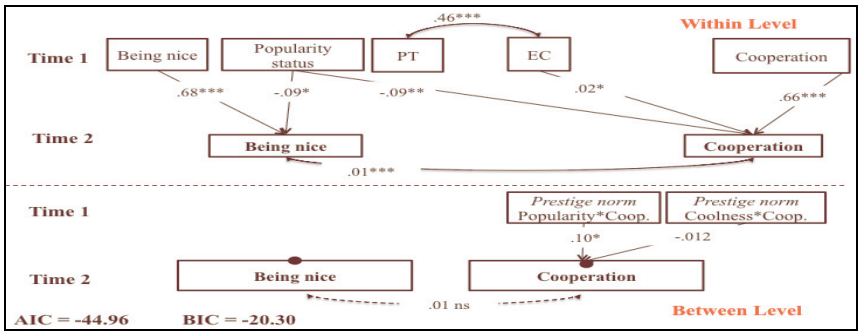


*Note. * p < .05, ** p < .01, p < .001. PT: Perspective Taking. EC: Empathic Concern. Only significant paths are displayed.*

Fig. 4. Final Model for Boys

3.3. Girls

Among girls, the best fitting and most parsimonious model was the second model, which did not include crosslevel interactions. In this gender group, *empathic concern* came back to predict an increase of *cooperating* over time. At the between level, prestige norms predicted variation in the classroom mean levels of *cooperating*: cooperative behavior at time 2 was higher in classrooms in which at time 1 this prosocial behavior was more strongly associated to high status as popular, but more weakly associated to status as "cool" (Fig. 5).



*Note. * p < .05, ** p < .01, p < .001. PT: Perspective Taking. EC: Empathic Concern. Only significant paths are displayed.*

Fig. 5. Final Model for Girls

Discussion

When Controlling for the effects of relevant influential factors (the stability paths of the behaviors, and, above all, the two status dimensions of being well-liked and perceived popular, and the prestige norms), only the affective component of empathy, has been found to be associated to an increase of active forms of prosocial behavior. Nevertheless, the cognitive component of empathy resulted to be associated with (active) prosocial behavior under some peer-*context* conditions. Specifically, when prestige norms appraising the behavior are shared among classmates, cognitive empathy has been found to be more likely to promote active prosocial behavior. This result agrees with the hypothesis that being empathic can be not enough to motive to behave prosocially, and that the support by peers is needed [4].

When considering the associations between prosocial behaviors and peer-group dimensions, both the types of prosocial conducts we examined resulted to be influenced by having a high position among peers as well-liked, and perceived popular. In particular, being well-liked by peers emerged to foster the cooperative behavior, especially among boys, while a high status as perceived popular decreased the likelihood of behaving prosocially six months later among both boys and girls. As a possible interpretation of this result, it is possible that, to keep the popular high status, adolescents use more the aggressive behavior than the prosocial behavior, and that, in general, aggression can be more effective to maintain this type of high position among peers, than behaving prosocially.

Furthermore, both the types of prosocial behaviors that we investigated, appeared to be influenced by peer-prestige norms. In peer-groups (classrooms), in which cooperating is associated (hence, rewarded?) with the perceived popular status, this type of active prosocial conduct becomes more widespread among the classmates. Nevertheless, it seems that active prosocial behaviors become more widespread in peer-groups in which these behaviors are more weakly associated to being perceived as "cool" by peers. To interpret this result, we can suppose that other factors (different from behaving prosocially; e.g. behaving aggressively) are likely to contribute to the peer-perception of being cool. Moreover, it is possible that the prestige coolness norms are more relevant in promoting aggressive behavior [10] than the prosocial conducts. We need further research on this kind of prestige norms to test these hypotheses, as well as more research on the multidimensionality of peer-status and peer-norms to better investigate their relations to social behaviors.

Independently of the above considerations, it is relevant that the affective component of empathy has been found to foster prosocial behavior also when the effects of other factors were controlled for, and notwithstanding the assessment of empathy came from a different source of information (self-reports) in comparison to the other variables, which all were from the same source (peer-reports). Furthermore, prestige norms moderated the associations between cognitive empathy and the prosocial behaviors. When considered together, these results suggest that intervention programs aimed at promoting adolescents' prosocial behavior by fostering individuals' empathy, should focus on the *affective* components of empathy and should take into account possible moderations by the peer-group dimensions.

Lastly, in this study also gender has been found to play a role. Empathic concern predicted behaving prosocially only among girls, while among boys the peer-group dimensions were relevant in moderating the associations between cognitive empathy (the perspective taking skills) and the prosocial conducts. Hence, also gender needs to be token into account in possible interventions aimed at fostering the prosocial conducts through enhancing empathy.

Based on these results, in our opinion this study contributes to suggest some future lines for the reserach in this field. Firstable, further studies should be realized to confirm that affective and cognitive components of empathy have distinct effects on the prosocial behaviors, also examining other forms of prosocial conduct. Furthermore, the complexity of empathy requests to consider different dimensions of this construct not only by

distinguishign between affective and cognitive empathic skills, but also investigating other types of empathy, such as trait empathy *vs* state empathy, and empathy towards specific targets (e.g., bullied peers). More in general, it is recomendable that further research examines the interplay of empathy with peer-context dimensions, because this line of research is likely to give relevant insights for the intervention aimed at promoting behaving prosocially in early-adolescence.

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Social relationships and loneliness in adolescents with Learning Disabilities

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Abstract

Many studies in recent years have shown that adolescents with Learning Disabilities (LD) have more difficulties than typically developing adolescents in acquiring emotional independence from their family, in making friends and in forming peer networks. As a consequence they experience higher levels of loneliness associated to the separation/individuation process than their typically developing peers. The present study aimed to investigate the emotional autonomy from parents of adolescents with LD, the quality of their social relationships and loneliness. The participants were 371 typically developing adolescents (TD-group) and 40 adolescents with Learning Disabilities (LD-group) aged between 11 and 19 years. The assessments administered to each participant were the Emotional Autonomy Scale [1], the Loneliness and Aloneness Scale for Children and Adolescents [2] and the Assessment of Interpersonal Relations [3]. The data showed that adolescents with LD perceived a lower level of quality in both their familiar and their social relationships, higher levels of peer-related loneliness, a more positive attitude toward aloneness and a less negative attitude toward aloneness compared to the TD-group. For both groups a correlation emerged between emotional autonomy and parent-related loneliness, whereas an association between detachment and peer-related loneliness emerged only for the TD-group. The findings indicate differences in the separation/individuation process in adolescents with LD that could have important implications for intervention programs focused on social and emotional competences.

Keywords: Social relationships, Social Well-Being, Loneliness, Leaning Disabilities

Introduction

The Learning Disabilities (LDs) are defined as a group of disorders - around the acquisition of, and the use of, skills related to reading, writing and arithmetic - which are attributed to the failure to achieve expected learning criteria, and are present in children with a normal IQ [4]. Because of their difficulties, adolescents with LDs have to invest more energy in the tasks required of them at school - academic, social and personal - and in difficult situations they may find that they are less competent and effective than they would wish [5]. For example, many studies have shown that there is a strong association between LDs and psycho-social problems (negative self-image, low self-esteem, lack of social skills, stress, anxiety, negative behaviour and emotions, loneliness) [6];[7]. In addition, students with LDs have reported lower self-worth than TD students [8], they feel more loneliness [9];[10];[11] and they are at greater risk of internalizing problems [12]; [13]; [14]. Furthermore, adolescents with LD have problems in constructing social relationships with peers. They can feel alone, they are considered less popular, they have difficulty in communicating with others [15] and have difficulty in taking part in group discussions and in emotional comprehension [16]. Because they have difficulties with social relationships they feel a higher degree of peer-related loneliness and depression [17];[18];[6];[7];[19]. Some authors have suggested that the origin of the higher degree of loneliness is difficulties in learning the social competence that permits one to behave with confidence in the social context, with the result that adolescents with LD prefer solitary behaviour. Recent studies by Al-Yagon on the role of attachment factors and parental characteristics have also confirmed higher degrees of loneliness in adolescents with LDs [20];[21]. Some studies have underlined the importance of social support from parents as a protective factor, helping the adolescent with LD cope with negative aspects of the separation/individuation process [22];[23]. Indeed, there could be a strong relationship between some aspects of the family context and the socioemotional development of adolescents with and without LD [24];[20];[10]. However, what is not completely clear from the literature is the range of connections for the adolescent with LD between his/her representation of the familiar relationships and emotional autonomy and loneliness. This study examines whether Italian adolescents with LD show differences from typically developing peers, both in terms of loneliness,

social well-being, and emotional autonomy and in terms of the associations between the quality of family social well-being, emotional autonomy and peer-related loneliness.

Method

Participants

The participants are 300 typically developing adolescents (TD: 87 males and 213 females) and 50 adolescents with LD, all aged between 13 and 20 years (TD: M = 16.58; LD: M = 15.48) and all from middle-class family in the North of Italy. The diagnosis of LD followed the DSM-IV-R criteria [25]. The adolescents in the LD group had an average IQ level and substantially lower achievements on standardized tests in reading, writing, and/or mathematics than expected for their age, schooling, and level of intelligence.

Instruments

Four instruments were administered to each participant. The Louvain Loneliness Scale for Children and Adolescents-LACA [2], Italian version [26], is a measure of loneliness/aloneness comprising four sub-scales: loneliness toward peers (L-Peer), toward parents (L-Part), positive attitude toward aloneness (A-pos) and negative attitude toward aloneness (A-neg). Each sub-scale is composed of 12 items and the responses were assessed on a 4-point Likert Scale. The Interpersonal Relationships test-TRI [3], was used to evaluate the quality of the adolescent's relationships with parents (both mother and father), male and female peers and teachers (5 sub-scales). Each sub-scale is composed of 35 items and the responses were assessed on a 4-point Likert Scale. Finally, the Emotional Autonomy Scale-EAS [1] was administered in order to assess the adolescents' emotional autonomy from their parents,. This scale is composed of seven first-order factors (Deidealization, Nondependence, Nonimitation, Privacy, Perceived Ignorance, Distrust and Perceived Alienation) and two second-order factors (Separation and Detachment), each item being measured on 4-point Likert scale.

Results

In order to assess group differences, a subgroup was considered, of 50 typically developing adolescents matched with the group with LD for age and gender (28 males and 22 females, age: M = 15.48). A series of t-tests was conducted on loneliness, quality of social relationships (parents and teachers) and separation and detachment. Data analysis showed significant differences for L-Peer [(t(98) = 7.63; p = .04)], A-Pos [(t(98) = .51; p = .016)] and A-neg [(t(98) = 1.54; p = .038] and no significant difference for L-part (Fig. 1). Analysis of the TRI data shows significant differences for family subscale [(t(98) = 7.52; p < .001) and peers subscale (t(98) = 11.03; p = .006)] (Fig. 2). In contrast, no significant difference emerged for emotional autonomy (Fig. 3).

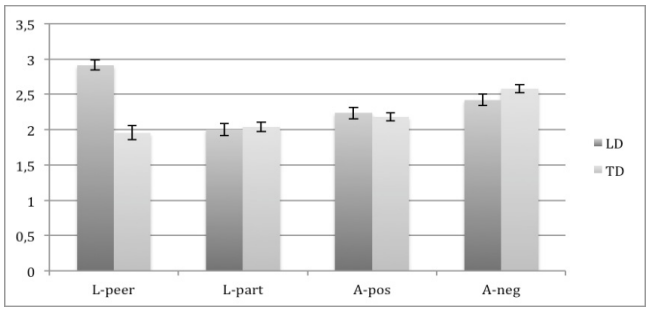

Fig. 1. Loneliness dimensions (L-peer, L-part, A-pos and A-neg).

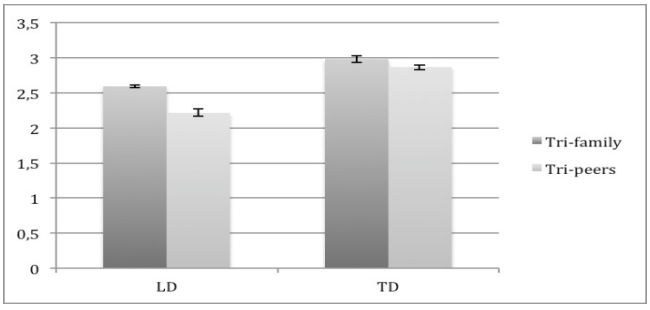

Fig. 2. Quality of social relationships (Family and Peers).

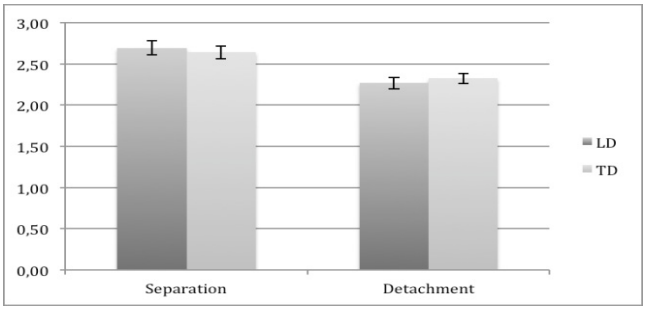

Fig. 3. Emotional autonomy (separation and detachment).

For both groups, loneliness toward parents is related to separation and detachment [TD: r(50) = .50; p <.01; r(50) = .44; p <.01, respectively; LD: r(50) = . 57; p < .01; r(50) =. 41; p <.01, respectively, while loneliness toward peers is significantly related to detachment only for TD-group [r(50) = .19; p < .05].

Discussion

These findings indicate that adolescents with LD display higher levels of peer-related loneliness, lower levels of quality of social-relationships and lower levels of self-esteem than their TD peers [27];[28];[29]. In contrast no significant differences emerge in parent-related loneliness and emotional-autonomy. Thus, although they perceived a lower quality of relationships with their parents, they displayed similar degrees of autonomy and of loneliness related to the process of separation. At the same time differences emerged between the two groups in terms both of the perceived feeling of loneliness towards peers and of self-esteem, as reported in other studies [30];[18];[31];[16];[28];[19];[32];[15]. In fact, although emotional autonomy (both separation and detachment) is positively related to parent-related loneliness in both groups, only in the TD group were detachment and peer-related loneliness significantly related. Furthermore, as reported by many authors, loneliness towards parents seems to be inherent to the process of separation/individuation, while peer-related loneliness is confirmed as a risk factor for the appearance of problems of various kinds. Some studies have reported that the parents of children with LD or other developmental difficulties can became more protective and anxious about their social relationships, trying to "over control" them. On the other hand, the same adolescents might feel that their family is a protective factor in their social-relationships, and thus they are more dependent on them for the construction of their social relationships and for their feeling of security. Thus, for adolescents with LD, a higher level of detachment from parents, and consequently a less intrusive approach on the part of parents could be beneficial for their social well-being and for constructing relationships with peers. However further investigation will be needed in order to clarify the influence of family relationships on social well-being.

In summary, the study shows that young people with LD are not different from their TD peers in terms of emotional autonomy and feelings of loneliness towards parents but they display differences in their socioemotional adjustment, with higher levels of loneliness in respect of peers. A difference also emerged between the groups in the influence exerted on their socioemotional adjustment by the quality of their relationship with parents. For further research, it would be interesting to investigate the factors - individual and environmental - affecting these dimensions. For example, whether direct observation reveals differences among groups of adolescents with LD in terms of their social development, or whether there are cross-cultural differences, or whether individual variables such as age of diagnosis and kind of treatment are more influential. This could also have implications for the construction of supportive programs for social and emotional well-being.

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Physiological reactions during mother-infant and father-infant face-to-face interaction

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Abstract

Background: The relationship established between infants and caregivers early in life provides one of the most important environments for infant development. Infant developmental outcomes highly depend on the quality of the relationship that the dyad infant-caregiver can accomplish. The importance of behaviors displayed by both parents and infants during early interactions to child development outcomes is well established and unquestionable. Despite that, scarce information is available regarding the physiological reactions that underlie behaviors during early interactions. **Aim:** Examine the underlying physiological reactions associated with the quality of parental behaviors during dyadic interaction between 6 weeks and 6 months of age. Methods: 35 mothers and fathers participated in this study. Separate face-to-face interactions between the infant and each parent were video recorded for a 10-minute interval according to the protocol of the Global Rating Scales (Murray, Fiori-Cowley, Hooper, & Cooper, 1996; Gunning, Fiori-Cowley, & Murray, 1999). This procedure was followed by the still-face paradigm. During this procedure parental respiratory sinus arrhythmia (RSA) and skin conductance (SC) were monitored. Baseline measures were also recorded. Results: During face-to-face interactions, maternal non-demanding behavior is associated with higher RSA, while maternal non-remote and non-silent is associated with lower RSA. High mutually satisfying engagement during face-to-face interactions is associated with lower maternal RSA.

Conclusion: Physiological indicators might explain parental approach oriented behaviors and behavioral inhibition responses during early interactions.

Keywords: parental respiratory sinus arrhythmia; parental skin conductance; FFSF, quality of interaction

Introduction

The relationship established between the infant and the caregiver is the earliest and closest among the many relationships that individuals experience throughout their life. These interactions are central to the lives of both parents and infants, and provide one of the most important environments in which children develop as a single and social individual (Russell, Mize, & Bissaker, 2002). In fact, empirical evidence suggests that the infant developmental outcomes highly depend on the quality of the relationship that the dyad can accomplish. Difficulties in the mother-infant interaction (Gerhold, Lauct, et al., 2002; Kaplan et al., 2008; Mäntymaa et al.,2004), father-infant interaction (Mäntymaa et al., 2004; Trautmann-Villalba, Gschwendt, Schmidt, et al., 2006) and mother-father-infant interaction (Lundy, 2003) seem to be the core of this association.

Researchers have typically referred to mother-infant interaction in terms of synchrony, reciprocity, matching, coherence and attunement. These terms are attempts to capture the quality of the interaction when it is going well. Nonetheless, Tronick (2007) found that infants and mothers spend a large amount of time not displaying positive emotions and in 70% of the time mothers and infants are not in matching state, they are not in synchrony. These mismatches cause stress in the infant by generating negative emotions, nonetheless the infant may use specific coping behaviors to turn a mismatch into a match and the negative emotions into positive emotions. Developmentally, the experience of repairing these mismatches has several positive benefits for the infant such as the increase of the infants' sense of effectiveness or mastery and the opportunity to elaborate his coping capacities. However, the infant who employs his coping strategies unsuccessfully and repeatedly fails to repair mismatches will begin to feel helplessness. Gianino and Tronick (1988) argue that in normal interactions, the infant experiences periods of positive affect and negative affect and frequent transformations of negative to positive affect; hence, experiences of negative emotion are brief. With the accumulation of success in reparation, the infant develops a representation of himself or herself as effective, of his or her interactions as positive and

reparable, and of the caretaker as reliable and trustworthy (Tronick, 2007).

The success in the development of early interactions is also largely dependent of the maternal sensitivity and responsivity. In fact, parents can vary in their ability to be attentive and effectively interpret their infants' behaviors and, therefore, they also vary in their ability to help their infants' to regulate (Ham & Tronick, 2009). Maternal sensitivity is associated with infants' efficient emotional regulation, infants' physiological pattern (Kaplan et al., 2008) and with physiological and behavioral regulation (Conradt & Ablow, 2010). But why are some parents sensitive and responsive while others are not so sensitive and responsive? This question remains unanswered, nonetheless there is some evidence that parents that respond in a sensitive and responsive manner to their infants are themselves more efficient in their own physiological reactivity regulation (Moore, et al., 2009). Ham and Tronick (2009) found physiological markers of anxiety in mothers of infants who did not recover from a stressful event during interaction (still-face paradigm). Although the study of physiological components of dyadic interactions has been the focus of a few studies, the study of both mother-infant and father-infant behavioral and physiological aspects of interaction is still scarce. In the modern societies, fathers spend more time in childcare, and there is recent empirical evidence on the impact of father-infant interactions on early behavioral problems in children (Ramchandani et al., 2013). Thus, we consider relevant to include not only mothers but also fathers in this study.

Method

1.1. Sample

A total of 35 mothers and fathers participated in this study. Social and clinical data is provided in Table 1.

Table 1. Socio-demographic characteristics

		% (n=35)	% (n=35)
		Mothers	*Fathers*
Marital status	*Married/living together*	*82.9*	*70.4*
	Not married	*8.6*	*20.6*
	Widow	*8.6*	*9.0*
Education	*High school or less*	*42.9*	*50.4*
	Academic degree	*57.1*	*49.6*
Income	*<=1000*	*17.1*	
	1001-2000	*65.7*	
	>=2001	*17.1*	
Conception	*Natural*	*94.3*	
	Treatment	*5.7*	
Previous abortion		*8.6*	

1.2. Procedures

Parents were invited to take a part of the study in a routine antenatal care unit between 33 and 37 weeks of gestation. The inclusion criterion is that both parents consent to participate in the study. The exclusion criteria are the inability to read or write Portuguese and fetal congenital problems. The research was explained to eligible parents and information about the study objectives, methods and procedures was provided. The research team ensured their right to give up at any moment; confidentiality and using the data for research purposes only. An informed consent was provided, and after signed, the first assessment moment was scheduled.

At 33 weeks of pregnancy a socio-demographic questionnaire was fulfilled and at 6 weeks after childbirth separate face-to-face interactions between the infant and each parent were video recorded for a 10 minute interval (Global Rating Scales procedure; GRS). This procedure was followed by the still-face paradigm. During these interactions parental respiratory sinus arrhythmia (RSA) and skin conductance (SC) were recorded

1.3. Measures

Parent-infant interactions

The Global Rating Scales (GRS, Murray, Fiori-Cowley, Hooper, et al., 1996; Gunning, Fiori-Cowley, & Murray, 1999) are a video-based assessment of the quality of parent-infant engagement that can be applied from 2 to 6 months post-partum either at the mother's home or in a laboratory setting. Parents are instructed simply to play with their infants in any way they choose without the use of toys in a 5–min face-to-face play session. The scales globally assess the quality of mother's behavior, infant's behavior, and overall interaction. The GRS comprises 25 five-point scales, describing 7 infant, 13 maternal, and 5 joint interactive behaviors that are

grouped in dimensions. In this study, we only analyzed the parent behaviours scales (Positive/hostile, Accepting/Rejecting, Responsive/Unresponsive, Non-demanding/Demanding, Sensitive/Insensitive, Non-Intrusive Behavior/Intrusive Behavior, Non-Intrusive Speech/Intrusive Speech, Non-remote/Remote, Non-silent/Silent, Happy/Sad, Much energy/Low energy, Absorted in infant/Self Absorted, Relaxed/Tense) and the joint interactive behaviors scales (Easy/Difficult, Fun/Serious, Mutually Satisfying/Unsatisfying, Much engagement / No engagement, Excited engagement/ Quiet engagement). Maternal dimensions describe mother's overall sensitivity, intrusiveness, remoteness, and signs of depression. Interactive dimension regards mutual engagement. The interactions were video-recorded and trained researchers coded parent-infant interactions.

The Face-to-Face Still-Face Paradigm (FFSF; Tronick, Als, Adamson, et al., 1978) is a standard laboratory-based observational procedure for studying infant social capacities and capacity to cope with perturbations. It is composed of 3 episodes: 1. normal parent–infant face-to-face interaction, 2. parent looks at the infant and remains immobile (still-face), and 3. reunion play episode in which the parent reengages with her infant as usual.

Physiological measures

The respiratory sinus arrhythmia (RSA) and skin conductance (SC) were assessed using the VU University Ambulatory Monitoring System of the impedance cardiogram (VU-AMS; Geus, Willemsen, Klaver, et al., 1995; Willemsen, de Geus, Klaver, et al., 1996).

Results

Correlations were used to analyze the association between parental physiological measures and the quality of the interaction during the FFSF procedure. Marginally significant associations were found between maternal sensitivity and skin conductance: higher maternal sensitivity is associated with higher maternal skin conductance levels in both baseline and face-to-face interactions (see table 2). During face-to-face interactions, maternal non-demanding behavior is associated with higher maternal RSA, while maternal non-remote and non-silent behavior is associated with lower maternal RSA (see table 2). High mutually satisfying engagement during face-to-face interactions is associated with lower maternal RSA (see table 2). As for fathers, non-demanding paternal behavior in the interaction is associated with lower paternal SC during baseline, face-to-face interaction, still-face and the reunion episode. Higher father-infant engagement during dyadic interactions is marginally associated with higher paternal SC during the baseline, face-to-face interaction, still-face and the reunion episode. Higher father-infant mutually satisfying engagement and excited engagement during dyadic interactions is marginally associated with higher paternal RSA during the baseline, face-to-face interaction, still-face and the reunion episode (see table 2).

Discussion

The respiratory sinus arrhythmia is a measure of parasympathetic nervous system and reflects changes in muscle tonus due to heart rate variability (Cacioppo, Tassinary, & Berntson, 2007). During face-to-face interactions with their infants, mothers that are more present and more talkative with their infants have lower RSA levels, which indicates that these mother's parasympathetic activity is lower which suggests that they are committed in the interaction and mobilizing their system to a behavioral response toward the infant. On the other hand, non-demanding mothers and those mothers in mutually satisfying interactions, have higher RSA levels, which suggest that these mothers decreased arousal level is underneath an accepting attitude toward their children's needs and as such they develop an adequate response.

The skin conductance is a measure of the sympathetic arousal (Porges, 2003), indicating emotional excitement or stress. This is associated with the mobilization of the system to the environmental stimuli - in this case the infant -, and to respond to it. Higher maternal SC during the interaction is associated to higher maternal sensitivity, as well as higher paternal SC is associated with demanding paternal behaviors and father-infant interactions with much engagement. This suggests that emotional excitement is a key characteristic of both sensitive mothers, that are attentive and that adequately interpret their infant's cues and of engaged demanding fathers, that spend a considerable amount of effort in the interaction, playing with the child while requiring a specific behavior from the infant. Emotional engagement seems, therefore, to have different behavioral effects in mothers and fathers: mothers take care of the children's needs and fathers spend more time playing with them.

Physiological measures of mother-infant and father-infant interactions can allow us to understand physiological mechanisms that underlie behaviors during dyadic interactions. Although this is an exploratory study, it may help us find specific physiological patterns corresponding to specific behaviors during dyadic interactions early in life.

Table 2. Correlations between mothers and fathers skin conductance and respiratory sinus arrhythmia and quality of dyadic interaction

	Skin Conductance (SC)								*Respiratory Sinus Arrhythmia (RSA)*							
	Mothers				*Fathers*				*Mothers*				*Fathers*			
	Baseline	*FF*	*SF*	*Reunion*	*Baseline*	*FF*	*SF*	*Reunion*	*Baseline*	*FF*	*SF*	*Reunion*	*Baseline*	*FF*	*SF*	*Recovery*
Positive/	*.198*	*.191*	*.175*	*.155*	,180	,168	,147	,118	*.042*	*-.059*	*.234*	*.071*	,414	,357	-,150	,195
													,308	,386	,723	,643
Hostile	*.313*	*.329*	*.373*	*.431*	,670	,691	,728	,781	*.826*	*.758*	*.214*	*.716*				
Accepting/	,116	,089	,063	-,011	-,135	-,176	-,207	-,240	*.012*	*.045*	*-.017*	*.189*	,601	,481	-,104	,327
													,115	,227	,806	,430
Rejecting	,556	,652	,751	,958	,750	,677	,624	,568	*.948*	*.815*	*.931*	*.327*				
Responsive/	,207	,190	,175	,176	,423	,404	,394	,381	*.034*	*.073*	*-.010*	*-.088*	,292	,412	,077	,012
													,483	,311	,856	,977
Unresponsive	,282	,324	,364	,360	,297	,320	,334	,351	*.856*	*.698*	*.958*	*.642*				
Non-demanding/	,091	,070	-,033	-,082	***-,457***	***-,470***	***-,488***	***-,504***	*-,002*	***,360***	*.008*	*,223*	-,549	,022	,392	-,464
											.967					
Demanding	,637	,718	,866	,674	***.029***	***.023***	***.049***	***.036***	*.991*	***.047***		*.236*	,159	,959	,337	,247
Sensitive/	**,368**	**,361**	**,342**	,323	-,135	-,086	-,044	-,028	*-.054*	*.318*	*.221*	*.344*	,414	,357	-,150	,195
													,308	,386	,723	,643
Insensitive	**,054**	**,059**	**,074**	,094	,750	,840	,917	,948	*.777*	*.086*	*.241*	*.068*				
Non-Intrusive Behavior/	-,313	-,236	-,060	-,260	,180	,168	,147	,118	*.128*	*.163*	*.103*	*.034*	,120	-,260	-,162	-,023
													,777	,533	,701	,957
Intrusive Behavior	,099	,217	,758	,172	,670	,691	,728	,781	*.491*	*.380*	*.581*	*.857*				
Non-Intrusive Speech/	-,010	-,104	-,133	-,106	,391	,417	,410	,422	*-.188*	*.088*	*.010*	*.098*	,160	,197	-,152	,110
													,705	,640	,720	,795
Intrusive Speech	,960	,590	,492	,583	,338	,304	,313	,298	*.328*	*.639*	*.959*	*.606*				
Non-remote/	,134	,170	,179	,219	-,528	-,560	-,569	-,599	*-,127*	***-,364***	*,265*	*-,042*	,102	-,055	-,162	,224
									.495	***.044***	*.150*	*.826*	,810	,897	,701	,593
Remote	,487	,379	,353	,254	,178	,149	,141	,116								
Non-silent/	,265	,180	,130	,217	,409	,390	,374	,372	*-.127*	***-.364***	*.265*	*.-042*	,614	,443	,080	,136
													,105	,271	,851	,748
Silent	,165	,350	,503	,257	,315	,340	,362	,364	*.495*	***.044***	*.150*	*.826*				
Happy/	,025	,185	,228	,122	,081	,065	,040	,026	*.194*	*-.163*	*.076*	*.071*	,399	,433	,135	,038
													,327	,283	,750	,928
Sad	,896	,335	,235	,530	,849	,879	,926	,951	*.296*	*.382*	*.685*	*.708*				
Much energy/	,166	,201	,161	,269	-,309	-,333	-,346	-,364	*.094*	*.181*	*-.135*	*.026*	,649	,470	,133	,113
													,082	,240	,754	,791
Low energy	,390	,296	,405	,158	,457	,420	,401	,376	*.613*	*.329*	*.468*	*.893*				
Absorted in infant/	,185	,122	,104	,064	-,267	-,297	-,322	-,337	*.605*	*-.243*	*-.292*	*-.061*	,404	,144	,097	,300
													,321	,734	,819	,471

Self Absorted	,337	,528	,592	,742	,523	,475	,436	,415	*.730*	*.189*	*.111*	*.748*				
Relaxed/	-,095	,109	,266	,038	,329	,354	,331	,340	*-.119*	*-.080*	*.075*	*.106*	.382	.524	.473	.717
Tense	,625	,574	,163	,844	,426	,390	,423	,410	*.523*	*.688*	*.687*	*.578*	,426	,503	,353	,849
Easy/	,091	,175	,202	,079	,076	,024	,022	,010	*-.011*	*.194*	*.093*	*-.061*	,081	,499	,222	,018
Difficult	,640	,363	,294	,684	,857	,955	,958	,982	*.954*	*.296*	*.618*	*.748*	,849	,208	,598	,967
Fun/	,130	,241	,264	,127	-,130	-,158	-,196	-,220	*.153*	*.313*	*-.116*	*.158*	,626	-,266	-,607	,099
Serious	,500	,208	,166	,512	,760	,709	,642	,600	*.411*	*.087*	*.534*	*.406*	,097	,524	,111	,815
Mutually Satisfying/	,144	,210	,253	,086	,160	,142	,104	,080	*,148*	***,455***	*-,062*	*,224*	**,655**	-,124	-,520	,134
Unsatisfying	,457	,275	,186	,659	,706	,738	,807	,850	*.427*	***.010***	*.742*	*.235*	**,078**	,769	,186	,751
Much engagement /	,019	-,055	-,092	-,101	**,658**	**,673**	**,683**	**,700**	*.116*	*.325*	*-.041*	*.215*	-,286	,016	,177	,075
No engagement	,921	,775	,636	,603	**,076**	**,067**	**,062**	**,053**	*.534*	*.075*	*.828*	*.254*	,492	,971	,675	,860
Excited engagement/	,029	,035	,078	-,053	,065	,069	,034	,027	*.122*	*.261*	*-.162*	*.189*	**,675**	,310	,033	,416
Quiet engagement	,880	,859	,687	,783	,878	,870	,936	,949	*.513*	*.156*	*.383*	*.317*	**,066**	,455	,939	,305

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Effects of listening comprehension, word recognition, and oral reading fluency on reading comprehension in second-grade students

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Abstract

Several studies have provided evidence regarding the importance of listening comprehension, word recognition and oral reading fluency in successful reading comprehension; however, most of the research has been conducted with English language speakers. This study aims to examine the direct effects of these three variables on reading comprehension using a sample of European Portuguese speakers. A sample of 325 second-grade Portuguese students completed the Test of Word Reading, the Reading Fluency Assessment Test, the Test of Listening Comprehension of Narrative Texts and the Test of Reading Comprehension of Narrative Texts. Path analysis showed that listening comprehension, word recognition and oral reading fluency were all significant predictors with unique effects on reading comprehension at this grade level. The combination of all three predictors explained 41% of the variance observed in reading comprehension. The results are discussed in terms of the practical implications and limitations of the study, and guidelines for future research are presented.

Keywords: listening comprehension, word recognition, oral reading fluency, reading comprehension, path analysis.

Introduction

Reading comprehension has been defined as an ability that entails the construction of meaning through contact and involvement with written language (RAND Reading Study Group, 2002). This complex ability is influenced by several factors, of which word recognition, oral reading fluency and listening comprehension are some of the most studied (Hoover & Gough, 1990; Padeliadu & Antoniou, 2014).

Empirical evidence concerning the relationship between word recognition and reading comprehension over primary school has been found in several studies (Adlof, Catts, & Little, 2006; Cutting & Scarborough, 2006). The results from studies conducted with Portuguese students from the second to fourth grades found correlations between word recognition and reading comprehension ranging from .36 to .55 (Cadime et al., 2013; Ribeiro, Cadime, Freitas, & Viana, 2015). The overall findings of these studies converge in the conclusion that reading comprehension is compromised when students have poor word recognition. This assumption has been explained using the framework proposed by La Berge and Samuels (1974) and Perfetti (1985). According to this framework, during the initial stage of reading acquisition, most beginning readers allocate a large amount of cognitive resources to the process of word recognition because this process is not yet automatized. When word recognition becomes increasingly automatized, cognitive resources can be allocated to the process of reading comprehension. Consequently, deficits in word recognition lead to reading comprehension difficulties. However, if word recognition is a necessary condition, it is not sufficient to guarantee that the reader comprehends what he reads. The attainment of fluent reading also plays an important role in the achievement of higher levels of reading comprehension. Studies conducted with English-speaking students attending the second grade (Burns et al., 2011), third grade (Roehrig, Petscher, Nettles, Hudson, & Torgesen, 2008) and fourth grade (Jenkins, Fuchs, Broek, Espin, & Deno, 2003) indicated that oral reading fluency is a strong predictor of reading comprehension. Similarly, large and statistically significant correlations have been found between oral reading fluency and reading comprehension in English-speaking students (Burns et al., 2011; Denton et al., 2011). These findings were confirmed in studies with samples of different school grades using cross-sectional and longitudinal designs.

For example, Kim et al. (2010) conducted a longitudinal study with English-speaking students who were followed from kindergarten to third grade and found that oral reading fluency was a strong predictor of reading comprehension in the first three grades of elementary school. In general, the results of the research conducted with English speakers appear to note that the relationship between oral reading fluency and reading comprehension is stronger in the early elementary school grades and weaker during secondary school grades (Yovanoff, Duesbery, Alonzo, & Tindal, 2005). A previous study conducted with European Portuguese speakers indicated that oral reading fluency had a correlation of .67 with reading comprehension in the second grade (Ribeiro et al., 2015).

Reading comprehension is also predicted by listening comprehension. Several studies have shown that difficulties in reading comprehension are explained by deficits in listening comprehension skills in English-speaking students (Cain & Oakhill, 2006; Nation & Snowling, 1997). The studies conducted with speakers of more transparent languages are not very frequent, but appear to note similar results. For example, large and statistically significant correlations between listening and reading comprehension were found by Hagtvet (2003), using a Norwegian sample of students aged nine years. Other studies with Korean speaking children who had received two years of reading instruction found similar results (Kim, Park, & Wagner, 2014). Studies that examined the contribution of word recognition and listening comprehension to reading comprehension found that these two variables explained 40% to 60% of the variance observed in reading comprehension (Joshi & Aaron, 2000; Joshi, Tao, Aaron, & Quiroz, 2012).

1.1. The present study

In conclusion, several studies have tested the direct effects of word recognition, oral reading fluency and listening comprehension on reading comprehension. However, most of these studies were conducted with English speakers. Given that English is a deep orthography, the results of most studies may not be generalizable to more transparent orthographies such as European Portuguese. The results of previous studies conducted with Portuguese students from primary school indicated the existence of medium to high correlations among reading comprehension, word recognition and oral reading fluency (Cadime et al., 2013; Ribeiro et al., 2015); however, these studies did not examine the unique effect of listening comprehension. Therefore, the present study aims to examine the direct effects of listening comprehension, word recognition and oral reading fluency on reading comprehension.

Methods

2.1. Participants

A total of 325 students in the second grade ($Mean_{age}$ = 7.41, St. $Dev._{age}$ = .546) participated in this study. Students attended public (n = 282, 86.8%) and private schools (n = 43, 13.2%) from northern Portugal. More than half the students were boys (n = 167, 51.4%). These percentages are representative of the distribution of the students in the population, given that according to the data of the National Council for Education and the National Office of Education and Science Statistics for the 2012/2013 academic year, 88.3% of children from first to fourth grade attended public schools, of which 51.5% were boys. Students with special education needs were not included in the sample. All students were of Portuguese nationality.

2.2. Measures

Test of Word Reading (TLP – *Teste de Leitura de Palavras*) (Chaves-Sousa et al., 2015). This is a subtest of The Battery of Reading Assessment (BAL – *Bateria de Avaliação da Leitura*) (Ribeiro & Viana, 2014), and it was used to assess single word reading accuracy. The TLP includes four vertically scaled forms for students in grades one to four. For the purpose of this study, the test form for the second grade (TLP-2) was administered. It includes 30 items (single words) that are presented in isolation through a computer application. The student reads aloud the words that are presented, which are isolated on the computer screen. Each correct response is scored with 1 point, and a raw score is computed by adding them together. The reliability coefficients of the TLP-2 are high (PSR = .88; ISR = .99; KR-20 = .92). The results of the TLP-2 are correlated with the results obtained in other tests of word reading and with the teachers' ratings of the students' performance in reading. The administration was individual and untimed.

Reading Fluency Assessment Test (*Teste de Avaliação da Fluência e Precisão de Leitura "O Rei"*) (Carvalho, 2010). This test was constructed to assess reading fluency in students from second to sixth grade. The text is composed of 281 words, and it is an adapted version of the tale "The Emperor's New Clothes" by Hans Christian Andersen. Each student must read the text aloud within a time limit of three minutes. The number of correct words read per minute is then computed. The test presents adequate reliability and validity indicators.

Test of Listening Comprehension of Narrative Texts (TCTMO-n – *Teste de Compreensão de Textos na Modalidade Oral – Narrativo*) (Santos et al., 2015; Viana et al., 2015). The TCTMO-n is a subtest of the BAL (Ribeiro & Viana, 2014) that assesses the listening comprehension of narrative texts. This test includes four vertically scaled forms for students in grades one to four. In this study, the test form for students in grade two

(TCTMO-n-2) was administered. The student listens to the text passages, which are followed by multiple-choice questions (30 items) with three options, also presented orally, and indicates the chosen option. Each response is scored with one point, and the raw score is computed by adding the points for the correct answers together. The TCTMO-n-2 reliability coefficients are high (ISR = .96; PSR = .73; KR-20 = .77). Validity evidence was also provided for the test scores by obtaining significant correlations with other tests of listening comprehension. The administration was collective and untimed.

Test of Reading Comprehension of Narrative Texts (TCTML-n – *Teste de Compreensão de Textos na Modalidade de Leitura – Narrativo*) (Ribeiro, Viana, Cadime, Santos, & Spinillo, 2014). This is another subtest of the BAL (Ribeiro & Viana, 2014). It assesses students' reading comprehension of narrative texts. The TCTML-n is composed of specific test forms for students in grades two to four and is presented in a pencil-and-paper format. Each student reads the text passages silently and then completes multiple-choice questions with three options; the chosen option is marked on an answer sheet. The responses are scored as 0 (incorrect) and 1 (correct). The raw score is computed by adding the correct answers together. The test form for the second-grade students (TCTML-n-2) was used in this study. The test form is composed of 27 items as follows: eight assess literal comprehension; 14 assess inferential comprehension; three evaluate reorganization; and two evaluate critical comprehension. The TCTML-n-2 reliability coefficients are high (ISR = .96; PSR = .70; KR-20 = .77). The administration of the TCTML-n was collective and untimed.

2.3. Procedures

Legal authorisations for the administration of the tests were obtained from the Portuguese Ministry of Education and the school boards, and informed consent for student participation was acquired from students' parents or legal tutors. Tests were administered by trained psychologists, according to the instructions provided in the technical manuals. All students completed the tests in the same order.

2.2. Statistical analyses

Descriptive statistics (frequencies, mean scores and standard deviations) were calculated using IBM® SPSS® (version 22) software. Pearson correlations (*r*) were computed to analyse the relationships between all measured variables. The magnitudes of the correlations were evaluated using the criteria proposed by Cohen (Cohen, 1992): .10 indicates a small effect; .30, a medium effect; and .50, a large effect. To test the direct effects of word recognition, oral reading fluency and listening comprehension on reading comprehension, path analysis was implemented using Mplus version 6.1 software (Muthén & Muthén, 2010). In this study, *p* values less than .05 indicated statistically significant results.

Results

Tab. 1 provides the descriptive statistics (number of participants, means and standard deviations) for each measured variable, as well as the correlations between all variables.

Tab. 1. Descriptive statistics and correlations

Variable	N	M	SD	ORF	LC	RC
WR	305	111.15	7.85	.665***	.328***	.481***
ORF	304	62.63	24.50	-	.248***	.500***
LC	297	108.34	10.25		-	.491***
RC	312	100.31	10.17			-

Note. WR = Word Recognition; ORF = Oral Reading Fluency; LC = Listening Comprehension; RC = Reading Comprehension; M = Mean; SD = Standard Deviation.
***p < .001

All correlations were statistically significant. Large correlations were found between word recognition and oral reading fluency and between reading comprehension and oral reading fluency. Medium correlations were found between reading comprehension and the other variables. Word recognition also had a medium-size correlation with listening comprehension. A low correlation was found between oral reading fluency and listening comprehension.

Regarding the path analysis results, all path coefficients were statistically significant (see Fig. 1). Word recognition, oral reading fluency and listening comprehension were directly and uniquely related to reading comprehension. The model explained 41% of the variance observed in reading comprehension.

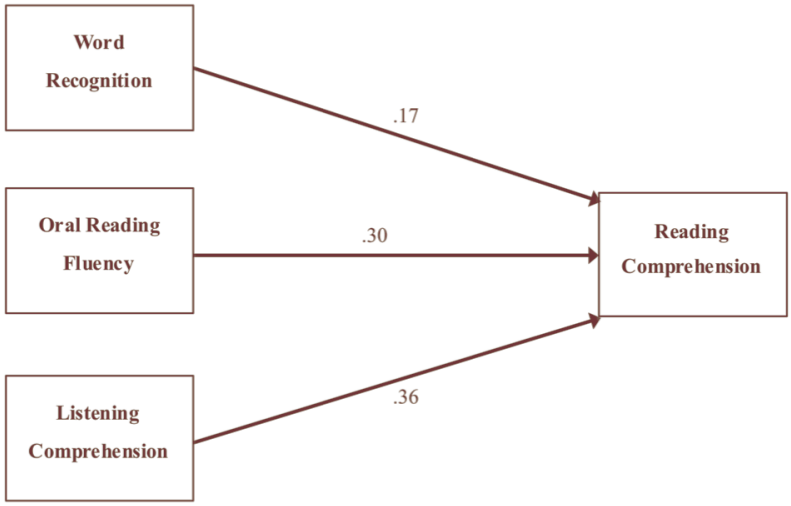

Fig. 1. Path model with the standardized regression coefficients.
Note: all regression coefficients were statistically significant ($p < .05$). $R^2 = .410$

Discussion and conclusions

The current study aimed to examine the direct effects of word recognition, oral reading fluency and listening comprehension on reading comprehension in a sample of second grade students who were speakers of European Portuguese, an intermediate depth orthography.

The correlations between reading comprehension and the other three variables (word recognition, oral reading fluency and listening comprehension) were statistically significant and ranged between .48 and .50. Considering the criteria proposed by Cohen (1992), the magnitudes of these correlations were medium-to-large. The correlations between reading comprehension and word recognition and between oral reading fluency and reading comprehension were very similar to those obtained in other studies with Portuguese students (Cadime et al., 2013; Ribeiro et al., 2015). The results of this study also indicate that listening comprehension has a medium-to-high correlation with reading comprehension, as previously observed for other languages (Hagtvet, 2003).

Moreover, the results of the path analysis showed that word recognition, oral reading fluency and listening comprehension had a unique effect on reading comprehension. The model explained more than 40% of the variance observed in reading comprehension, a percentage that is similar to that observed in previous studies, using only word recognition and listening comprehension as predictors (Joshi & Aaron, 2000; Joshi et al., 2012). These findings indicate the necessity of promoting not only basic reading abilities, such as word recognition and fluency, but also oral language comprehension skills to obtain higher levels of comprehension of written texts, even in the initial years of schooling.

One limitation should be considered in the interpretation of the results obtained in this study. Although representative, the sample size is relatively low. Future studies should attempt to replicate this result using a larger sample size. The influence of listening comprehension, word recognition and oral reading fluency on reading comprehension has been reported in several studies, and some of them indicate that this influence changes across school grades (Adlof et al., 2006; Kim, Wagner, & Lopez, 2012). Furthermore, other variables, such as vocabulary and reasoning, can have an additional effect on reading comprehension, particularly after the initial school grades (Ribeiro et al., 2015). Therefore, the structural invariance of the models across school grades should also be investigated, and other cognitive skills that have an effect on reading comprehension (e.g., vocabulary and reasoning) should also be included in the models that are tested in future studies.

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Would you be a Tattle-tale? Age Differences in Moral Evaluations of Tattling

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This study investigated how children evaluate the reporting of peers' transgressions to teachers. Participants, (*N*=76), aged 5-6 and 9-10 years, were presented with 4 stories, where a child committed either a moral transgression (intentional or unintentional) or a conventional transgression. Participants were asked to judge the decision of a child observer who either did or did not report the transgression to a teacher, and to express how much they liked them. Younger children considered positive the reporting for both type of transgressions, whereas older children negatively evaluated the reporting of an intentional moral transgression and liked less the tattletale. Similar differences were found between boys and girls. Further research will include an analogous group of English children to study cross-cultural influences.

Tattling – the reporting to a second party of norm violations committed by a third party – is a widespread activity among school and preschool age. Such behaviour has been observed since the early 20th century (Piaget, 1932). Nevertheless, the majority of research has focused on sibling relationships (den Bak & Ross, 1996; Dunn & Munn, 1987; Ross & Den Bak-Lammers, 1998). A part from a study by Nucci and Turiel (1978), only in the last decade or so researchers have started to investigate this behaviour in peer contexts (Buta, Leva, &Visu-Petra, 2015; Chiu Loke, Heyman, Forgie, McCarthy, & Lee, 2011, 2014; Friman, Woods, Freeman, Gilman, Short, McGrath et al., 2004; Ingram, 2014; Ingram & Bering, 2010). These studies indicate a negative correlation between boys and girls frequency of tattling and whether they are liked or not by peers (Friman et al., 2004). Moreover, moral judgments of tattling have been shown to depend on the perceived seriousness of the norm violations (Chiu Loke et al., 2011, 2014). However, no study has been carried out in Italy. We intended to examine how 5-6 and 9-10-year-old Italian children evaluated stories involving transgressors and observers, in order to understand: (1) whether both age groups consider bad the reporting of peers' transgressions to adults, regardless of the type and the perceived seriousness of transgressions; (2) how much they like or dislike transgressors and observers who report to adults or not; (3) what they would do if they were the observer child. In line with previous works (Chiu Loke et al., 2011, 2014; Friman et al., 2004, Turiel, 2008), we hypothesised that: (1) both 5-6 and 9-10-years-olds children would positively evaluate the reporting of an intentional violation of a moral rule; (2) only 5-6-years-olds would positively evaluate the reporting of an unintentional violation of a moral rule or violations of conventional rules; (3) as children grew up, they would increasingly dislike peers who tattle, especially when they report conventional or unintentional moral transgressions.

Method

Participants

76 children participated in this study (40 M/36 F): 36 pupils from an infant school (M age: 5,8 years), and 40 pupils from a junior school (M age: 9,7 years). All participants attended a central state primary school in a small city of the South of Italy.

Materials

Each child was presented with 4 two-part-stories set in school contexts: (1) in the first part, a child committed a moral or conventional transgression, unaware to be observed by a peer; (2) in the second part, the observer child told or not what happened to the teacher. The stories were developed with 5 infant school teachers

and 5 junior school teachers and piloted with 20 children between 4 and 11 years of age. They were based on the following transgressions: *calling somebody fatty* and *breaking somebody else's work by accident* (as intentional and unintentional moral transgressions); *kneeling on the chair in class* and *jumping the queue* (as conventional transgressions). The observer child told the teacher after seeing the two moral transgressions, whereas he/she decided not to tell after seeing the two conventional transgressions.

Procedure

Each child was interviewed individually, after having their parents' consent and their personal assent. The interviewer read aloud each part of the stories and asked participants to indicate: (1) whether the character's behaviour was good or bad, pointing to one of the circles of a 5-point scale, ranging from "*very good*" to "*very bad*"; (2) whether participants liked or not the protagonist, pointing to one of the faces of a 5-point "*feeling face scale*" (Abrams, Rutland, Ferrell, & Pelletier, 2008), ranging from "*like a lot*" to "*dislike a lot*"; (3) what participants would have done in the observer's place.

Data analyses

The evaluations on the scales of goodness/badness and liking/dislike were converted in scores ranging from 1(«*very good*» or «*like a lot*») to 5 («*very bad*» or «*dislike a lot*»). A 2(age)X2(gender)X4(transgression type) Repeated Measures ANOVA has been performed on the *evaluation of transgression* and on the *liking for the transgressor*. Whereas a 2(age)X2(gender)X2(transgression type) Repeated Measures ANOVA has been performed on the *evaluation of telling* and *not telling* first, and on the *liking for the tattletale* and *for the observer who didn't tattle* second. The Within Subjects Contrasts Test (Repeated type) was considered to determine the difference between the mean scores given to each story (*i.e.,* the four levels in the test). A χ^2 test was performed on the *personal choice question* with age and gender as independent factors. All data analyses were carried out using the IBM SPSS Statistics software.

Results

1. Evaluation of Transgression

Results concerning the evaluation of the four transgressions indicated a significant transgression type effect, $F(2,734)=79.613$, $p=.000$, and a significant interaction transgression type by age, $F(2,734)=6.325$, $p=.001$. By contrast, the transgression type by gender interaction was not significant. Moreover, children significantly rated the four transgressions according to an increasing degree of severity: from the least serious (*breaking somebody else's work by accident*) to the most serious (*calling somebody fatty*). Each shift from the previous level to the next one was significantly different: (1) level1 *vs* level2, $F(1)=23.761$,$p=.000$; (2) level2 *vs* level3, $F(1)=35.124$, $p=.000$; (3) level3 *vs* level4, $F(1)=10.325$, $p=.002$. With respect to the transgression type by age interaction, only the contrast between the third level (*jumping the queue*) and the fourth (*calling somebody fatty*) was significant, $F(1)=4.373$, $p=.040$. Thus, older participants significantly judged calling a classmate fatty as the overall most serious transgression; whereas younger children always judged each transgression more seriously (see fig. 1.a). No significant gender effect occurred.

2. Liking/Dislike for the Transgressor

When participants judged how much they liked the transgressor characters, results indicated a significant transgression type effect, $F(2,505)=63.457$, $p=.000$, and a significant transgressor type by age interaction, $F(2,505)=3.499$, $p=.023$. Once again, a significant graduation in scores occurred: (1) level1 *vs* level2, $F(1)=16.474$, $p=.000$; (2) level2 *vs*level3, $F(1)=31.646$, $p=.000$;(3) level3 *vs* level4, $F(1)=17.077$, $p=.000$. Interestingly, the contrast between the second level (*kneeling on the chair*) and the third (*jumping the queue*) was significant, $F(1)=4.634$, $p=.035$. Therefore, as age increased, children liked significantly less the child who jumped the queue rather than the one who knelt on the chair, showing a preference for the mate who broke a school rule with no implication for the group (see fig. 1.b). No significant gender effect occurred.

3. Evaluation of Telling

Concerning the evaluation of telling in the first and fourth story (*breaking somebody else's work by accident* and *calling somebody fatty*), results showed a significant transgression type effect, $F(1)=76.991$, $p=.000$. Specifically, children rated more negatively reporting a misdeed by accident then reporting an intentional offence. Results also indicated a significant transgression type by age interaction, $F(1)=13.479$, $p=.000$. Specifically, both age groups considered reporting to be positive when a mate had been called names, whereas only the oldest children judged significantly more negative reporting when a mate had done a misdeed by accident (see fig. 1.c). Interestingly, only the transgression type by gender interaction was significant, $F(1)=4.358$, $p=.040$. Boys significantly judged more negatively reporting an unintentional misdeed than girls (see fig. 2.c). Whereas, the transgression type by gender by age interaction was not significant.

4. Evaluation of Not Telling

With respect to the evaluation of not telling in the second and third story (*kneeling on the chair* and *jumping the queue*), there was no significant transgression type effect. Participants generally rated the decision of not telling on a violation of a school rule regardless of which rule had been broken. By contrast, the transgression type by age interaction was significant, F(1)=4.912, p=.030. Therefore, older children considered less negatively the choice of the observer not to tell on when a mate was not sitting properly (see fig. 1.c). No significant gender effect occurred.

5. Liking/Dislike for the Tattletale

As regards the liking for the observer who told in the first and fourth story (*breaking somebody else's work by accident* and *calling somebody fatty*), results showed a significant transgression type effect, $F(1)=82{,}836$, $p=.000$. Hence, participants declared to like less the observer who tattled in the first situation than in the latter. The transgression type by age interaction was also significant, $F(1)=11{,}107$, $p=.001$. Thus, older children showed a preference for the child who reported an intentional offence rather than an unintentional damage (see fig. 1.d). Whereas, the transgression type by gender interaction was not significant.

6. Liking/Dislike for the Child Observer who Didn't Tattle

As regards the liking for the observer who didn't report in the second and third story (*kneeling on the chair* and *jumping the queue*), neither significant transgression type effects, nor significant transgression type by age or transgression type by gender interactions were found. Thus, the observer who didn't tell on a violation of a school rule was liked similarly, regardless of which rule had been broken (see fig.1.d and 2.d).

Fig.1. Age differences: mean scores of goodness/badness (*1/very good–5/very bad*) and liking/dislike (*1/like a lot–5/dislike a lot*)

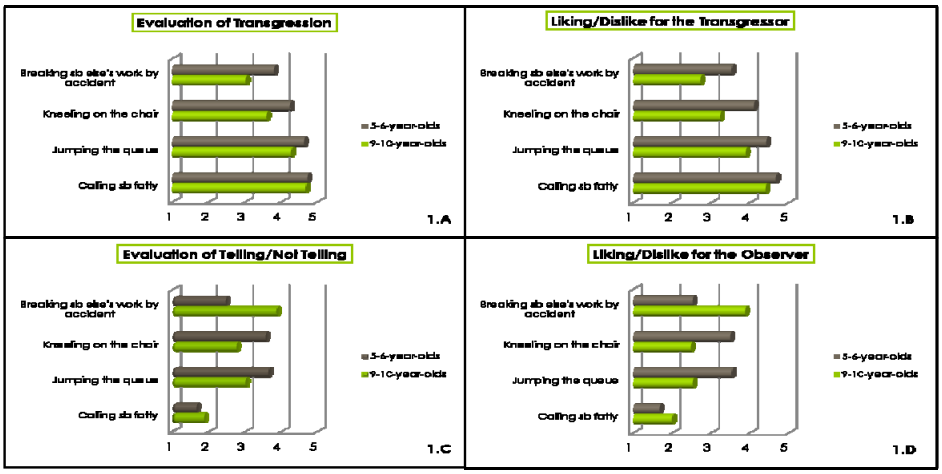
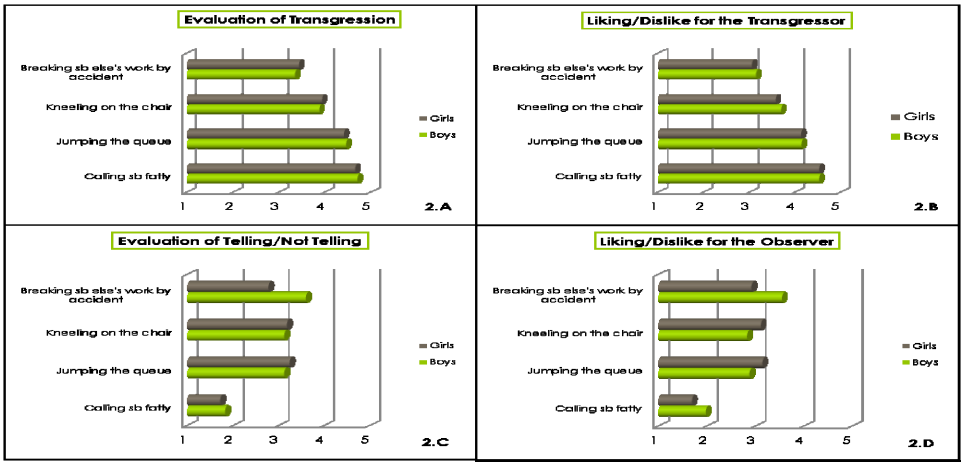


Fig.2. Gender differences: mean scores of goodness/badness and liking/dislike

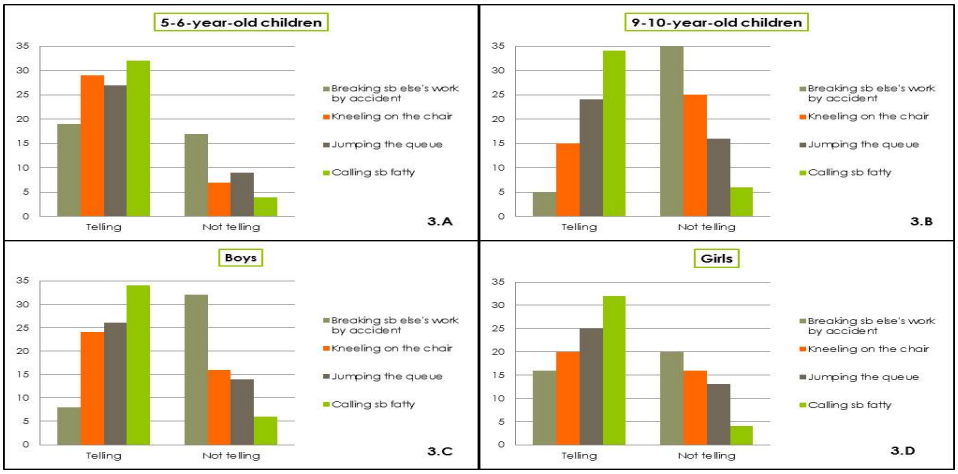


7. Participants' Choice

Concerning the age effects, the declared choice to tell or not was significantly different in the first and second story, $\chi^2=14.226$, $df=1$, $p=.000$, and $\chi^2=14.409$, $df=1$, $p=.000$, respectively: in this two situations (*breaking somebody else's work by accident* and *kneeling on the chair*), older children would have tattled less

than younger children, whereas both age groups would have prevalently tattled in the third and fourth situation (*jumping the queue* and *calling somebody fatty*) (see fig.3.a–3.b). As regards gender effects, only in the first story (*breaking somebody else's work by accident*) results showed a significant difference in the tendency to tattle between boys and girls, χ^2=5.240, *df*=1, *p*=.022: the 80% of boys wouldn't have tattled, instead of the 55,6% of girls (see fig. 3.c–3.d).

Fig. 3 Participants' choice in the observer's place: mean scores in both gender and age groups



Discussion

This study is part of a larger research aiming to investigate age-related and cross-cultural similarities and differences in Italian and English children's evaluations of peer reports of moral and conventional transgressions to an authority figure. Results on the Italian participants' rates confirm that age and gender influence moral judgements of tattling. As regards the age effect, our preliminary results are consistent with previous studies (Chiu Loke et al., 2011, 2014): children aged 9-10 start to differentiate their judgment on tattling in accordance to the perceived seriousness of transgressions, especially if they compare telling on an accidental damage (*i.e., breaking somebody else's work by accident*) with telling on an intentional offence (*i.e., calling a classmate fatty*); whereas, according to younger children, it's almost always better to report to the teacher whatever their peers have done. Moreover, older children are more likely to dislike peers who told on an accidental moral transgression and this might be interpreted in light of previous findings about adolescence (Friman et al., 2004). Interestingly, we also found gender effects: boys are more strict than girls about telling on an accidental damage. This gender effect was not found in previous studies (Chiu Loke et al., 2011, 2014). Moreover, from the best of our knowledge, only one study has attempted to grasp cross-cultural differences on moral judgements of tattling, involving American and Japanese children and adults (Chiu Loke et al., 2014). To better characterize this issue among European children, we have interviewed two analogous groups of English children in a primary school of the South-West of England. Data analyses are in progress.

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Evaluation of manual dexterity in early education

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Abstract

Part of the recent research on fine motor skills questions the existence of a general factor of manual dexterity. If this manual dexterity factor is not proved this would affect the suitability of using motor development scales. The present study aimed at developing a set of tasks to evaluate manual dexterity in early education involving each hand to identify hand preference development. Specifically, the aim was to explore inter- and intra-task correlations by way of a series of object-manipulation tasks using objects of a size and weight adapted to children 3-6 years old, and to be administered easily by staff working in early education settings. In a first study using three tasks -*Posting coins*, *Moving pegs*, and *Threading eyebolts*- involving separately left and right hand (6 trials), 151 children aged 3-6 years have participated. The results show high inter- and intra-task correlations, and one factor explaining 64.03% of the total variance. Individual differences in motor skills and in hand preference are confirmed a year later, and correlate with children's writing skills when starting compulsory education. Implications for school and home are mentioned, emphasizing the interest of these type of studies for detecting typical/atypical developmental pathways.

Keywords: manual dexterity, early development, hand preference, fine motor skills, writing precursors.

Introduction

The study of motor development has traditionally focused more in changes taking place during the infancy years, and consequently, more in gross motor progressions (Adolph & Berger, 2006). Nevertheless, motor development continues improving in developing creatures. Not only new locomotor achievements are completed but relevant advances are shown as well in the more precise domain of hand use of tools. Recently, research literature on motor development has found moderate correlations between various tasks of hand dexterity pointing at the existence of a factor of manual dexterity in children: Bart, Hajami, & Bar-Haim, 2007; Ellinoudis, Evaggelinou, Kourtessis, Konstantinidou, Venetsanou, & Kambas, 2011; Kaiser, Albaret, & Doudin, 2009; Schulz, Henderson, Sugden, & Barnett, 2011; Van Waelvelde, De Weerdt, De Cock, & Smits-Engelsman, 2004; Wagner, Kastner, Petermann, & Bös, 2011. However, the lack of a significant correlation between the different tasks of manual dexterity included in motor development scales -e.g. Movement ABC-2- administered to children, has been highlighted against the existence of such a general factor, in favour of the specificity of the tasks (Haga, Pedersen & Sigmundsson, 2007). This lack of correlation could be due to the fact that some scales, e.g. the Movement ABC-2 do not specify which hand should do the task, or they demand the use of only one hand (generally the dominant one), making it difficult to determine whether there is a factor of manual dexterity (Henderson, Sugden, & Barnett, 2007). Following Lorås & Sigmundsson (2012), the present study uses three tasks with each hand to explore possible intra-task and inter-task correlations (3 tasks x 2 hands) in a sample of preschool children in Madrid, Spain. The interest of this study would be twofold. First, a theoretical interest, as this design could contribute to the debate of the existence of a manual dexterity factor vs. the tasks specificity. Second, an applied interest: compared with other countries, the Spanish educational system generally -not officially- demands an early introduction of children to the learning of reading and writing, so the identification of motor difficulties is relevant for the development of writing skills. The present study aims at designing a set of tasks to evaluate manual dexterity in early education involving both hands to identify hand preference development, and to investigate the possible existence of a manual dexterity factor common to various tasks (*ability*, as described by Fleishman & Bartlett, 1969), as opposed to task-specific skills in performing manual actions (Haga et al., 2007). Specifically, the aims are three: a) to compare the efficacy of each hand in performing three different tasks -*Posting coins, Moving pegs*, and *Threading eyebolts* (6 trials)-,

and calculate an index to study the development of manual preference in preschool children; b) to explore inter- and intra-task correlations using each hand in performing the three different tasks, and c) to identify possible difficulties in motor development in the participants.

Method

Participants

A total of 151 children (77 girls; 74 boys) aged 3-6 years participated. They attended the pre-school unit in a state-funded school in Madrid. Of them, 137 were right-handed, and 14 were left-handed, following the criterion of spontaneous use of either hand to draw or write her/his name. None of them had any sensory, motor or cognitive disability. The school assembly of educators approved the study, and every family received information of the study and signed the consent, for their children to participate in it.

Procedure and materials

A series of three object-manipulation tasks were designed with the following characteristics: reliable; using size and weight adapted to children 3-6 years old; attractive to children of the same age; short (less than 20 min.); cheap (with recycled material, and easy to make by hand); to be administered easily in small rooms, and by staff working in early education settings (not necessarily psychologists). The three tasks are described as follows:

Posting coins. Twenty coins (20 euro cent) should be inserted into a box with a slot, using a hand, while the other hand supports the box. Previous practice time with 5 coins was given. Time in seconds was measured since the first coin was touched until the last one was inserted.

Moving pegs. Using one hand, 15 wooden pegs (6 mm diameter, 30 mm long) had to be inserted in 15 holes separated each 2 cm upon a wooden board. After a previous practice with 5 pegs, time in seconds was measured since the first peg was touched until the last one was inserted.

Threading eyebolts. A string should be passed through 10 eyebolts (8 mm diameter) located on a board separated 4 cm each from left to right, repeating the action the other way. As it is a bimanual task, the hand inserting the string through the eyebolts changes from the first to the second time (left hand when starting from the left side; right hand when starting from the right side). Initial practice with 3 eyebolts was provided. Time in seconds was recorded since the string is moved towards the first eyebolt until it passes the last one.

The 3 tasks were performed twice: preferred hand (PH); non-preferred (NPH) hand, in the order each participant would prefer; and took place in the second session of a wider study on motor development, individually; during school time, in a separate room from the classroom.

Results

A preliminary analysis showed non-significant or no differences linked to gender and to right/left hand preference, so the data will be presented together. In all the tasks, better results were obtained with the preferred hand (PH) than with the non-preferred hand (NPH): *Posting coins*: PH vs. NPH Wilcoxon's z = -8.11, $p<0.001$; *Moving pegs*: PH vs. NPH Wilcoxon's z = -7.83, $p<0.001$; *Threading eyebolts*: PH vs. NPH Wilcoxon's z = -6.01, $p<0.001$. The ratio NPH/PH obtained values higher than 1 for the three tasks: 1.10, 1.13 and 1.12 corresponding to *Posting coins*, *Moving pegs* and *Threading eyebolts* (see Tab. 1).

Tab. 1. Performance using preferred hand and non-preferred hand in the three tasks.

	M	SD	Min.	Max.	Skewness	Kurtosis	NPH/PH
Posting PH	**37.41**	**6.54**	**26**	**60**	**.86**	**.72**	
Posting NPH	**41.18**	**7.78**	**26**	**72**	**.98**	**1.44**	1.10
Pegs PH	**45.59**	**9.15**	**27**	**76**	**.92**	**1.02**	
Pegs NPH	**51.29**	**10.58**	**34**	**90**	**1.11**	**1.44**	1.13
Threading PH	**23.73**	**6.55**	**14**	**53**	**1.41**	**2.95**	
Threading NPH	**26.69**	**7.78**	**16**	**65**	**1.81**	**5.44**	1.12

The inter- and intra-task correlations taking into account the six variables are shown in Tab. 2. All correlations were significant ($p < 0.001$), with values ≥ 0.4. In the three tasks the highest correlations were found between preferred hand and non-preferred hand (0.76, 0.72 y 0.66).

An exploratory factor analysis using the principal components method was performed for the six variables (Field, 2009). Kaiser-Meyer-Olkin test got a sample adequacy of 0.83, and Barlett's test of sphericity got a significance of $p < 0.001$. The principal components analysis (PCA) resulted in one factor explaining 64.03% of the total variance. Tab. 2 shows commonalities and saturations for each variable.

Tab. 2. Correlations, saturations and commonalities for the 6 tasks.

	Posting PH	Posting NPH	Pegs PH	Pegs NPH	Threading PH	Factor I	h^2
Posting PH						**.85**	**.72**
Posting NPH	**.76**					**.85**	**.72**
Pegs PH	**.65**	**.59**				**.81**	**.66**
Pegs NPH	**.59**	**.58**	**.72**			**.80**	**.64**
Threading PH	**.53**	**.51**	**.46**	**.43**		**.74**	**.55**
Threading NPH	**.48**	**.57**	**.44**	**.46**	**.66**	**.75**	**.56**
					eigenvalue	3.84	

A separate factor analysis for each hand (3 variables) resulted in a similar output: one factor explaining 69.91% for the preferred hand, and 69.69% for the non-preferred hand. Finally, average performance values for both hands in each task were calculated. Kaiser-Meyer-Olkin test of sample adequacy resulted in 0.69, while the level of significance in Barlett's sphericity test was: $p < 0.001$. The PCA showed one factor with an eigenvalue higher than 1 explaining 74.56% of the variance. Tab. 3 shows the correlations, commonalities and saturations for each task average value of both hands.

Tab. 3. Correlations, saturations and commonalities for each task.

	Mean BH	SD	Posting BH	Pegs BH	Threading BH	Factor I	h^2
Posting BH	**39.29**	**6.72**				**.89**	.80
Pegs BH	**48.45**	**9.14**	**.64**			**.84**	.70
Threading BH	**25.21**	**6.54**	**.62**	**.49**		**.82**	.68
					eigenvalue	2.24	

A follow up

In 2015, one year after conducting this study, children have been interviewed again with a double aim: to test the inter-rater reliability and to perform a test-retest comparison of the results obtained in 2014. The number of participants differed from Time 1: only the 3 and 4 year-old preschool groups in 2014, correspondingly the 4 and 5 year-old groups in 2015. Moreover, the relation between 5 year-olds hand dexterity in 2014, and writing speed in 2015 (1st year of Primary school) was studied.

Inter-rater reliability. The reliability of the measure –time in seconds- was analysed over a total of 357 trials (3 were discarded). Thirty children in the 4 and 5 year-old groups (former 3 and 4 year-olds) performed the tasks as used in the 2014 study. Time was recorded separately by the first author and an assistant. Four postgraduate students were trained, and each of them participated as assistant recording the time for seven or eight children's performance in the various tasks. As seen in Tab. 4, inter-rater and intra-class correlations were very high.

Tab. 4. Pearson and intra-class correlations for experimenter's and second rater's scores.

Second rater	Trials	Pearson's *r* *	Intra-class *
1	**96 (8 children)**	**0.998**	**0.998**
2	**84 (7 children)**	**0.998**	**0,998**
3	**83 (7 children)**	**0.996**	**0.996**
4	**94 (8 children)**	**0.996**	**0.996**

*** $p < 0.001$**

Test-retest reliability. Tasks were repeated 12 months later in 2015. A total of 98 preschool children participated, from 4 and 5 year-olds groups (former 3 and 4 year-olds). Data show a high correlation between the two scorings (2014 and 2015) on each task, highest for the *Posting coins* task with the preferred hand.

Tab. 5. Pearson correlations for each task in 2014 and 2015 performances.

Task	Pearson's *r*
Posting PH	**0.724**
Posting NPH	**0.650**
Pegs PH	**0.648**
Pegs NPH	**0.618**
Threading PH	**0.519**
Threading NPH	**0.459**

Hand dexterity data and writing speed relation. The relation between the results obtained from the 42 children in the last year of preschool education in 2014, and their writing speed one year later, when attending 1st year of primary school in 2015, was explored. Writing speed was evaluated by the number of letters produced per minute. A composite score (CS) of dexterity was calculated from the factor analysis conducted in 2014, and was correlated with writing speed, resulting in a Pearson r = -0.509. Due to the fact that the CS is higher in slower writers, the correlation of dexterity scores and writing speed is negative, a high scoring in dexterity pointing at a slower performance in writing.

The division of the group by the median of the composite score resulted in the data shown in Tab. 6: the 21 children with a better performance in hand dexterity tasks in 2014 (CS < 81), one year later could write almost ten letters more per minute than their peers having performed not so well the manual dexterity tasks.

Tab. 6. Relation of hand dexterity and writing speed one year later

Composite score	N	Speed**	s.d.
CS <81	**21 children**	**46.38 l/min.**	**10.83**
CS >81	**21 children**	**36.48 l/min.**	**10.11**

**** Mann-Withney *U* = 109.00 *z* = -2.808 *p* = 0.005.**

Conclusions

Results show an asymmetry favoring the preferred hand among participants. Ratio NPH/PH is similar to those found in adults (Annett, 1970; Bryden, Roy, McManus & Bulman-Fleming, 1997), and slightly lower than those in 4-11 yrs. old children (Hill & Khanem, 2009), thus suggesting that preschool children (3-to-5 years old) have already developed a clear hand asymmetry in the three tasks used in the study. The high inter-rater correlations guarantee the reliability of the evaluation procedure. The 2014-2015 comparison shows the stability of the hand difference. Moreover, differences in hand motor skills found in the 5 yrs. age-group in preschool are related to individual differences in writing speed identified in the same children one year later, when attending 1st year of Primary school.

These results contribute to the debate on the nature of manual skills pointing at commonalities across the various tasks and supporting the idea of a manual dexterity factor. The data suggest the convenience of early intervention among those children with lower scores on manual dexterity tasks, to prevent difficulties in their first steps in the learning of writing skills. The overt interest of children participating in the experiment could influence on the efficient performance of the tasks (Schulz, et al. 2011). Moreover, the strong emphasis of Spanish educational system on the preschool teaching of reading and writing, could influence positively on the data. Consequently the results of this study and other studies should be considered in relation to the specific educational context.

The next step in this research project is looking for the validity of the tests. The validation process includes three actions. First, administering several tasks involving the manipulation of cubes equipped with speed/acceleration sensors in order to identify individual differences in motor patterns and, eventually to detect

possible difficulties hard to be observed with the naked eye in some kids (Rivera, García-Herraiz, Alarcos, & Ortega, 2015). Second, developing a questionnaire to be filled in by early education staff and by families. Finally, administering the Movement ABC-2 (Henderson, Sugden, & Barnett, 2007) and PDMS-2 (Folio & Fewell, 2000) scales to evaluate motor development and compare children's performance with the results obtained in the present study.

A further aim with implications for schools and homes is to design new intelligent toys to detect semi-automatically typical/atypical development pathways.

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Influence of infant gender and presence of partner on parental game with their 18 month-old infant

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Abstract

Fathers and mothers present well documented similarities and differences in their interactions with their infant. In everyday life, infants interact with their parents in various contexts: alone with one parent, with both, or with one parent in the presence of the other. The aim of this study is to document variations in parenting behaviours according to these different contexts and according to infant gender

Each parent-infant dyad at play (from 67 non-clinical two parents families with 18-month-old infant) has been video recorded alone, in the presence of the other parent and while playing actively with him/her. Parental behaviours have been micro-coded according to three categories: (i) joint activities with infant (ii) stimulating infant and (iii) observing and validating infant's behaviour.

Results show that the presence or not of the other parent has not the same effect on fathers and mothers. Only when alone, mothers of boys observe more their infant, whereas mothers of girls stimulate more. On the contrary, it is only in the mothers' presence, that differences emerge: fathers of boys observe and do more joint activities, whereas fathers of girls stimulate more. Methodological and clinical implications are discussed.

Keywords: Family interaction, parent's gender, infant's gender, context of interaction.

Introduction

Fathers and mothers are rather similar in their behavior toward their children. Indeed there are no difference between fathers and mothers for dimensions like sensitivity, involvement when playing, or responsibility for discipline ([1]; [2]). According to Power ([3]) both fathers and mothers encourage visual exploration, object manipulation, relational and communicative play. Both fathers and mothers propose a variety of play experiences like problem-solving, expression of fantasy and imagination, perceptual discrimination and social games ([4]). Both parents' speech is highly repetitive, contains many questions, and it reveals they both consider their infant as a real interlocutor ([5]). They both adapt their behavior to the developmental changes of their infant: as the latter grows up, they propose less plays based on physical stimulation and more plays with objects ([6]). However, some differences have been highlighted between paternal and maternal styles and types of game. Indeed, fathers tend to be more physically engaged in their play (in particular concerning gross-motor stimulation such as lifting, bouncing, and wrestling [7]), they do more teasing and more nonconventional play ([8]) and direct their infants' attention less often than mothers do ([9]). On the other hand mothers are more verbal, make more requests, are more didactic and propose more toy-mediated play ([4], [10], [1]).

Paternal and maternal styles and type of games can be influenced by child gender. Indeed several studies have shown that parental behaviors can vary according to infant's gender in very different areas. For example mothers of girls are more likely to engage in face-to-face interaction and to talk more with their children than mothers of boys ([11], [12], [13]). Mothers also hold and touch their male infants longer than their female infants ([14]), maybe to soothe them, as boys seem to have greater difficulty than girls to regulate their emotional activation ([15]). In terms of global family activities, from 9 to 15 months, parents of boy increase the time spent in outings whereas parents of girls decreases it ([1]). The same authors also noticed that parents of boys provide more physical stimulation than do parents of girls. Fathers of boys encourage more their infant to visual, gross-motor and fine-motor exploration whereas girls were more often encouraged by their father to

vocalize ([11]). The sequence of parent responding positively after a three years-old child assertion showed a main effect for child gender, with boys more likely to be praised for assertiveness. Girls, in contrast, were more likely than boys, to experience parent negative responses for their assertions. Moreover, fathers were more likely to reward boys for assertiveness and to reward girls for positive and compliant behavior ([16]). And both parents are more directive with girls than with boys ([17]). Socialization of girls emphasizes interpersonal relatedness and emotional expressivity, whereas socialization of boys promotes more autonomy and agency ([18]). However, child gender seems to have different influence on fathers and mothers. Indeed, parents' interactive behaviors with their infants reveal that fathers show greater differences in interaction based on gender than mothers do ([11]). This is confirmed by the review and meta-analysis done by Siegal ([19]).

After comparison between father-child dyad with mother-child dyad in order to learn about mothers' and fathers' specificity in play activities, the role of the other parent presence has begun to be studied. Father-child and mother-child dyads have been compared to father-mother-child triad. In triadic contexts both parents generally decrease the amount of behaviors directed to the child. Mothers are less engaging and less responsive whereas fathers are less talking and less demanding in a triadic context compared to dyadic context ([9], [20]). Bronfenbrenner ([21]) defined the "second-order effect" as the fact that, when interacting with the child, parents have different behaviors if the other parent is present or absent. In this perspective, the impact of marital and coparenting conflict on parenting has been studied ([22], [23]). For example, conjugally distressed parents display less warm parenting behaviors when they interact with their child in the presence of the other parent than when they interact with the child alone. This transfer of negative emotions from parent-parent to the parent(s)-child relationship has been labeled "spillover effect" ([24], [25]). Until now this "spillover effect" has only be studied in the context of marital conflict or divorce and not in intact families without particular relational distress. Moreover studies have compared parent-child dyad with parents-child triad but did not take into account the three possible interactive contexts in a triad: parent-child alone, parent-child in the passive presence of the other parent and parents-child active triad.

The aim of this study is to compare these three contexts and to explore in what way children's gender influence parental behaviors in face to face interaction. Then our aim is to compare the possible impact of the other parent's presence in a third party position versus his or her active participation in the interaction. So our main questions are: (1) Do parents behave differently in face to face interaction according to their child gender? And (2) Does the absence or the passive or active presence of the other parent influences the parental behaviors according to their child gender?

Method

1.1. Sample

Sample consisted of 67 two-parent families living in the area of Lausanne (in the French-speaking part of Switzerland) who agreed to participate in a longitudinal study including three time-points (3, 9 and 18months). Families were recruited at an annual child care fair and flyers explaining the context of the research were distributed by the General Register Office where births have to be announced. Socioeconomic status ranged from lower to upper-middle class according to Hollingshead's two factor classification, with most mothers and fathers in the upper-middle class (68% and 61% respectively). When meeting for the first time, when the infant was 3 months old, mothers ranged in age from 23 to 41 (M=32.3, SD=4.4) and fathers from 23 to 54 years (=34.9, SD=5.8). Most of the couples were married (74.6%). Children were 36 boys (53.7%) and 31 girls (46.3%). They were all born healthy at full term. Most of them were first-born babies (68.2%).

1.2. Procedure

Only the data of the third time-point (when children were 18 month-old) will be presented here. At that time, the families came to our laboratory and were invited to play in the Lausanne Trilogue Play for toddlers (LTP; [26]). In this validated situation the family members are seated around a table, each part lasts 5 minutes and they have at disposal, as toys, three little spoons, three small socks and three little stuffed pigs. Parents are invited to play with their child according to a scenario in four parts: (1) one parent plays with the child, the other one being "simply present"; (2) parents switch roles; (3) the three play together; and (4) parents have a discussion, leaving the child on his or her own. Then each parent played alone with the child with the same "toys", while the other parent was busy in another room. The order of the dyadic sessions was counterbalanced to rule out any order effect. All the interactions were videotaped. So each father, as well as each mother, was recorded interacting with his or her infant in three different interpersonal contexts: dyad alone, dyad interacting in front of the other parent being in an observer position, and dyad inside the active father-mother-baby triad. The dyads interacting in front of the other parent correspond to the first and second parts of the LTP and the interactive dyad inside the active father-mother-baby triad comes from the third part of the LTP.

1.3. Coding

In order to qualify parental behavior in the interaction with his or her child, the Direction of parental interest coding (CDIP; [27]) was used. This coding allows seeing how the parent's behaviors articulate with those of his or her child, in particular how the parent is following or not the interest of his or her child. For each 5 seconds episode one of these 7 following categories has been attributed: (1) to observe, validate and let the child pursue his/her activity; (2) to share joint activities; (3) to make a show, stimulate, to propose a new activity, to stimulate the child; (4) to interfere; (5) to console when infant in distress; (6) to channel infant's action by telling or showing what to do, giving advises what the infant is currently doing; (7) to have activities not concerning the infant. Inter-raters reliability has been calculated on 22% of the sample; the agreement is 78.2 for mothers and 92.6 for fathers.

Results

In this paper, only the results concerning the three most represented categories (observe, joint activities, and stimulate) will be presented; the sum of these three categories corresponds to on average of half time to 94% of time for mothers and to 56 to 95% of time for fathers. Descriptive statistics for family of girls are presented in Table 1.

Table 1. Descriptive statistics (in percentage) for fathers and mothers of girls for the three categories and the three contexts.

			Dyad alone	Dyad in the presence of other parent	Dyad in the triad
		n	M (SD)	M (SD)	M (SD)
Mothers					
	Observe	30	8.94 (7.41)	37.36 (15.39)	34.86 (15.27)
	Joint activities	30	35.57 (16.40)	41.80 (13.93)	21.19 (15.96)
	Stimulate	30	47.94 (15.03)	1.30 (2.90)	35.71 (12.52)
Fathers					
	Observe	28	11.44 (9.66)	18.35 (12.28)	29.04 (17.51)
	Joint activities	28	31.19 (21.32)	25.28 (20.44)	18.58 (13.87)
	Stimulate	28	45.08 (15.13)	49.96 (19.70)	45.37 (16.77)

Descriptive statistics for family of boys are presented in Table 2.

Table 2. Descriptive statistics (in percentage) for fathers and mothers of boys for the three categories and the three contexts.

			Dyad alone	Dyad in the presence of other parent	Dyad in the triad
		n	M (SD)	M (SD)	M (SD)
Mothers					
	Observe	35	17.51 (14.24)	38.73 (18.31)	32.22 (11.94)
	Joint activities	35	35.18 (20.44)	35.74 (14.32)	21.98 (11.81)
	Stimulate	35	39.31 (19.56)	2.94 (3.57)	37.06 (13.94)
Fathers					
	Observe	32	16.85 (12.69)	15.57 (11.66)	37.89 (15.80)
	Joint activities	32	34.70 (23.92)	43.45 (24.74)	16.20 (16.49)
	Stimulate	32	42.09 (21.66)	36.54 (20.36)	38.39 (16.89)

Interestingly, when alone with their infant, fathers and mothers behave rather similarly. Indeed no differences are observed and correlations are high between fathers and mothers for the three categories (for observation: r=.45, p=.000; for joint activities r=.39, p=.002; and for stimulation r=.35, p=.007). When they are in the presence of the other parent, no correlation is observed. When they play all three together, there is only a single correlation between fathers and mothers, for joint activities (r=.36, p=.003).

All contexts merged, and fathers and mothers taken jointly, parents of boys spend significantly more time observing and validating their child than parents of girls (t_{123})=2.052; p=.042). Conversely, parents of girls

tend to spend more time stimulating their child than parents of boys (t_{123}=-1.918; p=.059). No difference is observed concerning joint activities.

The results concerning parental behavior and gender of the child indicate that the context has a different influence on mothers and fathers. Only when alone, mothers of boys spend more time observing and validating their child than mothers of girls (t_{63}=3.068; p=.003; mean for boys = 17.5; mean for girls=8.9). On the contrary, it is only in the presence of their partner that differences between fathers of boys and fathers of girls emerge. In the passive presence of the mother, the fathers of boys observe more (t_{58}=3.1; p=.003; mean for boys = 43.5; mean for girls = 23.3) and they also stimulate or make more show (t_{58}=2.7; p=.009; mean for boys=36.5; mean for girls: 50.0). When interacting altogether, by comparison to fathers of girls, fathers of boys spend more time observing (t_{58}=2.1; p=.038; mean for boys=37.9; mean for girls=29.0).

Discussion

Our first finding was that parents of boys spend significantly more time observing and validating their child than parents of girls. And conversely parents of girls tend to spend more time stimulating their child than parents of boys. An explanatory hypothesis would be to link this parental attitude with greater promotion of boys' autonomy and agency, as underlined by Block ([28]) and Leaper ([18]). Indeed, more observation and less stimulation may lead to more freedom given to the child for following oneself interest.

The second finding is that mothers are behaving differently according to their child gender only when alone. And on the contrary fathers are behaving differently according to their child gender only in the presence (active or observing) of their partner. So the influence of the partner's presence is not the same for fathers and mothers. Then what is observed in dyad cannot be generalized to the triad. Gender studies should definitively take into account the context they use for their observation.

A supplemental finding is that in all contexts, great variations from one family to the other, from one parent to the other are observed. This is a good illustration of the importance of interfamily variations, that all clinicians as well as researchers have to keep in mind.

A number of limitations of the present study should be noted when considering these results. First it is noteworthy that the participants were nearly all belonging to middle class and a great majority of them to upper-middle class. Moreover the sample is rather small; then this study should be replicated on a larger sample with families belonging to a wider range of socio-economic classes; a larger sample would also allow to perform multivariate statistics taking into account simultaneously both genders and the three contexts. A second limitation is that only one setting has been studied: face-to-face interaction around a table. This setting corresponds maybe more with "maternal type of play" and could prevent paternal specificity to emerge. Indeed a free play on the ground allowing the partners to be more physically engaged in their play (in particular concerning gross motor stimulation such as lifting, bouncing and wrestling) could lead fathers to behave more differently from mothers ([7], [29]). Then this study should be replicated in different settings like free play on the ground or a teaching situation who could maybe highlight more differences between fathers and mothers. Finally, besides the interactions, it would be necessary to analyze parents' representations (concerning gender and education) and the links between these two levels (representation and interactional behaviors).

To conclude, despite the necessity to replicate these results on a larger sample, the importance of the relational context (absence, active or passive presence of the partner) should be taken into account in clinical as well as research framework and what is observed in one context should not be generalized to others.

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The neglected question of materiality in Developmental Psychology: An interdisciplinary overview

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Abstract

Recent years have highlighted the paramount importance - for many disciplinary areas - of the place of the material world and human embodiment within it. Outlining the cross-disciplinary synergies, the main aim of this paper is to offer further perspectives and reflections on "material engagement" in psychological developmental research. We begin with a brief inter-disciplinary review in different domains such as cognitive archaeology (Malafouris, 2004, Knappet, 2005 et al.), symmetrical anthropology (Latour, 1997, 2007), linguistic studies (Paveau, 2010), phenomenogical perspectives (Heiddeger 1975). We conclude by proposing new possibilities of conceptualizing materiality in psychological developmental studies

Keywords: material engagement, simmetry, developmental psychology

In recent decades, there has been a significant evolution of the research on the relationship between materiality and human development carried out by multiple interdisciplinary approaches. This evolution seems to provide – in our opinion – indications that could also be useful in psychology, allowing to reformulate the role of materiality in development processes and human activities. It seems clear that psychological sciences, until now largely centred on the "abstract" dimensions of mental functioning and the alleged immateriality of psychological activity, have only marginally considered materiality (Iannaccone, 2013).

In some cases, psychology has simplified the role of the material dimensions (for example, the material context considered only as an outer frame of psychological activity), while in others by paying attention mainly to the semiological dimensions of materiality. Postulating, wrongly, that starting from the "acquisition of symbolic thought", psychological activity consists almost exclusively in relation to the mediated way by language or by other forms of symbolization. This representation of materiality in psychology has highlighted a number of important critical elements that have fuelled, in parallel, both philosophical and epistemological analyses. Consider inter alia the proposals made by Searle, who have created an interesting debate on the status of reality and the constituent ways of so-called institutional realities.

An important exception to the classical notion of human/non-human interaction has come from the studies on perception in psychology and, in particular, the initial contribution of Gibson (1979) and the vast amount of literature that followed. In contemporary psychology, the idea of an ecological dimension of psychological activity (in the case of Gibson of perceptive activity) has allowed, for the first time, to propose the analysis units that breaks away from the traditional separation of the of the human actor from the context of activity. According to Gibson, perceptive behaviour is inevitably formed by the presence in the environment of affordances, in other words of elements inevitably involved in the definition of the behaviour. An extensive amount of literature subsequent to the pioneering contribution made by Gibson, not without ample critics (that will not be cited for reasons of space) has extended the notion of affordances in various other contexts of psychological activity up to postulating "social" and "cultural" affordances (Tomasello, 1999).

What follows briefly outlines some of these pivotal interdisciplinary perspectives in order to show how material embodiment (that is not a new idea in a broad sense) has been central to a particular thread of through since the late nineteenth century. For psychology, the relationship of so-called material reality with the corporeality of human beings and their cognitive activity (highlighted by multiple disciplines) appears to offer a number of interesting ideas. In particular, the distinction proposed by Nunez (1999) between trivial, material and full embodiment seems useful. In Nunez terms: "first it sees cognition as a decentralized phenomenon, and second it takes into account the constraints imposed by the complexity of real time bodily interactions performed

by an agent in a real environment" (Nunez, 1999). Highlighting the social and cultural dimension of materiality, in "Rethinking Materiality", the archaeologist De Marrias begins by emphasizing that the material aspect of culture "draws attention to the interaction of knowledge social practices and material things" (De Marrias, 2004, p.13). She argued toward that: "analysis of material aspects of culture must also consider the conscious (and strategic) intentions of social actors and their capacities of action. Agency depends upon cultural competence but also sometimes crucially upon the position of an agent (or agents) vis-a-vis in the community". (De Marrias, 2004, p.13). It is, in this case, an important reformulation that the archaeologists puts forward about the relationship between human culture and materiality. In 2007, a rich debate, that appeared in Archaeological Dialogues, further corroborates and develops this line of investigation on materiality. The debate moved, among others, from an article by Tim Ingold "Materials against Materiality" (Ingold, 2007) in which he highlights the proprieties of materials in archaeological studies. As he claimed, "I can touch the rock whatever of a cave wall or of the ground underfoot and can thereby gain a feel for what rock is like as material. But I cannot touch the materiality of the rock. The surface of materiality, in short, is an illusion" (Ingold, 2007, p.7).

If Ingold highlights the importance of the material properties, on the other hand he seems to underestimate how the materiality can also be understood as a network of social, cultural relationships (and therefore of use) including the material objects and their properties. These are systems of relationships that are not directly identifiable as a property of the materials but certainly constitute a fundamental element in the definition of the experience that humans have of materiality.

Along this line, Tilley pushes Ingold's argument further by arguing that "to consider the materiality of stone is to consider its social significance, the stone as meaningful, as implicated in social acts and events and the stories of people's live both past and present." (Tilley, 2007, p.13). Knappet, in turn, leads the debate developed by Ingold to the argument between Latour and Lemmonier over the agency of humans and guns. Latour argued that the active agent is neither the human nor the gun but the human with a gun and any attempt to isolate either individual element is hopeless. In contrast of this view, Lemonnier thinks all kinds of materials have proprieties that can be described independently of the particularities of a social context. (Knappet, 2007, p.20). In 2007, Witmore (Witmore, 2007) presented his manifesto about the idea of symmetrical archaeology. This was a term inspired by Bruno Latour's early accounts of actor network theory (Latour, 1997), in which an actant can literally be anything provided it is granted to be the source of an action. Appling the notion of symmetry to the archaeology, Witmore wrote "a symmetrical archaeology attends not to how individuals get on in the world but rather to how a distributed collective, an entanglement of humans and things negotiates a complex web of interactions with diversity of other entities whether materials, things or our fellow creatures" (Witmore, 2007, p.547). Harman, in a dedicated appraisal of Bruno Latour and his perspective argues that the enactment of symmetry produces a philosophy where "a total democracy of object replaces the long tyranny of human beings" (Harman, 2007, p.36). Cerulo (Cerulo, 2009) give us a good example in order to explain this: "the doorbell once it rings engages you to answer or ignore it to make a decision and respond" (Cerulo, 2009, p.534). So not only actant humans but also non-human entities such animals or objects could be the source of action.

Along this line, Paveau show a symmetrical linguistic approach in which she integrates contexts to discourse analysis. Paveau argues that linguistic analysis should not be limited to linguistic facts (traditionally made of language) but that the definition of the linguistic dimension must also extend and enrich socio-cultural, environmental and objectifying materiality (Paveau 2012). In the course of her argument, Paveau suggests that the Gibsonian theory of affordance could be useful to understand how objects are vehicle of linguistic possibilities. In recent works, Per Linell is clearly oriented towards an idea of language open to the theoretical integration of affordances. He describes affordances as meaning potential in concrete utterances, just like objects in specific situations. According to Linell, affordances are somewhat inscribed, or potentially inscribe, or at least potentially inscribed in the utterances, texts or artefacts, given the presence of an appropriate resonant interpreter. In this perspective, artefacts are affordances "assigned" for meaning-making processes and become part of an extended mind. In Gibson's theory, affordances are relational phenomena, not static properties of objects. "An affordance is a combination of physical proprieties of the environment that is uniquely suited to a given animal – to his nutritive system or his action system or his locomotor system" (Gibson, 1979, pp. 127-128). Sinha points out that the "physical properties of an artefact are not merely physical: they are socially constructed and normatively regulated cultural affordances which make possible the canonical function of the artefact." (Sinha, 2009, p.177).

In "first person" point of view, researchers take seriously in account the problem of the subjective dimensions of human /non-human interactions. As Dourish points out "the phenomenological perspective offers a starting point for a foundational understanding of embodied interaction" (Dourish, 2004, p.177). For Heidegger, "embodied action was essential to our mode of being and to the ways in which we encountered the world while Merleau-Ponty emphasized the critical role of the body in mediating between internal and external experience." (Dourish, 2004, p.116).

The main lesson that we can draw, as Dourish said, from the phenomenological works is that embodiment is about the relationship between action and meaning" (Dourish, 2004, pp. 125-126). Sinha argues that language as a social and semiotic system is not only grounded in embodied engagements with the material and social interactional world but also grounds a subclass of artefacts of particular significance in the cultural history of human cognition. (Sinha, 2015). Merely recognises the "presence" of objects (and their properties) in the space for thinking, while learning does not seem to be a fully satisfying condition to understand the status of materiality in psychological activity.

Some closing remarks

The understanding of the role of materiality in human activity, as we have seen in the different fields mentioned (to which a large number of others can be added, such as cognitive ergonomics) reinforces our view that, in order to appreciate the relationship of man and material settings (including through the corporeal), we cannot longer ignore some essential elements of this complex topic.

First of all, after having examined the way in which similar concepts have emerged across a range of different disciplines, we propose to consider seriously the "active participation" of non-human elements in psychological activity. In general, it is likely to make researchers aware of the many ways in which materiality can participate in the activity and development of psychological functions. We think that it would be useful to begin with thinking about the different perspectives that can be taken in order to bring out the different implications of materiality in psychological processes.

We also propose to recognizing natural, social and cultural environments as a set of affordances for actions and – consequently – avoiding some (too) drastic separations between human and non-human dimensions in psychological activity.

In our idea of human/non-human interaction, we also propose to considering the environments – modified by humans – as an extension of psychological activity. As several contributions showed in recent decades, could be epistemological pertinent considering human physical and symbolic artifacts as an integral part of psychological development, learning processes and communicative dynamics.

Finally, we would like to underline the relevance of take in account subjectivity ("first-person" point of view) in human perception and management of materiality. What is commonly considered as access to the experience of the subject (Iannaccone & Cattaruzza, in print), seems an effective element to become aware of the limits of some traditional approaches based mainly on observations from the "outside" of the complex relationship between human and non-human elements. We are constantly engaged in a continuous creation (and re-creation) of individual and social webs of meanings in material spaces, interacting with (and using) a large number of tools. At this level (high-level psychological functions), we are unique and not easily predictable. Thus, a specific attention to the validity of subjectivity seems an essential step to understand the systemic and unpredictable co-existence of humans and materiality in our daily lives.

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Reasoning about mathematical problems: first results of a cross-sectional study

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Abstract

How do pupils of different ages argue and to which extent are they able to profit from cooperation? To answer these questions, a cross-sectional observation study was realised, in which N = 95 dyads of German fifth respectively ninth graders were confronted with two mathematical problems one after another. Both problems could be handled in different ways. In each case, the pupils had to find exemplary solutions first. Then, a more difficult, but similarly structured task was presented. At last, the pupils should analyse how many different solutions were possible. Each dyad worked for 2 x 15 minutes on the two problems. The proceeding of the pupils was filmed and analysed by content. Communicative acts and argumentation structure were considered. Furthermore, social and learning behavior, intelligence, mental speed, reaction to failure, neuroticism, extraversion and self concept of the pupils were measured in a group test. As a result, the pupils showed good social competences. However, their argumentation competences were rather limited.

Keywords: argumentation competence, mathematical competence, problem solving, social competence

Introduction

In a collaboratively organised world of work the ability to cooperate efficiently is indispensable. Furthermore, argumentation is of great relevance regarding scientific, cultural, and social aspects of our (daily) life (Rigotti & Greco Morasso, 2009, Budke & Meyer, 2015). Therefore, to promote the ability of pupils to communicate, to cooperate and to work together on rational solutions when facing a problem is an especially important task in school. In this respect, the advancement of argumentation and social skills as interdisciplinary educational objectives (cf. Muller Mirza, Perret-Clermont, Tartas & Iannaccone, 2009) should go hand in hand since the ability to argue reasonably face-to-face is limited by social competences.

With regard to mathematics, argumentation skills are of particular interest as they play an important role in the process to learn how to yield mathematic proofs. If a comprehension-oriented teaching of mathematics is an objective of education in school (Freudenthal, 1983, Prediger & Wittmann, 2014), lessons in mathematics may not only focus on the ability of pupils to solve real-world problems, but should try to promote an understanding for fundamental mathematical concepts as well. This inevitably includes mathematical proofs. Therefore, mathematical argumentation skills are indispensable, too. Particularly, to argue in social contexts goes along with the necessity that arguments and conclusions must prove its worth (Bezold, 2009, Bezold & Ladel, 2014). This opens up possibilities for teachers to let pupils experience the need for proof and to let them realise the advantages of mathematical strictness.

At last, the question to which extent pupils are able to solve and argue about mathematical problems in social contexts includes the question of the effectiveness of mathematics instruction in particular and instructions in school in general. From this point of view, our study tries to make a contribution to school evaluation, too.

Theory

The structure of a complete argumentation is characterised by the following features (Toulmin, 2003): Based on data which are covered by a general rule (warrant) a specific claim (qualifier) is made. The warrant is well-founded (backing) and possible exceptions of the rule are considered (rebuttal).

Fig. 1 illustrates this structural analysis.

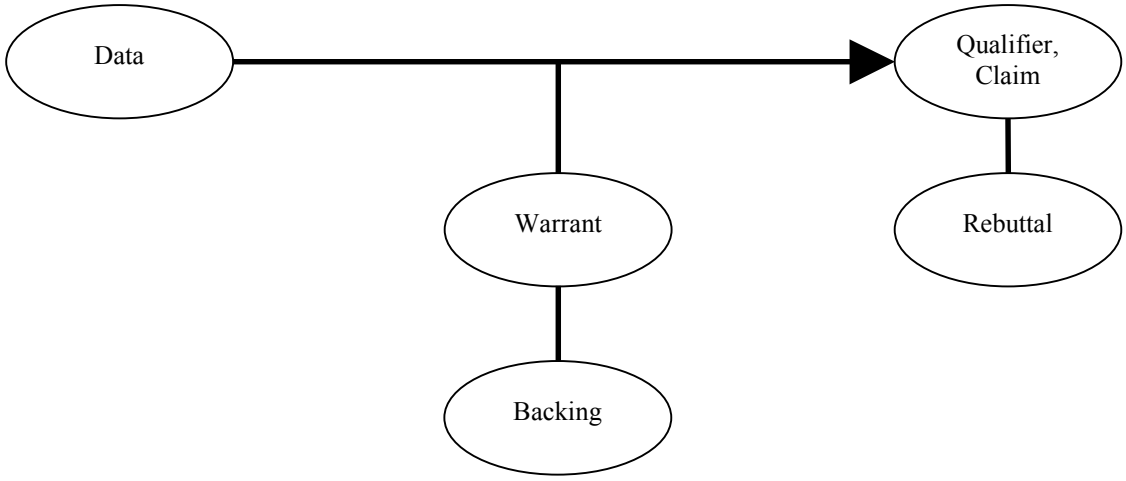
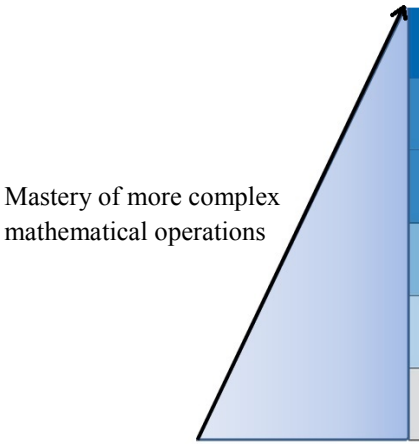


Fig. 1. Structural analysis of argumentations based on Toulmin (2003)

Toulmin's scheme offers great potentials for teaching (Rigotti & Greco Morasso, 2009). On the one hand, it can have a diagnostic function. With its help, argumentations of pupils can be analysed and individual problems to argue consistently can be detected. On the other hand, the scheme can be used as a methodological-didactic tool since it allows for arranging trainings to advance different aspects of argumentation competence (collecting data, proving warrants, considering possible rebuttals etc.). For instance, pupils can learn to analyse argumentations using this scheme to get more proficient in arguing consistently on their own.

Despite its usefulness, Toulmin's scheme was not used in international comparative studies of education regularly, although it was tried to include mathematical argumentation skills in the context of mathematical literacy. As an example, fig. 2 shows how argumentation skills were assigned to the competence levels of mathematical literacy which are used in the context of the PISA studies and how often pupils performed at those levels (OECD, 2014).



	% of pupils able to perform tasks at each level or above	Typically pupils can ...
6	3.3	... develop strategies
5	12.6	... evaluate strategies
4	30.8	... reason with some insight
3	54.5	... use simple strategies
2	77.0	... handle and interpret algorithms
1	92.0	... do routine procedures

Fig. 2. Operationalisation and distribution of argumentation competence based on the PISA study 2012 (OECD, 2014)

The results for Germany are slightly better but do not differ essentially (Sälzer, Reiss, Schiepe-Tiska, Prenzel & Heinze, 2013). Only about a third of the pupils was able to do complex argumentations. However, it must be taken into account that in the context of PISA studies literacy is a global concept. Although the focus in PISA 2012 was on mathematics and different content areas were examined (formulating, employing, interpreting, change and relationships, space and shape, quantity, uncertainty and data), specific operative abilities – like they are depicted in the Toulmin-scheme with regard to argumentation competence – are not considered. Insofar results about argumentative abilities, like shown in fig. 2, were only indirectly inferred in PISA 2012. Matters are further complicated by the fact, that a clear allocation of the tasks that were used in the context of the PISA studies to map skill profiles did not take place in detail (Meyerhöfer, 2005).

Reiss, Hellmich, and Reiss (2002) report more detailed findings regarding argumentation competence of German pupils. They prove that seventh and eighth graders only have low levels of argumentation competences for tasks involving geometric reasoning and proving. In a study of Reiss, Klieme, and Heinze (2001), even only a few pupils of 13th grade of German Gymnasium, the most demanding type of secondary school in Germans, were able to demonstrate a proof or at least an almost faultless argumentation. On the other side, Tebaartz & Lengnink (2015) analysed the performance of pupils who had been participants in the German Mathematics Olympiad (DeMO, "Deutsche Mathematik-Olympiade"). They found that already 40% of the fifth and sixth graders, about 65% of pupils from seventh to ninth grade and nearly all pupils of 10th to 12th grade showed complete and correct proofs. This indicates that the ability to argue consistently about mathematical problems and do mathematic proofs correctly depends strongly on mathematical interest and training. Muller Mirza, Perret-Clermont, Tartas, and Iannaccone (2009) report similar results for argumentation during geography lessons and highlight the relevance of individuals' relationship with the content of an argumentation.

Consequently, mathematics instruction should put more emphasis on tasks which arouse interest in pupils. These tasks are supposed to allow for independent discoveries, new ideas, and discussions about their own argumentations which need to be proven and defended (Bezold, 2009). Pupils should be given ample opportunity for inquiry learning and free exchange among themselves through learning arrangements like inside-outside-circles, egg races, etc. (Funke & Käser, 2014).

Considering the significance of social competences for the argumentation ability of pupils, it is evident that theory-of-mind skills as well as the ability to adopt other perspectives are important to convince others (Astington & Pelletier, 1996). Pupils who understand somebody else's world of ideas and are willing to adopt unfamiliar attitudes generally argue more convincingly.

Furthermore, Kanning (2009) underlines that social competence can be understood as a compromise between the abilities to adapt to someone and to assert yourself. Precisely this distinction makes the importance of social competences for argumentation in social contexts clear. Such argumentations always contain an interactive dimension (Muller Mirza, Perret-Clermont, Tartas & Iannaccone, 2009), where the quality of argumentation is increased through a reciprocal exchange, if pupils neither insist rigidly on their own point of view nor are too compliant.

There are a multitude of studies concerning different aspects of social competences of German pupils (cf. Paschen & Röhr-Sendlmeier, 2010). In the context of the PISA studies, PISA 2000 placed a special focus on social competences. Particularly the acceptance respectively the refusal of responsibility was examined. It became apparent that differences between school types (German Hauptschule, Realschule, Gymnasium) were small – considerably greater were the differences between different schools. Also, the differences were substantially smaller for social than for cognitive competences.

However, there is a lack of studies that deal with the precise relationship between argumentative and social competences in Germany – especially with regard to the subject mathematics. Against this background, the following research questions are analysed:

1. In which way do pupils argue about mathematical problems?
2. How well do pupils work together to solve mathematical problems?
3. Which predictors influence the argumentation / social competences of pupils?
4. To which extent are argumentation and social competences of pupils correlated?

Method

A two-part study plan was realised. The first part took two lessons. In a group survey, different questionnaires and tests were applied. ZVT, SPM, HAPEF-K, SESSKO, and SSL were used (partially) to measure information processing, intelligence, personality (extraversion respectively neuroticism), student self concept, and different aspects of learning behavior (e. g. willingness to work hard for school and concentration during lessons). Furthermore, demographic data like age and gender were captured. All tests hold good performance criteria which were confirmed in our study ($.80 < \alpha < .93$).

In the second part of the study plan, a video study was realised. Social interaction and argumentation competence of randomised dyads confronted with two mathematical tasks were observed and filmed. The first task 'number angle' was developed by Bezold (2012). An experimenter explains that the pupils have to place the numbers from '1' to '9' on the nine fields of the number angle to sum up to the same result on both sides. The field at the top counts for both sides (cf. fig. 3). The second task was 'sums in circles'. Here, the numbers from '1' to '5' must be placed in the two overlapping circles and again sum up to the same result. Similar to the first task, numbers in the intersection count for both circles (cf. fig. 3). In both tasks the number tiles were placed randomly on the desk.

number anglesums in circles

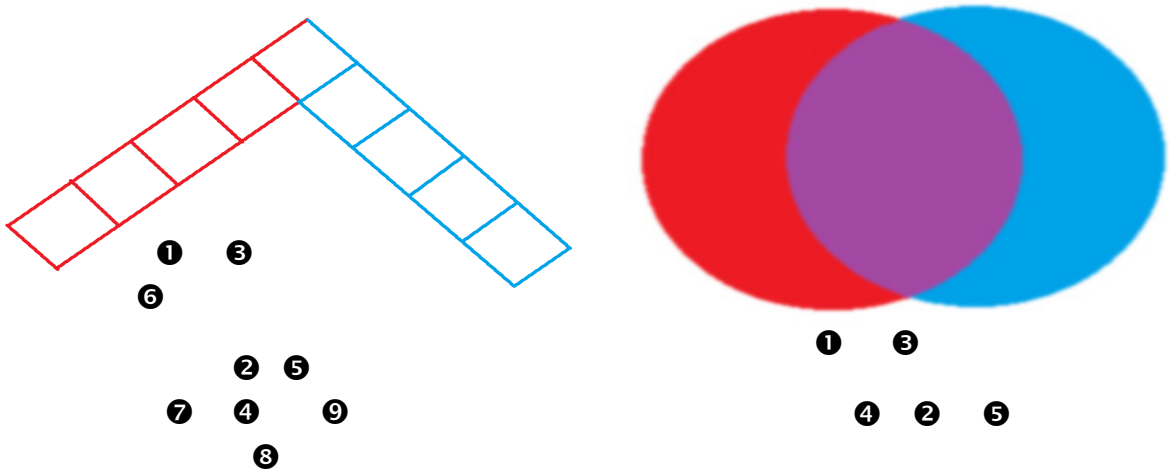


Fig. 3. Mathematical problems 'number angle' and 'sums in circles'

At first, in each task, the pupils should find an exemplary solution. Then they should try to find as many solutions as possible. At last, the experimenter raised the question which numbers can be at the top respectively in the centre and if the centre can be empty. This research questions should help the students to inquire that, in the first task, even numbers cannot be placed at the top, and that, in the second task, the centre cannot be empty.

The videos were analysed in regard to argumentation and social competence for both tasks by one respectively two observers. Argumentation competence of the dyads was measured on a four-point scale. Pupils showed argumentation competence of level 0 when only singular data in the context of both problems were perceived. Level 1 was attributed if not only data were seen, but a conclusion was drawn – however without any good reasons. If pupils had incomplete justifications, level 2 was assigned. Level 3 stands for complete argumentations. Social competences of the individual pupils were rated for the dimensions 'active listening', 'work / think', 'accept help', 'offer help', 'monologue', and 'dialogue' on five-point scales ('1' = 'very strong', '5' = 'very weak'). The inter-rater-reliability was acceptable for the assessment of social competences ($r \approx .85$).

The sample includes 95 dyads from fifth (n = 49) or ninth grade (n = 46). The pupils of 29 respectively 15 dyads of fifth and ninth graders each visited German Gymnasium / Realschule. Five dyads of fifth and two dayds of ninth graders visited German Hauptschule. On an individual level, 105 girls and 85 boys participated.

Results

The handling of the three questions, (1) which numbers can be at the top of the number angle, (2) which numbers can be in the centre of sums in circles, and (3) can the centre of sums in the circle be empty, allow for the measurement of the argumentation competence of the dyads. At first it becomes clear, that the average performance of the dyads becomes better from task to task. Especially the third question is easier to handle than the first and the second one, since a less complex procedure is required to find an answer. Secondly, it must be noted that the German pupils do not perform well. Although the problems are elementary and could be solved through basic mathematical skills, only 8.5% (question 1) respectively 13.9% (question 2) of the dyads perform on the second or third argumentation competence level. Even for the third question, less than half of the dyads show complex argumentation competencies. Most pupils are not able to justify their conclusions reasonably or draw conclusions at all. Tab. 1 shows the results in detail.

Tab. 1. Distribution for levels of argumentation competence

	number angle		sums in circle		sums in circle	
predictor	n	%	n	%	n	%
level 0	71	75.5	57	60.6	7	7.4
level 1	15	16.0	24	25.5	44	46.8
level 2	5	5.3	9	9.6	33	35.1
level 3	3	3.2	4	4.3	10	10.6
	Which numbers can be at the top?		Which numbers can be in the centre?		Can the centre be empty?	

In contrast, the majority of the pupils show good social skills and worked together well – particularly with regard to the most important dimensions 'active listening' (M = 1.58, SD = .82) and 'working / thinking' (M = 1.56, SD = .82). In the dimensions 'dialogue' (M = 2.74, SD = 1.16), 'offer help' (M = 3.01, SD = 1.12), and 'accept help' (M = 3.16, SD = 1.23) good performances are common, too. Furthermore, pupils talk in monologue only rarely (M = 4.20, SD = .91).

At all tasks, pupils of ninth grade argue significantly better than those of fifth grade ($p < .001$, $d > .637$). But also older pupils are not truly competent in argumentation: Only between 15.6% and 24.4% of the dyads of the ninth graders show a strategic approach and reach the second or the third argumentation level in the more complex tasks. Extraversion ($r = .151$, $p = .039$) and neuroticism ($r = .163$, $p = .026$) correlated positively with argumentation competence for the more complex first and second question. For the easier third question, the correlations are stronger (extraversion: $r = .234$, $p = .001$; neuroticism: $r = .261$, $p < .001$). Enjoyment of mathematics and argumentation competence correlate positively, too ($r = .150$, $p = .041$). In comparison with these results, in particular, no significant correlations between argumentation competence and gender respectively the school performance in mathematics can be found.

Furthermore, older pupils work better together than younger ones. They score significantly better in all dimensions (dialogue: $p = .001$, $d = .479$; active listening: $p = .045$, $d = .295$; accept help: $p < .001$, $d = .567$; offer help: $p = .001$, $d = .467$). There are no significant differences with regard to gender. Pupils with better marks in mathematics perform better in offering help ($r = .258$, $p = .001$) and talk more about the problems with their partner ($r = .252$, $p = .001$). Neuroticism correlates negatively with some aspects of social competence (dialogue: $r = -.273$, $p < .001$; offer help: $r = -.301$, $p < .001$).

Finally, all variables of argumentation competence correlate with all variables of social competence except active listening. Pupils who behave socially more competent also perform better with regard to their argumentation competence. The correlations range from $r = -.118$ ($p = .010$) to $r = -.388$ ($p < .001$).

Conclusions

Regarding social competencies, the results of our study are encouraging. Most pupils cooperate well and work together efficiently. Although only a cross-sectional design was realised, the effects on age can be interpreted as an indication that the social competences of pupils are successfully promoted in school. With respect to argumentation competence, our results are disappointing and confirm findings of earlier studies (Reiss, Klieme & Heinze, 2001, Reiss, Hellmich & Reiss, 2002). Regularly, the pupils fail at arguing about the problems which were presented. Below one quarter of the older pupils succeeded in arguing reasonably about the more complex tasks. Mostly conclusions without sufficient justifications were made. So it becomes clear that instruction in school should focus more strongly on argumentative skills. This impression is reinforced by the result that marks in mathematics and mathematical argumentation competence are uncorrelated. However, pupils who enjoy mathematics argue more consistently. Therefore, the recommendation that "[...] children should be enabled to explore patterns and structures, to discover mathematical relations or to scrutinize mathematical phenomena" (Bezold & Ladel, 2014, 409) makes perfect sense. Open learning arrangements which enable such activities (cf. Funke & Käser, 2014) should be used more often and more effectively.

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Causal relation between the number reading task and the number-related tasks in pre-school children

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Abstract

This study examined relationships between the number reading task and the number-related tasks, such as counting tasks and a give-N task. Japanese children aged 3- 5 years participated in this study. The results indicated that the children's performance in the number reading task was affected by their performance in the number counting tasks and the give-N task, and this relationship varied depending on the size of the number in the number reading task.

Keywords: Numerical reading, Number concepts, Children aged 3-5 years.

Introduction

Several studies have focused on the development of numerical notations (Teubal & Dockrell, 2005; Tolchinsky, 2003; etc.), but few have examined the relationship between the acquisition of numerical notations and number concepts. Koike & Yamagata (2013) showed that both the counting tasks (a measure of the one-to-one principle) and the give-N task (a measure of the cardinal principle) were related to the reading of small numbers (i.e. 1-10) task, and that the give-N task was also related to the reading of larger numbers (i.e. 11-) task in young children aged 3-5 years. Koike & Yamagata showed the relationship among these tasks, but they didn't consider their causality. So, this study examined the causal relationship among them, considering the number size in each task.

The research questions are as follows: (1) Does the performance in the counting task and the give-N task affect the number reading in young children? (2) Which of the two task performances has a stronger impact on the number reading? (3) Does the impact vary according to the number size of reading?

Method

Participants

Japanese children (N = 53: aged 3- 5 years, 29 boys and 24 girls) of middle-class background at a day-care center participated in this study. There were three age groups: Group 1, N=13, M=3;10; Group 2, N=20, M=4;10; Group3, N=20, M=5;9.

Tasks

The children were given three tasks: a number reading task (0-10 and 11-20), two counting tasks (counting 4 blocks and 10 or 13 circles) (Kyoto Scale of Psychological Development, 2001), and a give-N task. In the number reading task, the children were presented a set of number cards one by one in random order, and were asked to read them aloud. Each card showed one of the written numbers as follows: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 20. In the two counting tasks, the children were asked to count 4 blocks and 13 circles respectively, both of which were arranged in line. In the give-N task, the children were asked to take the appropriate number of blocks, the numbers asked being as follows: 3, 4, 6, and 8. The two counting tasks were supposed to be a measure of the one-to-one principle, and the give-N task to be a measure of the cardinal principle.

Procedure

All the participants were tested individually in the three tasks.

Results

Tasks analyses.

The data of the three age groups was analysed together. The descriptive data is shown in Tab. 1. When the participants responded correctly, they were given a score of 1 (the total scores would be as follows: 'Counting of 4 blocks', 'Counting of 10 circles', and 'Counting of 13 circles', 1; 'Give-N(3, 4)' and 'Give-N(6, 8)', 2; 'Reading (1-4)', 4, 'Reading (5-10)', 6, and 'Reading (11-)', 4).

Tab.1 Summary of descriptive statistics for three tasks

	Counting			Give-N		Reading		
	4 blocks	10 circles	13 circles	3, 4	6, 8	1-4	5-10	11-
N	53	53	53	51	49	53	53	53
M	.91	.87	.77	1.65	1.31	3.32	4.60	2.21
SD	.30	.34	.42	.69	.90	1.38	2.25	1.67

Relationships between tasks.

To examine which parameters affect the scores in the reading task, stepwise multiple linear regression analysis was conducted with Reading (1-4), Reading (5-10), and Reading (11-) as dependent variables respectively. The results are shown in Fig. 1- Fig.3. The score in Reading (1-4) was affected by both the scores in Give-N (3, 4) and in Counting 4 blocks. The score in Reading (5-10) was also affected by both of the scores, but the score in Give-N (3, 4) had stronger impact on the score in Reading (5-10) than the score in Counting 4 blocks. The score in Reading (11-) was affected by both the scores in Give-N (3, 4) and in Give-N (6, 8).

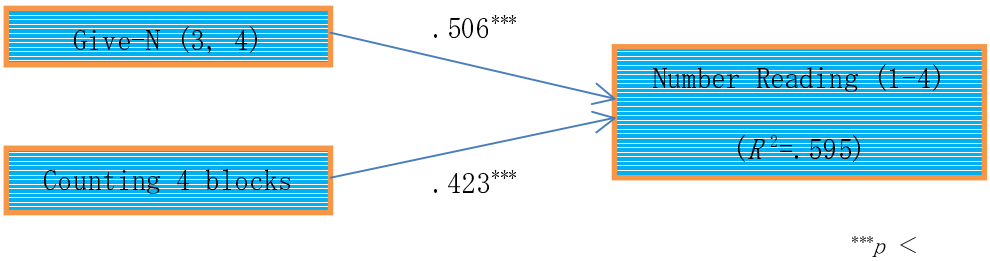

Fig. 1 Regression results for Number Reading (1-4) (*N*=49)

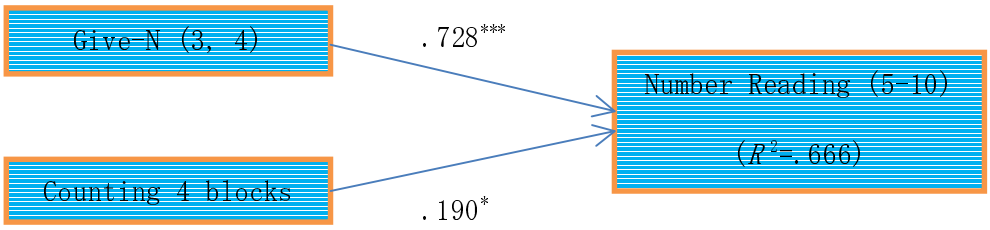

Fig. 2 Regression results for Number Reading (5-10) (*N*=49) ***p < .001, *p <

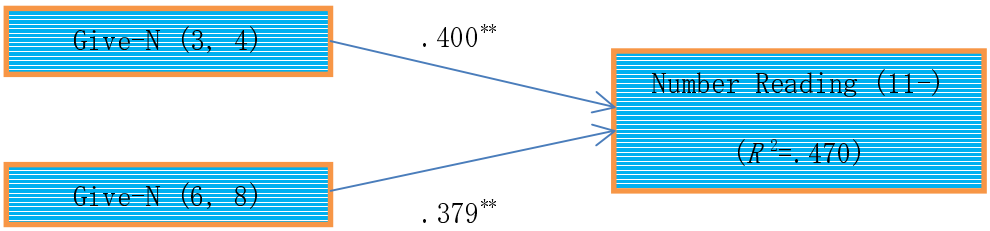

Fig. 3 Regression results for Number Reading (11-) (*N*=49) **p <

Discussion

The children's performance in the number reading task was affected by their performance in the number counting tasks and the give-N task, and this relationship varied depending on the size of the number in the number reading task. The give-N task had an impact on every size of number in the reading task, but the number counting tasks only had an impact on the numbers less than 10. These findings suggest that number concepts, which are assessed by the number counting task and the give-N task, may affect number reading, but the causality depends on their number size.

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Social support as a predictor of maternal responsiveness: a review of the literature

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Abstract

This work aims to present a review of the literature about social support as predictor of maternal responsiveness. A systematic search was made in two international bibliographic databases. As a result, 31 studies were found in *Web of Science* and 36 studies in *Portal Periódicos Capes*, summing up a total of 43 studies, after exclusion of repeated data. We have identified, analyzed, and classified those studies. The majority of the articles showed a significant positive association between social support and maternal responsiveness, including being married, parenting services/training, and having a larger support network. In addition, the studies demonstrated that the mothers with more social support tended to be more responsive in interactions with their babies, and also are predisposed to provide more stimulating home environments, if compared to women with less social support. Nevertheless, more research needs to be done seeking to analyze the results of social support programs directed to mothers.

Keywords: predictors, maternal responsiveness, mother-child interaction, social support.

Introduction

Maternal Responsiveness is a complex and multidimensional phenomenon characterized by a set of maternal contingent and appropriate behaviors related to children's behavior (Bornstein & Tamis-LeMonda, 1997). Many studies have been carried out aiming at identifying possible predictors of maternal responsiveness, however, until the present time it has not been possible to identify all factors involved (Drake et al., 2007).

1.1. Social support

Social support has been considered an important predictor of maternal responsiveness because it can help managing life stress and adaptation to new situations (Logsdon, Ziegler, Hertweck, & Pinto-Foltz, 2008). Some types of support related to the development of maternal responsiveness found in the literature include relational, informational, physical, and ideological support (Baker, McGrath, Pickler, Jallo, & Cohen, 2013; Haslam, Parkenham, & Smith, 2006).

Method

A review of the literature was made about the possibility of social support as one of the predictors of maternal responsiveness. A systematic search was made in two international bibliographic database (*Web of Science*) using the terms "social support" and "maternal respons*", and in (*Portal Periódicos Capes*) with the terms "social support" and "maternal responsiveness" from the first record to December 2014.

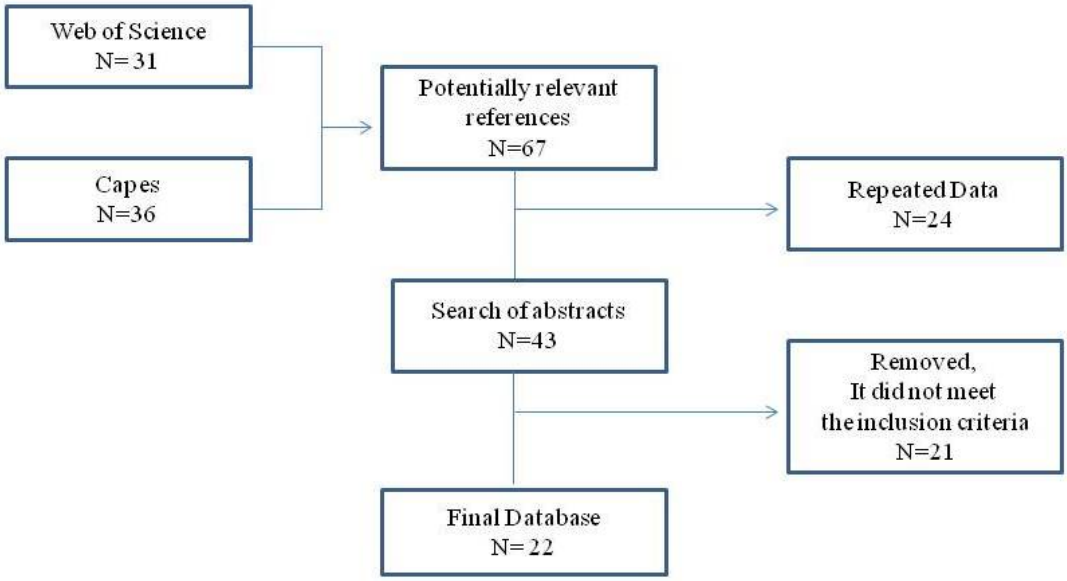
The inclusion criteria built to achieve this goal was: 1- social support as predictor, i.e., an independent variable of maternal responsiveness, 2- social support offered to mothers of infant. 3- empirical studies.

Furthermore, we have identified, analyzed, and classified these studies considering the following aspects: country, type of study, area and journal.

Result

As a result of these systematic searches, 31 studies were found in *Web of Science* and 36 studies in *Portal Periódicos Capes*, summing up a total of 43 studies, after exclusion of repeated data. Of the 43 articles found, only 22 studies were considered in this inclusion criteria, 15 articles did not used social support as predictor of maternal responsiveness, and six articles were theoretical or about reviews of the literature..

Table 1. Summary of research



The first study identified is from 1981 and it is from *Portal Periódicos Capes,* and the latest was found in *Web of Science* dated 2014. Most of the articles that were found are from United States, longitudinal studies and the researchers writers are from psychology, nursing and medicine area. Only in United States longitudinal researches were conducted, indicating that those studies that require a greater financial investment end up being conducted more at countries with high average income.

Table 2. Summary of studies

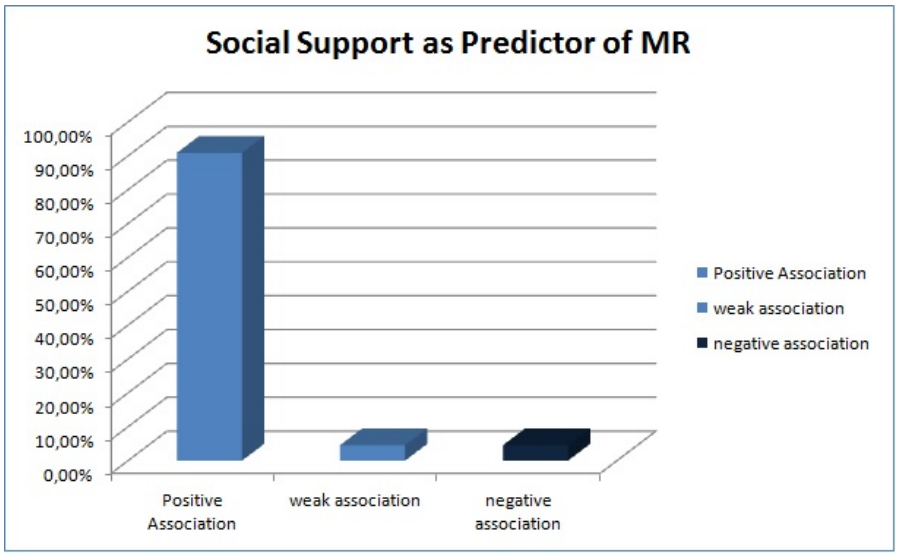
Countries	N	Type of Study	Area
USA	18 (81,81%)	12 L (54,54%) 6 CS (27,27%)	6 Psychology (Barakat & Linney, 1992; Crockenberg, 1981; Hsu, 2004; McFadden & Tamis-LeMonda, 2013; Owens, Shaw & Vondra, 1998; Popp, Spinrad & Smith, 2008)
			3 Psychology and Psychiatry (Jones et al., 2005; Riggs et al., 2004; Sockol, Epperson & Barber, 2014)
			3 Nursing (Amankawaa, Pickler & Boonmee, 2007; Blank, Schroeder & Flynn, 1995; Roman, 1995)
			2 Educational Studies, Psychology (Burchinal, Follmer & Bryant, 1996; Kruger & Konner, 2010)
			1 Psychology, Nursing and Medical Sociology (Klein et al., 2000)
			1 Medicine (Fish , 2001)
			1 Social Medicine, Social Work and Education (Casanueva et al., 2008)
			1 Medicine and Nursing (Baker et al., 2013)
USA & Brazil	1 (4,54%)	1 CS (4,54%)	1 Psychology (Piccinini et al., 2010)
Australia	1 (4,54%)	1 CS (4,54%)	1 Medicine and Psychiatry (Eastwood et al., 2013)
Australia & UK	1 (4,54%)	1 CS(4,54%)	1 Nursing (Power et al., 2011)
UK & Jamaica	1 (4,54%)	1 CS (4,54%)	1 Educational Studies, Epidemiology and Medicine (Baker-Henningham et al., 2003)

Note: L - Longitudinal, CS - Cross-sectional

There were 19 different types of journals, and the most frequent topics were infant (*Infant Mental Health Journal*; *Infancy*; *Infant Behavior and Development*; *Child Development*), following by nursing (*Contemporary Nurse*; *Applied Nursing Research*; *Research in Nursing Health*; *Newborn and Infant Nursing*), behavior (*Behavior Therapy*; *Brain and Behavior; Human Nature Journal)*, psychology (*Developmental*

Psychology; Journal of Pedriatric Psychology; Interamerican Journal of Psychology), obstetrician/gynecology (*Journal of Obstetric, Gynecologic and Neonatal Nursing*) and psychiatry (*Archives of Women´s Mental Health*).

Table 3. Social Support as a predictor of maternal responsiveness



Significant positive association between social support and maternal responsiveness were present in 20 studies. One article found a weak relation to responsiveness and one article showed that social support perceived as unsatisfactory was associated with a greater amount of touch and stimulation during mother-infant interaction and also more infant vocalization.

Final Considerations

The majority of the articles selected by the inclusion criteria showed social support as predictor of maternal responsiveness, including being married, parenting services/training, and having a larger support network. In addition, the studies demonstrated that the mothers with more social support, reported less stress and perceived their infant as less difficult, tended to be more responsive in interactions with their babies, and also are predisposed to provide more stimulating home environments, if compared to women with less social support. Nevertheless, more research need to be done seeking to correlate all possible predictors that influences the development of maternal responsiveness, as well as to analyze the results of social support programs directed to mothers.

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Reflection of the Emotional State in Verbal and Nonverbal Behaviour of Normally Developing Children and Children with Autism Spectrum Disorders

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Abstract

The goal of the study is to receive data about emotional states manifestation in the speech and in the non-verbal behaviour features of 4-7 years old children, typically developing (TD) (n=130) and children with autism spectrum disorders (ASD) (n=26). Children with ASD were divided in two groups: presence of development reversals (first group) and developmental risk diagnosed at the infant's birth (second group). Perception and acoustic measures of participant's speech, voice features and facial expression were compared with data from TD children. Unintelligible speech and higher pitch values more prevalent in ASD first group children. Significant differences between TD children and children with ASD were revealed in the voice features, mimic and behavioural reactions.

Keywords: Emotion, typically developing children, children with autism ASD, emotional speech, facial expression, recognition, acoustic features of speech.

Introduction

Emotions play important role in a human's life, being one of the factors of behaviour and functional status of the person, is a significant factor in communication. Human express emotion via a variety of channels, including the visual and auditory modalities. Research has established that there are correlations of the recognition of facial emotion expression of anger, fear, disgust, happiness, sadness, and surprise, and that these are expressed both in emotion and speech [9, 10]. Autism spectrum disorders (ASD) are neurodevelopmental disorders characterized by impaired social interactions, deficits in verbal and nonverbal communication, emotion, and repetitive behaviours or unusual or severely limited interests [1]. There is an extensive literature examining the performance of individuals with ASD in many of these domains [2]. A smaller number of works devoted to the study of emotions in children with ASD [5]. ASD children often find it hard to recognize and control emotions. Investigation of emotional expression with instrumental analysis methods for Russian TD children is few in number [6, 7]. Such works for Russian ASD peers are absent.

The goal of our study is to receive data about emotional states manifestation in the speech and in the non-verbal behaviour features of 4-7 years old children, typically developing and children with autism spectrum disorders.

Methods

The participants of the study were 26 children with ASD (F84.0) [4] biologically aged 5-16 years (M= 9.4, SD=3. 2), psychophysiological aged 2-8 years and TD children aged 4-7 years (n=130). For this study the participants was divided into two groups according developmental features: presence of development reversals at the age 1.5 - 3.0 years (first group) and developmental risk diagnosed at the infant birth (second group). Mean Child Autism Rating Scale [11] total scores were calculated for each group. In order to assess whether differences in autism severity varied across groups, a one-way ANOVA was conducted for two groups. The groups don't differ significantly (first group - M = 38, SD = 5.4; second group - M = 36.4 SD 11.5).

Ethical approval was obtained from the Ethics Committees (Health and Human Services, HHS, IRB 00003875, St. Petersburg State University IRB#1-Behavioral and Local Committee).

Design of the study included: modelling children's emotional states; audio recording of vocalizations and speech, video recording of behaviour; analysis of video records; perception analysis of audio records by listeners (auditors) and video by experts; spectrographic acoustical analysis; statistics.

Model situation: The three different recording conditions for TD children were used: playing with a standard set of toys, repetition of words from a toy-parrot in a game store setting, and watching a Russian cartoon called "Masha and bear" from iPad and the retelling of the story, respectively. Same of the task could be simplified on the depending on the child's age and language skills. Places of recording were at home, in laboratory and kindergarten.

Modelling emotional state ASD children included swimming in the pool for anxiety or stress removal, dialogue with the experimenter, show a standard set of the pictures and questions on the picture and pictures description. Testing was carried out in the presence of the child's parents. Places of recording were swimming pool and laboratory.

The video was made by the camera "Sony" (HDR-CX560 12.3 Mega pixels), speech and vocalizations by the digital recorder "Marantz PMD660" with external microphone "SENNHEIZER e835S". Heart rate (HR) recorded by pulsoxymeter "Choicemmed MD300C318". Child's non-verbal behaviour was analysed in the Observer XT program. The vocalizations and speech sounds were analysed by using Syntrillium's "Cool Edit Pro" sound editor and "Praat" program. The pitch values and prosody were calculated.

Perception experiment: The aim of perception study is the review of the adult's recognition of the child's emotional state on the base of their vocalizations, speech and facial expression. Two tasks were used – recognition three emotional state: "discomfort - neutral/calm – comfort" and/or recognition six emotional states "fear – anger - sadness – neutral/calm – gladness – surprise". This study included selections samples of vocalizations/speech and child's faces images, test sequences creations (*Tab.1.*), test sequences presentation to adults (listeners and adults who were evaluated facial expression) and statistics.

Tab. 1. Perception study: tests and experts characteristics

Test sequence			Aim of the study			
		Samples	3 - emotional states*		6 - emotional states*	
Video/ Audio	Test title	Amount (n)	Adult (n)	Adult age (y)	Adult (n)	Adult age (y)
Images	Norm 4-7 y	45	5	34±7,5	5	34±7.5
	Test-ASD	24	5	32±8	5	32±8
Vocalizations/speech	Norm-4y	30	100	22.8±3.2	16	18.7±4.1
	Norm-5y	30	100	18.8±2.2	13	18.5 ± 1.7
	Norm 6-7y	30	100	28.7±7.8	19	24.2 ± 4.2
	Test ASD -1	20	20	41.7±12.5	20	
	Test ASD - 2				28	24.4±12.5
	Test ASD - 3				23	21.9±9.7

** - discomfort –neutral/calm –comfort state; ** - fear – anger - sadness – neutral/calm – gladness –surprise .Test ASD-1 contains vocalizations and speech samples; Test ASD-1 – included child's ASD-3 – child's vocalizations only. Norm 4-7y includes images of facial expression (photo) of TD children (participant of this study); Test-ASD included analogies images of ASD children. Adult age - M, SD*

The child's test samples amounts attributed by adults to a different emotional state were calculated. Emotional state and emotional reactions ASD children were selected. The criterion for selection of emotional state (calm/neutral, comfort, discomfort) was reflected in the child's face an expression over time, which can be traced in seconds. Duration of emotional reactions (smile; laugh; clearly determined grimace, reflecting dissatisfaction or discomfort; grimace, the impact of which was impossible to determine in the context of the situation) is measured in milliseconds. Total time was taken as 100%. The duration of different emotional state was calculated as a percent from total time.

Results

TD children show a wide range of emotional manifestations in the voice, facial expressions, and behaviour in model situations dialog with experimental, play with toys and retelling of the story. Almost all children (98%) used model situations to give manifestation emotional state of comfort or /and discomfort. HR values in a neutral state of TD children was 82-90 beats per minute and 85-110 beats per minute in emotional state. The analysis of emotional expression showed that 4-5 years old TD children used hypertrophied gestures, facial expressions, speech and variability of intonations. For the children of this age is characterized by eyes wide, eyebrows raised, a loud voice, and clear articulation. 6 - 7 years old children used a lot of formulaic gestures appropriate to the situation. At the child age, there is an increase in the lexicon of words that reflect the different emotional state.

ASD children showed emotional state adequate to the situation (43.7% and 50% of children from the first and second group), inadequate to the situation (12.5% and 10% of children from the first and second groups), and the same children could be manifested emotional state adequate and inadequate to the situation. Amount of the latter type of children from the second group (40% children) was more than in the first group (31.3%) children were shown. According parental reports and experimental protocol 12.5% of children from first group emotion manifestations are absent. The first group ASD children are allocated a limited range of gestures; emotional manifestations could be adequate situations. Children of the second group showed gestures more diverse, but emotional expressions could be lacking. HR values in a neutral state of ASD children was 80-90 beats per minute and 85-115 beats per minute in emotional state and don't significant differ from TD peers.

Experts recognize the images with facial expression of TD children from the test sequence "Norm-4-7y" as indicated gladness state and different type of discomfort state. 87% of the images were recognized by experts with rage 1.0. Calm/neutral state of ASD children was recognized by adults better (56.7%) than other different emotional states (*Fig. 1.*). 75% of the images were recognized with rate 0.75-1.0 and 37.7% images with rate 1.0.

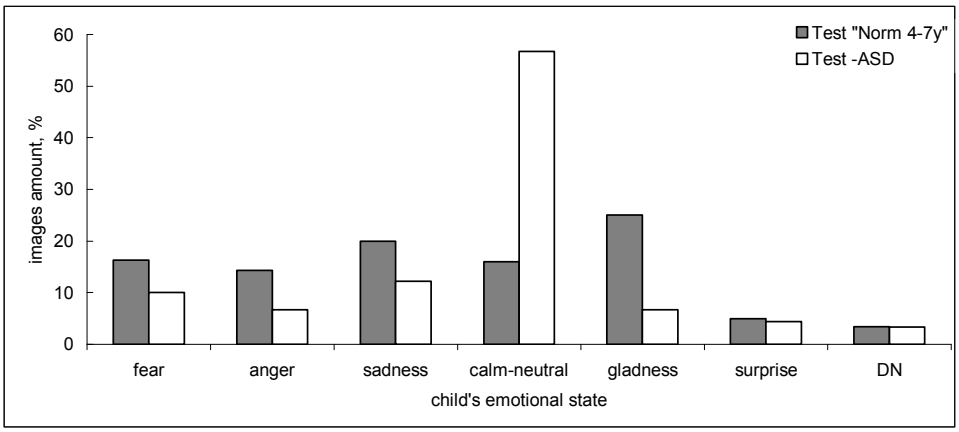

Fig.1.The facial expression of TD children and ASD children by experts
Test "Norm 4-7y" – grey color; test ASD – white

Experts reported that ASD children face emotional expression more complex, then emotional state, that they recognized according instruction. ASD child emotional manifestations close to adults, such were noted. For instance, gladness state could describe as the satisfaction, peace, joy, and at the same time a lack of understanding, fun, but with the tension. The calm/neutral condition it possible to mark as neglect, misunderstanding, detached condition, immersing immerse oneself, concentration.

A specifics of the analysis of the emotional states of ASD children are impossible to correspondence the facial expressions to try emotional state. The first group children longer demonstrated neutral state than comfort or discomfort state. Discomfort state demonstrated 42% first group children. The second group children, as a first group ASD child, long time demonstrated neutral state (70.5% and 59.7% time from total time), but manifestation of discomfort were longer (26%), than comfort state (16.7%).

Emotional reactions amount significant don't differ between two ASD children's groups (first group M = 6.9, SD = 4.4 reactions for 5 minutes; second group M = 6.7, SD = 7.6 reactions for 5 minutes). CARS scores affect on ASD children emotional manifestation (adequate/inadequate) $F(1.12) = 7.252$ $p<.01$ (Beta = -.613 R2 =.583 - Multiple Regression analysis). High level of CARS scores (a severe form of autism) was revealed as predictor of lower level of speech and inadequate emotion manifestation.

Speech of TD group children contained words and phrase were shown. The TD child adequate used speech for communication with adults and coevals. The TD child's age was revealed as predictor of the child possibility to cartoon's story retelling F (1.14) = 6.593 p<.02 (Beta = .565 R2 = .320 - Multiple Regression analysis).

Normal speech and specific speech were described in ASD children. Normal speech presented babbling-like vocalizations, simple words and simple phrase. Articulation skills, prosody, grammar, pragmatics level of speech (used language inappropriately) were abnormalities or have a level, proper for young children. So, peculiarities of normal speech were unformed different levels of speech. Specific speech included echolalia – repetition syllables, words and simple phrases, and "personal speech" - unintelligible speech with voice impairments. Communication between ASD children and parents, experimenter or another child are absent (47% children in the present study). Some of the ASD children (53%) used simple reply in dialogue with adults as simple words or phrase and repetition some words pronounced by an adult. Among second group children the ASD children used only specific speech were not revealed. Differences between groups on the base of speech level were shown. More children from the first group used normal speech (p<0.05 – Mann – Whitney criterion) and less children simultaneously used a specific and normal speech (p<0.01) than children from the second group.

An important feature of language function in children with ASD is a wish to use speech. Significantly more first group children (p<0.01) characterized by a reluctance to talk, then second group children.

Both discomfort and comfort conditions in the speech of 4-5 year old TD children were recognized by adults with the perception rate of 0.75-1.0 better compared to the neutral condition. The adults' emotion recognition rate for the 6-7 years old children were higher than for the 4 years old children (p<0.01, Mann-Whitney criterion). Discomfort state in the vocalizations and speech of ASD children listeners recognized better (p<0.01) than comfort and neutral state. According perception analysis data adults recognized neutral emotion state and sadness and gladness emotion state better than fear, anger and surprise for TD children *(Fig.2*). However, for ASD children's images adults better recognize fear (test sequence contains vocalizations), anger and gladness (words), surprise (both test sequences) vs TD peers.

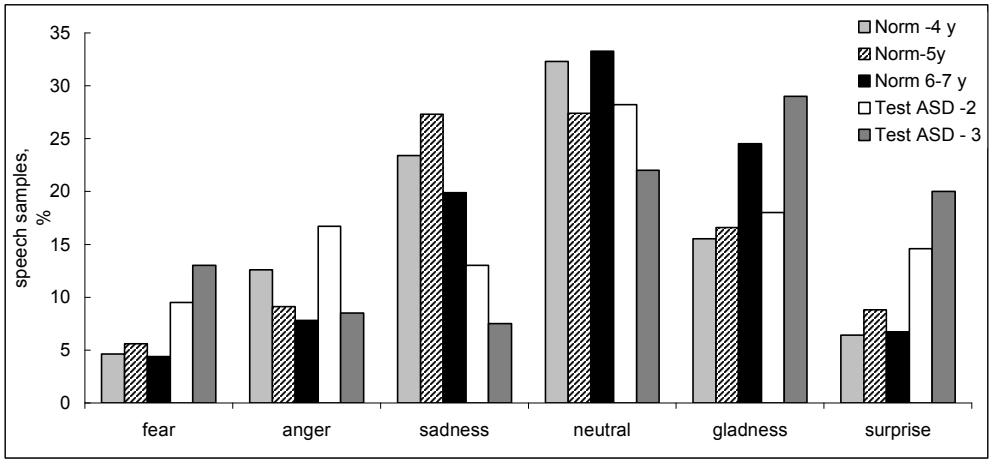

Fig. 2. Percentages of emotional child speech samples perceived by adult native speakers with rate 0.75-1.0 Data for 4 years old TD children – light grey color; for 5 y – sloping hatch, for 6-7 y – black; for ASD children (speech samples – words) – white; for ASD children (speech samples –vocalizations) – grey

Spectrographic analysis revealed that discomfort TD children's speech sample are characterized by highest maximum pitch values (p<0.01), average pitch values (p<0.05) and pitch variation values (F0max-F0min) (p<0.05) vs. neutral speech sample. Discomfort states significant don't differ from comfort state on the base of average pitch values of stress vowels from words. Correctly recognized discomfort and comfort speech samples do not differ in pitch variation values.

Positive correlation between age and recognition of discomfort state r = 0.9747 (p<.05 Spearman) was revealed. The pitch values of the vowels from discomfort speech were revealed as predictor of discomfort state recognition: F (1.3) =12. 308, p<.03 (Beta = -0.896, R2 = 0.80402) Multiple Regression analysis. Changes of comfort and neutral state recognition with child's age are bonded together: positive correlations between recognition of comfort and neutral test samples were revealed r = 0.9. The pitch values' variability of the vowels from comfort speech was revealed as predictor of comfort state recognition: F (1.3) = 13.283, p<.035 (Beta = -0.9, R2 = 0.815) - Multiple Regression analysis.

For all children with ASD voice and speech is characterized by high values of the pitch, abnormal spectrum, and well-marked high-frequency. Pitch values of the first group children was significantly higher ($p<0.05$) than in the second group children. Pitch variation values don't differ from two groups of ASD children's vocalizations and speech. Discomfort ASD children's speech sample are characterized by vowels' highest average pitch values from vocalizations and words ($p<0.05$) than comfort and neutral speech samples.

Child membership to an ASD group $F(5.13) = 8.536$ $p<0.0009$ associated with average pitch values (Beta = -0.364, R2 = 0.7665), values of third formant (emotional formant) (Beta = -0.743, R2 = - 0.7665), the level of speech (Beta = -0.484, R2 = 0.7665 – Multiple Regression analysis). The heaver child disease, the higher pitch values and third formant values, the lower speech level was revealed. ASD children differ significantly from TD children on the omnibus comparison of pitch. This difference was significantly different than the average pitch values for the TD children. Pitch values of vocalizations and speech ASD children in discomfort and comfort state significantly higher ($p<0.01$) than pitch values in TD children emotion speech. Pitch values in neutral ASD child speech have higher values ($p<0.05$) than pitch values for the TD children. The third formant values are significantly higher in discomfort speech and vocalizations of first group ASD children ($p<0.001$) than corresponding voice features in second group children and TD children. Correlation between child group and acoustical features of speech and recognition of facial expression ($p<0.05$ Spearman) was revealed (*Tab.2*.).

Tab.2. Intercorrelation of the measures: child group and recognition of speech samples and acoustical characteristic of vocalizations and speech, and recognition of facial expression images

	Characteristics	1	2	3	4	5	6	8	9	10	11
1	Group	-		-.96	-.92			-.98	.80	-.80	.80
2	RS -comfort		-					-.84			
3	F0 - discomfort	-.96		-	.93	.82		.94			-.80
4	F0 - neutral	-.91		.87	-			.87			
5	F0 - comfort	-.92		.93		-	-.91	.95	-.93	.90	-.90
6	F3 - discomfort			.82	.84		-		-.80	.80	-.80
7	F3 - neutral				-.91			-.87		-1.0	1.0
8	F3 - comfort	-.98	-.84	.94	.95		-.87		-.90	.90	-.90
9	RI - comfort	.83		-.80	-.95	-.83	.99	-.90	-	-1.0	1.0
10	RI - neutral	-.83		.80	.95	.83	-.99	.90	-1.0	-	-1.0
11	RI - discomfort	.83		-.80	-.95	-.83	.99	-.90	1.0	-1.0	-

Note P<0.05 Spearman correlation; RS – Recognition of speech; RI – recognition of facial expression images

Factor analysis based on 13 variables identified 2 factors with 11 variables. Factor 1: group of children (.890), recognition of comfort speech samples (-.705), discomfort speech pitch values (.718), comfort speech pitch values (.911), discomfort speech third formants values (.799), neutral speech third formants values (-.9899), comfort speech third formants values (.8413), comfort images recognition (-.992), neutral images recognition (.991), discomfort images recognition (.991). Factor 2: recognition of neutral speech samples (-.959), neutral speech pitch values (.839).

Conclusion and discussion

We present the first data for Russian TD and ASD children of perception and acoustic measures of participant's emotional speech, voice features and perception of facial expression. This study has shown that the ASD children differ from TD children on the base of voice features, mimic and behavioural reactions. We found, that participants with ASD in the present study had significantly lower speech level, higher pitch values and third formant values. Our data about higher pitch values of Russian ASD children vocalizations and speech correspond to the results of the study in 4-10 years old English-Hindi bilinguals with ASD [12]. In another study in the laboratory was shown that differences of average pitch value are not significant in the speech of 4-7 years old ASD children vs. TD children [13]. It is noteworthy that in our study ASD children were not in strong laboratory conditions, but in the comfort after swimming in the pool, in the presence of parents. They didn't demonstrate all skills, because the experimental situation was play-like situation. Pitch variation values don't differ in two groups Russian ASD child vocalizations and speech. In the studies of ASD pre-school children living in the Japanese language environment the negative correlation between the pitch variation and the domain

of social reciprocal interaction scores of Japanese Autism Screening Questionnaire was revealed [8]. No significant correlation was found between the pitch coefficient of variation and the IQ levels in the ASD group. The specificity of facial expression recognition by experts between ASD children and TD peers was revealed. Experts recognized more static images of ASD children as calm/neutral state, then images of their TD peers. This finding is very close to ASD children behaviour observation during experimental session. It is worth mentioned that the experts reported more complex facial expression in ASD children vs. TD children. For ASD children's images adults better recognize fear (test sequence contains vocalizations), anger and gladness (words), surprise (both test sequences) vs. TD peers. These results correspond with the data about facial and vocal expressions of participants with high-functioning autism (HFA). It was shown that facial and vocal expressions of HFA children and adults were as recognizable as those of their TD peers but were qualitatively different [3].

We believe that the study of the acoustic features of speech of children with ASD is perspective for the study of the different skills of ASD children and early diagnosis of ASD.

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Fathers as communicative companions to their twin and non-twin infants

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Abstract

We compared basic aspects of imitation (such as the frequency across the age range of the study, direction, structure and the kind) in spontaneous dyadic interactions of non-twin and twin infants with their fathers in the course of early infancy. Five father-non-twin infant and five father-twin infant dyads from Crete, Greece, were observed during natural interactions at home from the second to the sixth month of life. Interactions of fathers with their non-twin and twin infants were evidenced to be *similar* in the frequency, the direction and the kinds of imitated expressive behaviors and to *differ* in the structure of imitative sequences and the developmental trajectories of imitation across the age range of this study. In the frame of the theory of Innate Intersubjectivity, we assume that: a) *differences* in certain aspects of imitation may be related to variations in three fundamental dimensions of infant – Significant Other communication: 'kinematics' (temporal patterns), 'physiognomics' (form) and 'energetics' (effort); b) *similarities* in other aspects of imitation may be according to innately determined self-organizing development. These patterns provide evidence that fathers of non-twin and twin infants are as capable and sensitive as communicative companions as are mothers.

Keywords: imitation, twin infant, father, innate intersubjectivity

Introduction

There is an agreement on the innate ability and the communicative function of imitation in a naturalistic frame during early infancy among the majority of developmental researchers (see Kokkinaki, 1998 for a review). Comparative studies between twin- and non-twin infant-mother spontaneous interactions have shown *similarities* in basic aspects of imitation such as: (a) the *direction of imitation*: mothers imitate their twin and non-twin infants more than vice versa; (b) the *structure of imitation*: imitations occur more frequently in turn-takings (my turn-pause-your turn) than in co-actions; (c) the *kind of imitated behavior*: vocal imitations predominated over the rest imitated expressive behaviors; and (d) the *developmental trajectory* of imitation (Markodimitraki, 2003; Pateraki, 2011).The proposition that fathers are as capable and sensitive as imitators as are mothers has been acknowledged (Kokkinaki and Kugiumutzakis, 2000). To the authors' knowledge, evidence on imitation in spontaneous father-twin infant interaction is restricted to Markodimitraki's case study (2003). This study provided evidence that dyadic interactions of the father with his infant twin-girl and his infant twin-boy were: a) *similar* in the kinds of imitated expressions (vocal imitations predominated over the rest imitated expressions) and in the structure of imitative sequences (turn takings predominated over coactions) while they b) *differed* in the direction of imitative sequences; the father imitated the infant twin-girl significantly more than the infant twin-boy. The current study improves the methodology of the Markodimitraki's case study (2003) on the number of participants and extends the comparison of basic aspects of imitation in spontaneous dyadic interactions of non-twin and twin infants with their fathers in the course of early infancy.

Our study was conceived within the frame of the theory of Innate Intersubjectivity (Trevarthen, 1993), according to which imitative intersubjective encounters with infants reveal within- and between-subjects coordination in three essential dimensions of communication that motivate learning in a human community: 'kinematics' (the temporal patterns of movements), 'physiognomics' (changes in the shape of the body) and 'energetics' (variations in the intensity) (Trevarthen, 1986).

Comparing basic aspects of imitation in spontaneous dyadic interactions of fathers with their non-twin and twin infants in the course of early infancy is important because it may extent our understanding: a) on the effect of the unique intra-uterine experience of twins on self-other organization; and b) on the way fathers constitute an actual figure of intimacy for the developing non-twin and twin infants, who co-"creates" with them, gradually but systematically, their intersubjective companion.

Methods

2.1. Sample

Participants were part of a longitudinal and naturalistic study which aimed to compare basic aspects of spontaneous imitation in interactions of fathers with their non-twin and twin infants (Note). Five non-twin infants (3 boys and 2 girls) and five dizygotic twin infants (2 boys and 1 girl of opposite-sex pairs and 1 boy and 1 girl of same-sex pairs) with their fathers (N=20), from Crete, Greece, participated in this study. All non-twin and twin infants were first-borns due to differences in the brain structure between first-born and second-born twins (Pol, Posthuma, Baare, De Geus, Schnack, van Haren, van Oel, Kahn and Boomsma, 2002). All infants were healthy and born without complications. They came from families in which at least one parent was employed and fathers were >29 years of age. No twins who were in medical risk or with birth weight less than 1.700 gr. or with gestational age less than 34 weeks were selected. Opposite-sex twin infant pairs were classified as dizygotic on the basis of the sex difference (Wilson, 1983). For same-sex twin infant pairs, zygosity was established according to the Zygosity Questionnaire for Young Twins (Goldsmith, 1991).

2.2. Procedure

Parents were approached either before, or after birth in the maternity clinic, or at home through the obstetricians and pediatricians, who opened access at birth records. After parents approved their participation in the study, an introductory discussion took place at their home. The first visit was arranged at a time suitable for the fathers, when the infant was likely to be fed, relaxed and alert, and a time usually amenable to social games (Kugiumutzakis, 1993). Video recordings were made at 30-day intervals starting when the infant was 2 months old until she/he was 6 months old. Each video-recording lasted 7 minutes. A total of 50 video-recordings were made [(5 twin infants X 5 age points) + (5 non-twin infants X 5 age points)], or 350 minutes (50 video recordings X 7 minutes) of spontaneous dyadic interactions. All recordings were made with a Handy Cam SONY DCR-HC90E digital video camera recorder. The only instruction given to the fathers was "Please, play as you normally do with your baby".

2.3. Coding

An *imitative sequence* was defined as a period from the moment that the start of the model's expressive behavior until the completion of the imitator's last imitative activity. An i*mitation* occurred when one partner's vocal, kinetic, facial expression or any combination of these expressions, that had not been expressed by either father or infant in the immediately preceding 10 seconds, is 'recreated or reproduced' by the partner within a 10-second interval and with no other intervening activities. In the present study, the following aspects of imitation were analyzed: (a) The *frequency* of imitation as an entire sequence across the age range of the study; (b) The d*irection* of the imitative sequence, which indicates who it is that is the initiator of the modeled behavior and who gives the first imitative response; (c) The *structure* of the imitative sequence, which indicates the timing between the model's and the imitator's expressive behavior. Imitative sequences were categorized in three types: turn-taking, co-action and multiple exchange (turn-taking with co-action); and (d) The *kinds* of imitative expressive behaviors, which were as follows: vocal imitations, facial imitations, non speech sound imitations, hand imitations, body movement imitations and combinations of the above imitated behaviors (Kokkinaki, 1998, 2011).

Statistical Analysis

Chi-square tests were used to determine possible relationships between pairs of variables. In cases where proportions of two-outcome analyses were assessed (i.e. frequency of imitation in father-non-twin and father-twin infant dyads), Binomial tests were used to test equality of outcomes. The significance level for chi-square test was set at 1%, as a safeguard against false rejections of the null hypothesis. The significance level for the Binomial test was set at 5%. All analyses were performed using the SPSS statistical package (Version 17.0, 2008).

Results

Frequency of Imitation: No significant differences were found in the frequency of imitations in father-non-twin [191 (51.4%)] and father-twin infant dyads [167 (46.6%)] (p=0.224, two-tailed Binomial test).

Direction of Imitation: No significant differences were found in the direction of imitative sequences in father-non twin and father-twin infant dyads. Non-twin infants modeled expressive behaviors that were then imitated by the father almost as frequently as twin infants (χ^2 =0.019, df=1, p=0.890). Similarly, imitations by non-twin infants were almost as frequent as imitations by twin infants (χ^2 =0.02, df=1, p=0.873).

Structure of Imitation: Imitative sequences in father-non-twin infant dyads were structured more in turn-takings than in co-actions, while co-actions were more frequent than turn-takings in father-twin infant pairs (χ^2=9.562, df=2, p=0.008).

Kinds of Imitative Expressive Behaviors: No differences were found in the kinds of imitated expressive behaviours between father-non-twin infant dyads and father–twin infant pairs (χ^2=10.752, df=4, p=0.029).

The Developmental Pattern of Imitative Sequences: Imitation follows different developmental patterns (χ^2=19.106, df=4, p=0.001) in interactions of fathers with their non-twin and twin infants. Figure 1 shows that the frequency of imitations in father-non twin infant pairs decreased after the 3rd month, while imitations in father-twin infant dyads increased about two months later, that is, at the 5th month.

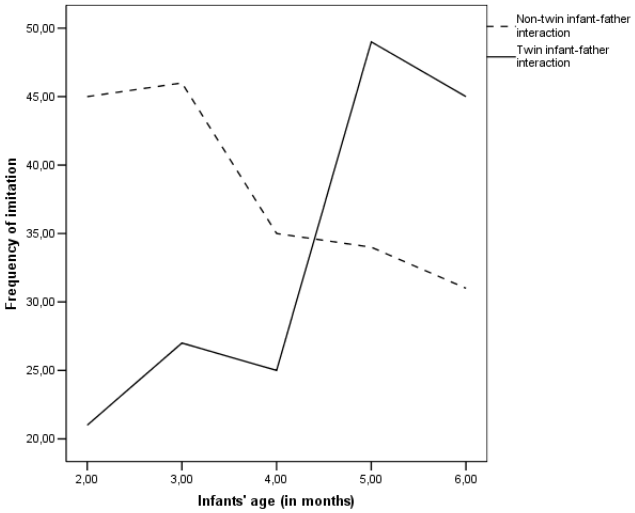

Figure 1: Developmental trajectories of the frequency of imitation in interactions of fathers with their non-twin and twin infants from the 2nd to the 6th month of infants' life.

Discussion

The comparison of certain basic aspects of imitation in spontaneous dyadic interactions of non-twin and twin infants with their fathers in the course of early infancy provided evidence of *similarity* in the frequency, the direction and the kinds of imitated expressive behaviors, and *differences* in the structure of imitative sequences and the developmental trajectories of imitation across the age range of this study.

Similarity in the frequency of imitation implies that the extent of direct inter-motive attraction does not differ according to early family interaction histories in interactions of fathers with their non-twin and twin infants. Given that imitation is not the only mean of communication available to the young infant and human communication is regulated by an integrated system of equivalent expressions (Kugiumutzakis, 1985; Trevarthen, 1993), the 'asymmetric' imitative participation by non twin and twin infants – as evidenced by the *similarity* in the direction of imitative sequences - is explained by the suggestion that infants may express sympathetic communicative feelings in other ways. *Similarity* in the kinds of imitated behaviors implies, indirectly, invariant 'physiognomics', that is, adjustment of spatial patterns in interactions of fathers with their non-twin and twin infants. These *similarities* may be according to innately determined self-organizing development (Trevarthen, 1993). *Differences* in the structure of imitation presuppose that non-twin infants, twin infants and their fathers make different timing adjustments to obtain inter-synchrony. Based on the speculation that co-actions constitute: "…an index of the intensity of affective arousal, regardless of quality" (Beebe, 1982, p. 194), *differences* in the structure of imitation may imply variations in 'energetics' between the two groups. *Differences* in the non-linear developmental trajectories of imitation in interactions of fathers with their non twin and twin infants from the 2nd to the 6th month of infants' life might be due to variations in periodic reorganizations in the infants' motivational system leading either to corresponding motivational changes in father and / or to changes in Significant Others' perceptions of the infant's interests and emotions (Kokkinaki, 1998; Kugiumutzakis, 1993; Trevarthen, 2005).

In sum, this preliminary study provided evidence that: a) *differences* in certain aspects of imitation may be related to variations in three fundamental dimensions of infant – Significant Other communication: 'kinematics' (temporal patterns), 'physiognomics' (form) and 'energetics' (effort); b) *similarities* in other aspects of imitation may be according to innately determined self-organizing development. These patterns may have implications for the ability of all partners to regulate and negotiate interpersonal challenges throughout their lives. In connection to these, fathers seem to constitute one more Significant Other - along with mothers - who offers infant a sense of partner stability with similar and predictable behaviors and interactions to mothers and variations which may reflect differences in the fathers' individual styles, personality and relationship history.

These data describe imitation in a restricted sample of Greek white middle-class infants with their fathers. The participant twins' families are representative of families who volunteer and meet certain inclusion

criteria. Obviously, generalization of these findings to a larger sample of other socio-economical and cultural populations is limited.

Note

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Evaluating early communicative development.

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Abstract

The communicative context is a key aspect of development in early childhood; it is therefore of critical importance to develop instruments for evaluating young children's competence in communication and social interaction. The ECSP scale (the acronym for *Echelle d'évaluation de la Communication Sociale Précoce* – the standardized and adapted French version of the American *Early Social Communication Scales* [1], by Guidetti and Tourrette [2]) is one of the most promising tools currently available for the evaluation of early social communication in all its complexity. This paper presents the data for the standardization and validation of the ECSP in two different countries (France and Italy), as well as two further studies testing the scale's effectiveness in evaluating child development in atypical populations (composed of deaf and autistic children, respectively). Overall, we found that the ECSP is an effective tool with rich potential for the evaluation of early communication in both typical and atypical populations.

Keywords: infancy, communication, ECSP, deafness, autism.

Introduction

Recent studies on early development have identified the communicative context as a key factor not only for the development of communication and language, but also for the development of relational and affective competence, and social cognition [3, 4, 5]. Hence the requirement for reliable and effective measures of early child-adult communication. The ECSP scale (the acronym for *Echelle d'évaluation de la Communication Sociale Précoce* – the standardized and adapted French version of the American *Early Social Communication Scales* [1], by Guidetti and Tourrette [2]) is one of the most promising tools currently available for the evaluation of early social communication in all its complexity.

The ECSP was first devised over 20 years ago to supply the lack of instruments for evaluating communicative development. Two theoretical paradigms informed the definition of the scale's content and structure. The first of these was Bruner's vision [6, 7] of developmental pragmatics based on the notion of continuity between prelinguistic and linguistic communication, together with Bates, Camaioni and Volterra's [8] distinction between protodeclaratives and protoimperatives. This paradigm led to the definition of the three communicative functions evaluated by the ECSP: Social Interaction (SI), Joint Attention (JA) and Behavior Regulation (BR). The second theoretical paradigm followed was Fisher's [9] neo-Piagetian model, which prompted the structuring of the scale to reflect five developmental levels (see Fig. 1).

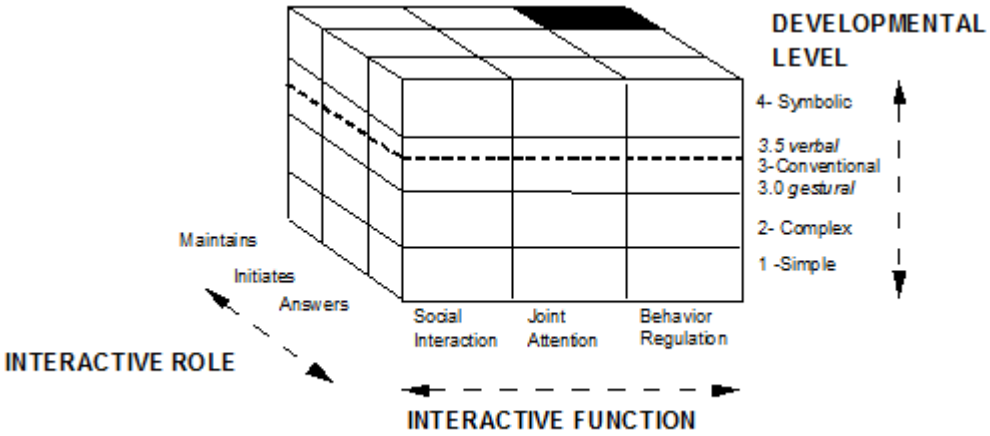

Figure 1: The ECSP structure and content

The ECSP comprises 23 interactive situations, such as being presented with a mechanical toy or other appealing and age-appropriate materials, singing a conventional action song, looking at a picture book, receiving basic instructions, and so on. The child is shown a selection of toys and objects (balls, toy cars, puppets, posters, books, etc.), in order to elicit occurrences of a possible 108 communicative behaviors.

Each occurrence is then coded in terms of its communicative function, the level of development it reflects and the child's role in the interaction. For each communicative function – with the exception of "behavior regulation" – the child may play three alternative roles in the interaction: he/she may initiate the interaction, respond to it or maintain it. The scores for the coded behavioral occurrences may take the form of *total scores*, corresponding to the sum of the scores received for all the behaviors actually produced, or of *optimal levels*, corresponding to the highest levels at which the child produces behaviors for each function. Finally, each participant's *mean level*, i.e. the mean of the optimal levels attained for the three functions, may also be computed. The difference between children's *scores*, reflecting the overall range of behaviors they currently engage in, and their *optimal levels*, corresponding to the most advanced behaviors they are currently able to produce, can inform the design of personalized therapeutic interventions targeting their "zone of proximal development" [10].

To date, this scale has proved useful for assessing children with disabilities and developmental disorders (autism, language delay, intellectual disability, etc.). In France, it is recommended by the National Health Authority and the French Federation of Psychiatry for evaluating communication in subjects with autism and deafness. It is generally administered to children aged 3-30 months, but given that its upper limit of application is the point at which the child begins to combine words, it may also be used with older children displaying atypical development.

The ECSP is of particular interest because:

- it enables the development of communication to be assessed from the earliest months of life;
- it evaluates interactive and pre-linguistic communication;
- it has been standardized on typically developing children in two countries;
- its reliability has been confirmed by studies conducted with large samples;
- it clearly discriminates between typical and atypical development.

Our ongoing work is focused on adapting the scale to meet the specific needs of different groups of children with atypical development (deaf children, children with autism, blind children, etc.) and on exploring how it may be used to evaluate intervention strategies.

Method and results

1.1 Study 1: Standardization and validation of the ECSP in French and Italian samples.

The French sample was composed of 190 typically developing children (93 females) aged between 3 and 30 months (M = 16.9, SD = 7.8). The data were collected in the Poitou-Charentes region in the 1990s, prior to the initial publication of the scale. In this sample, both scores and optimal levels were found to increase with age and internal validity was confirmed. This result provided support for the scale's hierarchical structure. The external validity of the ECSP was computed with a second sample comprising 145 children, who were also administered the Brunet-Lézine scale (BL [11]). The findings in this case included a significant correlation ($r = .352$, $p. < .01$) between the language scores obtained on the BL and the JA scores obtained on the ECSP, suggesting that joint attention plays a role in the emergence of lexicon.

The Italian sample on the other hand, was recruited in different waves. The first round of data collection concerned a sample of about 200 children, recruited over the 1994-1997 period, mainly in Trento and Milan; data from an additional 200 children were collected subsequently, in the course of multiple research projects conducted in Piedmont, Trento and Milan. Currently, the total Italian sample comprises 423 children (207 girls), aged between 2 and 30 months (M = 16 months, SD = 8 months). After controlling for age, we did not find any significant differences in the mean levels of the earlier and later subsamples (regression on Mean Total Scores, N=423: age effect: β=.887, R^2= .786; *p*<.001; sample effect: β=.044, ΔR^2=.001, *p* =.362, on residuals of first step scores). Using the data from the first subsample, we performed confirmatory factorial analysis on participants' optimal levels [12], finding evidence for a single factor model. In addition, we found substantive correlation between participants' ECSP scores and their scores on the McArthur questionnaire [13, Italian version 14] as completed by their parents, in a subsample recruited in Trento [15].

On comparing the two country samples, we found a small but significant difference in mean levels of communication ability (regression on Mean Total Scores, N = 613: age effect β = .874, R2 = .772, p <.001; sample effect: β = .126, ΔR2 = .007, p <.002, on residuals of first step scores). Nonetheless, both groups displayed a similar pattern of development as a function of age: specifically, as illustrated in Fig. 2, there was strong correlation between communicative competence and age in both cultural samples (Mean Total Scores: French sample r = .861, p <.001; Italian sample r = .887, p <.001), as well as in the overall sample (r = .874, p <.001); there were no significant differences between the two samples in relation to degree of correlation (Z=1.257, p > .05, two-tailed Fisher's Z Test).

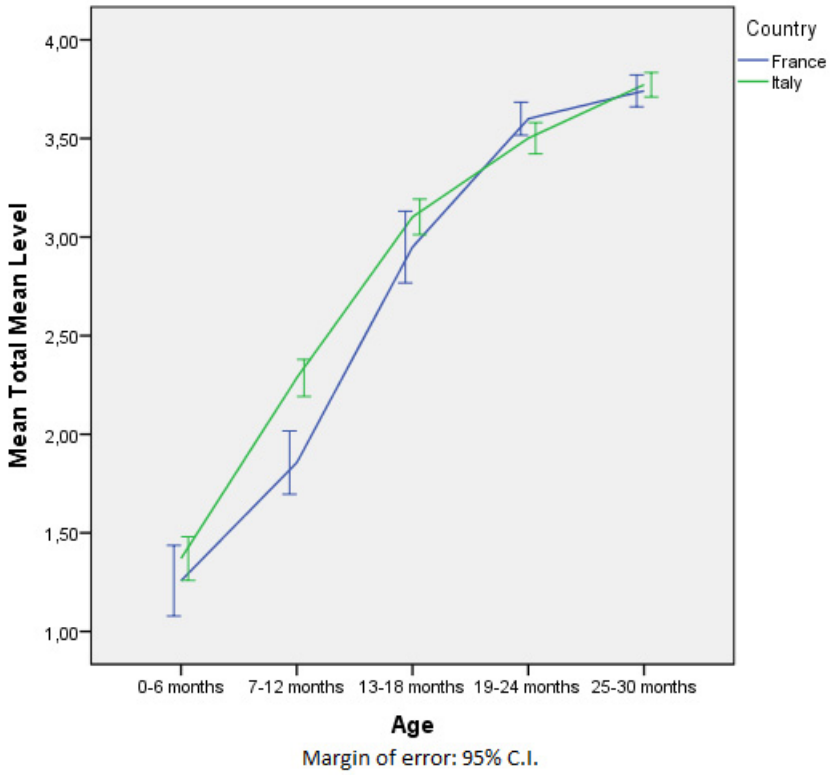

Figure 2: Developmental trend of mean level scores in French and Italian samples

1.2 Study 2: Early communication in cochlear implanted children.

Cochlear implants (CI) allow profoundly deaf children to develop their understanding of spoken language and acquire speech. Numerous studies have indicated that children implanted before the age of twelve months display more advanced perceptual and communication skills than children implanted later. However, even the children implanted at the youngest ages display considerable inter-individual variability in outcomes. We set out to investigate this variability by conducting a longitudinal study designed to determine the impact of cognitive development on communication and perceptual development. We also evaluated whether additional factors (e.g., other characteristics of the children and their families, the device used, and educational environment) were correlated with the outcome variables of communication and perceptual skills. Seven participants aged between 1 and 3 years old were evaluated before receiving the implant and subsequently reassessed at 3-month intervals, up to 12 months after activation of the implant. Test measures included: the

ECSP [2], used to assess cognitive and communication abilities; the Brunet-Lézine-Revised scale [11], chosen to evaluate global development; and the "Sound Room" detection task, deployed to measure participants' ability to perceive non-linguistic everyday sounds. We hypothesized that the development of pre-linguistic skills would influence performance at 6, 9 and 12 months post-implantation, and that the inherent characteristics of the child and its family (presence of siblings, maternal education, etc.) and the child's auditory characteristics would be associated with later outcomes. The data showed that, at pre-implantation, subjects displayed an overall delay in communicative ability compared to normative values. However, their early social communication development was broadly in line with normative patterns up to the age 17 months (see Fig. 3), with a more sizeable gap appearing to develop from the age of 18 months onwards. Despite the heterogeneity among subjects, a positive and significant correlation between joint attention and language skills was observed 12 months after CI activation.

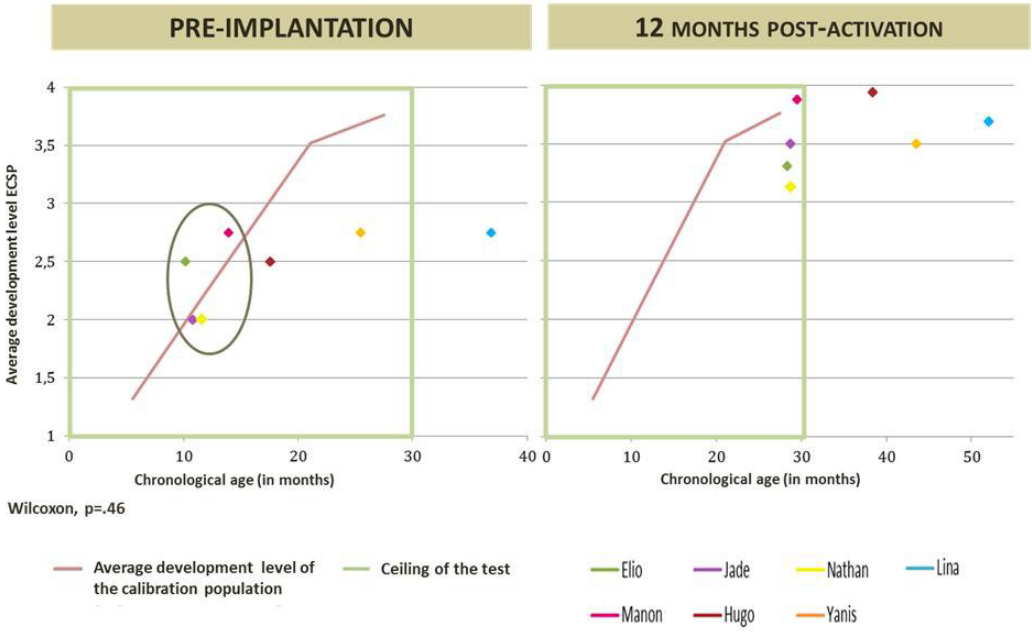

Figure 3: Early social communicative development in deaf children with CI, before implantation and 12 months post-activation

This study (see also [16]) contributes to our understanding of the developmental trajectory for language and communication in deaf children with a CI, which is different to that of normally hearing children of the same chronological age, but similar to that of hearing children of the same hearing age. It follows that these children's communicative competence should not only be compared to standardized data, but also evaluated in relation to their hearing age, while taking into account their pre-implantation level of linguistic competence. The findings also suggest the importance of assessing deaf children not only in terms of their speaking competence, but also in terms of their ability to engage in multimodal communication in response to given inputs. However, the size of the cohort did not allow us to control for other variables that may have significantly affected the results, such as etiology of deafness, age at implant, or type of communication background (pre-implantation exposure to oral or sign language in the home). Future studies are needed to specifically investigate these factors.

This research also advanced our awareness of how best to administer the ECSP with deaf children and helped us to adapt the scale to suit the characteristics of deafness. One key issue concerns identifying the most appropriate type of communication/speech to use in the evaluation of young deaf children. Given that the majority of deaf children are born into hearing families, they communicate on a bipolar continuum that runs from speech only to sign language only. As a consequence, they should be assessed in the modality in which they are currently most competent. In this regard, when assessing children in sign language, some of the interactive situations in the ECSP are difficult to reproduce, such as asking subjects to point to body parts. In sum, any assessment of children with atypical development should take into account the heterogeneity of their clinical profiles.

1.3 Study 3: A training study with autistic children.

Intervention focused on enhancing social skills is of key importance for subjects with autism, and is especially critical for very young children who have just been diagnosed. The most effective means of evaluating and monitoring these children's social development – and particularly what instruments should be used for this

purpose – is still a matter of debate. The ECSP scale [2] is one of the tools currently available for analyzing the social and communicative development of children with autism.

In this study, we used the ECSP to evaluate 34 children with autism (2 to 4 years old, M =3 years). Two assessments were carried out six months apart. During the 6-month interval between assessments, all children underwent one of two types of early intervention. Seventeen subjects received intensive ABA intervention and the other 17 received twice-weekly training in social abilities (SAS, [17]). Assignment to the two groups was quasi-randomised. The evaluators were blind to the type of intervention programme followed by the children they tested.

Overall, the participating children displayed enhanced social communication skills at the end of the six-month trial. This trend was found in both treatment groups. Gains varied significantly as a function of developmental age ($F(1,32)= 16$; $p<.001$). Only six children obtained no improvement in their global score.

In order to validate our use of the ESCP, we compared subjects' ESCP scores with their CARS scores [18], finding a significant correlation between the two evaluations ($r = -.64$): higher levels of autistic symptoms corresponded to poorer outcomes on the ECSP.

Concerning the ECSP subscales, when the individual scores for the different communicative functions were analysed, significant improvements from pre- to post-test were found for two of the three subscales: the subscale Joint Attention ($F(1,32)= 8.9$; $p=.005$) and the subscale Social Interaction ($F(1,32)= 11.8$; $p=.002$).

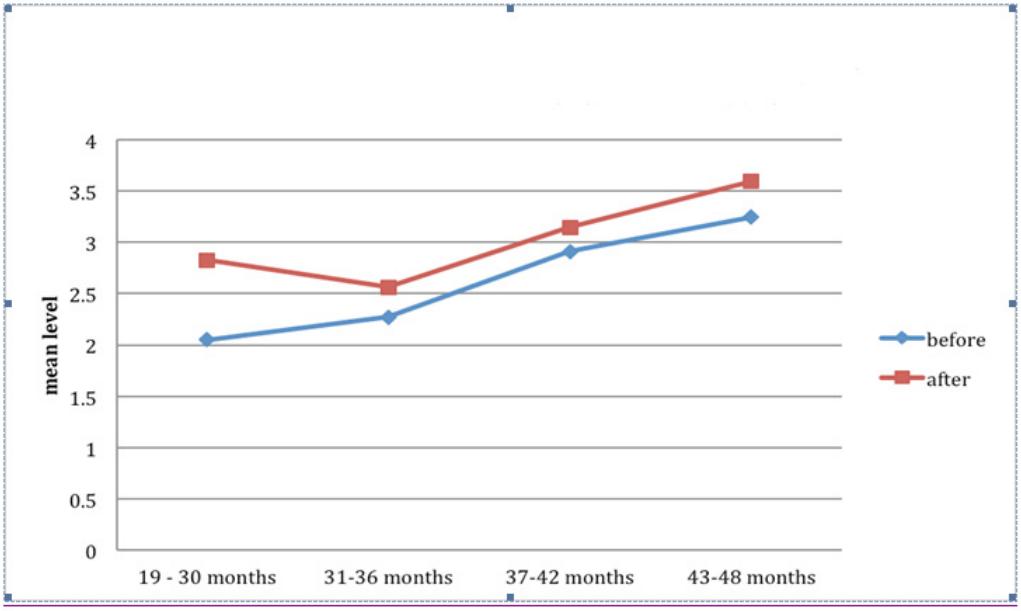

Figure 4: Mean optimal level of children with autism by age group and time of evaluation

These research findings have multiple implications. First, the effectiveness and sensitivity of the ECSP in evaluating the development of autistic children's social abilities means that this scale is a valuable tool for tracking ongoing progress, which should be incorporated into clinical practice. Second, monitoring the developmental trajectory for social understanding in children with autism is helpful to those attempting to understand this process and train children in social competence. Our study captures this pattern of development, showing that although children with autism are impaired in social interaction, their social competence increases over time.

Conclusion

Overall, our results confirm that the ECSP scale offers a sensitive instrument for the evaluation of early communication development, with the potential to capture change over time. The standardization sample comprised a large number of young children, and the comparison between French and Italian samples seems promising, although the slight difference between the scores requires further analysis. We are currently collecting additional data from clinical samples, such as deaf children with deaf and hearing parents, children with autism and other neurodevelopmental disorders. Our ultimate aim is to adapt the ECSP administration procedure and materials to these different pathologies, and to inform clinical practice by producing differential developmental profiles for different clinical groups.

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Perspective taking and prosocial behaviour: an intervention with preschoolers

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Abstract

The present study wanted to verify the possibility of promoting perspective taking in preschoolers, using ecological intervention inside the kindergarten. Subsequently, analyses were conducted to examine if a possible increase in these competences could positively influence prosocial disposition and determine a decrease of aggressiveness. The design was a pre-test/post-test/follow-up quasi-experimental procedure with independent samples: an experimental and a control group, each one with children aged 3–5. In both pre-test and post-test we investigated the ability of perspective taking through several tests and the prosocial behaviour and aggressiveness through repeated ecological non-participant observations. In order to propose ecological activities consistent with the didactic methodologies adopted daily by the teachers, we selected three methodologies directly borrowed from the kindergarten context: drawing, narration and dramatization. Results showed a significant improvement in most of the investigated areas after the training, confirming the possibility of promoting perspective taking abilities. Moreover, children with greater perspective taking skills were also more inclined to behave in a prosocial way during peer interactions. Furthermore, these changes were persistent at the follow-up session four months later.

Keywords: Perspective taking, training, preschoolers, prosocial behavior, socio-cognitive functioning

Introduction

Successful social interaction often requires an understanding that others may not interpret the world exactly as we do. Differing motivations, expectations, knowledge, or even visual perspective can lead people to interpret the same event very differently [1]. The ability to mentally put ourselves in others' shoes and thus to imagine how others perceive, think, and emotionally experience the events is a central ability to our social lives because it allows us to anticipate others' beliefs and desires and then to behave appropriately [2, 3]. This skill, defined perspective taking, can be considered a multidimensional construct which is composed of three different components: cognitive, visual and affective. Cognitive perspective taking is the ability to infer other people's thoughts, motivations and intentions [4].Visual perspective taking refers to the ability to infer how an object is seen from a different position in the space [3, 5] and affective perspective taking consists of the ability to understand the emotional states of another person, which provides the foundation for empathy [6, 7].

Accurate perspective taking is not a skill with which humans are born, but it must be developed. Three decades of psychological research have shown that this ability starts in early infancy and develops throughout childhood and beyond [8]. There is considerable consensus that children become increasingly proficient in perspective taking tasks during preschool age (3-5 years) and that by the end of that period, they are able to reason correctly about most mental states like beliefs, emotions and desires [9]. Perspective taking plays an adaptive role and is fundamental to the development of various social abilities. From the literature we know that perspective taking is very important in social interactions because it facilitates the anticipation of other people's thoughts. Some studies underlined that 'good perspective-takers' seem very capable with respect to the main social indicators, are considered more socially competent by their teachers and are more accepted by friends. In particular, perspective taking seems to be highly connected to a specific area of social competence: prosocial behaviour.

On the basis of these considerations, being able to teach perspective taking in early development and finding more effective ways of doing so are very significant objectives from an educational point of view. An analysis of the literature showed that various authors have developed different specific interventions aimed at increasing children's perspective taking ability [10]. It is interesting to note that only few studies analysed

perspective taking as a multidimensional construct [11, 12]. Indeed, there were numerous researches on cognitive dimension of perspective taking [13], fewer on affective component [14] and none specifically on visual one.

The most effective methods to improve perspective taking in children seem to be those in which the child plays an active role. This active position has been achieved in various ways in every different type of intervention: reworking metacognitive experiences of feedback to acquire a new insight [15], asking children to provide a first person explanation [16] or engaging children in conversations and reflective interactions [17], sometimes supplemented with drama activities and drawing [12]. Another important aspect in term of efficacy seems to be the ecological validity of intervention, as suggested by authors which stressed the benefits of using procedures and methods which were familiar to the children and fitted well in the school context in which the training took place [12, 17, 18].

Method

1.1. Goals

On the basis of these considerations, the main goal of the research was to verify the possibility of promoting perspective taking competences in preschool children using a specific training procedure.

The second aim was to verify if the ability of visual, cognitive and affective perspective taking could positively influence prosocial disposition, indicated by the increase of the frequency of prosocial behaviors after training.

Finally the maintenance of change in perspective taking ability over time was analysed.

1.2. Participants

A total of 90 typically developing and native Italian speaker preschoolers (42 males and 48 females) participated in the study. All the children were 4–5 years old (from 46 to 68 months; M = 55.7 months, SD = 2.97). They attended different mixed-age classrooms (classroom with children who are 3, 4, and 5 years old) within the same kindergarten in a northern Italian town. None were identified as having both learning or language difficulties and personality or behavioural problems. All participants came from an equivalent socio-economic range (middle class).

The sample was randomly divided into two subgroups balanced for age and gender: an experimental group (M = 55.1 months, SD = 2.93) and a control group (M = 56.3 months, SD = 3.09), each consisting of 45 children. Specifically, the experimental group was composed of 21 males (from 47 to 67 months; M = 54.2 months, SD = 2.78) and 24 females (from 48 to 68 months; M = 56.2 months, SD = 3.21) and control group was composed of 21 males (from 48 to 67 months; M = 55.4 months, SD = 3.35) and 24 females (from 49 to 68 months; M = 57.1 months; SD = 2.76).

1.3. Procedure

The design of this research was a pre-test/post-test quasi-experimental procedure with independent groups. The experimental layout consisted of four phases: pre-test (T1), training (T2), post-test (T3) and follow-up (T4). The experimental group was involved in all of the four phases, whereas the control group did not participate to the training sessions. In the pre-test phase (T1), which lasted 20 days, perspective taking ability, prosocial behaviour and aggressiveness were assessed. To promote perspective taking, a training (T2) procedure, which lasted 15 days and immediately followed the pre-test, was performed. Post-test (T3) began after training and lasted 20 days. Four months after the end of the post-test, a follow-up phase was conducted to evaluate the maintenance of the acquired abilities after the intervention.

During pre-test, post-test and follow-up, perspective taking ability was assessed during two encounters of 15 minutes, by means of specific tests and tasks, presented in counterbalanced order. Specifically different tests underlying the same paradigm were administered in order to avoid the repetition effect, whereas in the follow-up the variables were measured with the same procedures of the post-test. Children were tested individually by a female experimenter in a suitable and familiar room inside the kindergarten. Prosocial behaviours and aggressiveness were analysed through non-participant ecological observations.

1.4. Measures

Perspective taking

Children's perspective taking level was assessed threefold (T1, T3 and T4) with a series of 6 tasks (two for each perspective taking dimension: visual, cognitive and affective) (Tab. 1).

The measure of cognitive perspective taking involved two first-order false belief prediction tasks: the location change task [19] and the unexpected content task [20], using Italian adaptation of the original versions [21]. In the first test children had to predict where a character would look for an object whose position was

changed during his/her absence by a second character; in the second task children were shown a familiar container (e.g., a candy box) that hides an unexpected content (e.g., pencils) and were asked to predict what a character unaware of the situation would think the box contained.

For the analysis of visual perspective-taking two types of tasks were presented: an adapted visual-perceptual task [22] and a modified version of the "policeman task" [23]. In the first, children were shown two tables featuring the same image on both sides, but with a different detail. The challenge was to consider both point of views. The second test consisted of a three-dimensional model in which the child's task was to simulate the hide-and-seek game, attempting to conceal a character location. The scene was presented so that the child's point of view did not coincide with the point of view of the seeking character. The children were proposed three different situations, asking them to find three different hiding places for each position.

The affective perspective taking was assessed by means of the Test of Emotion Comprehension (TEC) [24] using the Italian validated version [25] and an adapted version of the affective perspective-taking task [7]. TEC is composed of 23 cartoon scenarios and contains 28 items, subsequently grouped into nine hierarchically organised variables (I–IX), in line with the specific stages of child development. According to the authors' recommendations [24] the nine components may be grouped into three levels: external (external aspects of emotions), mental (various mental aspects of emotions) and reflective (children's understanding of the way in which an individual can think about a particular emotionally charged event from more than one perspective).

The affective perspective-taking task was designed to examine children's ability to predict their own emotions and the emotions of a friend. This task consider, after a first task based on labelling emotional expressions of happiness and sadness in order to verify expressive and receptive understanding, a child flight of fancy through the presentation of 12 short stories involving himself/herself and a suggested friend. After each story the experimenter asked how the child and his/her friend would felt in the situation. Some stories provided a congruence of the emotions felt by the two characters, while in others the two emotions were opposite.

Tab. 1 - Perspective taking tasks

	PRE-TEST	POST-TEST	FOLLOW-UP
COGNITIVE PERSPECTIVE TAKING	**Location change task** Sara & Anna *(Wimmer & Perner, 1983)* **Unexpected content task** Candy box with pencils *(Perner et al., 1987)*	**Location change task** The two mice *(Liverta Sempio et al.,2005)* **Unexpected content task** Can of coke with rice *(Perner et al., 1987)*	**Location change task** The two mice *(Liverta Sempio et al.,2005)* **Unexpected content task** Can of coke with rice *(Perner et al., 1987)*
VISUAL PERSPECTIVE TAKING	**Visual-perceptual task** Turtle sleeping on a pillow *(Flavell et al., 1981)* **Policeman task** Policeman & thief *(Hughes & Donaldson, 1979)*	**Visual-perceptual task** Grub sleeping on a pillow *(Flavell et al., 1981)* **Policeman task** Cat & mouse *(Hughes & Donaldson, 1979)*	**Visual-perceptual task** Grub sleeping on a pillow *(Flavell et al., 1981)* **Policeman task** Cat & mouse *(Hughes & Donaldson, 1979)*
AFFECTIVE PERSPECTIVE TAKING	**TEC** *(Pons & Harris, 2000)* **Affective pt. task** *(Harwood & Farrar, 2006)*	**TEC** *(Pons & Harris, 2000)* **Affective pt. task** *(Harwood & Farrar, 2006)*	**TEC** *(Pons & Harris, 2000)* **Affective pt. task** *(Harwood & Farrar, 2006)*

Prosocial behaviour

In order to assess prosocial behaviours and aggressiveness during daily interaction between peers, non-participant ecological observations during two moments of free play (before and after lunch) and during lunch in the naturalistic context (in the outdoor or indoor spaces of the school for free play and in the classroom for lunch) were conducted. Each child was observed three times (free play before lunch, lunch, free play after lunch) on three different days. Every single observation lasted 45 minutes. The behaviours were operationalised based on four behavioural categories: helping, consoling/encouraging, sharing, aggressiveness. These categories were derived from Roche Olivar's code system of assessment of prosocial behaviours in the school context [26] and from the "Questionnaire for the evaluation of social behaviour" [27]. With regard to aggressive behaviours, it is opportune to underline that in preschool age, aggressiveness is often experienced as play or exploration of the environment. Therefore, only physical or oral actions intentionally directed to hurt peers or teachers were considered. The frequencies of behaviours in each category (helping, consoling/encouraging, sharing, aggressiveness) were computed. It is important to underline that the observers were naive, that is not aware of the intervention condition and study hypotheses.

Intervention activities

Training was aimed to promote perspective taking in children in the experimental group. In particular, in order to propose ecological activities consistent with the didactic methodologies adopted daily by the teachers, three activities directly borrowed from the kindergarten context were selected: drawing, narration and dramatization. The contents of the activities were consistent with the subjects proposed by the teachers. The intervention was subdivided into nine different sessions (three sessions focused on each of the specific component), each lasting 45 minutes, carried out in a suitable room. Since the group was too large, smaller subgroups of 5-7 children were created. All the activities were conducted by the experimenter who had a stimulating and supporting function, by means of positive feedback, reinforcement and explanations. Drawing tasks aimed to promote visual perspective taking, and the activities of narration and dramatization were focused on understanding others' thoughts and emotions (cognitive and affective perspective taking).

Results

2.1. Scoring

In every test, for both cognitive and visual components, 1 point was given for the correct answer and 0 for the wrong one. For the 'Policeman task' a dual encoding was necessary. The total score, ranging from 0 to 9, was re-coded into a binary score (1–0): value 1 for scores higher or equal to 7 and 0 for those lower than 7. TEC encoding considered 1 point assigned for each component answered correctly. For each level, score can range from 0 to 3. Finally, by summing the score of each component, it was possible to obtain the overall level of emotion understanding, labelled total. The child can obtain in this level a score ranging from 0 to 9. On the affective perspective-taking task, children received 1 point for each emotion they correctly predicted. Each child could receive a total of 24 points on this task, with 12 possible points for accurately predicting their own emotions and 12 points for accurately predicting their friend's emotion.

The encoding of the scores provided the identification of three index of perspective taking (visual, cognitive and affective) obtained by the sum of the scores achieved in the tests related to these components. The scores of visual and cognitive perspective taking indexes could range from 0 to 2, whereas affective index from 0 to 33.

Moreover, the analyses of the behaviours frequency provided the creation of four behavioural categories (helping, consoling, sharing, aggressiveness) and a total index of prosocial behaviours by adding all positive behaviours (helping, consoling/encouraging, sharing) called total prosocial behaviour.

2.2. Analysis

In order to underline the efficacy of training, a within-subjects comparison (Wilcoxon's test) was conducted to verify the presence of significant differences between pre-test and post-test scores within the subjects of the same sample. With regards to the experimental group, there was a large significant difference between pre-test and post-test in the three dimensions of perspective taking: cognitive ($Z=-4.21$; $p=.004$), visual ($Z=-4.28$; $p=.020$) and affective ($Z=-3.98$; $p=.003$). Significant differences were found for the prosocial behaviours of helping ($Z=-4.50$; $p=.007$) and sharing ($Z=-3.18$; $p=.002$), for the score of total prosocial behaviour ($Z=-4.67$; $p=.003$), and for aggressiveness ($Z=-2.50$; $p=.039$). It is important to underline that all the mentioned variables increased in the post-test, except aggressiveness which decreased (Tab. 2). With regard to the control group, no significant differences for any variable were found.

In order to verify the real change obtained after training, we carried out a between subjects comparison of the scores of the experimental group and the control group using the Mann-Whitney test for both pre-test and post-test. Comparing the data obtained in the pre-test for both perspective taking and behaviours (prosocial and aggressiveness), no significant differences emerged between the two independent samples. Comparing the data obtained in the post-test for the same measures, there were significant differences in cognitive ($Z=-3.00$; $p=.001$), visual ($Z=-2.87$ $p=.043$) and affective ($Z=-2.58$; $p=.017$) perspective taking. There were also significant differences in the prosocial behaviours of helping ($Z=-4.46$; $p=.006$) and sharing ($Z=-3.09$; $p=.011$), and in total prosocial behaviour ($Z=-3.03$; $p=.025$). Specifically, the experimental group obtained higher scores.

In order to verify the maintenance of the positive results obtained by the experimental group in the post-test, we conducted a non-parametric statistical comparison between post-test scores and follow-up scores using Wilcoxon's test. This analysis did not reveal any significant differences between post-test and follow-up (Tab. 3).

Tab. 2 - Perspective taking and observed behaviour by experimental and control group in pre-test and post-test (means and standard deviations)

Variables		Experimental group				Control group			
		Pre-test		Post-test		Pre-test		Post-test	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Visual PT		1.30	0.37	1.63	0.65	1.22	0.65	1.31	0.45
Cognitive PT		0.87	0.66	1.38	0.78	0.94	0.73	0.99	0.82
Affective PT		23.92	1.94	29.67	1.82	24.12	1.32	25.32	0.98
Behaviour	Helping	3.74	2.52	6.34	2.42	3.85	2.95	4.12	2.60
	Consoling	1.79	1.37	1.86	2.21	1.57	1.54	1.69	1.27
	Sharing	24.29	8.39	34.36	8.39	23.72	7.79	24.91	8.02
	Aggress.	0.87	1.02	0.46	1.08	0.74	1.00	0.81	1.64
	Total	29.46	7.94	41.74	8.02	28.74	7.12	29.95	7.45

Tab. 3 - Perspective taking and observed behaviours by experimental group in pre-test and follow-up (means and standard deviations)

Variables		Experimental group			
		Post-test		Follow-up	
		Mean	SD	Mean	SD
Visual PT		1.63	0.65	1.68	0.72
Cognitive PT		1.38	0.78	1.43	0.85
Affective PT		29.67	1.82	30.25	2.15
Behaviours	Helping	6.34	2.42	5.98	2.47
	Consoling	1.86	2.21	1.98	2.02
	Sharing	34.36	8.39	32.87	8.57
	Aggress.	0.46	1.08	0.51	1.24
	Total	41.74	8.02	40.47	8.41

Discussion and conclusions

The general summary of the obtained results can be considered extremely interesting both from a theoretical and applicative point of view. In reference to the possibility of promoting perspective taking ability through a specific training, the results revealed a positive change in scores of the all three dimensions. With regard to the second goal, only the experimental group, which comprised children who displayed an improvement in the ability of perspective taking, showed a significant increase in prosocial behaviour, accompanied by a decrease in aggressiveness. Therefore children with a greater ability of perspective taking are also more inclined to behave in a prosocial way. Finally, the follow-up session demonstrated the maintenance of the acquired abilities. The scores of the experimental group did not show any significant differences between the results of the post-test and follow-up phase, confirming that the changes in the children's skills recorded after the training remained even after a period of four months.

These positive results showed the possibility to promote perspective taking ability of preschoolers. Indeed, training with a small group of children, conducted in the familiar context of kindergarten, and through the use of well-known methods, could facilitate the acquisition of this important ability. The results also confirmed the relationship between the ability to understand other people's point of view and the development of prosocial ability. Therefore it is possible to conclude that children with a greater ability of perspective taking are also more inclined to behave in a prosocial way during peer interactions. Another important aspect is that unlike the majority of studies which have considered only variables obtained through child's answers to individual tasks, the present research included behavioural variables directly observed in school contexts. Finally, the present study was one of the few which considered all the dimensions of perspective taking and in view of the positive results of specific interventions, the development of training programs which provide activities aimed at strengthening all three dimensions of this ability would be recommended.

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Decision-making under uncertainty among children victims of maltreatment: "*Attentionally*" sensitive or not?

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Abstract

Yet abuse can have multiple impacts on the life of an individual, the fact remains that very few researchers have examined the abilities of real-life affective decision-making among young victims of abuse, according to an adaptive perspective. This exploratory study documents within a cohort of 25 preadolescents who have been victims of maltreatment, the links between learning strategies and competences to make advantageous choices over the duration of the Hungry Donkey Task, in relation to levels of ADHD (CPT-II) and depressive symptomatology (TSCC). The magnitude of ADHD or depressive symptoms did not seem to impact globally the learning strategies of participants throughout the HDT. Differences were found according to more subtle symptoms or competencies erosions, like the lessening of sustained attention. Young victims exposed to an adverse living-environment may become rapidly sensitive and *competent* to detect a potential occurrence of threats, punishments or rewards, because it could increase their chances of survival.

Keywords: maltreatment, children, vigilance, affective decision-making, emotion, adaptability

Introduction

Socio-affective and cognitive developmental deficits related to child abuse are strongly documented, especially in regards to I.Q., memory, attention and executive functioning [1], decision-making and risk of psychopathology [2], [3], [4]. However, few studies looked at these interrelations from an adaptive standpoint. Adverse experiences associated to child maltreatment, may cause significant and chronic stress that could impact young developing brain structures of the child [5], [6], [7], [8]. The lateral and medial prefrontal cortex, as well as the anterior cingulate cortex and amygdala regions could be impacted by child maltreatment [9]. These brain regions are all involved in affective decision-making (ADM) processes.

The Damasio somatic marker hypothesis [10], provides interesting cues to explore constructs of such underlying processes with this clinical population. It suggests that bodily states evoked by the experience of reward and punishment, *« signal »* the potential occurrence of a potential outcome, which could guide a more accurate *« anticipation »* of this outcome. From an adaptive perspective, these signals should « *guide* » the behavior, in a manner that is advantageous to the individual in the long run. These signals are strongly interrelated with internal states, in order to "guide" the process of day-life decision-making. It seems that the ability to make advantageous choices in the long run would not develop before the end of adolescence [11], as the prefrontal cortex, particularly the ventromedial prefrontal cortex is involved. Full development of this structure occurs in late adolescence [12], [13], and some authors even suggest that the prefrontal region could continue its development in the early years of adulthood [14]. Crone and van der Molen [15], spoke about the "future myopia" in children ADM, due to the late development of these structures. Then, children might experience some difficulties in anticipating future consequences (good ones or bad ones). These authors studied ADM under uncertainty with normal children using the Hungry Donkey Task (HDT – and adaptation of the IOWA Card Gambling Task for children). They found that between age 7 and 12, normal children tend to opt for choices that yield high immediate gains in spite of higher future losses. Geurts and colleagues [16], found that ADHD children do not show particular *affective* DM deficit at the HDT. However, Masunami et coll. [17] used a task similar to the IOWA Card Gambling Task and concluded that ADHD children seem to pay less attention to punishments (losses) and more attention to rewards, suggesting some sensitivity to immediate gratification. Furthermore, they appear sensitive when the frequencies of losses increase, but seem "blind" to their magnitude.

However, if the task is administered twice, the ADHD children adapt their decisions and consider magnitude of looses, suggesting adaptive strategies.

What about ADM skills of children victims of severe maltreatment, often affected by attentional deficits, disruptive behaviors, anxious and depressive symptoms [18]? Some authors have directed their research towards children who have experienced abuse. Using an ADM task involving different probabilities of obtaining gains, Guyer et als [2], wanted to assess the possible links between abuse and the reward system in the ADM processes. They included in their study participants affected by mental illness (mood disorder, posttraumatic stress disorder, ADHD, oppositional defiant disorder and conduct disorder). They found that children who experienced abuse were selecting risky options faster than the controls, suggesting that these children may have a higher level of excitement, a central symptom of post-traumatic stress disorder and impulsivity characteristics. They suggested that the stress of abuse may have altered the reward circuit, causing an increase in impulsive responses and decreased sensitivity to rewards. Weller and Fisher [3] obtained similar results: it seems that young abuse victims are more likely to take risks to avoid a loss and they do not adjust their decisions according to the *expected* values. However, could it be possible that in some way, child maltreatment could also shape the brain structures in order to simply *detect* efficiently targets associated to potential punishments or threats, real or perceived [19], [20]? Yet abuse can have multiple impacts on the life of an individual, the fact remains that very few researchers have examined the abilities of real-life ADM among young victims of abuse, according to an adaptive perspective. In this exploratory study, we did so in considering their attentional abilities and depressive symptomatology as moderators of the ADM skills.

Objective

Explore within a cohort of 25 preadolescents who have been victims of maltreatment, the links between learning strategies and competence to make advantageous choices over the duration of an ADM task, in relation to levels of ADHD and depressive symptomatology, and attentional competences.

Method

1.1 Participants

Twenty-five children (8 girls and 17 boys) aged from 8 to 11 years old (M = 9.9; SD =1.2) participated in the study. Participants were currently receiving child welfare and protection services, according to the Quebec Youth protection Act. In fact, 68% had been victims of neglect in the past, 20% of physical abuse, 20% of psychological violence, and 20% were abandoned by their biological family. About 72% of them had 2 or more legal grounds for seeking child protection services (i.e. they were poly-victimised in the past). Among the participants, 32% were living in community homes at the time of the data collection, 32% in foster families, and 36% were living with their biological parents.

1.2 *Measures*

1.2.1 Independent variables

The *Continuous Performance Test II (CPT-II)* [21], was used to assess symptoms of ADHD and attentional competences. In this computerized test lasting 14 minutes, participants have to press the space bar or click the mouse button when a letter other than "X" shows up on the screen. Letters appear on the screen with different time intervals (1, 2 or 4 seconds) between each ones. CPT-II has good psychometric properties and is widely used in research and for clinical purposes. We used the *Hit RT Block change T score* for assessing the ***sustained attention*** ability; *Hit RT ISI change T score* for assessing ***vigilance*****;** and the *Global confidence index T score* for assessing the probability that the subject fits a clinical (or a non-clinical) ***cognitive profile of AHDH***.

We used T scores at the *Depression sub-scale* of The Trauma Symptom Checklist for Children (TSCC) [22], to assess levels of depressive symptomatology. The TSCC was answered by the child in the presence of an evaluator who was reading the questions. It's a self-report measure for children between 6 and 18 years old with 54 items and six clinical scales (anxiety, ***depression***, anger, posttraumatic stress, dissociation and sexual concerns). The TSCC is widely used in research and for clinical purposes with children who had experienced maltreatment. It has good psychometric qualities (internal consistency of 0.85 to 0.87) [23].

1.2.2 Dependent variables

To assess ADM, we used The Hungry Donkey Task (HDT) [15], [11], an experimental task that models real-life « affective » decision-making. This tool was created according to the adaptive perspective framework of the "*somatic marker hypothesis"* [12]. The HDT is an adaptation for children, of the IOWA Card Gambling Task [24]. We used a standard task with 200 trials, where the child is faced to 4 doors on a computer screen, all

equal in size and appearance. A "hungry donkey" sits below the door and the participant is told to assist the hungry donkey to collect as many apples as possible, by choosing one of the doors in pressing appropriate buttons on a standard keyboard. Each choice could result in a gain or loss of apples, and the goal of the task is to maximize the amount of apples. The variation of gains and losses magnitude and frequencies through different trials among the doors are controlled. On the long run overall, doors C and D are the most advantageous choices, with low-paying gains but losses of smaller magnitudes. In contrast, doors A and B are high-paying doors but with higher punishment magnitude. Frequencies of punishments are equivalent between doors A and C and between doors B and D. To assess *learning strategies* (i.e. the ability to learn on the long run, that Doors C and D are the most advantageous choices), we calculated the ***net scores differences*** (C+D) – (A+B) for each block of 20 trials over the course of the task. We also computed the frequencies of ***doors choices*** (i.e. number of doors A, B, C or D chosen) for each block.

1.3 Analyses

We made *t* tests to look at means differences between median split subgroups, for all the independent variables, namely: CPT II Confidence Index (probability to fit with a clinical profile of **ADHD**), **depression** T scores at TSCC, Hit RT Block change at CPT-II (**sustained attention**) and Hit RT ISI Change (**vigilance**).

To examine whether the number of advantageous choices at HDT (net score differences (Doors C+D) – (Doors A+B)) differed in function of ADHD confidence index, depressive symptoms, sustained attention and vigilance, a series of repeated ANOVAS were performed : 2(Low vs. High ADHD confidence index) X 10 (Task Block); 2(Low vs. High Depressive symptoms) X 10 (Task Block); 2(Low vs. High Hit RT Block Change T score) X 10 (Task Block); 2(Low vs. High Hit RT ISI Change) X 10 (Task Block); where « Task Block » represents a division of the HDT task in segment of 20 trials. A series of repeated ANOVAS were also performed for each of the independent variables in regards to Door Choices through the course of the task (i.e. Doors A, B, C or D).

Results

Means differences for median split subgroups were statistically different for all the independent variables: CPT-II Confidence Index T scores for **ADHD** (Lower n=13 (M=47.00, SD=11.64); Higher n=12 (M=75.76, SD=8.83); $t(23) = -6.91$, $p < .001$); **depression** T scores at TSCC (Lower n=12 (M=42.67, SD=6.01); Higher n=13; (M=62.00, SD=10.10); $t(23) = -5.75$, $p < .001$); CPT-II Hit RT Block Change T scores (**sustained attention):** (Lower n=12 (M=47.50, SD=6.92); Higher n=13 (M=67.01, SD=8.75); $t(23) = -6.15$, $p < .001$); and CPT-II Hit RT ISI change (**vigilance**) :(Lower n=13 (M=44.54, SD=5.92); Higher n=12 (M=61.96, SD=9.70); $t(23) = -5.47$, $p < .001$).

We did not observe a significant progression of the **net score differences** over the duration of the HDT task for all the participants, globally speaking (F (9, 15) = 0, 94, p = 0.52). So time sequence seeemed not to be related to a significant improvement or impairment of learning strategies, overall. There was either no interaction effect between time X CPT-II Confidence Index score (figure 1), so the fact remains that having a clinical confidence index higher or lower has no influence on the HDT performance throughout the progression of the task (F (9, 15) = 1.09, p = 0 42). However, children matching with a non clinical ADHD profile tend to perform better in general (average net score greater - F (1, 23) = 4.13, p = 0.054)[1], but did not show specific improvement over the duration of the task. For Door choices, no significant difference was observed between the groups.

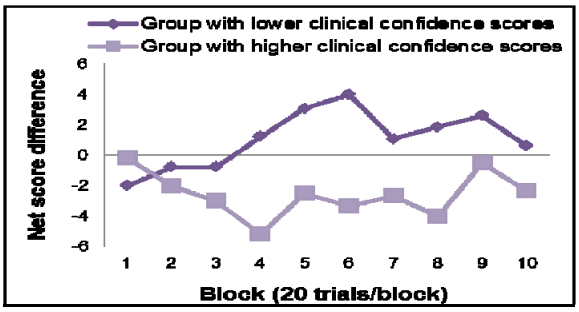

Figure 1. Net score difference (Doors C+D)- (Doors A+B) X block of 20 trials X CPT-II confidence index score.

[1] (η^2 =.15)

Regarding reported depressive symptomatology, no time X Depressive TSCC T scores effect was found ($F(9, 15) = 0.64$, $p = .75$) and both groups (higher and lower depressive children) performed equally well ($F(1, 23) = 0.43$, $p = .52$) (figure 2). Thus, regardless of the intensity of the reported symptoms, the two groups showed generally the same kind of learning strategies throughout the task.

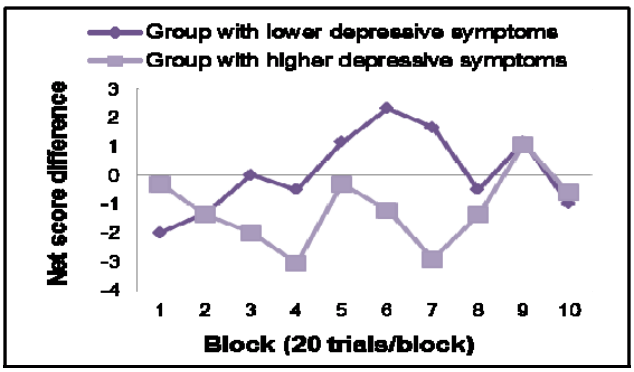

Fig 2. Net score difference (Doors C+D)-(Doors A+B) X block of 20 trials X depressive sx at TSCC.

However, children reporting greater depressive symptoms choose Door A more often ($F(1, 23) = 6.89$, $p = .02$)[2] and took more time than less depressive children to change their strategy about Door A ($F(9, 15) = 3.06$, $p = .01$)[3] (figure 3). Door A is a high-paying door, with frequent punishments of smaller magnitude than Door B. Yet choosing Dorr A a little bit more often, did not make children with higher depressive feelings less competent in terms of global net scores differences. We found no difference regarding other Doors choices according to the depressive symptoms.

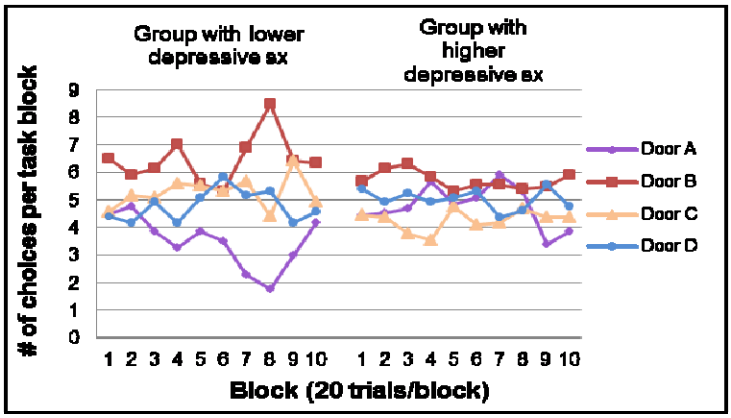

Fig 3. Number and nature of HDT Door choices X block of 20 trials X depressive sx at TSCC.

For attentional ability, we found no time X CPT-II Hit RT Block Change effect for sustained attention (F (9, 15) = 1.61, $p = .20$) (figure 4). However, children showing better sustained attention abilities (n=12) made globally more advantageous choices at HDT (F (1, 23) =6.62, $p = .02$)[4]. They choose less often Door B ($F(1, 23) = 6.60$, $p=.02$) and marginally more often Door C ($F(1, 23) = 3.09$, $p = .09$) (see figure 5).

[2] ($\eta^2 = .23$)

[3] ($\eta^2 = .12$)

[4] ($\eta = .22$)

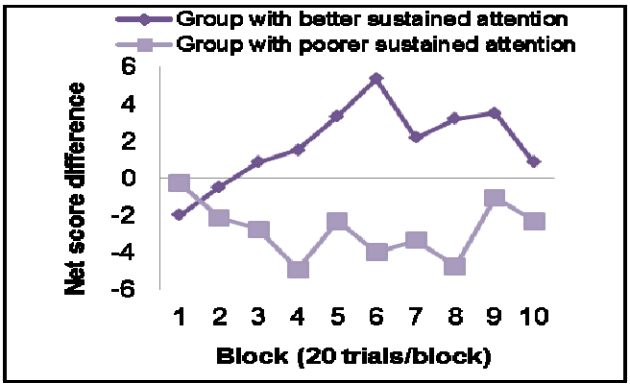

Fig 4. Net score difference (Doors C+D)-(Doors A-B) X block of 20 trials X sustained attention performance at CPT-II (Hit RT Block Change).

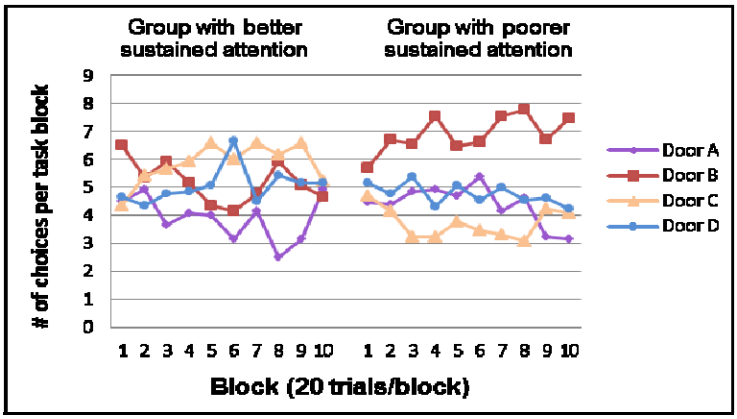

Fig 5. Number and nature of HDT Door choices X block of 20 trials X sustained attention at CPT-II.

For vigilance, no time sequence X CPT-II Hit RT ISI Change was found ($F(9, 15) = 0.69$, $p = .71$) and children showing more or less vigilance competence at CPT-II performed equally well through the duration of the task ($F(1, 23) = 1.70$, $p = .21$) (fig 6). There was no difference for Door choices according to vigilance ability levels.

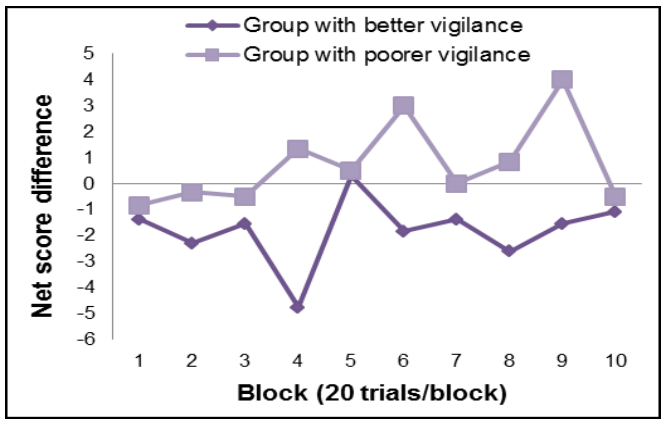

Fig 6. Net Score difference (Doors C+D)-(Doors A+B) X block of 20 trials X vigilance performance at CPT-II (Hit RT ISI Change).

Conclusion

This exploratory study looked at ADM abilities among children who have been victim of abuse, and its interrelations with attentional functions and depressive symptomatology as moderators of such ADM skills. The absence of a control group is a serious limitation to our study and prevents generalization or any firm conclusion arising from our findings. Nevertheless, a visual inspection of our data compared to the ones published by Crone and van der Molen with a sample of children from the general population [15], suggests that the participants in our study showed pretty good performance in ADM, as assessed with HDT. On the first 100 trials of the task,

they seemed more competent than children of the Crone and van der Molen study of their age, and made more conservative choices. Furthermore, participants were able to maintain their anticipation of gains and losses throughout the task, even if the HDT version we used was two times longer (200 trials) than the one used by Crone and van der Molen. Our explanatory results question some research conclusions suggesting that maltreated children show risky or even low ADM skills [3]. To what extent is it truly the case in their really-life contexts? Clinically speaking and from an adaptive research perspective, we suggest a more nuanced way of seeing things, and urge for more research on ADM skills with this population.

In our study, participants who reported *higher depressive feelings* showed a Door choices response pattern a little bit more random: They took more time to combine both frequency and magnitude of punishments in their learning strategies into a higher proportional reasoning rule, in order to realize that Door A was not such a good choice over time. This could be related, partly, to cognitive problems associated with more important depressive or psychological suffering states, but it didn't seem to impact overall their ability to adjust themselves to the task. In fact, both groups of children performed equally well on net scores differences, notwithstanding the levels of depressive feelings reported. It was almost the same for ADHD symptoms levels. In sum, the magnitude of ADHD or depressive symptomatology did not seem to impact the learning strategies of participants or, in other words, their ability to make more and more (or less and less) advantageous choices throughout the HDT. So no specific major deficit in ADM was found as in the study of Geurt et al. [16], but participants with less probability to fit a cognitive ADHD clinical profile, tended marginally to perform better overall. This was especially the case for children showing better sustained attention capacities. Surprisingly, the children of our sample performed equally well over the duration of the HDT, regardless of their levels of vigilance as assessed by the CPT-II. This suggests that all the participants were able to stay equally competent for *"detecting"* a signal when an occurrence of a reward or a punishment was involved, even if they appeared to be less vigilant at CPT-II, a task involving a more "neutral" stimulus (emotionally speaking).

The small sample size, another serious limitation of our study, could prevent us to detect some difference for gender, as for other constructs we discussed above. But the fact is that *we did find* some interesting differences, with good statistical power. Furthermore, such differences involved more subtle symptoms or competencies erosions, like the lessening of sustained attention. According to the adaptive functionality of emotions in day-life ADM [25], [26], it is possible that maltreated children may become rapidly sensitive and competent to *detect* a potential *occurrence* of threats, punishments or rewards in their environment. They could develop sooner good *vigilance* capacities, because it's crucial for increasing their chances of survival to stay alert in an adverse living environment. We may expect that they could become competent to *correctly anticipate* and respond to these occurrences in a proper way, as long as their sustained attention capacities are not overloaded or too much affected. The "developmental cost" they pay to stay vigilant seems, nevertheless, very high… [27].

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What's inside child's self? Mother's view, child's view

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Abstract

The child's self at the age of 5 years reaches a rather complex stage of self-reference encompassing dynamic interrelationship with advancing cognitive abilities and emotional competencies. Theoretical and empirical evidence draws conclusions about the narrative, self-enhancing and self-monitoring essence of the construct at that age integrating repercussions of intersubjective experience.

The aim of this investigation was to analyze the developmental attributes of the child's self at the age of 5 years. A semi-structural interview was addressed to 18 dyads of a child and his/her mother. Thematic analysis of the sense of self (a child's view) and perception of the self (his/her mother's view) covered the domains of intersubjective relatedness, I-self and Me-self, and continuity over time.

Our findings detalize the attributes of the child's interactional self and narrative self. Intersubjective experience served as a basis for a declarative self-reference. Children sense their self in terms of internal states and episodic events, whereas their mothers perceive it in terms of emerging personality characteristics. A shared meaning in paired opinions was obvious concerning rule-obedient behavior but little concordance was apparent speaking of emotional states with emphasis on child's sensitivity to evaluative and comparative characteristics. All participants perceived the past and present self from the perspective of ever-increasing abilities and broadening experience.

Keywords: self, early childhood, narrative, intersubjective experience.

Introduction

Introduced more than a century ago, the "self" became an important component of many constructs – representation, esteem, image, boundaries, constancy, regulation, construals (the latter – after the seminal work of Markus & Kitayama, 1991) among others. These constructs are of different levels of abstraction, for instance, self-esteem is a function of self-construal which comes from a self-schema. Most often the self stands as an object of psychological phenomena (e.g., self-image, self-representation), sometimes – both as an object and a subject, e.g. Baumeister and Vohs (2011) claim self-regulation to be an exertion of control over the self by the self.

Contemporary psychology has a special focus on mind and the self (Damon & Lerner, 2008). A progressive pathway of the self during the life-span is intertwined with (but not identical to) the development of cognitions, emotions, interpersonal relationships. As a result, influential psychological paradigms contribute to conceptualization of the self. From a cognitive-developmental perspective, the self is, first and foremost, a cognitive construction because a particular cognitive mindset of every developmental period inevitably influences the self-system (Harter, 2008). This approach tracks and expands the idea of Piaget that the child actively constructs his own development through constant social interactions. A psychodynamic view introduced another issue – that of the primacy of emotional experience as a source of the self. According to Winnicott, the self originates in the relationship between an infant and his mother and "describes… something of life in a direct way" (Schacht, 1988, p. 516). Mahler with her colleagues (Mahler, Pine, & Bergman, 1975) considered this construct as the core of the personality and came up with the terms of "states of self". Kohut (1971) made an important distinction between the ego and the self where the former represents a distant relationship with experience while the latter stems from the first-hand experience and is not a structural part of the psyche. Leaving aside the differences between the two frameworks, they outlined two-fold guidelines for field-specific research: (a) both cognitive and emotional components are intrinsic components of the self from the birth onwards; (b) both of them explained a distinct expression of the self during particular developmental stages (e.g. why children with top-tier cognitive abilities have a fragmented self).

Thorough clinical observations and insightful investigations proposed elaborate explanations of the development of the self from the earliest form of psychophysiological self (Jacobson, after Mahler, Pine, & Bergman, 1975) through infancy and childhood (Kopp, 1982; Sroufe, 1997; Stern, 1985, 2006; Rothbart, 2012). From the emergence of conscious life the self is engaged in a double-edge relationship with reality – orchestrating the encounter with ongoing challenges and representing most salient repercussions of experience.

Navigation in databases on the keyword "child's self" suggests its connections with self-control (Coyn & Wright, 2014; Neubauer, Gawrilow, & Hasselhorn, 2012; Garon, Longard, Bryson, & Moore, 2012), self-regulation (Caughy, Mills, Owen, & Hurst, 2013; Kim-Spoon, Haskett, Longo, & Nice, 2012; Pino-Pasternak & Whitebread, 2010) to mention but a few. The scope of investigations usually covers the type of self-regulation or a target activity. However, the content and structure of the self deserves a detailed evidence-based account in all the periods of child's life. Limited attention was paid to certain developmental attributes of the self, though, for instance, self-reflection plays a critical role in self-regulation during childhood (Lyons & Zelazo, 2011).

We already consider that till the end of early years the self undergoes very intense development and reaches the stage of verbal forms (Stern, 1985), self-monitoring (Sroufe, 1997), self-enhancement and extension (Allport, 1955). As the development of the self is characterized by a nonlinear, non-deterministic character of emergence (Donohue, Wise, Romsky, Henrich, & Sevcik, 2010; Smiley & Johnson, 2006), knowledge of an ordinal sequence offers little understanding of individual differences and particular attainments of the development of the self which children succeed at or fail to seize. Our study raised an issue about developmental attributes of the self which children acquire at the intersection between early childhood and preschool years. Subsequent research questions sought to clarify the following: 1) in reference to what kind of attributes do children reflect their self?, 2) is the self multidimensional?, 3) what is the content of shared reflections from parent's and child's perspective?, 4) what expressive language is used to describe the child's self?

Method

The aim of this investigation is to analyze the developmental attributes of the child's self at the age of 4–5 years.

18 dyads of children and their mothers took part in the investigation. All participants were typically developing Lithuanian children from families of middle SES.

The data were collected using a semi-structural interview. Its questions were formulated with reference to theoretical studies on the early development of self – on social space as the birthplace of self (Cooley, 1902), on *I-self* as a subject and *Me-self* as an object (James, 1890), on self-identity through time (Allport, 1955), and on the domain of intersubjective relatedness (Stern, 1985). We formulated 5 opening questions with several subordinate questions and addressed them to the child and his/her mother. They covered awareness of personal strengths, affective bonding, and self-continuity.

Results and Discussion

Our findings are lined up along two main streams of the results – that of a child's interactional self and that of a narrative self (see Figure).

Across all the domains the child's self was perceived on the basis of apparent inter-subjective characteristics via a full scale of relations with his/her closest family members and friends. Inner relatedness with parents served as a basis for internal standards. This is consistent with Hart's (2008) note that the self develops and reorganizes itself on the basis of relational experiences. Dialogical existence of important other people appeared quite friendly and ensuring, however sensitive issue from the children's point of view., it was supplemented with some kind of comparative notes found in their mothers' interviews ("she is so different from her sister", "absolute contrast to his brother"). That feature of an intrapsychic arrangement gives us some clue for counseling, namely, suggesting that parents should be aware of their children's susceptibility to comparative evaluations. This factor can threaten a stronger base of mutual trust.

Predominance of evaluative terms speaks in favor of emerging objectification of the individual which is closer to *identity*, i.e. named and defined by a social context, recognized by one's similarities and differences from others, than to *self*, i.e. entirety of personality (Gerson, 2014). It was and will be a shared meaning of family life, gaining its verbal shape with advancing language abilities of the offspring. Case (1991) also indicated the start of declarative descriptions at that developmental stage – "…children can now take themselves as explicit objects, i.e. as objects of reference, their implicit sense of themselves should also become something they can focus on directly…" (after Rothbart, 2012). Our investigation was obviously more sensitive to explicit characteristics, not the implicit ones, which would be more easily available through detailed here-and-now observation. Concordance in paired opinions was obvious when dealing with the roles "to be good" and "to behave well". This also speaks in favor of a strong layer of intersubjective self (Stern, 1985), the epicenter of *looking glass self* (Cooley, 1902). Little shared meaning was apparent speaking of internal constructs –

emotional states. Children speak of their self in terms of emotional states, whereas their mothers – in terms of personality characteristics.

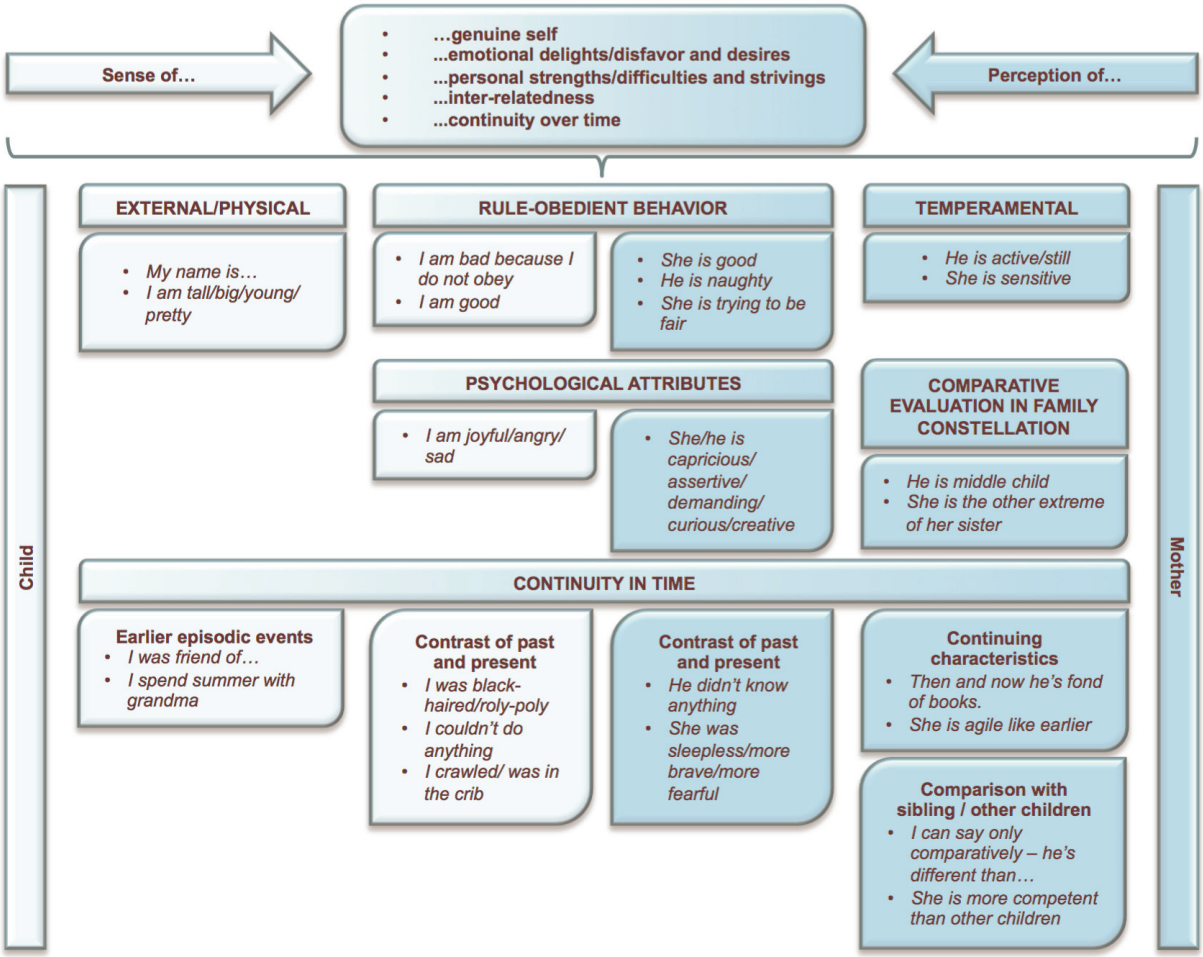

Figure. A schematic presentation of the interview questions and the main nodes with illustrations.

Our findings support the evidence of the narrative self. Stern (2006) delineates that the self of 4–5-year-olds is a subjective organizing perspective about himself/herself which takes the form of a narrative embracing already developed senses of *core*, *subjective*, and *verbal* selves. This was most obvious in coherence of past and present experiences. Herewith, from time perspective mothers encompassed an all-round picture with unique and distinct features of their offspring that draw our attention to the self as an enduring subjective nucleus (Bruner, 1990). We dared look at the child's narratives from the perspective of narrative construals (Bruner, 1996) being aware of their adherence to a more mature population. Nevertheless, the child's narratives were approaching the criteria of temporality, particularity, reasoned actions, and implied canonicity. Children's accounts were constructed in a sequential time perspective, situated in a specific context where internalized others activated their roles, with a flavor of authentic personal agency and an implied theory of mind. In regard to these features, Rothbart (2012) equated the child's narrative self with an autobiographical one characterized by the placement of the self within episodic events and in relation to the acts and the inferred thoughts and emotions of others. All participants perceived the past and present self from the perspective of ever-growing abilities and broadening experience: children referred to salient physical attributes and episodic events while their mothers remembered upbringing and emergence of psychological traits.

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Path Integration in German and Namibian children

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Abstract

In the presented study, 18 kindergarten and 50 preschool children (range 1.9 yrs. to 6.7 yrs.) living in the Omaheke Region (Namibia) were led along a path of about two kilometres in length, in a macro spatial environment. Every child had to stop at six locations along the path and was asked to point to two different targets. One of the targets was the starting point and another a well-known object nearby. Neither of the targets could be seen from the pointing location. First the children had to point with their outstretched arm and finger and afterwards with a mechanical pointer. The angle deviation between correct pointing and children's actual pointing was taken as a measure of children's spatial orientation ability. Comparison of the results with German kindergarten and preschool children indicated that Namibian children as young as two to three years old performed better than German preschool children.

Keywords: children, path integration, spatial orientation ability, Namibia

Introduction

Path integration is the ability to demonstrate knowledge on bearing and distance of the direct connection between two points that are not directly connected. It is measured by taking the difference between distance estimates and actual distance or by angular deviations between pointing direction and actual direction. Several models and theories explained the ontogenetic development of orientation and navigation in large scale environments. The most popular theory, based on Piaget and Inhelder (1975) was elaborated by Siegel and White (1975), claimed that a child has to go through four developmental stages in serial, the order has to be followed chronologically until it reaches the highest stage of development. According to this theory, kindergarten children would be unable to point to a starting point of a path they have just followed. On the contrary, Hazen, Lockman and Pick (1978) disapproved of Piaget's preoperational stage. They claimed that children would remember a certain path due to the possession of kinesthetic memory. To demonstrate this claim, they tested children from three to six years old in a virtual reality condition and found out that these young children were able to remember the correct path with the help of various landmarks. A similar result was found by Simms & Gentner (2014), four and five year old children were found to possess and utilize an early form of landmark knowledge.

Previous Findings

In the previous study, we compared a group of kindergarten children in Namibia to an age- matched group of children in Germany (Neidhardt & Popp, 2012). Within the German group, the children either walked a certain route alone, or accompanied by adults. As the Namibian children were used to walk independently in their environment it was hypothesised that their pointing precision will be better as compared to the German children's. The results demonstrated clearly that Namibian children outperform their German comparison group (figure 1). Four to six year old Namibian kindergarten children point significantly better than German children of the same age ($p<.005$, $\eta 2=.20$). Figure 1 additionally showed the difference between the German children who walked alone as compared to those accompanied.

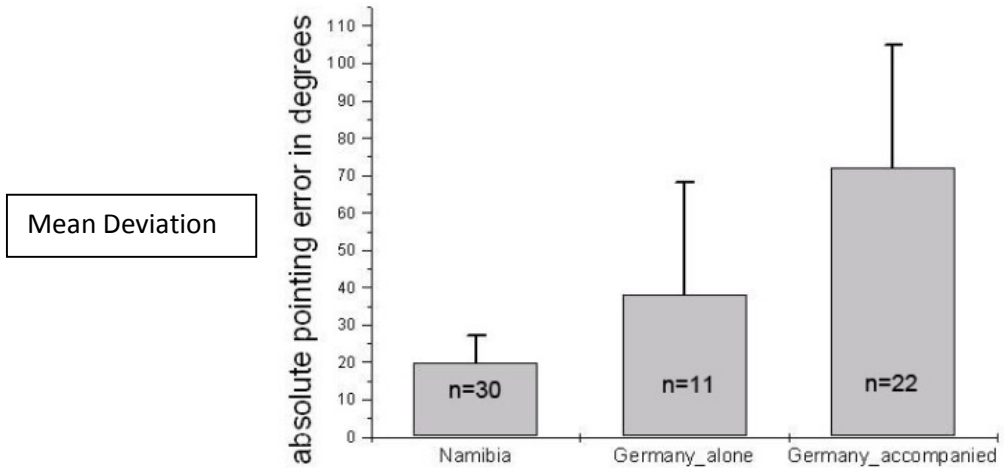


Fig. 1. Comparison of pointing precision from kindergarten children in Namibia to same-aged kindergarten children in Germany that are additionally divided into alone walkers (middle) and accompanied walkers (from Neidhardt & Popp, 2012)

To summarize, children who actively explore their environment develop better spatial orientation in macro environments. In the following experiment, we tested whether the same results also hold for younger Namibian children.

Method

Subjects: 18 children (mean age=3.2yrs., sd=0.5 yrs.) from a kindergarten (Martyr of Uganda Kindergarten) in Witvlei, a small rural town nearby Gobabis/Namibia, and 50 preschoolers (mean age=5.6 yrs., sd=0.4 yrs.) from the Nossob Combined School participated in this study.

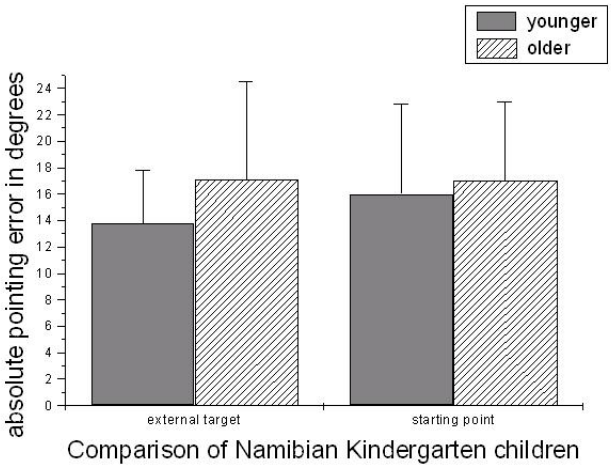
Procedure: At the beginning of the experiment, all children's demographics and wayfinding experiences were obtained. All children reported that they had been walking around the school location without being guided by adults or older siblings. Hence, the areas around the kindergarten and pre-primary school were familiar to most of the children, including the path they walked as part of this research project.

The path started at the front gate of the kindergarten and continued as a closed path through the kindergarten environment. The target area was a very rural town in the Omaheke Region with small houses and shacks, either made out of stones, of mud or often also out of corrugated sheets. Paved roads did not exist, only dirt roads were available. The Transkalahari highway was about 3 km away from the area and was leading either to Windhoek (150km) or to Gobabis (45km).

Each child had to walk the same route through the area, accompanied by the experimenter. At six fixed points along the path they had to stop and were asked to point to two different targets. One target was always the starting point and the other one was the gate of a big soccer field. Both pointing targets could not be seen from those six pointing locations. First the child was requested to point with an outstretched arm and finger to the target and afterwards with a pointer. The angle of the pointer was recorded, measured by a compass and then compared with GPS data of the location.

Results

Figure 2 demonstrated the almost perfect performances of Namibian kindergarten children and preschoolers. The comparison of both groups showed that there were no significant main or interaction effects with respect to age or target. The pointing accuracy of younger Namibian children is within the compass measuring accuracy, which was estimated to be around 20°.



Mean Comparisons

Age group		mean	standard deviation	N
mean deviation starting point	<=4	15,50	6,80	18
	>4	16,89	6,00	50
	all	16,73	6,17	68
mean deviation external point	<=4	13,78	4,01	17
	>4	17,09	7,43	49
	all	16,24	6,85	66

Fig. 2. Results of pointing task of Namibian kindergarten and preschool children

Compared with the previous study (figure 1) the analyses showed that even two to three year old Namibian children performed better than German preschoolers and as good as Namibian preschoolers (figure 3).

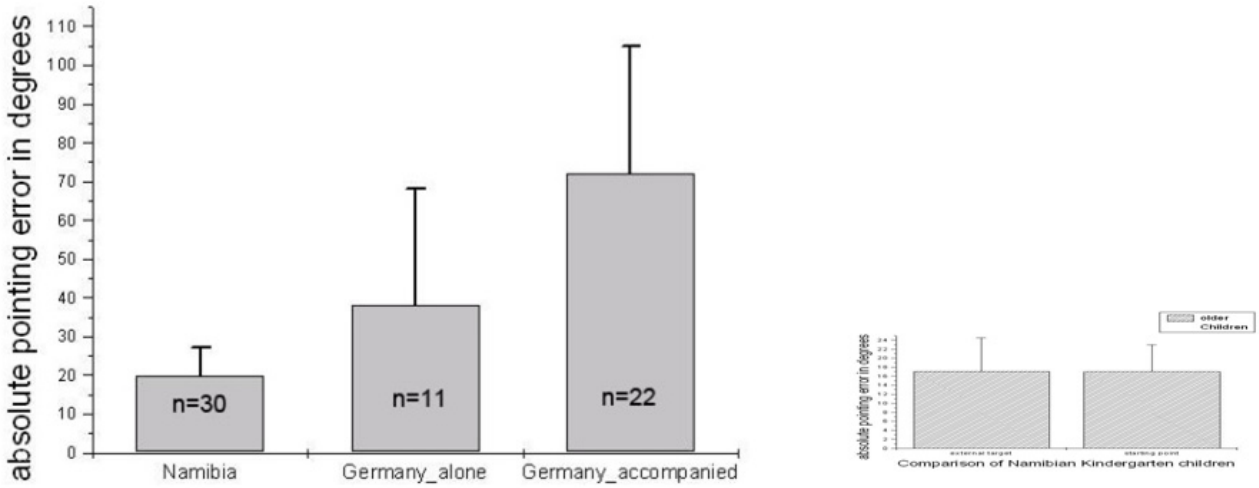


Fig. 3. Pointing performance of Namibian and German preschoolers compared to young Namibian kindergarten children.

The results show perfect pointing for all Namibian groups and for both target locations within measuring accuracy. This replicated previous findings and showed in addition, that Namibian toddlers have better path integration competencies than German preschoolers.

Discussion

A central factor for path integration performances seems to be the children's everyday activities in their familiar environment (Neidhardt & Schmitz, 2001).

The results of the study showed that even children at the age of two years from Namibia were able to point correctly to non-visible targets. This knowledge disproves the cognitive development theory of Piaget & Inhelder as well as the model of Siegel & White. Self- directed path finding experience is an influencing factor for pointing accuracy across ages and experimental conditions. Path integration competencies seem to be fully developed in Namibian children at the age of two to three years.

In this case only children from rural areas have been tested in an environment that had been familiar to them. It would be interesting to see how the results would change if children were tested in an unknown terrain.

It would also be very informative to find out the orientation abilities of kindergarten children and preschoolers from an urban area in Namibia, such as Windhoek.

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Adoptive and Non-Adoptive Families: Same or Different in Attachment and Parental Stress?

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Abstract

At present new research on adoption are trying to explain the psychological adjustment of adopted children seeking answers in the children themselves or their parents. This paper studies the adult attachment and parental stress in adoptive families, and their relation to security in attachment behaviors and behavioral adjustment of children adopted. The participants in the study were 98 families: 40 adoptive and 58 non-adoptive families, who served as a control group. The adult attachment was evaluated by *Parental Bonding Instrument* [15], which measures the memory that people have about their relationships with their parents in childhood and adolescence (up to sixteen). To assess the magnitude of stress in the relationship between parents and their children below 12 years of age, was used the *Parenting Stress Index* [1]. The security in attachment behaviors of children was assessed by *Interview Measure of Attachment Security* [4, 5] and to assess the children´s psychological problems we used *Strengths and Difficulties Questionnaire* [9]. Comparative analysis revealed that adoptive mothers are not different from the control group comparing remembers they have on their relationships with their parents in childhood and adolescence. Moreover, the stress sources from adoptive and control families was proved to be qualitatively different. In adoptive families distraction/hyperactivity was the major source of stress, while in control families the lack of instrumental and emotional support from the couple was more relevant. In both types of families (adoptive and control), a significant and positive correlation between behavioral problems of children and the level of parental stress and higher parental stress was found appeared statistically associated with lower security in attachment behaviors of children adopted and non-adopted.

Keywords: adoption, family context, attachment, parental stress, psychological adjustment of children

Introduction

In the context of adoption, both children and parents actively contribute bringing uniqueness to the inner function of the family. Most studies have been mainly focused in the intergenerational transmission of attachment, finding relationship between attachment security and parental security in attachment behaviors of children adopted [22], however, there is little research on attachment of the adoptive parents [18, 6].

Indeed, there is greater scientific literature on parental stress in the context of the adoption [2, 3, 12, 17, 23]. So far, it has been studied the relationship between parental stress and the psychological problems of adopted children, being a strong relationship between the two variables [7, 8, 9, 11, 13, 14]. Also, the adult attachment has been related to the children attachment [22]. Particularly, there have been fewer empirical studies on safety in attachment behaviors of adopted children [4, 12, 20], and when it has been explored it has not been widely related to the characteristics of the parents.

This paper studies the adult attachment, measured by the memory of emotional relationships with parents in childhood and adolescence, and parental stress in adoptive families. It also discusses how these parent variables (adult attachment and parenting stress) are related with certain psychological variables of children (security attachment behaviors and psychological problems of children). It is expected that the adult attachment of the adoptive parents is not different from that manifested in the sample of non-adoptive parents. It is understood that their emotional stories do not have to be different. Also, there is a relationship between parental stress and emotional and behavioral needs of adopted children. Three main objectives are pursued in this work. First, to analyze whether there are differences in adult attachment and parental stress depending on the family (adoptive or non-adoptive). Second, to examine the relationship between adult attachment and parental stress and

security attachment behaviors of adopted children. Third, to study whether there are relationship between adult attachment and parental stress with the psychological problems of adopted children.

Method

1.1. Participants

The participants in the study were 98 families: 40 adoptive and 58 non-adoptive families. About the parents, the mean age was 43.90 years old (*SD* = 4.58) for the adoptive fathers and 43.05 (*SD* = 4.01) for the adoptive mothers. Among non-adoptive parents, the average age of the fathers was 39.46 years old (*SD* = 5.91) and 36.78 (*SD* = 5.34) of the mothers. The groups were matched for educational level (82.5% of the adoptive parents and 53.4% of the non-adoptive mothers held university qualifications).

Regarding adopted children (*N* = 40), all of them had been born in Russia and were three years old at adoption (*M* = 35.78 months, SD = 15.96). Their average ages were six years (*M* = 75.68 months, *SD* = 14.26); they had three years in the adoptive family (*M* = 39.90, *SD* = 14.25); and 27.5% were girls and 72.5% boys. The non-adopted children 50.0% were girls and 50.0% were boys.

1.2. Instruments and procedure

The adoptive families were contacted through two agencies that specialize in adoptions from Russia; the non-adoptive' comparison group was contacted through schools in the same region. The parents identified the adult who spent more time with the child. This was the mother in almost all cases, but four cases in the adoptive group, in which the father was interviewed. Data collection was performed in the families' home.

Adult attachment was assessed using the *Parental Bonding Instrument* [15]. A pair of questionnaires containing 25 items related to behaviors and attitudes must be filled. One questionnaire is based on the memories of the relationship with the mother during infancy and another questionnaire is referred to the father. It provides a score on the scales of affection and overprotection and the types of attachment that people remember having with their primary caregivers (optimal parenting, neglectful parenting, affectionate constraint and affectionless control).

The parental stress was assessed by *Parenting Stress Index* [1]. This was administered to the parents of children. It allows a total stress score to be extracted, distinguishing between those sources of stress most linked with the child characteristics, others most closely related to the parents and, lastly, those associated with the environment and stressful life events.

Attachment security behaviors was measured by the *Interview Measure of Attachment Security* [4, 5]. This test is applied as a parent interview, lasting approximately 15 minutes. It presents 23 items and evaluates security attachment behaviors of children with specific person participating in the interview. The scale offers a total score attachment security.

To assess the children´s psychological problems we used *Strengths and Difficulties Questionnaire* [9]. This instrument explores the psychological adjustment of children by assessing their parents. It includes 25 items distributed into 5 scales focused on both their strengths (pro-social behaviour) and difficulties (emotional problems, behavioural problems, hyperactivity/distraction and problems with relationships with friends) with 3 items for each.

Results

1.1. Comparative analysis of adult attachment

Regarding the story of affection and overprotection with the figure of the mother and the father, the statistical analysis did not show significant differences in the history of affection and overprotection with the the mother or the father in both samples (history of affection and overprotection with the figure of the mother $t(91) = -.006$, $p = .996$ and $t(90) = -1.127$, $p = .263$; and history of affection and overprotection with the figure of the *father* $t(86) = -.296$, $p = .768$ and $t(86) = -.160$, $p = .874$).

Regarding the relationship between the type of attachment depending on the group of belonging, it was found that the type of attachment with the figure of the mother and the father in adoptive and non-adoptive families was independent of the reference group ($X^2(3) = 1.899$, $p = .594$ for type of attachment with the figure of the mother and $X^2(3) = 1.447$, $p = .695$ for type of attachment with the figure of the father).

1.2. Associations between adult attachment and attachment security of children

As shown in Table 1, statistical analysis showed no significant relationship between the dimensions of adult attachment (affection and overprotection) and attachment security of children in adoptive and non-adoptive samples.

Table 1

Pearson correlation between parent global codes and dyad ratings and global code of Sensitivity

Indicators	Adoptive families	Non-adoptive families
Mother's affection	.011	-.158
Mother's affection	-.080	.073
Mother's affection	.201	.013
Mother's affection	.019	-.205

Note. $p > .05$

In the comparison of means between the attachment security of children with attachment types referring to the father and mother, results showed no significant differences between the two samples (adoptive and non-adoptive) (in adoptive families, $F(3\ 30) = .553$, $p = .650$ referred to the father and $F(3,32) = 2.566$, $p = .072$ referred to the mother in families non-adoptive, $F(3,49) = 2.259$, $p =. 093$ referred to the father and $F(3,52) = .328$, $p = .805$ referred to the mother).

1.3. Associations between adult attachment and behavioral adjustment of children

Overall, no significant relationships between adult attachment and behavioral adaptation of adopted children (Table 2) were found.

Table 2

Pearson correlation between the scales of affection and overprotection of adult attachment (PBI) and

Indicators	Adoptive families	Non-adoptive families
Mother's affection	.148	.108
Mother's overprotection	-.040	.003
Father's affection	.023	-.092
Father's overprotection	.026	.275*

Note. *$p < .05$

1.4. Comparative analysis of parental stress

In general, the statistical analysis of the comparison between the two samples (adoptive and non-adoptive families) reflected the absence of significant differences in the total score in *PSI*, as well as the two main domains (parent and child) ($p >. 05$). Only significant differences in *PSI* scale were found on distraction/hyperactivity disorder ($t(94) = 1944$, $p = .055$) and the scale of spouse ($t(94) = 2.379$, $p = .019$) (Fig. 1). In both cases the effect size was small ($d = 0.40$ and $d = 0.49$ respectively).

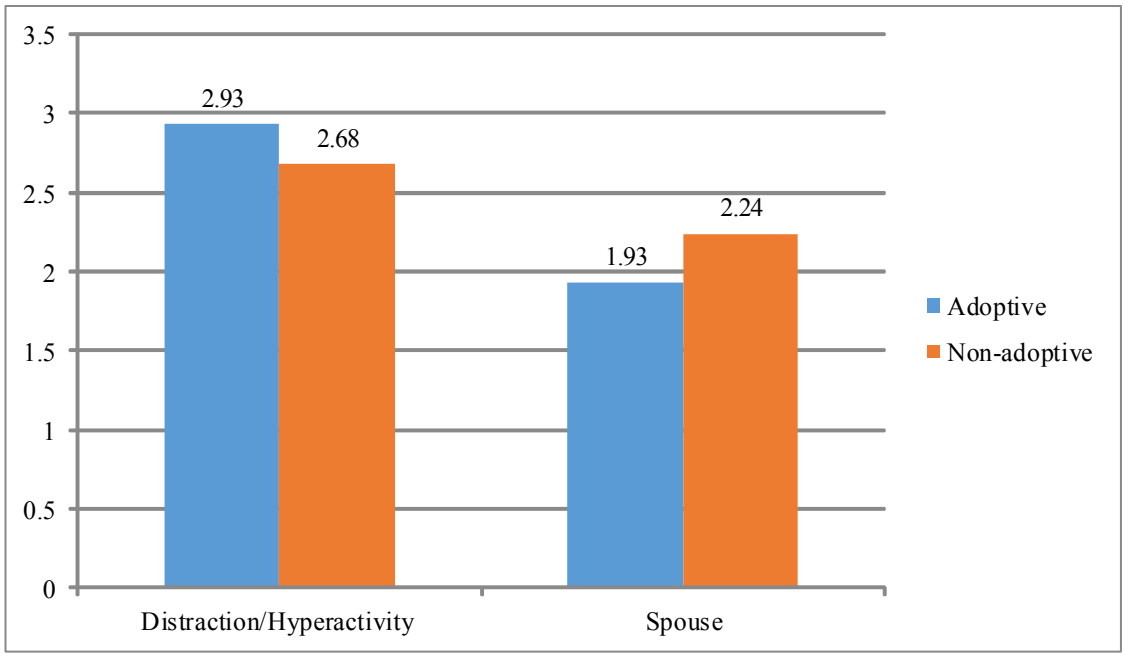

Fig. 1 Mean scores on the PSI scale of distraction/hyperactivity and scale of spouse in adoptive and non-adoptive families

1.5. Associations between parental stress and security in attachment of children

Significant negative associations were detected between the level of stress associated with parenthood of adoptive and non-adoptive parents and security attachment behaviors of children (Table 3).

Table 3
Pearson correlation between indicators of parental stress (PSI) and the attachment security for children (IMAS), in adoptive and non-adoptive families

Indicators	Adoptive families	Non-adoptive families
Contents related to children		
PSI: Adaptability	-.565***	-.317*
PSI: Demandingness	-.453**	-.276*
PSI: Mood	-.212	-.406**
PSI: Distractibility/Hyperactivity	-.493**	-.181
PSI: Acceptability	-.426**	-.247
PSI: Reinforces Parent	-.143	-.157
Contents related to parent		
PSI: Depression	-.347*	.170
PSI: Competence	-.528**	-.184
PSI: Attachment	-.409*	-.396**
PSI: Spouse	-.020	-.093
PSI: Isolation	-.308	-.126
PSI: Health	-.280	-.065
PSI: Role Restriction	-.154	-.044
Total scores		
PSI: Child	-.504**	-.370**
PSI: Parent	-.440**	-.135
PSI: Total	-.527**	-.294*

Note. *$p < .05$;**$p < .01$;***$p < .001$

1.6. Associations between parental stress and the behavioral adaptation of children

Significant and positive associations were found both in adoptive families and non-adoptive families between the level of stress experienced by parents and behavioral difficulties in adaptation of children (Table 4).

Table 4
Pearson correlation between the total score of parental stress (PSI) and indicators of behavioral adjustment in children (SDQ), in adoptive and non-adoptive families

Indicators	Adoptive families	Non-adoptive families
SDQ: Total problems	.693***	.401**
SDQ: Emotional problems	.429**	.338*
SDQ: Behavioral problems	.502**	.209
SDQ: Hyperactivity problems	.643***	.331*
SDQ: Problems with relationships peers	.371*	.198
SDQ: Pro-social behavior	-.227	-.019

Note. *$p < .05$; **$p < .01$; ***p < .001

Conclusions

Adoptive and non-adoptive families are similar with respect to the memory they have on their relationships with their parents in childhood and adolescence. In general terms, the stress level found between adoptive and non-adoptive families was similar. Adoptive families presented higher scores of stress due to the perception of inattention or hyperactivity of their children. The non-adoptive parents had higher scores on stress due to the lack of physical and emotional support of their partners in tasks related to parenthood.

Parental stress was negatively associated with security attachment behaviors of children in both adopted and non-adoptive families. In adoptive families, significant and negative between attachment security of the children and the level of stress related to the characteristics of children and parental relationships were found. In non-adoptive families negatively they correlated own sources of the characteristics of the child with security attachment behaviors of children stress.

Parental stress was significantly and positively associated with the level of behavioral adaptation of children both in adoptive and non-adoptive families. Adoptive parents with less stress may better address the emotional and behavioral needs of adopted children.

These results highlight the need to study the interaction between parents and children, taking into account the relationship established between the characteristics of children and parents. This approach seems to be even more necessary in the case of adoptive parenthood.

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The Quality of Interaction Between Parents and Children in Adoptive Families and their Relationship with Behavioral Adjustment of Adopted Children

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Abstract

Research on adoption has been very focused on child outcomes. Much less know about the dynamics established in the family context and more specifically the interaction between parents and children. As a contribution to overcoming this limitation, this paper is focused on studying the quality of interaction between parents and children in adoptive families and the relationship between the quality of interaction and behavioral difficulties in adapting adopted children. In the context of a larger study, interactions between parents and children were analyzed by *construction task* [17, 18]. This instrument is based on observation and subsequent analysis of the parent-child interaction. Content verbal and nonverbal coded both parents and children. The index of the quality of interaction was extracted from the overall scores of both behaviors of fathers to their children during interaction (quality of positive behavior, animation to the task, sensitivity), and the dyad (rhythmicity, creativity, overall quality of interaction). The difficulties in children behavioral adaptation was evaluated through applied parents *Strengths and Difficulties Questionnaire* [6]. This instrument provides an overall score and five scores extracted from the subscales that comprise: one focused on the strengths (pro-social behavior) and four on difficulties (emotional problems, conduct problems, hyperactivity/ distraction and problems in relationships with peers). The sample consisted of a total of 98 families, of which 40 were the group of international adoption and 58 formed the group policy families. All children (adopted and non-adopted) had aged 4 to 8 years. On the one hand, comparative analyzes showed no statistically significant differences in the quality of interaction between both types of families (adoptive and non-adoptive). When we analyze the relationship between quality of interaction and behavioral adjustment of children in both samples (adoptive and non-adoptive), statistically significant and negative correlations were obtained. Specifically, in the adoptive families, the quality of the interaction is related to the total score of behavioral adaptation of the children and the subscales of emotional problems, behavioral problems and problems in relationships with peers. The descriptive and comparative analysis of the interactions between parents and children allows us to establish an interesting discussion about some intra and inter-personal processes and its relationship with behavioral adaptation of the children. This helps us gain a better understanding of the complex dynamics of the interactions between parents and children in adoptive families.

Keywords: parenting, quality of interaction, adoptive families, behavioral adaptation of adopted children

Introduction

Research in adoption has been more focused on children. It has been explored less familiar context in which they develop. There is some research that has studied minutely mother/child interactions in the context adoptive [17]; or systematically the relationship between quality of interactions and socio-emotional development of adopted children [8, 16, 20]; and the role played by expectations of adoptive parents, about the characteristics of children, in the quality of their relationship [5, 13, 14, 17]. The results of these investigations reflect the effective efforts made by the adoptive parents, using more facilitative behaviors of attachment to more difficult situations, particularly when children are not corresponding them [17]. The authors conclude that high parental sensitivity is related to the quality of the children attachment in samples of foster families [13], and the

sensitive support of the adoptive parents, both in early childhood and adolescence, is important for continuing with the attachment during the first 14 years of life, as well as for later improvements [3]. Regarding the perception that mothers have with care of children, some researchers with samples of foster families have found that mothers are more sensitive when childcare is easier [14], other studies found that adoptive mothers were equally sensitive to their children, regardless of the children past, and the maternal sensitivity did not change with the passage of time [20].

Behavioral problems in adopted children are one of the topics most studied in the literature on adoption. These difficulties in behavioral adaptation or behavior problems have been linked to different variables of the children themselves, variables relating both to their personal characteristics, such as, for example, sex or age [1, 2, 11, 19, 21], and its previous history, for example, when they have suffered child abuse or institutionalization [9, 10, 21]. Researchers have also tried to understand the characteristics of the family context that are related to behavioral problems of adopted children, studying how they relate to these problems with different family variables. For example, a more democratic style of education has been associated with a lower incidence of behavioral problems in children adopted [4, 11], while situations of overprotection by parents have been associated with major behavioral problems [12]. So far, very few researches are studying the relationship of the quality of interaction between mothers and children and the behavioral problems of adopted children. In our study, we have tried to meet the objective of examining the relationships, in both samples, including the quality of interaction between mothers and children and behavioral adaptation of children. Two main objectives are pursued in this work.

First, to analyze differences in the quality of interaction between parents and children in adoptive and non-adoptive families. Second, to explore whether the quality of interaction between parents and children are related to the adopted children's psychological problems. It is expected, on the one hand, there are no differences in the quality of interactions between adoptive and non-adoptive parents and on the contrary, that there is some relationship between the quality of the interactions between parents and children and the psychological problems of children.

Method

1.1. Participants

The participants in the study were 98 families: 40 adoptive and 58 non-adoptive families. About the parents, the mean age was 43.90 years old (*SD* = 4.58) for the adoptive fathers and 43.05 (*SD* = 4.01) for the adoptive mothers. Among non-adoptive parents, the average age of the fathers was 39.46 years old (*SD* = 5.91) and 36.78 (*SD* = 5.34) of the mothers. The groups were matched for educational level (82.5% of the adoptive parents and 53.4% of the non-adoptive mothers held university qualifications).

Regarding adopted children (*N* = 40), all of them had been born in Russia and were three years old at adoption (*M* = 35.78 months, *SD* = 15.96). Their average ages were six years (*M* = 75.68 months, *SD* = 14.26); they had three years in the adoptive family (*M* = 39.90, *SD* = 14.25); and 27.5% were girls and 72.5% boys. The non-adopted children 50.0% were girls and 50.0% were boys.

1.2. Instruments and procedure

The adoptive families were contacted through two agencies that specialize in adoptions from Russia; the non-adoptive comparison group was contacted through schools in the same region. The mother was identified as the adult who spent more time with the child in almost all cases but four cases in the adoptive group, the father was interviewed. Data collection was performed in the families' home.

The interactions between parents and children were analyzed by *Co-construction Task* [17, 18]. It is a simple task based on the parents-children interaction around a building game and is videotaped. The main objective is to evaluate, from observation, patterns of both verbal and nonverbal behaviors that are put into practice in situations of interaction. The encoding of the task of *Co-construction* comprises verbal, non-verbal and global codes of parents and children, separately, and ratings dyad.

To assess the children's psychological problems we used *Strengths and Difficulties Questionnaire* [6]. This instrument explores the psychological adjustment of children by assessing their parents. It includes 25 items distributed into 5 scales focused on both their strengths (pro-social behaviour) and difficulties (emotional problems, behavioural problems, problems hyperactivity and problems with relationships with peers) with 3 items for each.

Results

1.1. Calculation of the index of quality of interaction mother/child

For this work, an index of quality of interaction was extracted from parent global codes (positive quality of demeanor, encouraging behavior, sensitivity to child), and dyad ratings (child/parent rhythmicity and coordination, creativity, global quality of interaction) of the *Co-construction Task*.

To calculate the index, first the three variables of the dyad that had values ranging from 1-4, 0-3 passing them, so that all variables were scored alike. Reliability index is checked through its 6 items, obtaining a *Cronbach* alpha of .881. As the reliability was good, and the item-total correlation was positive and higher than .30 in all cases, it switched to calculate the index with the average of the 6 items above.

Theoretical assumptions and empirical findings of statistical analysis of correlations between variables (Table 1) and its relationship to the variable sensitivity to the child (Table 2) were considered.

Table 1
Pearson correlation between parent global codes and dyad ratings (Co-construction)

	1	2	3	4	5
1. Positive quality of demeanor					
2. Encouraging behavior	**.738*** **				
3. Sensitivity to child	**.766*** **	**.674*** **			
4. Child/parent rhythmicity and coordination	**.531*** **	**.471*** **	**.456*** **		
5. Creativity	**.280***	**.436*** **	**.319*** **	**.438*** **	
6. Global quality of interaction	**.686*** **	**.605*** **	**.657*** **	**.756*** **	**.348*** **

***Note.* *p < .05; **p < .01; ***p < .001**

Table 2
Pearson correlation between parent global codes and dyad ratings and global code of Sensitivity to child (Co-construction)

Indicators	Sensitivity to child
Positive quality of demeanor	**.771*** **
Encouraging behavior	**.676*** **
Child/parent rhythmicity and coordination	**.531*** **
Creativity	**.275*** **
Global quality of interaction	**.417*** **

***Note.* **p < .01; ***p < .001**

1.2. Comparative analysis the quality of interaction mother/child

The results revealed non-significant differences in the comparison of the average in the quality of interaction of adoptive families and non-adoptive families ($t(81) = 1116$, $p = .268$) (Fig. 1).

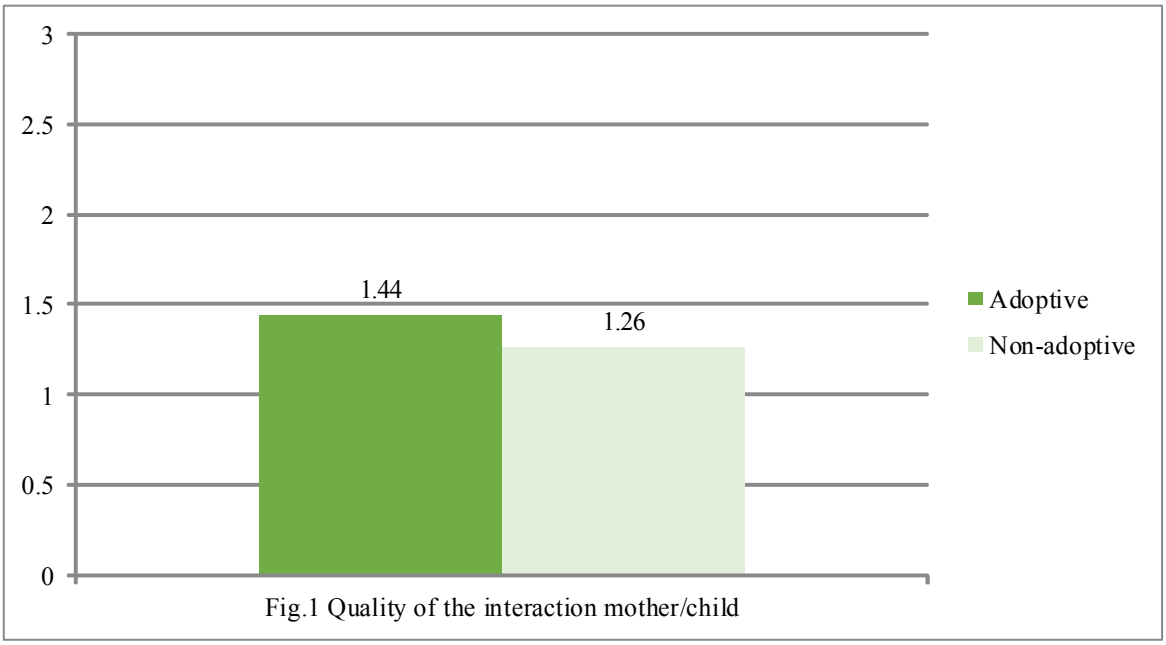

Fig.1 Quality of the interaction mother/child

1.3. Associations between the quality of mother/child interaction and the children's psychological problems in adoptive families

Significant and negative correlations was found, in the adoptive families, between quality of mother/child interaction and most *Strengths and Difficulties Questionnaire* (*SDQ*) scales: scale of emotional problems, scale of behavioral problems, scale of problems with relationships peers and total score of *SDQ* (Table 3).

Table 3

Pearson correlation between the quality of mother/child interaction and children's psychological adjustment (SDQ) in adoptive families

Indicators	Adoptive families	Non-adoptive families
SDQ: Emotional problems	**-.395***	**-.023**
SDQ: Behavioral problems	**-.375***	**-.129**
SDQ: Hyperactivity problems	**-.334**	**-.092**
SDQ: Problems with relationships peers	**-.512****	**-.127**
SDQ: Pro-social behavior	**.088**	**-.120**
SDQ: Total problems	**-.525****	**-.132**

***Note.* *$p < .05$; **$p < .01$**

1.4. Partial correlation between the quality of mother/child interaction and the children's psychological problems in adoptive families

The procedure of partial correlation was used to control the possible effect of the age variable in the above correlations. Analyses showed that relations remained statistically significant (Table 4).

Also, the partial correlation procedure revealed a significant correlation, of negative sign, between the quality of mother/child interaction and adopted children's hyperactivity problems (r = - .357, p = .049). In this case, the correlation between the quality of interaction and children's hyperactivity problems was modulated by the effect of the variable age of children at the time of the study

Table 4
Parcial correlation between the quality of mother/child interaction and children's psychological adjustment (SDQ) in adoptive families

Indicators	
SDQ: Emotional problems	**-.387***
SDQ: Behavioral problems	**-.395***
SDQ: Hyperactivity problems	**-.357***
SDQ: Problems with relationships peers	**-.544****
SDQ: Pro-social behavior	**.088**
SDQ: Total problems	**-.528****

***Note.* *p < .05; **p < .01**

Conclusions

In this paper, we studied the quality of interaction between mothers and children (rhythmicity, animation, sensitivity, creativity and quality of behavior), by calculating an index. In this paper, we studied the quality of interaction between mothers and children (Positive quality of demeanor, encouraging behavior, sensitivity to child, child/parent rhythmicity and coordination, creativity, global quality of interaction), by calculating an index of the test *Co-construction Task* [17]. The comparative analysis revealed no significant differences in the quality of interaction between parents and children in the group of adoptive and non-adoptive families.

Regarding the relationship between the quality of the interaction and the difficulties of behavioral adaptation of adopted children, significant and negative correlations were discovered in adoptive families between the quality of interaction and the scale of emotional symptoms, the scale of behavioral problems, the scale of problems with peers and the total score of *SDQ*. Those relationships were not found in the non-adoptive sample. So, *t*he quality of interaction between parents and children appeared significantly and positively associated with adopted children's psychological adjustment. The correlation between quality of mother/child interaction and adopted children's hyperactivity problems was modulated by the effect of the variable age of the child at the time of the study. These results show the importance of studying the mother-child interaction considering what each brings to the type of relationship established between mother and child.

We also want to see some of the limitations of this study and some practical implications. One of the limitations of this work is related to the characteristics of the samples. On the one hand, the group of families studied is small, limiting the statistical analyzes. Likewise, most of the participants in this study were mothers, being the person who were identified spending more time dedicated to direct attention to the child. It would have been interesting to have been able to extend the study to a larger sample of parents. A further limitation of this study, regarding research design, it is that was considered as a transversal study. The data are drawn from a sample of households of international adoption in our region, but there are research questions whose answer can only be obtained with longitudinal designs. With regard to the limitation just mentioned, the project that this thesis is part has a longitudinal character, so that the data obtained here, from the time 1 design, may be related to those of Time 2, still under exploitation by members of the research team. Regarding the implications of the results of this study for professional practice, as is known, an appropriate intervention in the early stages of adoption can help improve, among other things, the quality of interaction between parents and children and facilitate the establishment of attachment bond between them [7, 8, 15, 17] and can respond more adequately the socio-emotional difficulties of adopted children.

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Education for positive parenting and social inclusion: Analysis of the effectiveness of the Grupo Laços de Inclusão (GLI) programme

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Abstract

The Council of Europe recognises the promotion of positive parenting as an important factor in child protection, but it also poses challenges to some fundamental structures of society for the development and training of individuals. So, parental education programmes can be presented as a privileged way to help parents to strengthen their parenting skills. In this paper, we analysed the effectiveness of a parent training programme, Grupo Laços de Inclusão - GLI (Bonds of Inclusion Group - GLI), jointly implemented with the "Inclusive Art Association: Dancing with Difference". The programme included eight sessions and was delivered every two weeks over a period of four months. Five parents (four mothers and one father), who completed the three moments of evaluation (pre-test, post-test and follow up - six months after the end of the programme), were considered for this study. To assess the quality of parent child relationships were considered the measures of parental stress and parental perception of the child characteristics, through the Parenting Stress Index [1]. The results revealed significant differences, at the three moments of evaluation, in the perceptions of parents in the Child Domain scale and in the Depression subscale of Parent Domain scale. Although these preliminary results were promising, some implications for future studies and interventions with the GLI programme are discussed.

Keywords: Positive parenting, social inclusion, people with special needs, GLI programme effectiveness.

Introduction

Parenting is a very challenging task and an essential asset to the quality of family ecology and child wellbeing [2]. However, how children are parented has traditionally been considered a matter relying on the private sphere of the family life and taken as a solitary endeavour of every family [3]. Countering this social representation, in the last decades a shift in child protection and family public policies encompassed by developmental and social sciences have documented the need to strengthen parental resources and the capabilities that require positive parenting. Moreover, addressing parenting from an ecological approach has been critical to sense which conditions have a facilitating role and those others that harshen the parenting role, thus aiming at promoting a societal responsible attitude and community development. Looking after the needs of family support and child's wellbeing as a whole has led to devote special interest to ways to enhance the parents' feeling of parental efficacy, their conceptions of children's development and education, and their socialization practices and to focus on positive parent-child relationships as a protective factor against processes that shape maltreatment in families.

A growing concern in promoting positive parenting has been a key component to changes in family interventions approaches. In the scope of the strength-based, preventative programmes and community development services, parenting education may represent an important resource of the community to help parents to optimise their skills to raise children, stimulating integral growth [4].

Currently, there is, in Europe, a growing interest in parental education programmes to promote positive parenting and also to implement research-based programmes [2] [5] [6]. The emphasis on these two aspects follows the recommendation of the Council of Europe on Positive Parenting Promotion Policy [7], and the importance of parents and the State in the development of children [8]. It has been recognised the importance of parenting support policies and that parents need formal and informal support networks to perform successfully their parenting role [6].

To implement parenting programmes respect for the child and for the family members is crucial. This type of intervention is usually

"meant to help parents develop and enhance their parenting skills by trying alternate approaches to childrearing, improving the family learning environment, fostering their sense of personal competence, and strengthening their capability to draw upon available resources for their own well-being and the well-being of their young and adolescent children"[6] (p. 95).

Professionals and parents have become more aware of parenting as a lifelong learning task. However, different parents, at different developmental stages across lifespan with children with peculiar characteristics, may need intervention according to their specificities and needs. So, the design of a programme also implies the knowledge of the audience, its difficulties and strengths [9]. A great diversity of parental programmes has been registered. But, despite the efforts of some European states to implement actions to support parents, it is not yet possible to assess the effectiveness of some of those interventions [2]. This point is very important and it is necessary to continue to notice that evidence-based research is necessary once assessment results allow researchers, professionals and sponsors to improve, to defend and to invest in this type of intervention with families.

Concretely, the existing research seems favourable to parenting education. Results of some investigations show change in parents believes and improvements in social network support [10], development of deeper knowledge and improvements in parenting skills [11]. Group sessions seem favourable to parental reflexion about their educational practices and to feel the group moment as a sharing moment, where learning is assisted through participants' perspective taking and guided exploration of parent experiences [12]. Emotional factors are also important. For instance, after a parental programme, some parents seem more efficient adopting democratic practices, expressing positive feelings and having positive aptitudes when coping life difficulties and leading with others [13]. Recently, in Portugal, a national investigation about evidence-based parenting programmes revealed several positive results for parents and for children, mainly, decrease of parental stress, decrease of abuse and neglect behaviours towards children, improvement of educational practices, increase of perception of informal social support and slightly improvements in adjustment of children [14].

Results of parenting programmes with special groups are available too. For instance, and related to the main topic of this paper, we want to refer specially the parents of children with special needs. These families tend to have higher levels of stress, and greater efforts of adaptation and family reorganization also tend to be present [11] [15]. These parents and family members more often manifest feelings of insecurity related to what they have do and how to do, that is, daily routine decision making to raise the child and to cope with the disability [16]. In fact, family is crucial to promote the inclusion of disabled children. Its positive or negative believes about disability and ability will influence the child development and her later inclusion in the labour market [17].

Recently, United Nations have alerted to the inclusion of persons with disabilities. Despite the United Nations Secretary-General, have said that "Disability is part of the human condition; almost everyone will be temporarily or permanently impaired at some point in life" [18] (para. 3), it continues to be difficult to see it as a natural human life factor and to promote inclusion. To that international institution, this topic should be subject of concern once "the estimated 1 billion people worldwide who live with disabilities are still excluded from equitable access to resources such as education, employment, healthcare and social and legal support systems", which implies higher rates of poverty among disabled people [19] (para. 1).

So, attention to development and inclusion of disabled children must be paid. In fact, parental education with families of children with disabilities and special educational needs or with behavioural or emotional problems are referenced, with empirical support, as high priority [20]. According to the literature review, the Grupo Laços de Inclusão - GLI (Bonds of Inclusion Group - GLI) programme was designed and jointly implemented with the "Inclusive Art Association: Dancing with Difference". The main purpose of this study, based on a broader research [21], is to evaluate the effectiveness of the GLI programme measuring indicators related to the characteristics of the child and the characteristics of the parents, which may be associated with sources of stress in the parent-child relationship, through the Parenting Stress Index scales [1].

Method

1.1. Participants

The participants were 5 parents (one father and four mothers) of children/youngsters (four with special needs and one without disabilities), who were attending dance classes in an inclusive dance group in the "Inclusive Art Association: Dancing with Difference", in Madeira Island (Portugal). These parents were selected because they participated in the GLI programme and in its three moments of evaluation: pre-test, post-test and follow up.

1.2. Instruments

The Parenting Stress Index (PSI) [1] is a questionnaire for evaluating specific sources of stress, where two main areas were considered as sources of stress in parent-child relationship: Child Domain, related to child characteristics, and Parent Domain, referring to characteristics of the parental figure. A Portuguese version of the PSI was used [1], where the information was organized into four scales: Total Stress, Life Stress, Child Domain (CD) and Parent Domain (PD). The CD scale was composed of 6 subscales: Distractibility/Hyperactivity, Reinforces Parent, Mood, Acceptability, Adaptability and Demandingness. The PD scale was composed of 7 subscales: Competence, Attachment, Role Restriction, Depression, Spouse/Parenting Partner Relationship, Isolation and Health.

The GLI is a parent training programme, whose main goals were: to develop in the participants a sense of belonging to the group and to build a social network support; to promote knowledge of family dynamics and reflection about educational styles; to develop and to optimise parenting skills; to discuss beliefs about disabilities, special needs and inclusion; and to promote a change in attitudes and beliefs related to inclusion.

1.3. Procedure

Approval by the Board of the Association for the research project was given to researchers, as well as parental consent was gathered.

The GLI programme included 8 sessions, held every two weeks, over a period of 4 months. Programme evaluation was carried out in three moments at pre-test, post-test, and follow up. Assessment included quantitative as well as qualitative measures, addressing perceptions of parental stress, family dynamics, inclusion beliefs and satisfaction with the intervention. Although this, for the present study, we will only consider the measures of parental stress through PSI.

The data collected were analysed using IBM SPSS for Windows, version 23.

Results

Using a non-parametric test (the Friedman test) we tested the differences for the PSI scales and subscales between the three moments of assessment. Firstly, are presented the results for the scales of PSI. As can be seen in Tab. 1, the results differences for Total Stress, Life Stress and Parent Domain scales are not significant. However, for the Child Domain scale (M_I = 110,6; M_{II} = 100,4; M_{III} = 97,4) the results differ significantly ($p < 0,05$). To explore these differences three pairwise testing (Wilcoxon test) were conducted. When were considered the pre-test and post-test (p = 0,68), and the pre-test and follow-up (p = 0,68), the results differed marginally for each pair. No significant differences were observed when post-test and follow-up conditions were considered (p = 0,197).

Tab. 1. Results in the scales of Parent Stress Index

Scales	Assessment Moment	M	SD	Min.	Max.	FriedmanTest	
						X^2	p
Total Stress	I	202,3	33,48	157	230	2,800	0,247
	II	216,8	18,82	191	236		
	III	197,0	20,93	170	215		
Life Stress	I	18,8	14,79	3	38	2,211	0,331
	II	22,6	17,60	6	45		
	III	16,8	13,37	0	32		
Child Domain	I	110,6	25,30	76	147	6,500	0,039
	II	100,4	18,69	76	126		
	III	97,4	18,49	76	120		
Parent Domain[a]	I	117,8	5,44	110	122	5,286	0,071
	II	118,3	7,37	110	127		
	III	102,8	13,33	88	115		

[a]n=4; I. Pre-test; II. Post-test; III. Follow-up

Secondly, in Tab. 2, are presented the results for the subscales of CD. As can be seen, in Tab. 2, no significant differences were found for the variables studied.

Tab. 2. Results in the subscales of Child Domain

Subscale	Assessment Moment	M	SD	Min.	Max.	FriedmanTest	
						X^2	p
Distractibility/Hyperactivity	I	23,2	6,83	16	34	1,778	0,411
	II	20,8	4,49	15	25		
	III	23,4	5,73	16	32		
Reinforces Parent	I	9,0	2,12	6	11	2,923	0,232
	II	7,8	2,95	6	13		
	III	7,6	2,97	6	11		
Mood	I	9,6	4,16	4	15	3,800	0,150
	II	8,4	3,58	4	14		
	III	7,4	1,95	4	9		
Acceptability	I	18,6	4,22	12	22	1,625	0,444
	II	18,4	2,97	14	21		
	III	17,0	4,90	10	22		
Adaptability	I	31,4	11,13	14	45	5,286	0,071
	II	27,6	9,07	14	39		
	III	24,4	8,17	14	32		
Demandingness	I	18,8	2,78	15	22	2,800	0,247
	II	17,4	1,95	15	20		
	III	17,2	3,27	14	22		

I. Pre-test; II. Post-test; III. Follow-up

Finally, results for PD are presented in Tab. 3. It is shown that results for 6 of the PSI subscales (Competence, Attachment, Role Restriction, Spouse/Parenting Partner Relationship, Isolation and Health) do not differ significantly considering the assessment moments. However, for the Depression subscale (M_I = 23,4; M_{II} = 21,6; M_{III} = 17,8) a significant difference ($p < 0,05$) is registered. To explore these differences three pairwise testing (Wilcoxon test) were conducted. It revealed that parents perception differed significantly when were compared the results from pre-test and follow-up ($p = 0,042$). When were considered the post-test and the follow-up conditions the differences were marginally significant ($p = 0,066$). No significant differences were registered when pre-test and post-test conditions were considered ($p = 0,500$).

Tab. 3. Results in the subscales of Parent Domain

Subscale	Assessment Moment	M	SD	Min.	Max.	FriedmanTest	
						X^2	p
Competence	I	31,2	4,38	25	37	2,800	0,247
	II	33,2	6,22	29	44		
	III	32,0	6,00	27	42		
Attachment	I	11,8	4,87	7	18	1,500	0,472
	II	11,8	4,87	7	20		
	III	12,0	5,34	7	21		
Role Restriction	I	15,0	4,00	10	20	2,111	0,348
	II	15,4	1,82	13	18		
	III	12,0	3,39	8	16		
Depression	I	23,4	6,99	16	34	6,632	0,036
	II	21,6	3,85	17	27		
	III	17,8	5,02	10	22		
Spouse/Parenting	I	20,5	5,80	16	29	3,800	0,150
Partner Relationship	II	20,5	5,92	16	29		
	III	17,0	8,64	9	29		
Isolation	I	12,0	4,36	7	17	3,125	0,210
	II	12,8	4,60	6	18		
	III	10,6	4,45	6	18		
Health	I	12,4	2,07	10	15	3,846	0,146
	II	11,0	2,24	8	14		
	III	10,4	1,63	8	12		

I. Pre-test; II. Post-test; III. Follow-up

Discussion

The results point to significant differences in parent perceptions for the Child Domain scale, related to child characteristics, and for the Depression subscale, related to Parent Domain scale, that is, characteristics of

the parental figure. A deeper analysis of the CD subscales does not reveal significant differences between the three moments of assessment. However, for the PD it is possible to see a significant decrease of the mean values.

Despite the small number of participants, these results are promising and interesting. On the one hand, results seem to reflect some changes in the parents responses, that is, when pre-test is compared to post-test or follow-up parents tend to feel less stress induced by the characteristics of the child. On the other hand, parents also seem to decrease their personal negative feelings since mean values for depression decreased revealing significant differences from pre-test to post-test and follow-up. Considering this results and the fact that one of the main purposes of the GLI programme was to discuss with the participants their beliefs about disabilities, special needs and inclusion, and also to promote a change in their attitudes and beliefs related to inclusion, we may say that the GLI programme has been effective because it seems that participants commenced this process of change.

The GLI programme attempts to respond to a specific population and was designed according to it [9]. Considering that the intervention with parents of disabled children is considered priority [20] it is important to highlight that GLI programme also contributed to personal believes of the parents. The decrease of the mean values for the Depression subscale may be associated to the decrease of stress related to the child attributes. In fact, a decrease of depression also may lead to a less threatening perception of the environment and the interpersonal relations and, consequently, a more positive perception of the child. As the literature refers [22], depression is a factor not to neglect in parenting education once it is frequent among parents referred for programme interventions and it could interfere with the effectiveness of the programme.

In a previous study considering only pre-test and post-test and a higher number of participants, the effectiveness of the GLI programme was registered in reducing the Total Stress experienced by parents and also the perceptions of the characteristics of the children as sources of stress, the CD scale [23]. Specifically, was registered a decrease in Demandingness, subscale associated with the interaction with the child, and a decreased in Health, related to the perception of deterioration in the health of parents that could interfere with the relationship with the children [23]. Again, the participation in the programme seems to have contributed to reformulate some aspects of parenting and to start a process of changing personal beliefs [14].

Parenting programmes besides the improvement of parental skills and positive child-parent relationships [24] [25] also contribute to the development of social support [10]. This is another important point to refer about GLI programme because participants have described the group as a factor of social support [21].

Despite the promising results some limitations may be outlined. For instance, we refer the small number of participants and the lack of a control group, conditioning the assessment of the effectiveness of the GLI. Further studies, considering the quality of programme implementation and programme fidelity [26], beyond the research aspects, should reduce the interval frequency of sessions, increase the duration of each session, increase the number of sessions and select parents depending on the age of the children, separating childhood from adolescence.

To sum up, we think GLI programme is an important contribution to the topic of inclusion and parenting education. It is a domain that must be attended. The "Inclusive Art Association: Dancing with Difference" is sensitive to it and have embraced the social inclusion through dance, recognizing that parents need support to raise their children. Parents believes about disabilities could be an important factor to promote inclusion, not only the inclusion of their children but also the children of others. More attention must be paid to family policies and strategies for a society increasingly inclusive and open to diversity.

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Rhythm Perception in Children: The Roles of Age, Sex and Prematurity

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Abstract

Rhythm and melody are at the basis of music organization. They enable acoustic patterns to be organized in highly structured auditory phrases that can effortlessly be perceived, recognized and comprehended in our mind/brain. Scientific evidence suggests that musical rhythm perception is a complex process that involves more than the auditory cortex, and raises the possibility that rhythm processing is part of a wider mechanism that may also be involved in language production and perception. As such, rhythm perception is more than a component of musicality, and the failure to perceive rhythm might be relevant in domains other than music. In order to better understand the development of rhythm perception, the present study examined age-related changes in the perception of rhythm while exploring the impact of sex and prematurity. Musical excerpts varying in rhythm only (same note percussion phrases) or in melody and rhythm (rhythmic and rhythmic-melodic sets respectively) were presented to children aged 6 to 13 years (N = 177, of which 21 with gestational age less than 37 weeks; 103 female) and young adults aged 18/19 years (N = 29, 4 with < 37 weeks' gestational age; 27 female). Participants listened to pairs of musical excerpts (20 stimuli pairs in each set), and indicated whether they sounded the same or different using a grid in a pencil-paper response. In each set, eight pairs were identical and twelve were different (the difference was always in rhythm). The pairs of rhythmic patterns were the same in both sets. The results revealed an age-related progression in accuracy that differed in rhythmic and rhythmic-melodic excerpts: there was a small advantage of rhythm-only pairs that reached adult-like level at 11 years, whereas performance gains in the rhythmic-melodic pairs continued till adulthood. There was no main effect of sex. Prematurity was associated with a performance disadvantage that appeared to decrease with age; however, the small number of subjects precludes drawing firm conclusions on the role of prematurity. We compare our results with findings from earlier studies and discuss how both contribute to elucidate rhythm perception and factors that impact on its development.

Keywords: perception, rhythm, sex, age, prematurity.

Introduction

Music has played a pivotal role in the study of brain function. Research into music in the brain not only elucidates the biological and brain basis of music cognition but it also sheds light into how music impacts on brain plasticity and other functions, namely language. Koelsch (2011), among others, proposed that at an early age music and language are perceived by the same mechanisms and that for the human brain the two are not separate domains at the start. Indeed, language and music are very different in several respects but the two share similarities, the most obvious one being the use of acoustic media and a limited number of categorical units organized in sequences with a temporal dimension. Besides the close proximity with language, music is also recognized as a key element in the evolution of social cohesion, cooperation and communication (e.g. Zatorre & Peretz, 2001), maybe because making music is a demanding task which engages several cognitive processes including perception, cognition, learning, memory, emotion, and social cognition (Koelsch & Siebel, 2005).

Perception is the process that allows us to organize and interpret sensory information in order to give meaning to the surrounding environment. On music, our perception depends not only on the auditory system and acoustic information but also on culture-related factors that shape our ability to predict musical events (e.g. McDermott & Oxenham, 2008). As in other perceptual domains, music perception is an interplay between input and prior expectations; it is a multidimensional process that involves acoustic analysis, auditory memory, auditory scene analysis, and processing of musical syntax and semantics (Koelsch & Siebel, 2005).

Despite the multidimensional nature of music, pitch and time received most attention because they are primary dimensions of music (Krumhansl, 2000) and together they define the identity of a musical piece on most music materials (Prince, 2014). The independence between musical pitch and time/rhythm processing is an

ongoing topic of discussion (Peretz & Zatorre, 2005). Even though some researchers treat melody and rhythm as a unified dimension (Jones & Boltz, 1989; Griffiths, Johnsrude, Dean, & Green, 1999), others treat them independently (Peretz & Kolinsky, 1993; Peretz & Zatorre, 2005). In any case, it is indisputable that rhythm and melody are cornerstones of musical cognition; they allow the organization of perceptual auditory units into sequences that make us to understand music (Trehub, 2003).

Several studies (e.g., Trainor & Trehub, 1992; Overy et al., 2004; Koelsch et al., 2003; Koelsch, Fritz, Schulze, Alsop, & Schlaug, 2005) reported differences between children and adults in music processing. For example, children showed less hemispheric specialization than adults in melody and rhythm perception (Overy et al., 2004). These findings support the hypothesis that the neural basis of music processing changes throughout development and point to the need to better understand how melody and rhythm are perceived as age increases, and how this relates to music perception. Our perception and comprehension of auditory sequences depends on biology but it is also culturally shaped throughout development. Therefore, it is important to study music perception from childhood to adulthood and to examine the interplay of nature vs. nurture on music perception.

We undertook a preliminary study of these issues focussing on the influence of sex and prematurity. Sex is a biological characteristic whose manifestations are nevertheless affected by culture. Halpern (1997) proposed a psychobiosocial model arguing that despite the constraints imposed by the genetic code on brain development, the architecture of the brain is also influenced by personal experience. In relation to the nature vs. nurture impact on sex differentiation, Fausto-Sterling (2016) argued that biology and behaviour are manifestations of a complex system that includes infant and adult caregivers and that leads to the gradual onset of sex-related behaviour and later embodied gender. In neuroimaging approaches, among others, Kimura (2000) reported structural and functional differences between the female and male brains and Koelsch et al. (2003) found differences on auditory information processing across gender. More recently, Joel et al. (2015) demonstrated that regardless obvious differences between the brain and behaviour of women and men we should not categorize the human brain as either male or female. Given all the issues concerning sex/gender differentiation and the critical role of nature vs. nurture integration it is relevant for our purposes to assess its impact on rhythm perception.

Another factor crucial to brain development is gestational time. Disruptions on brain development due to preterm birth are associated with higher risk of impairments on behavioural and psychological functioning, namely attention deficit hyperactivity disorder and affective disorders (e.g. Aarnoudse-Moens, Weisglas-Kuperus, Van Goudoever, & Oosterlaan, 2009; Johnson et al., 2010). Recent neuroimaging evidence suggests that preterm birth is related with loss of grey and white matter (e.g. Groeschel et al., 2014), differential interhemispheric connection (Peterson et al., 2000; Northam et al., 2012) and, in cases where temporal regions are affected, deficits on auditory perception were reported (e.g. Hövel et al., 2015). Although most research has focused on birth prior to 37 weeks, Espel, Glynn, Sandman, and Davis (2014) have recently proposed that even in term birth longer gestation is beneficial to later cognitive and motor development.

In order to better understand the development of rhythm perception, the present study examined age-related changes in the perception of rhythm while exploring the impact of sex and prematurity as well as the role of pitch contour in rhythm perception. We considered preterm all the participants who were born prior to 37 weeks' gestational age.

Method

1.1. Participants

177 children (103 female; age range: 6-13 years; mean 9,57 years; STD: 2,14 years; 21 preterm) and 29 young adults (27 female; age range: 18-19 years; mean 18,45 years; STD: 0,51 years; 4 preterm). Participants were divided into three age groups (Tab. 1). Written informed consent was obtained from the parents or legal guardians of each participant.

Tab. 1. Sample characterization. Age groups and demographic information.

Age Group	N	Age (years)		Sex		Birth	
		Mean	STD	Female (N)	Male (N)	Preterm (N)	Term (N)
1 [6-10]	104	8,02	1,25	57	47	14	90
2 [11-13]	73	11,78	,73	46	27	7	66
3 [18-19]	29	18,45	,51	27	2	4	25
Total	206			130	76	25	181

Stimuli and task

Two sets of 20 pairs of musical stimuli with varying or constant pitch contour (Fig. 1) were composed in collaboration with professional musicians for the purpose of this study. Computer-generated versions of the stimuli were created on Logic Pro X and edited on Audacity. The scores were manually entered keeping intensity constant, and delivered in piano or marimba sound (ten pairs of stimulus each, for both sets). The perception tasks required a same/different judgment of two short musical phrases with a mean duration of 12.6 ± 2,10s, and tempo from 70 to 140 bpm. In each set, 8 pairs of stimuli were made equal and 12 different.

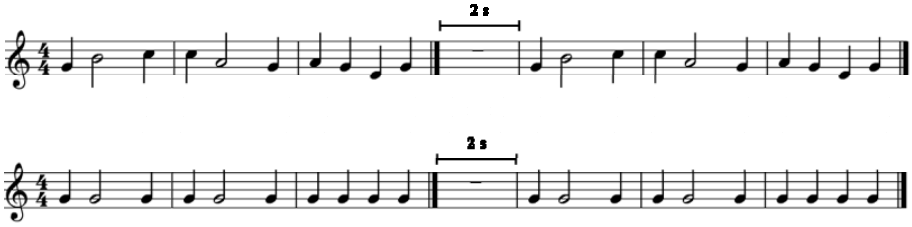

Fig. 1. Overview of a pair of stimuli with varying (top) or with constant (bottom) pitch contour. Both delivered in piano at 120 bpm.

Results

A 3x2x2 repeated measures ANOVA with type of stimulus as within-subjects factor and age group, sex and prematurity as between-subjects factors was performed. There were significant differences according to type of stimulus [$F(1, 195) = 9.84$, $p = 0.002$, Fig. 2a]. There were also main effects of age group, $F(2, 195) = 10.34$, $p < 0.001$, and prematurity, $F(1, 195) = 4.16$, $p < 0.05$ (Fig. 2b), but not of sex, $F < 1$. Post-hoc analysis using Tukey HSD revealed that in age group 1 rhythmic perception was significantly lower than in age groups 2 and 3, but these did not differ significantly (Fig. 2c). No interactions reached significance.

A 3x2 repeated measures ANOVA with type of stimuli as within-subjects factor and age group and sex as between-subjects factors was performed with preterm and term participants separately. In term participants a within-subjects effect was found, that is, there were significant differences in the perception on both types of stimulus $F(1, 175) = 5.33$, $p = 0.02$ (Fig. 2d). Only the interaction between type of stimulus and age group was significant [$F(2, 175) = 3.49$, $p = 0.03$], reflecting that rhythm was better perceived in constant than in varying pitch contour, particularly by age group 2 [$F(1, 64) = 33.72$, $p < 0.001$, Fig. 2f]. A main effect of age group was found, $F(2, 175) = 18.11$, $p < 0.001$ (Fig. 2e), but not of sex, $F < 1$. Post-hoc analyses using Tukey HSD allowed to find that similarly to what was reported in the global analysis, in age group 1 rhythmic perception was significantly lower than in age groups 2 and 3, but groups 2 and 3 did not differ significantly (Fig. 2e). Likewise, a repeated measures ANOVA was computed with the preterm participants only. The difference in rhythmic perception between stimuli with varying or constant pitch contour was barely significant, $F(1, 20) = 4.33$, $p = 0.05$ (Fig. 2d). A main effect of age was found, $F(2, 20) = 3.77$, $p = 0.041$ (Fig. 2e), but not of sex, $F < 1$. Post-hoc analyses using Tukey HSD showed that in age group 1 rhythmic perception was significantly lower than in age group 3, but it did not differ significantly from group 2, and groups 2 and 3 did not differ from one another (Fig. 2e). Due to small number of subjects in the preterm group it was not possible to draw firm conclusions regarding rhythmic perception and its relation with sex, age and pitch contour. We can speculate that the lack of significant differences is probably due to lack of statistical power.

Discussion

The first aim of the current study was to examine age-related changes in rhythmic perception. Adults performed significantly better than children on the rhythmic perception tasks and the children aged 11-13 years performed better than their younger peers. Another interesting finding was that participants accomplished an adult-like level of performance on rhythmic perception with constant contour at 11-13 years of age, specifically at eleven years old, while on rhythmic perception with varying pitch contour we found a continuous improvement of the performance until adulthood but still without reaching adult level. Our results show that rhythmic perception changes across age. This fact could hypothetically be related to brain maturation and hemispheric specialization as reported by Overy et al. (2004). Varying pitch contour was found to be a factor that increased the complexity of rhythm perception. In adulthood melody and rhythm are processed differentially by the brain, with the right hemisphere being more related to melody while the left is apparently more sensitive

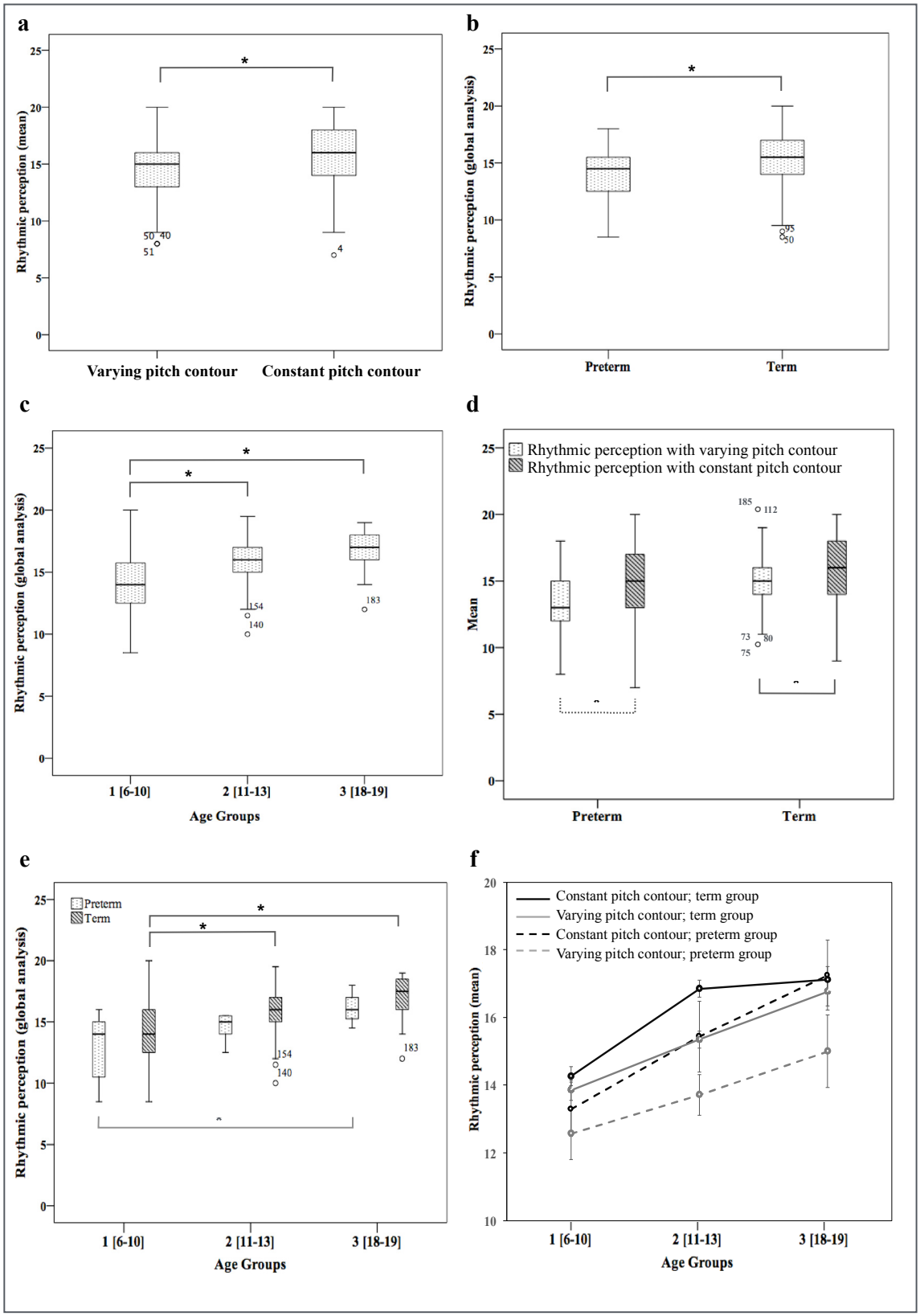

Fig. 2. Box plots representing rhythmic perception (a) with varying and constant pitch contour; (b) in the different age-groups; (c) in preterm and term participants; (d) in preterm and term participants in the different age groups; (e) with varying and constant pitch contour in preterm and term participants; (f) with varying and constant pitch contour, in preterm and term participants, in the different age groups.

to rhythm (Overy et al. 2004). During childhood, hemisphere specialization is present to a lesser extent. As the perception of stimuli with rhythmic and melodic information can be a demanding task which requires selective attention, it may benefit from more established hemispheric specialization. Likewise, Koelsh et al. (2003) reported that during childhood music is processed differently by boys and girls and with a hemispheric weighting different from adulthood.

Even though structural and functional differences in female and male brains have been reported (Kimura, 2000) and notwithstanding all the biological underpinnings and the differential enculturation associated with sex differentiation (Halpern, 1997; Fausto-Sterling, 2016), we did not find any significant effect of this variable on rhythmic perception. Contrarily to Koelsch et al., (2003), who reported gender differences on the analysis of auditory information related to music processing, our results did not suggest any significant relation between sex and rhythmic perception performance. Since previous studies reported differences on auditory processing between women and men (e.g. Moulden & Persinger, 2000; Koelsh et al., 2003) and our results pointed to an opposite direction, we can hypothesize that the relation between sex and rhythmic perception could be task-related.

Another question addressed was the impact of prematurity on rhythmic perception. Previous neuroimaging studies pointed to differential brain volume (e.g. Nosarti et al., 2002; Giménez et al., 2006; Groeschel et al., 2014) and connectivity (e.g. Gozzo et al., 2009; Northam et al., 2012) as well as to behavioural impairments (e.g. Hutchinson, De Luca, Doyle, Roberts, & Anderson, 2013) when preterm and term subjects are compared, while other behavioural approaches suggested a pattern of recovery and preserved performance on subjects with preterm birth (e.g. Saigal et al., 2006). We can speculate about a compensatory mechanism associated with cross-hemispheric connectivity similar to dyslexic subjects where the failure of conventional pathways leads to the engagement of compensatory alternate systems (e.g. Gozzo et al., 2009). Another hypothesis to justify the differences between preterm and term subjects is a delay on the networks maturation (idem). Despite the differences on rhythmic perception between preterm and term participants, the first ones also revealed an improvement in rhythmic perception across age, specially related with rhythmic perception with constant pitch contour where they accomplished a performance similar to the term ones. The difference between groups was found to be more marked on rhythmic perception with varying pitch contour. As previously argued, varying pitch contour increases the complexity of rhythmic perception task that becomes more demanding with regard to attentional and mnesic processes, which were reported by several studies as impaired in preterm subjects (e.g. Aarnoudse-Moens et al., 2009; Johnson et al., 2010). Impairments were also highlighted on auditory processing of preterms, a point that may also modulate rhythmic perception (e.g. Hövel et al., 2015).

The current study is limited by the small sample size of preterm participants and the lack of a group of adolescents aged 14-17 years. In spite of these limitations this study gives us some interesting insights about how rhythmic perception changes across age and the role of pitch contour on those changes, as well as on the impact of sex and prematurity on rhythmic perception. Findings from this study are valuable not only to improve our knowledge about how we perceive rhythm across age, but also to clarify key topics related to other cognitive processes related with rhythm.

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Emotion Regulation and Memories of Affective Relationships in Emerging Adulthood

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Abstract

Emotion regulation is a personal capacity of monitoring and managing own emotions in daily life. Research has revealed that emotion regulation has a positive impact on individuals' psychological and social wellbeing. However, even if for a long time research has shown the strong relationship between autobiographical narratives, life events memory and emotions, only recently scholars have started to show an interest for the research about emotion regulation, life narratives and autobiographical memories. The aim of our work was to explore this relationship, deepening in a sample of 30 (12 males, 18 females) emerging adult participants (range of years 21-26) the role of emotion regulation abilities in autobiographical memories of the end of an important close relationship, analysing the narrative of this experience. The used instruments were: "Emotion Regulation Questionnaire", "Difficulties in Emotion Regulation Scale", the narrative of the event, and an interview to examine emotion regulation during the storytelling. The results showed that the ability to regulate emotions has a positive influence on the narrative structure, highlighting that emotion regulation occurs not only during an experience, but also when that experience is remembered. The authors discuss these results in reference to the hypothesis that emotion regulation is a protective factor for individual wellbeing in emerging adulthood, especially in relation to emotionally intense events, such as the end of an affective relationship.

Keywords: Emotion regulation, autobiographical narrative, emerging adulthood.

Introduction

Research has demonstrated a strong relationship among emotions, autobiographical narratives, and life events memories (Holland & Kensinger, 2010; Pennebaker & Graybeal, 2001; Fioretti & Smorti, 2015). More recently, scholars have started to focus their attention on the specific construct of emotion regulation and its relation with narratives of autobiographical memories (Pasupathi, 2010). Several authors have analysed the influence of narrative on emotional wellbeing (Pennebaker, 1997; Pennebaker & Graybeal, 2001; Smorti, Pananti, & Rizzo, 2010), and also on emotion regulation skills (Cox & McAdams, 2014); on the contrary, there is a lack of research about the influence of emotion regulation on autobiographical narrative. Indeed, in this field, authors have considered similar constructs, such as emotional intelligence, or general emotional abilities (Pennebaker & Seagel, 1999; Wotschack & Klann-Delius, 2013; Yamamoto & Toyota, 2013), demonstrating that good emotional skills can promote the construction of a coherent story about personal experiences. In addition, there are no studies that have analysed emotion regulation processes of the storytelling, which are also influenced by the narrative itself.

Considering all these aspects, we suggest that emotion regulation and autobiographical narrative are in a continuous and mutual interaction. First of all, emotion regulation can promote the construction of a coherent story by influencing the regulation of the storytelling. In other words, individual emotion regulation abilities can differently affect the regulation of the storytelling and therefore the structure of the narrative. At the same time, the act of the storytelling can promote emotion regulation. Storytelling enables an individual to provide meaning to life events and to reorganize the emotions experienced; so, narrating can constitute a tool to regulate emotions. Consequently, a well-structured story can have concrete effects of emotion regulation by improving emotion regulation abilities. In our study, we consider the influence of emotion regulation on two aspects related to narrative: linguistic aspects, that refer to the structure of the narrative, and regulation aspects, that regard the emotion regulation processes of the storytelling.

1.1. Emotion regulation and the structure of the narrative

Research has found that emotional skills have a significant influence on the structure of autobiographical narratives (Pennebaker & Seagel, 1999; Wotschack & Klann-Delius, 2013; Yamamoto & Toyota, 2013). In particular, repressive coping is linked to a scarce use of negative-emotion words, instead high level of negative-affect is related to an overuse of negative-emotion words. In general, a high number of positive-emotion words, a moderate number of negative-emotion words, and several cognitive words are linked to personal wellbeing (Pennebaker & Seagel, 1999). Furthermore, Yamamoto and Toyota (2013) found that narratives of high emotional intelligence individuals were more detailed compared with low emotional intelligence individuals. In addition, Wotschack and Klann-Delius (2013) demonstrated that the narratives of high-alexithymic individuals were characterized by a fewer number of words that indicate different types of emotions, which suggests that an important facet of alexithymia is the reduction of the semantic space of emotion words. In general, these results support the claim that better emotional abilities are linked to better structured tales regarding the number and type of words and details.

1.2. Emotion regulation and the regulation of the storytelling

Good emotion regulation abilities can also support the regulation processes of the storytelling. Indeed, when individuals tell about personal their past experiences, they necessarily deal with their current mood. During the storytelling, past emotions, emotions linked to the memory, and emotions of the present arise at the same time; therefore, individuals have to be able to manage this emotional arousal. In general, emotion regulation skills can contribute to resolve this situation by promoting the reappraisal of personal experiences, the adequate expression of own emotions and feelings, and the management of emotional behaviours during the storytelling. In a few words, emotion regulation can promote the regulation processes of the storytelling.

In spite of the evidences regarding these processes, until now, a little number of studies have analysed the relationship between emotion regulation and autobiographical narrative. In addition, no studies have deepened the role of emotion regulation on the linguistic structure of the narrative and the regulation processes of the storytelling.

Research

The aim of our study was to explore the relationship between emotion regulation and autobiographical narrative, focusing on the role of emotion regulation strategies, as well as the impact of difficulties in emotion regulation, on narrative. In particular, we considered two aspects concerning the narrative: linguistic aspects, in terms of affective and cognitive words used in the story, and regulation aspects of the storytelling, in terms of emotional behaviour of the storytelling. We supposed that emotion regulation predicted a narrative structure characterized by a high number of positive-emotion words and a low number of negative-emotion words, indicating the reappraisal of life events, and a great amount of cognitive words, indicating the understanding of causal processes. Referring to regulation aspects, we hypothesized that high levels of emotion regulation predicted better emotion regulation abilities of the storytelling.

2.1 Participants

A total of 30 participants took part to the study. They were university students (mean age = 23.56, *SD* = 2.06), recruited in the Department of Psychology at the University of Florence. The majority of participants were female (60%).

2.2 Procedure

Firstly, participants were asked to complete two self-report questionnaires about emotion regulation strategies and emotion dysregulation. Successively, they had to think about a specific event related to the end of a close relationship (romantic relationship or friendship), and to describe it in few words, specifying their current age, the age at the moment of the event, and the place where the event happens. Successively, they were asked to tell the event to a colleague of the experimenter, who was a female apprentice (23 years) of the Department of Psychology, trained to listen participants' stories in an empathic way. Successively, the experimenter asked some questions about their emotional behaviour during the narrative and, in particular, their emotion regulation strategies and abilities.

The research was conducted in accordance with the American Psychological Association guidelines for the ethical treatment of human participants. The participants provided their individual consent and could withdraw at any time.

2.3 Measures

Emotion Regulation. We assessed emotion regulation strategies and emotion dysregulation. We used:
Emotion Regulation Questionnaire *(ERQ;* Gross & John, 2003; Italian validation by Balzarotti, John, & Gross, 2010) to assess two emotion regulation strategies. The first was *cognitive reappraisal* (6 items), a good emotion regulation strategy, that involves the modification of the meaning of an event in order to change its emotional impact (e.g., "I control my emotions by changing the way I think about the situation I'm in"). The second was *expressive suppression* (4 items), a maladaptive emotion regulation strategy, that involves the inhibition of the behavioural expression of emotional experiences (e.g., "I control my emotions by not expressing them"). Participants rated their agreement with each item on scale ranging from 1 (strongly disagree) to 7 (strongly agree). Each of the two ERQ scales includes both positive and negative emotion items, which formed respectively a single reappraisal factor and a single suppression factor as factor analyses have shown. Higher scores on a scale indicate a preference to use that strategy rather the other one.
Difficulties in Emotion Regulation Scale *(DERS;* Gratz & Roemer, 2004; Italian validation by Giromini et al., 2012) to assess emotion dysregulation. DERS is a multidimensional scale composed of 36 self-report items designed to assesses an individual's' typical levels of emotion dysregulation. This scale provides a global score of emotion dysregulation, as well partial scores related to six subscales. In particular, *Lack of clarity* subscale (5 items) assesses the lack of emotional clarity (e.g., "I have difficulty making sense out of my feelings"). *Lack of awareness* subscale (6 items) reveals the lack of emotional awareness (e.g., "When I'm upset, I acknowledge my emotions" – reverse scored). *Impulsive behaviours* subscale (6 items) measures the respondent's' difficulties in impulse control (e.g., "When I'm upset, I have difficulty controlling my behaviour"). *Non-Acceptance of emotions* subscale (6 items) assesses the non-acceptance of emotional responses (e.g., "When I'm upset, I become angry with myself for feeling that way"). *Difficulties in goals directed behaviours* subscale (5 items) measures individual's difficulties in engaging in goal-directed behaviour (e.g., "When I'm upset, I have difficulty thinking about anything else"). Finally, the *Limited access to emotion regulation strategies* subscale (8 items) assesses the difficulties in using appropriate emotion regulation strategies (e.g., "When I'm upset, I believe that I will remain that way for a long time"). Respondents rated each item using a 5-point Likert scale ranging from 1 *(never)* to 5 *(almost)*. Higher scores indicate higher emotion regulation difficulties.

Autobiographical narrative. The linguistic aspects of the narrative have been analysed with *Linguistic Inquiry and Word Count (LIWC;* Pennebaker, Booth & Francis, 2001*)*. We focused on the following categories: *positive-emotion words* (e.g., happy, pretty, good), *negative-emotion words* (e.g., hate, worthless, enemy), and *cognitive processes words* (e.g., cause, know, ought).

Emotion regulation of the storytelling. The regulation aspects of the storytelling have been examined with a 9 items semi-structured interview, the Narrative Emotion Regulation Interview. It has been realized *ad hoc* to assess emotion regulation processes of the storytelling, by using *Emotion Regulation Questionnaire* and *Difficulties in Emotion Regulation Scale* dimensions. Every dimension has been codified with 1 for items indicating emotion regulation, and 0 for items referring to emotion dysregulation (0-9 scores).

Results

A bivariate correlation analysis was conducted to examine relations between all variables. The results are shown in Table 1.

In general, emotional difficulties resulted to have strong correlations with narrative. Indeed, both expressive suppression and emotion dysregulation dimensions were related to linguistic and regulation aspects of the narrative. In particular, expressive suppression was positively linked to the use of negative-emotion words in the narrative, instead general emotion dysregulation was positively related to a high number of positive-emotion words. More specifically, referring to the emotion dysregulation subscales, we observed that lack of clarity, impulsive behaviour, and difficulties in goal-directed behaviours had a positive correlation with positive-emotion words. Moreover, impulsive behaviours dimension was also negatively linked with cognitive processes words. Finally, regarding regulation aspects of the storytelling, we found that non acceptance of emotional responses had a negative relationship with narrative emotion regulation.

Tab. 1. Bivariate correlations between emotion regulation, emotion dysregulation, linguistic and regulation aspects of the narrative.

Linguistic and regulation aspects / Emotion regulation/ dysregulation	**LIWC** **Positive emotion words**	**LIWC** **Negative emotion words**	**LIWC** **Cognitive processes words**	**Narrative emotion regulation**

ERQ_Expressive suppression	.17	.38*	-.31	.05
DERS_Lack of clarity	.64***	.04	-.29	-.03
DERS_Impulsive behaviours	.47**	.02	-.49**	-.13
DERS_Non acceptance of emotional responses	.15	-.04	-.05	-.50**
DERS_Difficulties in goal-directed behaviours	.47**	-.04	-.19	-.29
DERS_Difficulties in emotion regulation total score	.49**	-.00	-.29	-.27

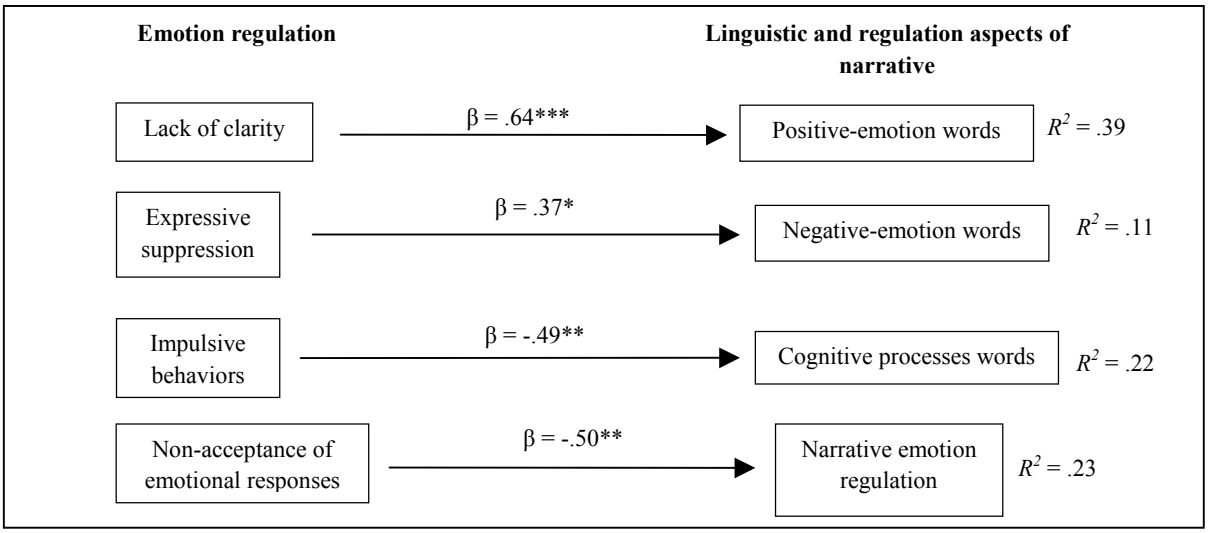
Legend: *ERQ= Emotion Regulation Questionnaire; DERS = Difficulties in Emotion Regulation Scale; LIWC = Linguistic Inquiry and Word Count*

* $p < .05$ ** $p < .01$ *** $p < .001$

We conducted a series of linear regression analyses to examine the influence of emotion regulation on personal narrative. The results are shown in Figure 1.

Referring to emotional linguistic processes, we found that lack of clarity had a positive influence on positive-emotion words (adjusted $R^2 = .39$, $F(1,28) = 19.75$, $p < .001$), instead expressive suppression had a positive impact on negative-emotion words (adjusted $R^2 = .11$, $F(1,28) = 4.63$, $p < .05$). Regarding cognitive processes, impulsive behaviours had a negative influence on cognitive words (adjusted $R^2 = .22$, $F(1,28) = 9.12$, $p < .01$). Finally, referring to emotion regulation of the storytelling, non-acceptance of emotional responses exerted a negative influence on narrative emotion regulation (adjusted $R^2 = .23$, $F(1,28) = 9.09$, $p < .01$).

Fig. 1. The influence of emotion regulation on linguistic and regulation aspects of the narrative.



* $p < .05$ ** $p < .01$ *** $p < .001$

Discussions and Conclusions

Our findings showed that difficulties in emotion regulation had a significant impact on both linguistic and regulation aspects of narrative.

Referring to linguistic aspects, we found that problems with emotional clarity lead to a great use of positive-emotion words in the narrative, in opposition to our hypotheses. However, it could be explained by the fact that people with difficulties in recognizing emotions, during the narrative of a negative experience, tend to

confound their emotional experiences and to overstate them in positive terms. Moreover, it could be due to an idealization of the personal story and the partner of the past relationship.

We reported an example of a narrative below, in which low levels of emotional clarity are linked to an overuse of positive-emotion words.

> *«I was… I had a shower in the garden, it was a beautiful day, almost night. I wouldn't be able to link this episode to other episodes of my life, because never more I have felt a such particular thing in my life, it's strange. It is like the* ***suffocation*** *in the rollercoaster, it's different as emotion but you understand. It was… It was a* ***very important*** *relationship, but we were kids, and when you are a kid everything is* ***bigger****. The first love,* ***so much love****,* ***so many beautiful things*** *and then… when the box is* ***too full****… You had* ***a such beautiful*** *relationship and everything seemed to be* ***very well****…».*

Moreover, we found that the tendency to suppress emotional reactions seemed to increase the use of negative-emotion words, in accordance with previous research which demonstrated that expressive suppressors tend to remember more negative emotions than non-suppressors (Richards et al., 2003; Wisco & Nolen-Hoeksema, 2010).

Finally, problems with the control of impulsive behaviours had a dramatic impact on cognitive and causal processes of the narrative. Indeed, the experience of own emotions as overwhelming obstructs the construction of a coherent frame in which the events could find their collocation and their meaning. We reported another example of a narrative in which low levels of emotion dysregulation are linked to a large use of cognitive-words.

> *«I still* ***think*** *in this situation when I meet him. I have not yet told him my* ***thoughts****. I would like to see him again, maybe to* ***apologize****, to* ***better understand****, to still have a dialogue… Anyway, if I would have the opportunity to meet him and to* ***explain*** *my point of view, I* ***think*** *that it would be ok also for my current boyfriend. From his point of view, I have been unfaithful, because our friendship was more such a romantic relationship for him.».*

Our data confirm the important role of emotion dysregulation also on the emotion regulation processes of the storytelling. Indeed, the inability to accept emotions leads to a less regulated narrative, in which individuals have more difficulties in managing their own emotions. Below, a narrative in which low emotion regulation abilities are linked to difficulties in emotion regulation of the storytelling.

> «*I tried to describe my emotions in the best way, although* ***it is not easy*** *because it's always a question of emotions… It is something that I've never felt, nor before neither after… I mean, it was something specific of that moment* ***and I hope to do not feel it anymore.*** *It was a* ***really strange emotion****, that* ***I cannot define very well****, I can try to explain but it's something that* ***I wouldn't link to nothing else****, so…».*

In conclusion, there is a clear relationship among emotion regulation, narrative emotion regulation and autobiographical construction. Emotion regulation appears to be a strong predictor of narrative construction and regulation processes of the storytelling. This result is particular relevant because refers to narrative concerning the end of an affective relationship, that is a normative event with a strong emotional intensity during emerging adulthood.

Our study contributes to explain interactional processes among these constructs, not yet well explored. One of the most important strength regards the focus on the specific construct of emotion regulation. Indeed, as we stated in the introduction, previous studies have analysed general emotional abilities, or other constructs. On the contrary, we chose to define our field of analysis within a specific theoretical frame, that refers to Gross' conceptualization of emotion regulation (Gross & John, 2003). Moreover, another strong point is the analysis of the narrative emotion regulation. Indeed, we examined not only emotion regulation as a personal and stable characteristic, but also as a process *on line*, that occurs during the narrative and, consequently, it is also influenced by it. In spite of these strengths, there are also various limitations. First of all, the sample was small and specific for culture; furthermore, we did not control other variables that could affect these processes, such as the role of the listener on narrator's story and narrative emotion regulation. For that reason, in the future, further analyses could be conducted to explore the role of the relational context on the emotion regulation processes and the narrative abilities.

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Attachment and Empathy as Predictors of Perspective-Taking Efficiency

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Abstract

In this study we probe the relation between empathy, perspective taking and styles of attachment. It was hypothesized that basic emotional responsivity towards experiences of others, will result in greater empathic understanding and more efficient suppression of egocentric inferences in a communication task. Group of students (N=60) filled out a set of self-report measures and completed a reaction time communication task. The results do not support the main hypothesis, they show however an interesting relation between the emotional component of empathy and perspective taking. Basic interpersonal emotional responsivity is detrimental to performance in a communication task when perspectives of the participants differ i.e. when there is a need to adopt the perspective of someone else. Empathetic emotional responsivity is, on the other hand, positively related to performance in a communication task where helping another individual is possible without adopting his or her perspective.

Keywords: Empathy, perspective-taking, attachment style

Introduction

Perspective taking requires overcoming egocentrism. Egocentrism, using oneself as a reference point when making judgments, is typical during childhood, but continues through adulthood, its level varying between individuals and situations (Boaz Keysar, Lin, & Barr, 2003). Children, up until the age of about 4, do not show evidence of explicit understanding that what they know might differ from that what others know (Wellman, Cross, & Watson, 2001). Research shows that even for adults, the initial judgement, when interpreting ambiguous information, remains egocentric, but is later corrected by taking into account additional information about different beliefs or intentions of other people (Epley, Morewedge, & Keysar, 2004). The change which occurs during our developmental process is therefore, essentially, the ability to correct the egocentric bias more efficiently.

Efficiency of correcting for the egocentric bias is significant for interpersonal communication as well as self-evaluation. Both require making adequate distinctions between one's own beliefs and the beliefs of another person. For instance, in a situation when an individual makes an embarrassing mistake, his or her inability to make the distinction between their own perspective and the perspective of others, leads to overestimating the negative reaction of other people and their negative opinion of the individual (Epley, Savitsky, & Gilovich, 2002). It also leads to a general overestimation of the degree to which other people pay attention to us at all. Furthermore, we tend to believe that our affective states are more transparent and obvious to others, than they actually are (Gilovich, Savitsky, & Medvec, 2001), as well as assume that others experience the same affective states as we do, for example, that they share similarly warm feelings towards an object that we own and want to sell (Van Boven, Dunning, & Loewenstein, 2000).

In the context of communication, perspective taking relates to the efficiency of reaching a common ground with the partner of the interaction. One of the measures of this ability is whether a listener is able to focus on and quickly select an object (referent) from only those objects which are mutually visible to both the speaker and the listener, or does he or she make errors (or time lags) due to focusing on objects which are only visible him or her, but not to the speaker (B. Keysar, Barr, Balin, & Brauner, 2000). People generally overestimate the degree to which what they say is clear, and unambiguous to the listener and do not routinely take other people's mental states into account while communicating with them (Boaz Keysar, 2007).

Perspective taking takes effort (Lin, Keysar, & Epley, 2010) and continuous practice, but can become almost automatic, as evidenced by cultural differences. People from collectivist cultures routinely put more effort in to looking for possible situational and contextual causes of other people's behavior and therefore are less prone to the fundamental attributional error (Gilbert & Malone, 1995). They are also more efficient in

suppressing egocentric interferences when interpreting ambiguous sentences expressed by a communication partner (Wu, Barr, Gann, & Keysar, 2013; Wu & Keysar, 2007).

1.1. Perspective taking and emphatic understanding

Relationship between empathy and perspective taking is not yet clearly established. Recent research suggests that empathetic processes engage similar networks as processing of intentions, but with additional activation of emotional processing (Decety & Svetlova, 2012; Völlm et al., 2006). The essence of perspective taking is the awareness that others' interpretation of a situation or affective state may differ from ours and correcting for that fact in social cognition and communication. When empathy and perspective taking are combined, we can say that perspective taking corrects for errors in empathy and widens the area of empathy. For example, it leads to the ability to empathize not only with salient emotional expressions of similar-to-oneself individuals, but with a generalized group of other people and their life circumstances (de Waal, 2008; Fabes, Carlo, Kupanoff, & Laible, 1999).

One of the most commonly used self-report measure of empathy, the interpersonal reactivity index (Davis, 1983), explicitly defines empathy as a general tendency to be influenced by observed experiences of another. One of its subscales measures the tendency to spontaneously adopt the psychological point of view of other people. It can be argued that this tendency of empathetic understanding will be reflected in the ability to perform well during ambiguous referent resolution in communication, that is to efficiently suppress egocentric inferences. Another subscale of the interpersonal reactivity index, empathetic concern, which assesses "other-oriented" feelings of sympathy for unfortunate others, should rather be related to mechanisms of social attachment (Decety & Svetlova, 2012).

1.2. Perspective taking and emphatic concern

Evolutionary perspective suggests that empathic concern and generally being responsive to the needs of others is rooted in parental care systems (de Waal, 2008) . Does it mean that attachment security leads to a better understanding of affective states of other people? The answer is „yes," if we consider this a motivational process (de Waal, 2008; Decety & Svetlova, 2012). On the other hand, secure attachment can lead to positive emotions and positive emotions actually decrease the tendency to use knowledge about other people's mental states (Converse, Lin, Keysar, & Epley, 2008). People also tend to include close but not distant others into their self-representations and therefore might make more errors when differentiating between one's own and somebody else's mental states, when the social attachment between them is strong (Aron, Aron, Tudor, & Nelson, 1991).

1.3. Current study

In the current study we attempted to probe the relation between perspective taking and a multi-dimensional self-reported empathy, as well as attachment style. We expected that self-reported empathetic understanding and self-reptorted perspective taking will be positively related to the tendency to quicker and more efficient suppression of egocentric inferences in a communication task (Wu et al., 2013). As previously mentioned, some theoretical views suggest that the enhancement of emphatic understanding should be facilitated by greater empathetic concern for others. Empathetic concern is in turn affected by security of attachment. Children who experienced secure parental attachment are generally more compassionate and responsive to the needs of others (Mikulincer et al., 2001; Mikulincer, Shaver, Gillath, & Nitzberg, 2005; Weinfield, Sroufe, Egeland, & Carlson, 1999). In summary, we expected that basic emotional responsivity towards experiences of others, will result in greater empathetic understanding and more efficient suppression of egocentric inferences in a communication task, by means of stronger motivation to care for and attend to others needs.

Method

2.1. Self-report measures

Basic emotional responsivity towards experiences of others was measured using the emotional contagion subscale of the Basic Empathy Scale in Adults (BES-A) translated into polish by M.Dolistowski and Ł.Tanaś (Carré, Stefaniak, D'Ambrosio, Bensalah, & Besche-Richard, 2013). Emphatic understanding was measured by the "cognitive empathy" subscale of BES-A, as well as "perspective taking" subscale of the Interpersonal Reactivity Index (IRI) (Davis, 1983). The IRI is 45 item empathy questionnaire that consists of four seven-item subscales, each with answers on a 5-point scale ranging from 0 (does not describe me) to 4 (describes me well). IRI has two scales designed to measure the cognitive aspect of empathy („perspective taking" and „fantasy" scales) and two measures of affective empathy („empathetic concern" and „personal distress"). The perspective-taking scale assess the inclination to adopt the perspectives of other people and see

things from their point of view. The fantasy scale measures a tendency to identify with fictional characters therefore it also taps cognitive perspective taking. The empathic concern scale contains questions about the inclination to feel sympathy, compassion, and concern for others, while the personal distress scale measures the respondent's inclination to experience discomfort as result of observing someone else's suffering or bad experience. The BES-A questionnaire is a 20-item empathy scale with two subscales: cognitive empathy scale and affective empathy scale. The participants rate 20 statements on a 5-point Likert type scale (form 1-Strongly Disagree, to 5 - Strongly Agree).

Attachment style was measured with the Experiences in Close Relationships Scale – revised (ECR-R) (Fraley, Waller, & Brennan, 2000). ECR-R measures attachment along two dimensions of "anxiety": fear of abandonment and rejection along with a high need for close relationships and a tendency to over-dependence and "avoidance": high need for independence and self-sufficiency, avoidance of dependency or even avoidance of close relationships in general.

2.2. Reaction time measure

In order to measure perspective taking with a non self-report tool, we used a computerized version of the "director's task" (B. Keysar et al., 2000). It is a form of a game with two participants — the original version involved two human participants, the computerized version involves one real person (the participant) and a virtual partner (Fig. 1.)., who instructs the participants to relocate certain objects seen on the screen (Fig. 2.). The virtual partner, called „the director" is standing behind a grid shelf and the participant sits opposite the grid shelf seeing it from the front on the computer screen. There are certain objects in the slots of the shelf, like a doll, a mouse or a cake. All objects are visible for the participants but not all objects are visible from the perspective of the director who is standing behind the shelf because some of the slots have a back wall through which the director cannot see a given object.

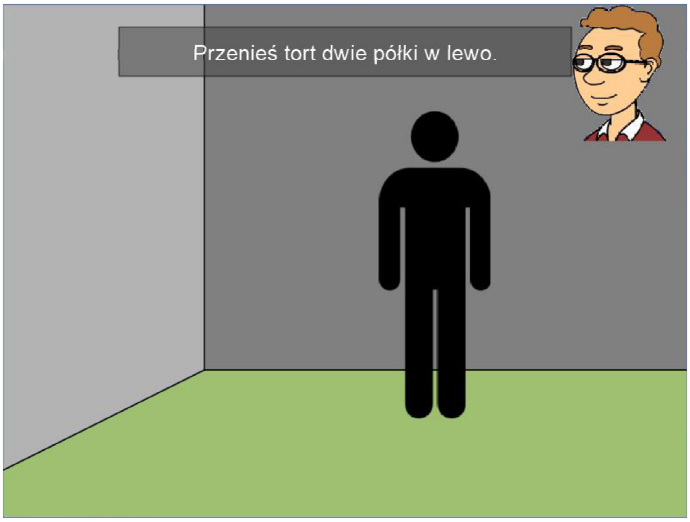

Figure. 1. Task instruction: „Follow the instructions which will be given by the person standing on other side of the shelf. Notice, that objects placed in slots without a back wall are visible for both you and the person standing behind the shelf".

Figure. 2. Trial details (eg. „Move X to the left") were given on a separate screen by the virtual „director".

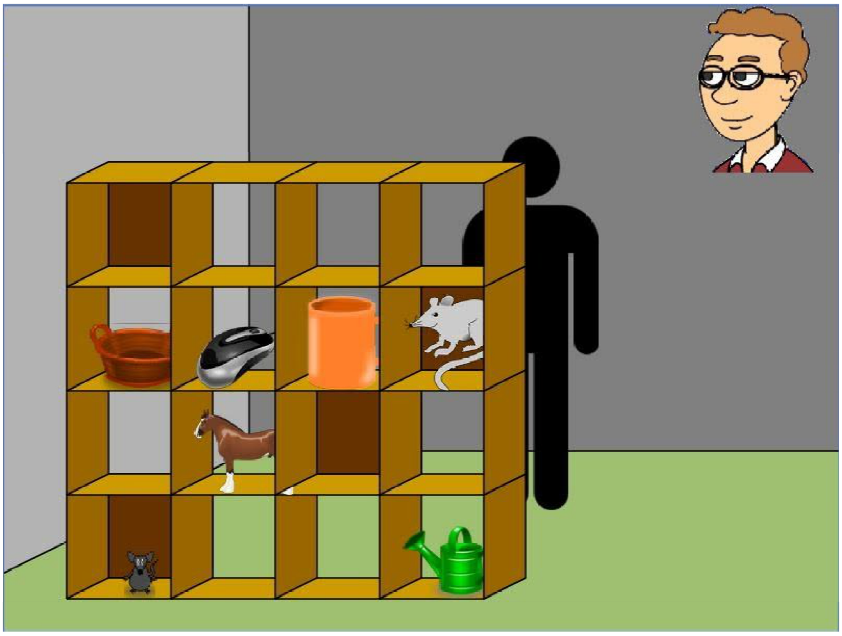

Figure. 3. Control trial. „Move the cake two shelves to the left".

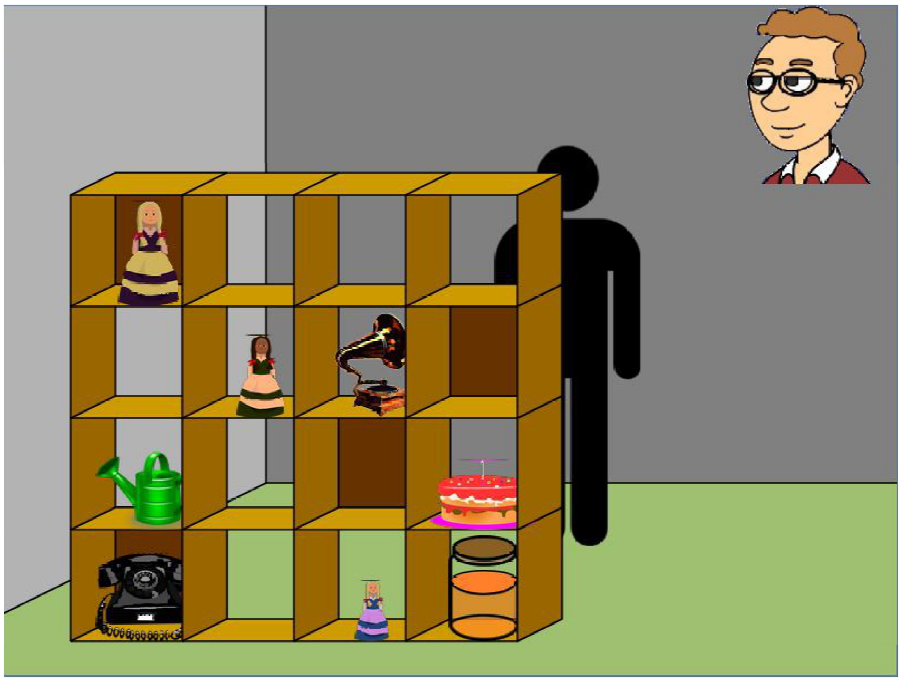

Figure. 4. Experimental trial – ambiguous size. „Move the small doll one slot up". Which doll would you chose?

Figure. 5. Experimental trial – ambiguous referent. „Move the mouse one slot up" – Which mouse would you chose?

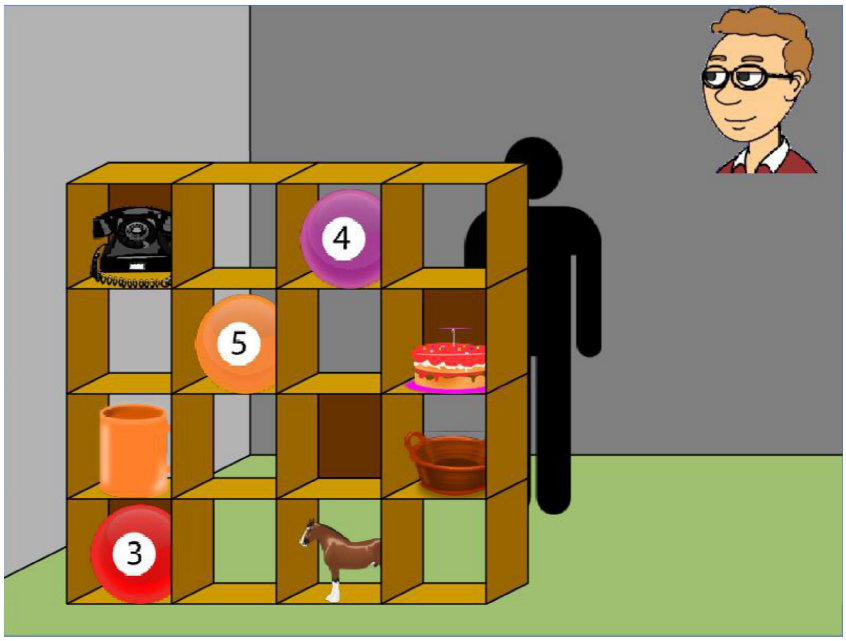

Figure. 6. Experimental trial – ambiguous location. „Move the bottom ball one slot to the right" - Which ball would you move?

The task is to relocate the object according to the director's instructions : e.g. : „Move the cake two slots to the left" (Fig. 3.). Because the perspective of the participant and the director differ, the success in the game involves speed and efficiency of taking the perspective of another person — the director. For example in the Figure. 4 we see that the director asks the participant to move the small doll one slot up — but the smallest doll is not visible for the director, so the participant must take this into consideration while choosing which doll to move and accordingly move the medium sized doll instead, because it is the smallest doll the director can see. In the task we have different types of ambiguity concerning perspective taking — the first example (Fig. 4.) concerned size, in Figure. 5 we see an example where the ambiguity concerns the referent (the object) — there are two types of mice in the grid but the director can see only the computer mouse, so this is the object that is supposed to be moved. In Figure. 6 we see an ambiguity concerning the location - the director asks to move the bottom ball, but ball no. 3 at the bottom of the grid is not visible for the director, so the ball which is supposed to be relocated is actually ball no. 5. The participants were first asked to do 4 test trails (which were all control trails (Fig. 3.) that did not contain any ambivalence. Next they were asked to take part in the actual test which consisted of 3 experimental and 3 control trials, randomized. The instruction was shown on the screen, the participant was asked to read and memorize it , then the instruction disappeared and the participant was asked to move the mouse courser to a central spot on the screen. After 3 seconds the grid shelf was shown and he participant was supposed to move a given object according to the previously shown instruction.

2.3. Procedure

Participants (N=60, student sample, 64% females; 2 participants did not indicate gender; scores of 1 participant from the "director" task were not included due to technical error) completed the attachment styles questionnaire (ECR-R, Fraley et al., 2000, Polish translation: Cieslak and Palider) and two self-descriptive measures of empathy (BES-A,Carré et al. 2013,Polish translation: Tanaś and Dolistowski; IRI, Davis, 1983, Polish translation: Kubiak). Speed and efficiency of visual perspective taking was measured using a modified "director task/Keysar task"(Epley et al., 2004). The "director" task measures response time and number of errors in a "game" requiring following on-screen instructions given by a virtual interaction partner (the "director"). Correct response in 50% of the trials (these are later called "experimental") requires taking the visual perspective of the partner instead of one's own, that is, distinguishing what does the other person know or see. For the Keysar Task see the illustrations and instructions below.

Results

2.1. Gender differences

Because we used self-report measures of empathy and the study was not anonymous, it is very probable that participants experienced an activation of empathy-relevant gender-role expectations (Ickes, Gesn, & Graham, 2000), that is that women should be more caring and affected by emotions of other people while men

should not be as affected emotionally. This was confirmed. There were gender differences with higher scores for females than males in each "emotional" subscale of empathy measures : IRI personal distress, $t(56) = 2,45$, $p < 0,05$; IRI empathetic concern, $t(56) = 2,5$, $p < 0,05$; BES affect, $t(56) = 2,34$, $p < 0,05$. There were no gender differences in any of the "cognitive" subscales : IRI perspective taking, $t(56) = 0,26$, p ns., IRI fantasy, $t(56) = 0,47$, p ns., BES cognition, $t(56) = 0,26$, p ns., nor in attachment or reaction times in the "director" task.

2.2. Self-report and reaction time measure of perspective-taking

We expected the self-report of perspective taking (IRI perspective taking) to correlate with the efficiency of perspective taking in the "director" task. Efficiency of perspective taking in the "director" task was measured as a relative difference between reaction times and number of errors in "control" trials and "experimental" trials. Control trials involved an instruction to move an unambiguous referent (object). Experimental trials involved instruction to relocate an ambiguous referent. Time was measured from the moment the grid shelf with objects was displayed on the screen, until the moment the participant „dropped" an object in the new location. In experimental trials this took significantly longer, M=10,31s, SD=5,4, than in control trials, M=8,75, SD=4,28, $t(59) = 2,59$, $p < 0,05$. Experimental trials also involved a larger number of errors, $t(59) = 11,3$, $p < 0,001$, with M=0,89, SD=0,21 correct answers in the control trials and M=0,38, SD=0,3 correct answers in the experimental trials. There was no significant correlation between IRI perspective taking and either time lag in experimental trials, rs=-0,04, p ns., or increased number of errors in experimental trials, rs = - 0,1, p ns.

2.3. Attachment style and reaction time measure of perspective-taking

We expected the self-report measure of attachment style to correlate with the efficiency of perspective taking in the "director" task. Specifically, higher attachment security should be correlated with more efficent perspective taking. Perspective taking was measured as a relative difference between "control" and "experimental" trials so a higher value of this variable means that the participant experienced less problems in experimental trails where there was a need to adopt he perspective of the director. This hypothesis was not supported, as there were no significant differences between attachment style and neither time lag in experimental trials relative to control trials, nor lower number of correct responses in experimental trials.

2.4. Basic interpersonal emotional responsivity and reaction time measure of perspective-taking

It was hypothesized that basic emotional interpersonal responsivity, measured by BES affect, IRI empathetic concern and IRI personal distress, will be positively related to efficient suppression of egocentric inferences in a communication task. This was not the case and the results actually point in the opposite direction. The three self-report variables are highly correlated with each other, BES affect is related to IRI empathetic concern, $rs = 0,44$, $p < 0,001$, and IRI personal distress, $rs = 0,54$, $p < 0,001$, IRI empathetic concern is related to IRI personal distress, $rs = 0,46$, $p < 0,001$, but they show different relationships with egocentric inferences in a communication task.

IRI personal distress is not related to efficiency of perspective taking in the communication task, rs = 0,03 (time lag), rs = 0,02 (correctness), but both BES affect, rs =-0,42, $p < 0,001$, and IRI empathetic concern, rs =-0,4, $p < 0,01$, are negatively related to efficiency of perspective taking in the communication task. This result might seem surprising. It is better explained by looking at absolute, not relative, values of correct responding. IRI empathetic concern was positively related to the number of correct responses in the control trials, $rs = 0,28$, $p < 0,05$, but negatively related to the number of correct responses in the experimental trials, rs =-0,27, $p < 0,05$. BES affect was positively related to the number of correct responses in the control trials, $rs = 0,44$, $p < 0,05$ and not related to the number of correct responses in experimental trials, rs =-0,16, ns. In summary, interpersonal emotional responsivity was related to better performance when the correct response required taking an egocentric perspective, and to worse performance when it was required to switch to the perspective of the virtual partner.

Discussion

Results show that the relationship between various aspects of empathy, attachment and perspective taking is a complex relationship. One significant result was the gender difference obtained in communicating-reported emotional, but not cognitive, aspects of empathy. This supports earlier claims about the activation of gender-related stereotypes and its influence on self-report measures (Ickes et al., 2000) although an alternative interpretation is also possible. Recent studies suggest that networks supporting empathy related skills might be organized differently for males and females, with males relying on a more cognitive strategy and females displaying a stronger emotional contagion based on the activation of human mirror neuron system (Schulte-Rüther, Markowitsch, Shah, Fink, & Piefke, 2008). It is yet unclear whether this difference is nature or nurture related, but suggests that the gender difference might be based on more than just self-report biases.

The fact that the main hypothesis : that there is a relation between security of attachment, self-reported perspective taking and egocentric inferences in a communication task, might be explained by several factors. One is surely the sample size. When estimating required power, we assumed that the effect will be moderate or large, but this might have been an overstatement, especially since we attempted to asses very similar constructs but with different measures — which is difficult to begin with and the differences could be excepted to be subtle. Another factor might be that the Experiences in Close Relationships Scale, which we used to measure attachment style, is narrowly focused on romantic relationships. Romantic relationships in adulthood might be a good choice if one is interested in the attachment system, this study however required an assessment of a much broader scope of close relationships. Perhaps if our perspective-taking software program was themed in such a way that it would prime the attachment relationship — a conversation with a significant other, instead of communicating with an anonymous virtual character, the effect of attachment style would be much larger and easier to observe.

In summary, the study shows that basic interpersonal emotional responsivity is positively related to performance in situations in which helping another individual is possible while adopting an egocentric perspective, but is detrimental to performance, when perspectives differ. Since this result was unexpected, we cannot firmly establish this as a conclusion. This result requires replication, but it also gives weight to the claim that when people are sensitive to emotions of others and their needs, they include them into their self-representations, therefore making more errors when one is required to differentiate between one's own and somebody else's mental state (Aron, Aron, Tudor, & Nelson, 1991). To support this hypothesis subsequent research is necessary. It is also important to use a larger set of tasks measuring successful separation of perspectives.

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A repeated-measures study of life values with Portuguese adolescents

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Abstract

This study examines mean differences of adolescents' life values over time. Participants included 483 Portuguese adolescents of both genders (57.1% women) of mean age 14.3 years old (SD_{age}= 1.4), attending middle and high school. Adolescents completed a demographic survey and the Basic Values Survey. Repeated-Measures ANOVA was used to examine mean differences at each sub-function for three occurrences of measurement. Results indicated statistically significant differences in life values for the first and the third occurrences of measurement. While the means at the Excitement and Interactive values sub-functions were higher in the third than the first occurrences of measurement, the means at the Supra-personal and Normative sub-functions were lower in the third than the first occurrences of measurement.

Keywords: Human values, mean differences, repeated measures.

Introduction

Human values play a central role in individuals' behavioural choices and contribute for socio-psychological phenomena [1]. Human values have been addressed in a number of fields, such as Psychology [2]. However, research on human values has mostly focused on the values' structure, with less attention being paid to the examination of change or stability of the values priorities over time. Although the literature affirms the stability of values over time [2, 3], some empirical contributions have highlighted the possibility of human values to change over time [4, 5]. Regarding such possibility, Gouveia [6] clarified that the priorities of human values might change over time, as individuals move across different developmental stages.

According to this position, changes in human values or in values priorities may be related to individuals' developmental processes. Career development and socialization processes start in childhood and extend through adolescence and adulthood. Adolescence has been acknowledged as an important period of the lifespan, in which changes in individuals' values standards might occur [7, 8]. As the adolescent period comprises changes at the biological, cognitive, social and career levels, this might also be a fruitful period to address change in human values [4]. While the family plays a primary role in transmitting the first values to their offspring [9], other socialization agents, such as teachers and friends, are important for individuals' development and may instil changes in one's values prioritization. These socialization processes operating during childhood and adolescence sustain the social- and cultural-based learning and integration of values, thus suggesting a dynamic development of values during these periods of the lifespan.

This study acknowledges the need to address if and how the pattern of values changes over time. Specifically, this study examined mean differences at each sub-function of life values across three occurrences of measurement with Portuguese middle and high school students. Our research relied on Gouveia's [10, 6, 11] Functionalist Theory of Human Values, which will be described and articulated with research supporting the possibility of values priorities to change over time in the following section.

1.1. Functionalist Theory of Human Values: Functions and sub-functions of values

The Functionalist theory conceives of life values as categories guiding behaviours. Values represent desirable categories based on human needs and pre-condition to satisfy them. Values can vary in magnitude and nature [6].

Within this framework, Gouveia [11] assumes that values transcend specific situations, as they take on different degrees of importance, guide human behaviours, and cognitively represent human needs. The Functionalist theory [6, 11, 12, 13] also suggests that values are organized across two main functions: the motivator-type (materialistic or humanitarian) and the orientation-type (personal, social or central). The

combination of these functions affords the possibility to retrieve six psychosocial sub-functions (each of which includes specific values) accounting for the structure of human values, namely: (i) Excitement (emotion, pleasure and sexuality), (ii) Promotion (success, power and prestige), (iii) Interactive (affection, social support and belonging), (iv) Normative (obedience, religiosity and tradition), (v) Existence (personal stability, health and survival), and (vi) Supra-personal (beauty, knowledge and maturity).

Following this framework, specific values can be grouped in a 3 x 2 schema, crossing the three orientation-types and the two motivator-types [10, 6]. On the one hand, each orientation-type consists of three sub-functions: personal values (excitement and promotion), central values (existence and supra-personal) and social values (interactive and normative). On the other hand, each motivator-type focuses on two sub-functions: materialistic (existence, promotion and normative) and humanitarian (supra-personal, excitement and interactive) (see Fig.1).

		Values as actions guiders (circle of goals) (Orientation-type)		
		Personal goals (the individual by him/herself)	Central goals (the general purpose of life)	Social goals (the individual in the community)
Values as expressers of needs (Motivator-type)	Thriving needs (life as source of opportunities)[1] Idealistic/ Humanitarian	**Excitement Values** Emotion Pleasure Sexuality	**Supra-personal Values** Beauty Knowledge Maturity	**Interactive Values** Affectivity Belonging Support
	Survival needs (life as source of threats) [2] Materialistic/ Pragmatic	**Promotion Values** Power Prestige Success	**Existence Values** Health Stability Survival	**Normative Values** Obedience Religion Tradition

Figure 1. Facets, dimensions and basic values

1.2. Human values in adolescence: Values differences over time

Although research on this topic is limited, a number of studies has analysed the establishment and evolution of the pattern of values over time. Schwartz [5] suggested that the values priorities might change over time, as a result of physiological changes and as a strategy for individuals to adapt to new life situations and circumstances. For example, it seems reasonable that young adults prioritize their fair values, as they progress in a phase of construction of their careers. Adolescence has been reported as a central period of the lifespan for identity construction [14, 15].

Another empirical contribution was offered in Tamayo's [16] study with adolescents, young adults and adults. This study indicated a main effect of age in values such as friendship, freedom, patriotism, comfort, personal dignity, honesty, pleasure, sex, inner balance, religion, family and exciting life. Additionally, this study suggested changes in the positive direction of religious values and in the negative direction of aesthetic, two decades after students completed college. This study suggests that the axiological structure of values is both stable and changeable over time.

Glover [17] examined differences in values priorities for grade, moral reasoning stage and gender. The results indicated that individuals located at stage 1 of moral reasoning chose mature love values, true friendship and ambition. People located at stage 2 prioritized mature love values as well, but also freedom, courage and affection. Mature love was also chosen by people at stage 3, who additionally prioritized family safety, salvation, honesty and affection. Finally, individuals located at stage 4 prioritized family safety, salvation, self-respect, honesty and affection. These findings seem consistent with literature suggesting that the values of social recognition, comfortable life and ambition, which concerns to the Promotion sub-function from Gouveia's [10] functionalist theory of human values, are negatively associated with moral development levels. In turn, values

such as honesty and responsibility, included in the Supra-personal sub-function from the Functionalist theory of human values, seem positively associated with more advanced moral development levels.

In a more contextual sensitive study, Sheldon [18] investigated how new situations, including academic ones, influenced the change in values priorities of college students, expecting an increase of intrinsic values and a decrease of extrinsic values [19, 20, 21]. Findings suggested differences in extrinsic and intrinsic values for students who participated in the study at both occurrences of measurement (i.e., first and final semesters) and those who only participated at the first semester. There were also differences within the group of students who participated in the study at both occurrences of measurement. Results suggested higher extrinsic values in the first than in the final semester. No differences were found in intrinsic values. Thus, these results suggest that changes may exist for extrinsic values, but relative stability seems to be registered for intrinsic values.

Similarly, Bardi and collaborators [7] conducted four longitudinal studies, varying the time interval between occurrences of measurement, countries and assessment of values. The sum of these studies suggested that changes in values priorities seem to follow a pattern of consistency and coherency. When natural life circumstances lead to change in values, change seems not to occur in a chaotic and disorganized manner, but rather to follow organized patterns.

Method

2.1 Participants

Participants of this study were 483 students from Minho and Douro Littoral areas of Portugal, 276 (57.1%) women and 207 (42.9%) men. From these students, 273 were attending 8th grade, 118 were attending 10th grade and 92 were attending 11th grade during the school year 2010/11. Students' age ranged from 12 to 19 years old *(*M = 14.3*,* SD = 1.4).

2.2 Instruments

Participants completed an identification survey, which elicited demographic information, such as age, gender, grade level and school. Participants also completed the Basic Values Survey (BVS) [10, 6]. The BVS includes 18 items (e.g., Success "Get what you propose; be efficient in everything you do") to evaluate the six sub-functions. Individuals were asked to position themselves in a Likert-type scale ranging from 1 "Totally unimportant" to 7 "Extremely important" based on the importance assigned to each value in their lives. Research with the BVS has supported the construct validity of the measure and found acceptable internal consistency reliability estimates, regarding the number of items and the nature of the construct under assessment [22, 23].

2.3 Procedure

After getting the consents from the educational institutions and the students' caregivers, the adolescents' voluntary participation in the study was guaranteed. The measures were administrated in-group at the school setting. Confidentiality was guaranteed throughout this study.

Data was collected across three occurrences of measurement. The first occurrence of measurement (T1) was carried out at the beginning of the school year 2010/2011. The second occurrence of measurement (T2) occurred at the end of the school year 2010/2011. Finally, the third occurrence of measurement (T3) was conducted at the middle of the school year 2011/2012.

2.4 Statistical Analysis

Statistical analyses were performed with the Statistical Package for Social Sciences (IBM SPSS), version 21 for Windows. There were no missing values. Descriptive analyses were conducted to support the sample's description and look for the central tendency and dispersion of the data. Mean differences in adolescents' values for the occurrences of measurement were examined by running a repeated-measures ANOVA. The statistical assumptions of multivariate normality and sphericity were fulfilled [24].

Results

The repeated-measures ANOVA suggested no statistically significant mean differences for the three occurrences of measurement neither in the Promotion, F (2, 481) = 0.69, p = .46, nor in the Existence sub-functions, F (2, 481) = 1.81, p = .16. However, results suggested statistically significant mean differences in the Excitement, F (2, 481) = 3.115, p = .05, Interactive, F (2, 481) = 5.312, p = .005, Normative, F (2, 481) = 13.96, p < .001, and Supra-personal sub-functions, F (2, 481) = 3.107, p = 0.05 (see Tab. 1).

Tab. 1 Basic values: Mean differences for the occurrences of measurement

	Occurrence of measurement				Pairwise comparisons		
	T1 (N = 483) Mean (SD)	T2 (N = 483) Mean (SD)	T3 (N = 483) Mean (SD)	F (2,481)	Mean difference T1 – T2	Mean difference T2 – T3	Mean difference T1 - T3
Supra-personal	17.05 (2.30)	16.81 (2.29)	16.78 (2.26)	3.11*	n.s	n.s	.27*
Existence	19.01 (1.96)	18.99 (2.21)	19.16 (1.93)	1.81	n.s	n.s	n.s
Promotion	14.77 (2.88)	14.91 (2.72)	14.90 (2.90)	.69	n.s	n.s	n.s
Normative	15.02 (3.08)	14.51 (3.19)	14.36 (3.07)	13.96*	.50*	n.s	.66*
Excitement	15.73 (2.86)	15.98 (2.80)	16.05 (2.70)	3.12*	n.s	n.s	-.32*
Interactive	17.61 (2.43)	17.24 (2.41)	17.39 (2.29)	5.31*	.37*	n.s	n.s

Note: * $p \leq 0.05$; n.s. = non-significant

Pairwise comparisons suggested that students present significantly higher Normative means in the first occurrence of measurement than in the second and third ones. Similarly, results indicated that students present significantly higher Supra-personal means in the first occurrence of measurement compared to the third one. On the other hand, results indicated that students present significantly lower Excitement and Interactive means in the first occurrence of measurement compared to the third one.

Conclusions

This study relied on the Functionalist theory of human values [10, 6, 11, 22, 23], which although addresses human values from an individual perspective (i.e., stating that values are acquired and/or developed by the person), it also acknowledges that each person suffers an influence from culture and socialization processes across the lifespan [6]. Following such a perspective, our study contributed to the examination of the change versus stability of human values over time.

Our findings offered evidence suggesting that adolescent personal guiders seem to grow while their central orientation means seem to decrease over time. Evidence also indicated that adolescents assign more importance to social orientation in the first occurrence of measurement compared to the third one. This might signal a decrease of the social sub-functions guiders over time. Overall, our findings seem to signal that youths start by assigning more importance to the central values and social orientation, but such an importance seems to decrease over time while advancing in the school years.

These results might be related to the adolescents' greater need to adapt to academic challenges (e.g., school, class, curriculum) at the beginning of a school year. Indeed, the first occurrence of measurement coincides with the beginning of the school year.

This study suggested that students assign more importance to values such as emotion, pleasure and sexuality (Excitement sub-function), affection, intimacy and social support (Interactive sub-function) in the third occurrence of measurement than in first one. These findings might illustrate that adolescents jointly couple personal and social behavioural guiders to achieve personal goals and to gain personal benefits [6]. These results seem also consistent with the career development literature, which presents adolescence as a central period of the lifespan for identity construction [14, 15]. Additionally, this study seems to suggest that students acknowledge their co-existence with others and within groups, which is aligned with the vision of adolescence as a period of the lifespan in which the identification with groups becomes more salient [14]. Moreover, the results suggesting that students prioritize these values in the third occurrence of measurement seem to illustrate an increase of the type of personal and social concerns over time.

Evidence also indicated that the values representing the physiological aspect need satisfaction (e.g., looking for adventure, enjoy life, get sexual pleasure) and sustained by a personal guidance seem to increase over time. Individuals adopting these values are usually less conformed to social norms [10, 6] and present a long-term future orientation to search for fixed and material goals, which seems aligned with the adolescent literature.

Based on the literature, the theoretical rational and evidence from this study, it is possible to conclude that values reflect human needs and, therefore, values priorities can change over time, as a function of mutable personal and/or social circumstances (e.g., the demand for greater social justice). As so, the priorities individuals assign to values or to their sub-functions change across the life-cycle.

The contribution of this study to characterize adolescents' values dimensions with a repeated-measures design is, therefore, noteworthy. Our study might stimulate further longitudinal studies focusing on the change of values priorities across the lifespan and within contexts, which might be useful to empirically sustain the establishment of goals for career interventions with adolescents.

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Health Care Climate, Posttraumatic Stress Disorder and Mothers and Fathers' Attachment to their Babies

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Abstract

Postnatal attachment is relevant to future parent-child relationship and child development outcomes. Previous attachment research focused mainly on mother-child bonds and fathers' perception has often been excluded. Thus, studies that include both mother and father variables enable a more complete perspective of family relationships. Previous research highlighted the PTSD negative effect on mothers' attachment. The objective of this cross-sectional study with Portuguese couples, whose babies were born less than a year before, is to explore the correlations and effects of health care climate and mothers' PTSD symptoms associated with childbirth on mothers and fathers postnatal attachment to their babies. One-hundred seventy-seven couples aged 19-47 (M=32.11; SD=5.92), mostly married, answered the PPQ-Perinatal Posttraumatic Questionnaire, MHCCQ-Modified Health Care Climate Questionnaire, MPAS-Maternal Attachment Scale, and PPAS-Post-natal Attachment Scale. Results indicate that for mothers, age and PTSD symptoms are associated with health care climate perception; health care climate predicts post-natal attachment. For men, being a new parent and the perceived health care climate provided to the partner, act as predictors of postnatal attachment. In summary, mothers' PTSD symptoms have a negative effect on health care climate, the latter being a relevant variable with an impact on attachment for both parents. This study may contribute to deepen the knowledge of the impact of health care conditions and services during pregnancy and after birth on the primary affective bond between parents and their new babies.

Keywords: Childbirth PTSD, health care climate, attachment, mothers, fathers

Introduction

Currently, some negative effects of PTSD symptoms related to childbirth are already known as having an impact at individual and family relationship level. Previous studies have enhanced its impact on the mother or on her baby (Ionio, & DiBlasio, 2014; Nicholls, & Ayers, 2007); on the couple's relationship (Ayers, Eagle, & Waring, 2006); and on mother's bonding and attachment to her baby (Davies, Slade, Wright, & Stewart, 2008). Concerning the impact of childbirth and PTSD symptoms related to childbirth, individual and contextual variables must be taken into account. These variables include severity, duration and proximity to the traumatic event, personal and family history of the subject; social support, personality traits, and coping (Soet, Brack, & Dilorio, 2003; Iles, & Pote, 2015). Regarding mothers, the feeling of lack of choice or lack of involvement in decision-making and the poor quality of health care information provision, staff factors, continuity of care and environment (Nicholls, & Ayers, 2007) are contextual factors associated with PTSD symptoms. These factors highlight the importance of health care climate perception. Several studies concluded that "good and honest" communication from medical staff is highly valued by women at the time of birth (Hinton, Locock, & Knight, 2014; McKenzie-McHarg, Crockett, Olander, & Ayers, 2014). Previous results also focus on the mothers´ need for more information before making prenatal decisions (Wohlgemuth, 2006) and during childbirth, as they are important factors that reduce the mothers' feeling of lack of control (Denis, Parant, & Callahan, 2011). Although research focusing on the fathers' role and relationship within the family is growing, only a small number of studies emphasise the fathers' attachment in the postnatal period. When transitioning to parenthood, fathers feel they play a secondary role and that their needs are underestimated (Kowlessar, Fox, & Wittkowski, 2015). Partner experiences are characterized by powerlessness and exclusion (*near-miss* events). Also, support (from staff) is very important, and clear, honest communication from medical staff is highly valued by fathers (Hinton, et al, 2014). First-time fathers report the need for formal support, for more and targeted information, and inclusion of prenatal, labour and delivery health care provision (Carlson, Edleson, & Kimball, 2014). Hence, for

both parents, the support and information provided by the health care team (doctors, nurses and midwives) appears to be an important variable to consider at the time of birth and afterwards, with possible implications on how parents relate to their baby. With this study, a couple's - mother/father design, we intend to deepen this association. The objective of this cross-sectional study is to explore the effects of health care climate and mothers' PTSD symptoms associated with childbirth on parents' postnatal attachment to their babies.

Method

1.1. Participants and procedures

It is a community-based sample of 177 couples with a baby younger than twelve months *(M*= 6.88; *SD*= 3.23). One hundred and seventy-seven healthy mothers, aged between 19 and 47 years old (*M* = 30.91; *SD* = 5.38), mostly married (82.5%), and their partners, aged 22-57 years old (*M*= 33.50; S*D*= 6.23) answered the questionnaires. The majority of couples has a college degree (42% of mothers and 45.2% of fathers) or completed their high school graduation (34.3% of mothers and 38.6% of fathers). All couples participated willingly, understood and accepted the study's objectives on an informed consent sheet.

1.2. Measures

Each partner answered the questionnaires individually. Mothers completed the PPQ Perinatal PTSD Questionnaire (14 items) (DeMier, Hynan, Harris, & Manniello, 1996), the MHCCQ-Modified Health Care Climate Questionnaire (6 items), which evaluate the perception of care and communication with the health care staff (Williams, McGregor, King, Nelson, & Glasgow, 2005) and the MPAS-Maternal Post-natal Attachment Scale (19 items) (Condon, & Corkindale, 1998) measuring mothers' bonding to their baby. Fathers answered MHCCQ (6 items) and PPAS - Paternal Post-Natal Attachment Scale (19 items) (Condon, Corkindale, & Boyce, 2008). PPQ, MPAS and PPAS were validated for the Portuguese population by the research team (Brites, et al., 2014; Nunes, et al., 2014; Pires et al., 2014).

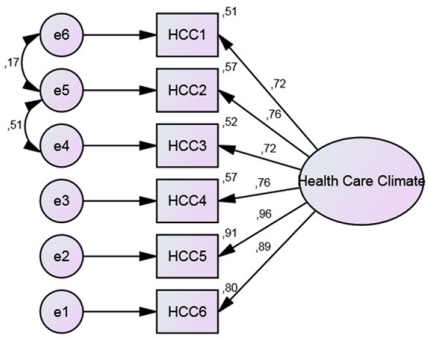
Results and Discussion

In order to test the impact of the variables under study on postnatal attachment, first we conducted a confirmatory analysis (CFA) of the attachment measure (after selecting the common items from MPAS and PPAS) and of the MHCCQ. After the observed variables validation was confirmed, a structural equation model (SEM) was conducted separately for mothers and fathers, including the demographic variables with significant Pearson correlations to the dependent variable (attachment). Prior to the referred analysis, outliers were removed based on a higher Mahalanobis distance (D2). Normality adherence was evaluated by kurtosis and skewness values with no variables presenting a strong violation for normal distribution (I*Sk*I< 3; I*Ku*I < 10) (Kline, 1998). Also, no collinearity between exogenous variables was found (VIF/tolerance < 10/2) (Field, 2005). The significance of regression coefficients was analysed after parameter estimation with ML (maximum likelihood) method resorting to AMOS (v.22 SPSS, IBM). Goodness-of-fit (GFI), Comparative-fit-index (CFI) and Root-mean-square-residual (RMSEA) were used as adjustment indexes; Akaike Information Criteria (AIC) and MECVI indexes were used for models comparison.

CFA validated the observed common items of parents' attachment measures based on adjustment indexes ($X^2_{(5)}$ = 9.48; CMIN/DF = 1.90; p = .09; GFI = .99; CFI = .98; RMSEA=.05, $P_{(rmsea<=0.05)=.}$44). Five items were retained, and three removed (2, 6, 7) due to low factor weight and high skewness, kurtosis and critical ratio (CR) values. The five-item solution has an internal reliability of .65 (Cronbach's Alpha). Although this value is far from satisfactory, this solution was the best, as a SEM observed measure.

For MHCCQ validation, three CFAs were conducted (no inter-item correlation, one and two correlations models). We elected the last CFA because it presented a better fit (fig.1) compared to the first (AIC = 182.31; MECVI = .52) and second model (AIC = 97.25; MECVI = .27). The measure presents a good reliability (α = .92).

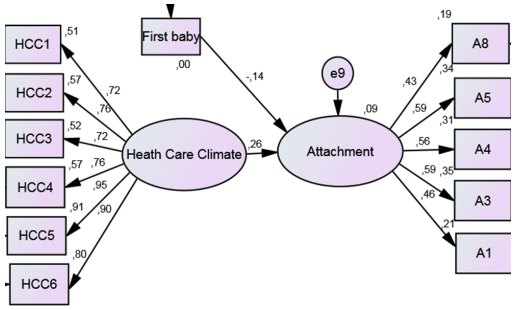
Figure 1. Confirmatory Factorial Analysis for MHCCQ measure



Legend. Fit indexes $X^2/_{df}$= 8.45, GFI= .86; CFI = .97; RMSEA = .15, *pclose* = .000.

After CFA, a SEM was conducted to test health care climate and other demographic variables' impact on fathers' postnatal attachment to their babies. The simplest model presented a better fit (Fig. 2), hence models including other variables such as age and educational level were not accepted for they did not meet the required criteria.

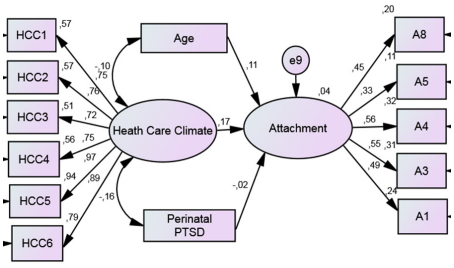
Figure 2. Fathers' SEM including being a new father, MHCCQ, and attachment



Legend. Fit indexes $X^2/_{df}$ = 2.50, GFI = .95; CFI = .96; RMSEA=.07, *P*(rmsea<=0.05)=.04; pclose = .000.

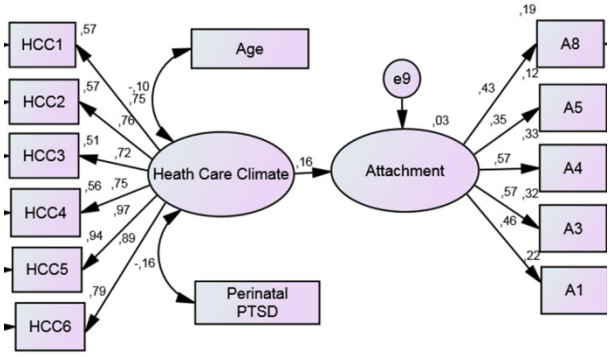
As for the mothers' model, being a new mother was not a significant variable. Accordingly, models included childbirth PTSD, health care climate perception and age as attachment predictors. Based on fit and comparison indexes, we tested a mediation model (Fig. 3) and a moderation model (Fig. 4). The moderation model, which envisages a correlation between independent variables, presented a better fit.

Figure 3. Mothers' attachment mediation model including age, MHCCQ and PPQ



Legend. Fit indexes $X^2/_{df}$ =1.92; *p*=.000; CFI=.94;RMSEA=.07;*P(rmsea*<=0.05)=.03; I.C.90%].05,.09[; Comparison indexes AIC=203.12; MECVI=1.25

Figure 4. Mothers' Attachment Moderation Model including age, MHCCQ and PPQ



Legend. Fit indexes $X^2/_{df}$=1.88; *p*=.000; CFI=.94; RMSEA=.07;*P(rmsea*<=0.05)=.04; I.C.90%].02,.05[; Comparison indexes AIC=200.29;BCC=207.88;MECVI=1.23.

SEM results showed that with regard to the fathers' model, health care climate and being new fathers predict postnatal attachment. Although acceptable, mothers´ models presented a poorer fit. For mothers, a moderation model including childbirth PTSD symptoms, health care climate perception and age may have a negative effect on mother-baby attachment (only a small effect).

There are no studies in Portugal regarding childbirth PTSD. This study demonstrates that childbirth PTSD is a pertinent variable that should be addressed, although no relation has been found between PTSD and attachment, unlike Davies et al Stewart (2008). Our results confirm the findings of Nicholls, and Ayers (2007) that poor quality of health care information provision is related to PTSD symptoms. The quality of health care climate perception in also related to age, meaning that younger mothers are slightly more vulnerable to this impact.

This pilot study may also contribute to deepen knowledge on the impact of health care conditions and services during pregnancy and following birth on the primary affective bond between parents and their new baby. Just like previous research, our findings confirm that, for both parents, health care climate is a relevant variable that needs to be valued at the time of childbirth (Hinton, et al., 2014; McKenzie-McHarg, et al., 2014). It can have an important impact on parents-baby attachment, probably due to an increased feeling of worth and control during labour and the notion that parents have some say in what concerns their babies' safety and health.

Future research should continue to address the interdependency between health care climate and parents-child relationship, as well as explore its importance in PTSD related to childbirth symptoms.

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Fieldwork study of a Yogo teacher's responsiveness to students in a school health room -A comparison of student-teacher's interactions in Japanese elementary and junior high school-

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Abstract

This study uses an observation method to clarify the differences between *yogo* teachers' responses to students visiting the school health room of Japanese elementary and junior high schools. One hundred seven students visiting health rooms of 8 elementary and junior high schools in a prefecture were participated in this project. Results showed that *yogo* teacher's responsiveness to the students were significantly different between elementary and junior high school regarding time. The reasons for students visiting the school health room were significantly different, and also the yogo teacher's posture and distance were significantly different between elementary and junior high school. These results clarified that observational research is necessary in order to understand the true interaction of the *yogo* teacher to the students, and thus better assess the *yogo's* work.

Introduction

A yogo instructor is a position in the Japanese compulsory education system that requires an accredited health teacher certificate but not a full-fledged medical nurse certification. Overseeing a student's physical and mental health, the *yogo* teacher is similar to what in other countries is referred to as a school nurse, although in those countries, the nurse holds a medical nursing certificate.

In the medical field, many studies regarding the issue of touch have explored the effect of touch between nurses and clients (Estabrooks & Morse, 1992; Tatsumi, Adachi, Yokota, Ashikaga, Tanaka, & Sakai, 2000). Concerning to the touch in mother-child interaction study, Field reported that when American children experienced a slight touch from their mothers, they show violent behavior in adolescence (2002), thus emphasizing the importance of touch (2001). However, in Japan few studies on touch studies focus on school nurses (*yogo* teachers). Those studies that do focus on touch utilize questionnaires given during student visits to the health room, and touch frequencies were significantly different between elementary and junior high school (Shimomura, Hayashi, Toda, Ishida, & Izawa 2014). As the reason for the visit is often private because the student comes for either a physical or mental problem, observation by a third person (observer) is difficult. Yet observation research is necessary in order to understand the true interaction of the *yogo* teacher to the student, and thus better assess the *yogo's* work.

Purposes

This study 1) explores *yogo* teachers' responsiveness to the students visiting the school health room in both elementary and junior high school and 2) examines any differences between *yogo* teacher's behaviors in elementary and junior high schools.

Method

Subjects: In one day in 8 elementary and junior high schools observed, y*ogo* teachers responded to one hundred seven student visits.

Observation

Three researchers observed *yogo* teacher's responsiveness for four hours between 10 a.m. and 2 p.m. on a particular day in each school. The observation focused on the number of *yogo* teacher's responsive behaviors to students visiting the health room, the time visited, the *yogo* teacher's posture, the kinds of touch, the reason for the visits, etc. Observations were recorded independently.

Reliability

Reliability by the three researchers was time 98%, the reason for the student visit 100%, the location where responding took place 100%, the teacher's standing location in regard to the student's position 90%, the teacher's posture 100%, the distance between the teacher and the student 92%, the number of recorded touches 100%, the kind of touch 96%. Items of disagreement were discussed with the three observers and then summarized.

Results

1. Time: Yogo teacher's responsiveness to the students was 12 minutes on average in elementary school and 22 minutes in junior high school ($p<.05$, Table1).

Table1. The time of yogo teacher's responsiveness to the students

	Mean (SD)	Range	t-value	p
Elementary	12 (19)	(1-120)	1.8	*
Junior high	22 (32)	(1-180)		
Total	17 (27)	(1-180)		

*N=107 *p<.05*

2. Reason: The reason to visit the school health room was for medical reasons ($p<.05$) in elementary school and for health consultation ($p<.05$) in junior high school (Table2). The students in junior high school have

Table2. The reason to visit the school health room

Reason	Elementary N (%)	Junior high N (%)	p
Surgical problems	24 (51.1)	12 (23.5)	*
Internal problems	14 (29.8)	24 (47.1)	n.s.
Other problems	7 (14.9)	3 (5.9)	n.s.
Health consultation	2 (4.3)	12 (23.5)	*

**p<.05*

3. Posture: Yogo teacher's posture significantly differed between the two types of schools. In elementary school, teachers responded to the students with a bent-knee squatting posture ($p<.001$). In junior high school, they responded to the students in a standing position ($p<.05$) or sitting ($p<.001$) posture (Table3).

Table 3. Yogo teacher's posture and distance

Posture	Elementary	Junior high	p

	N (%)	N (%)	
Standing	95 (60.1)	131 (71.2)	*
Bent-knee squatting	51 (32.3)	28 (15.2)	***
Sit by the student on the bed	3 (1.9)	22 (12.0)	***
Sit on the chair	9 (5.7)	3 (1.6)	n.s.

Distance between *Yogo* teacher and student	Elementary	Junior high	p
	N (%)	N (%)	
Less than 15 cm	4 (2.5)	3 (1.6)	n.s.
15 ～ 45 cm	39 (24.7)	27 (14.7)	*
46 ～ 75 cm	103 (65.2)	144 (78.3)	**
76 ～ 120 cm	12 (7.6)	10 (5.4)	n.s.

*p<.05, **p<.01, ***p<.001

4. Other items: There were no significant differences about the number of responses, the response place, *yogo* teacher's position, the number of touch and kinds of touch.

Conclusion

Although few observation studies about a *yogo* teacher's responsiveness to students have been explored, this study clarified the differences between the *yogo* teachers' responsiveness to students in elementary versus junior high school utilizing an observation method. It suggests that the *yogo* teacher's responsiveness to a student alters with the student's developmental and academic career stage. These results can be used in order to train pre-service *yogo* teacher's need to be better aware of how their behavior affects students in both school environments.

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Self-esteem and affective balance of a teenager in connection with parental attitudes and psychological well-being of his/her parents

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Abstract

The aim of the present study was to examine the effects of parenting styles on the teenager's self-esteem and affective balance. It explored the quality of parental attitudes that leads to a healthy sense of self. Researchers suggest that high level of self-esteem and positive moods such as joy and interest indicate individuals in flourishing mental health. For children the parent's child-rearing behaviour contributes profoundly to their development. The question, then, is how teenagers' self-esteem and affective balance correlate with mothers' and fathers' parental attitudes and psychological well-being. The study involved 35 families from Saint-Petersburg (every family consisted of mother, father and their 11-14 years old child). Methods used for teenagers were: the Rosenberg Self-Esteem Scale and Bradburn's 'Affect Balance Scale'. Mothers' and fathers' attitudes about child-rearing, parent-child relationships, and roles of family members were measured by PARI (Parent Attitude Research Instrument). Parents' psychological well-being was measured by Ryff's Scales. The results showed that teenagers' self-esteem has positive correlation with affective balance. These scales are significantly associated with the mothers' parental attitudes 'Encouraging Verbalization' and 'Breaking the Will' and with the fathers' parental attitudes 'Fostering Independence' and 'Permitting Child's Self Assertion'. In addition, they positively connected with the components of the mothers' psychological well-being: 'Autonomy', 'Environmental mastery', and 'Self- acceptance'. The more in a state of psychological well-being the father the more he takes on responsibility with regard to education of the teenager. Thus, the role of mother and father in the education of teenagers are different. The mother listens to his/her concerns and somehow limits behaviour, and the father promotes independence and self-assertion of the teenager, giving him/her more freedom and stimulating 'sense of maturity'. Such kind of parent-child relationships contributes to the shaping of the adolescent's healthy development.

Keywords: Affective balance, parental attitudes, psychological well-being, self-esteem, teenager.

Introduction

Researchers suggest that high level of self-esteem and positive moods such as joy and interest indicate individuals in flourishing mental health. For children the parent's child-rearing behaviour contributes profoundly to their development. A child's parents are the most influential people in their lives up until the teen years. During the teenage years, however, some children may feel that they have developed a sense of self and would like to break free from their parents. Across adolescence, then, parenting that treats the child as an individual, respecting needs for autonomy, and which is not psychologically intrusive and manipulative contributes to the development of the kinds of psychological and behavioral "outcomes" valued in the society [1].

Psychological attributes of parents also influence the way parents interact with their children [2]. Parents, who are prone to negative emotional states, to be it depression, irritability or anger, tend to behave in less sensitive, less responsive ways, than other parents [1].

The question, then, is how the narrow world of the family contributes to the shaping of the teenagers'strong sense of self.

1.1. Participants and methods

This present study explores the quality of mothers' and fathers' parental attitudes that leads to a healthy self-esteem and positive emotional state. It addresses the question of whether or not a high level of parents' well-being is really important for the teenagers' developing a healthy self-esteem and positive affect balance.

The study involved 35 families from Saint-Petersburg. Every family consisted of three people: a mother, father, and their teenager (*Tab. 1*). All parents were well-educated and had a job. All adolescents studied at school.

Tab. 1. Participants (gender, ages)

	Mothers	Fathers	Teenagers	
			Boys	Girls
	n=35	n=35	n=15	n=20
Ages	32–47	35–50	11–14	11–14

Methods used for parents were: PARI Q4 (Parent Attitude Research Instrument) E.S. Shaefer and R.Q. Bell (1958), revised by S. Schludermann and E. Schludermann (1979). PARI measures attitudes about child-rearing, parent-child relationships, and roles of family members. PARI Q4 has forms for the mother and for the father. 'Psychological well-being Scale' C. Ryff. Psychological well-being (PWB) Scale consists of six factors: Autonomy, Environmental mastery, Personal growth, Positive relatedness, Life purpose, and Self-acceptance.

Methods used for teenagers were: 'Rosenberg Self-Esteem Scale' (M. Rosenberg, 1965). 'Bradburn Affect Balance Scale' – standard version (N.M. Bradburn, 1969). The overall "balance" score is created by subtracting the negative affect score from the positive affect score.

1.2. Results and discussion

The study revealed that the level of self-esteem of teenagers slightly above average and an affect balance score was positive (*Tab. 2*). The chat indicates that 55 percent of teenagers were with a predominance of positive affect and only 21 percentages of teenagers – with a predominance of negative affect (*Fig. 1*). In addition, Self-esteem correlated positively with Affect Balance (r= .543). So, the majority of teenagers had a positive attitude towards themselves and positive emotions. The higher the self-esteem of a teenager, the more positive emotions prevail over negative ones in his life.

Teenagers in our sample, in general, can be described as having a good psychological and emotional state.

Tab. 2. Descriptive Statistics for Rosenberg's Self-esteem Scale and Bradburn's Affect Balance Scale

Variable	Teenagers (n=35)	
	Mean	(SD)
Self-esteem (Rosenberg)	26.06	(6.02)
Affect Balance (Bradburn)	0.96	(1.81)

Note: Possible range for Self-esteem Score: 0 to 40.
Affect Balance Score: Positive Affect Score minus Negative Affect Score. Possible range: -5 to +5.

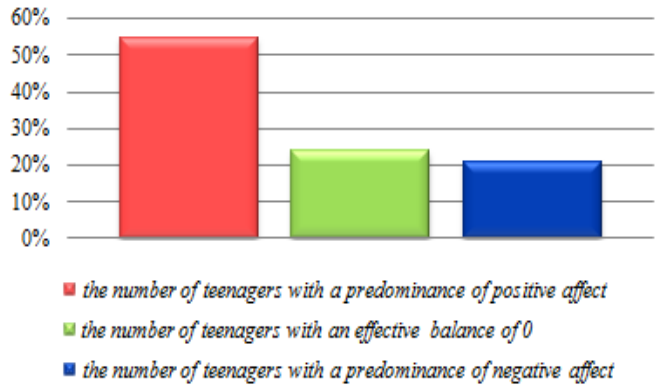

Fig. 1. The distribution of the Affective Balance among teenagers (percent).

The research revealed that fathers in our sample had significantly higher level of well-being, with higher components: 'Life purpose', 'Self acceptance', and 'Environmental mastery' than men of the comparison group. The differences between mothers in our sample and women of comparison group were not found on significant level, but mothers had higher level of the scales 'Life purpose' and 'Self-acceptance' in tendency

(*Tab. 3*). Comparative analysis showed that fathers had higher level of 'Autonomy' then mothers ($p < .01$). For both parents the most important component of well-being is 'Life purpose'.

Thus, in general, parents in our sample can be described as people with a high psychological well-being interested in achieving many of the goals in life.

Tab. 3. Descriptive Statistics of Well-being Scales in Mothers and Fathers and Difference between Sample and Comparison Group (t test)

Psychological Well-being Scales	Female		t test	Male		t test
	Mothers (n=35)	Comparison group (n=500)		**Fathers** (n=35)	Comparison group (n=250)	
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Autonomy	31.09 (3.61)	30.50 (4.61)	0.894	33.76 (3.55)	33.02 (4.81)	1.072
Environmental mastery	30.48 (5.04)	29.15 (5.01)	1.462	**32.82** (4.67)	29.89 (5.54)	3.311**
Personal growth	33.64 (4.92)	33.61 (4.86)	0.036	32.82 (4.49)	33.92 (5.42)	-1.294
Positive relatedness	34.79 (4.33)	33.74 (5.17)	1.332	32.09 (5.49)	31.24 (5.63)	0.832
Life purpose	35.03 (5.26)	33.56 (5.15)	1.557	**35.30** (4.47)	33.09 (6.41)	2.522*
Self-acceptance	33.70 (5.39)	32.08 (5.46)	1.670	**34.64** (5.48)	31.83 (5.67)	2.761**
Total scale	198.7 (22.2)	192.6 (22.3)	1.529	**201.4** (21.1)	192.9 (23.2)	2.143*

*Note: * $p < .05$; ** $p < .01$*

Parental attitudes of mothers and fathers in our sample have the following features. Mothers were inclined to establish friendly relations with teenagers, they give them the right to express their opinions and participate in family matters. They do not tend to demonstrate their power and dominance over the teenager (*Tab. 4*). Fathers focused on the education of the independence and autonomy of adolescents; promote their self-assertion. They orient on the changes and teach adolescents to do their best to improve their situation in life (*Tab. 5*).

Tab. 4. Descriptive Statistics of PARI (Parental Attitude Research Instrument) Scale for Mothers

	PARI scales	**Mothers**	
		Mean	(SD)
1	Encouraging Verbalization	**16.85**	(1.70)
2	Fostering Dependency	11.55	(2.95)
3	Seclusion of the Mother	10.61	(2.90)
4	Breaking the Will	11.94	(2.00)
5	Martyrdom	11.45	(3.08)
6	Fear of Harming the Baby	14.42	(2.97)
7	Marital Conflict	14.39	(2.19)
8	Strictness	10.88	(1.83)
9	Irritability	11.55	(2.15)
10	Excluding Outside Influence	13.03	(2.13)
11	Deification	13.33	(2.19)
12	Suppression of Aggression	13.55	(2.41)
13	Rejection of Homemaking Role	11.21	(2.91)
14	Equalitarianism	13.82	(2.31)
15	Approval of Activity	**15.27**	(1.99)
16	Avoidance of Communication	**9.45**	(1.77)
17	Inconsiderateness of the Husband	11.82	(2.54)
18	Suppression of Sex	11.06	(2.42)
19	Ascendance of the Mother	**10.06**	(2.42)
20	Intrusiveness	12.76	(2.97)
21	Comradeship and Sharing	**18.12**	(2.01)
22	Acceleration of Development	11.64	(2.82)
23	Dependency of the Mother	13.55	(3.11)

Tab. 5. Descriptive Statistics of PARI (Parental Attitude Research Instrument) Scale for Fathers

PARI scales		Fathers	
		Mean	(SD)
1	Encouraging Verbalization	14.42	(1.92)
2	Fostering Independence	**15.42**	(2.29)
3	Permitting Child's Self Assertion	**15.91**	(2.38)
4	Avoiding Harsh Punishment	**16.45**	(2.27)
5	Deception	11.85	(2.80)
6	Avoiding Marital Conflict	12.39	(3.09)
7	Non-Punishment	13.18	(2.59)
8	Irresponsibility of Father	12.39	(3.34)
9	Tolerating Aggression	**15.18**	(1.74)
10	Avoiding Deification of Parent	11.70	(2.62)
11	Tolerance of Outside Influences	14.15	(1.80)
12	Lack of Irritability	14.88	(3.51)
13	Avoiding Strictness	11.52	(2.08)
14	Tolerating Expression of Sexuality	11.48	(2.56)
15	Rejecting Ascendancy of Husband	12.36	(2.15)
16	Inconsiderateness of Wife	12.64	(3.02)
17	Encouraging Ascendancy of Wife	13.42	(1.77)
18	Encouraging Emotional Expression	13.61	(1.92)
19	Change Orientation	**15.58**	(2.37)
20	Forcing Independence	**15.42**	(1.82)
F1	Democratic attitude	13.99	(1.02)
F2	Paternal Detachment	14.44	(1.48)

Mothers who scored the highest on a scale of 'Autonomy' and 'Personal growth' tend to treat their children as their peers with their own agendas. They approve teenagers' activity and encourage them to exert their own independence. At the same time, mothers who scored the highest on a scale of 'Life purpose' and 'Positive relatedness', tend to break the will of teenagers, direct their activities (*Fig. 2*). So, mothers do not give up their positions as authority figures and provide teenagers parental guidance in life's decisions.

To sum up, mothers with great well-being can be described as authoritative parents. Children are encouraged to make their own decisions and exert their own freedom, however boundaries are established and compromises with parents must be made. Rather than dictate their child, authoritative parents listen to their child's point of view and make suggestions and provide direction. Much of the previous research has concluded that authoritative type of parenting yields the healthiest and most emotionally and mentally stable children [3].

Fig. 2 presents that 'Autonomy' positively correlated with teenager's self-esteem. Scales 'Self-acceptance' and 'Environmental mastery' positively correlated with teenager's 'affect balance'. Two scales: 'Life Purpose' and 'Positive relatedness' correlated positively through parental attitude 'Breaking the Will'. Thus, the mother's well-being is very important for healthy psychological and emotional state of teenager. In addition the highest levels of self-esteem and affect balance of teenagers are developed when the mothers favor the use of respect their opinions and somewhat limited their will.

According to J. Belsky in the preschool through adolescent years, authoritative parenting that mixes high levels of warmth and acceptance with firm control and clear and consistent limit-setting fosters prosocial orientation, achievement striving, and positive peer relations [1]. Rhee and colleagues found that the ability to communicate openly with parents and express one's own feelings may be a strong predictor of self-esteem [4].

Fig. 3 presents the correlations between the fathers' well-being and parental attitudes. The greater the father's well-being, the more likely he is to have a favorable attitudes towards paternal involvement and responsibility. He is strict and honest father, he is not involved in forcing independence, training teenager to do their own work without any help, but encourages him to undertake all kinds of jobs no matter how hard in order to allow teenager to be assertive. His wife pays much attention to him and he expects to be more highly esteemed than other worthy adults in his teenager's eyes.

Correlations between well-being and parental attitudes towards encouraging verbalization and emotional expression had not been found. So, fathers with great well-being can be described rather authoritarian, than authoritative parents. Fathers hold the attitude that they are the authority figure, they are involved in parenting, they introduce their children to new activities and teach them how to do certain things, permitting child Self assertion. But they prefer a child who always looks calm and cool and teach teenager to keep own feelings inside.

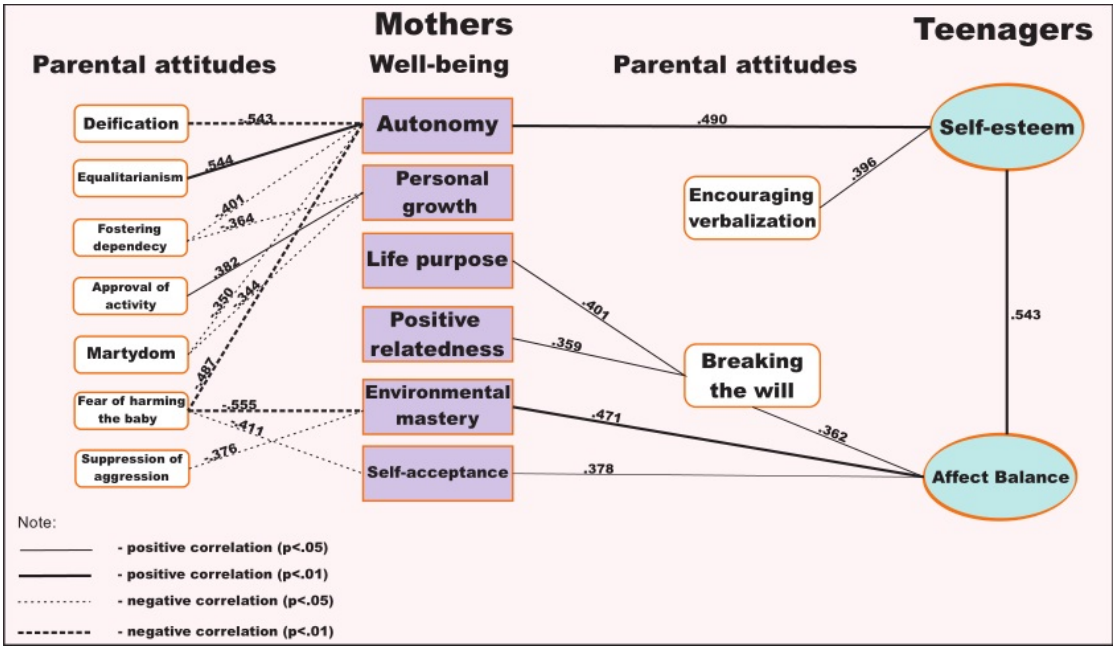

Fig. 2. Correlations between scales of Well-being, Parental attitudes, Self-esteem, and Affect Balance (Mothers – Teenagers).

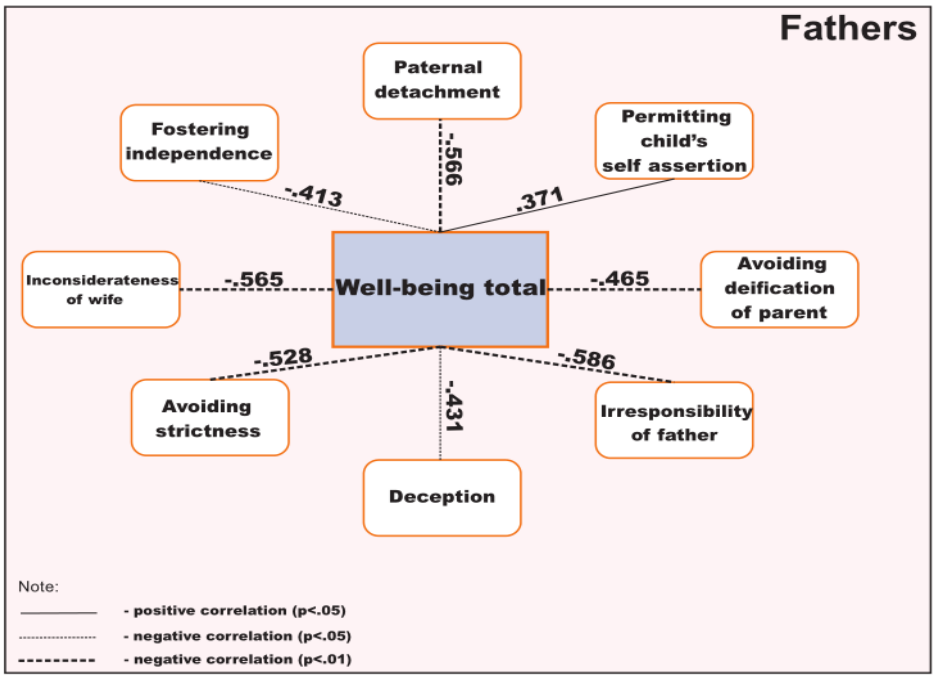

Fig. 3. Correlations between scales of Well-being and Parental attitudes (Fathers).

Fig. 4 shows that the more fathers in favor of stimulating teenagers' self-reliance, introduce their children to new activities, and let them learn the hard way about life, the more teenagers' have a good emotional state. Teenager's self-esteem is more pronounced in the case of the father's avoiding deification of him from teenager. Correlations between the scales of fathers' well-being and teenagers' self-esteem and affect balance had not been found, but scales of well-being were connected through parent attitude 'Avoiding Deification of Parent' with teenagers' self-esteem. 'Avoiding Deification of Parent' was associated with lower levels of scales 'Life purpose' and 'Self-Acceptance'.

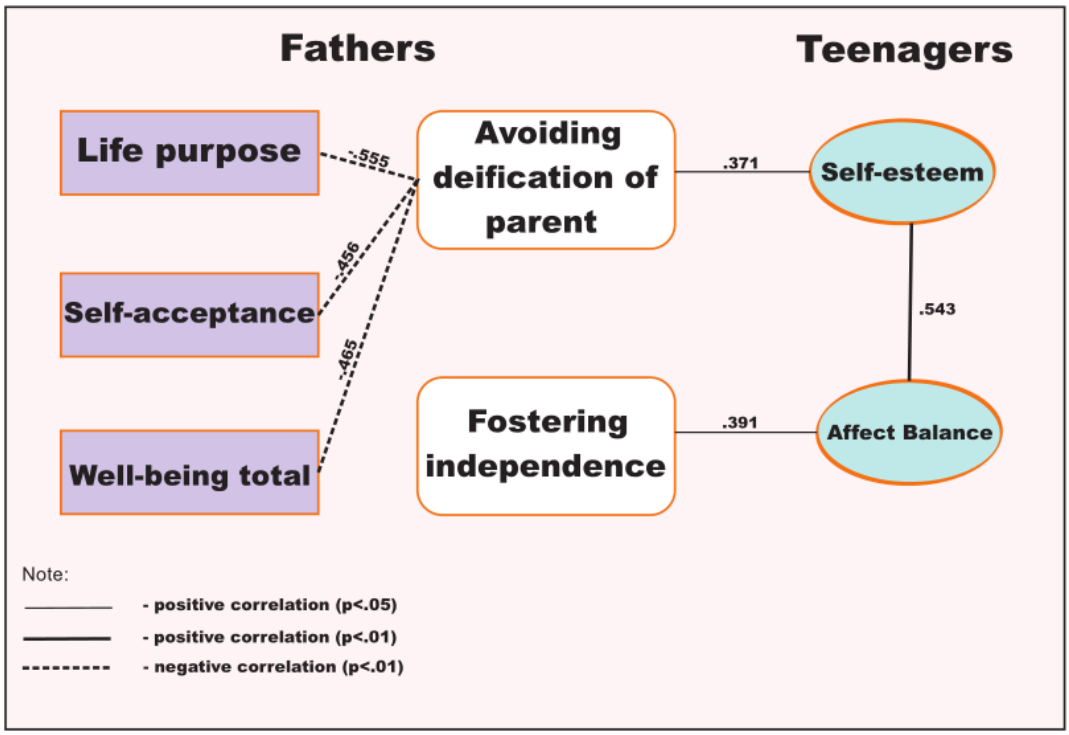

Fig. 4. Correlations between scales of Well-being, Parental attitudes, Self-esteem, and Affect Balance (Fathers - Teenagers).

1.3. Conclusion

High levels of psychological and emotional well-being of adolescents are combined with a democratic style of parenting: the presence of warm respectful relationships, and discipline with the relative autonomy of the adolescent within the limits set. At the same time the role of mother and father in the upbringing of the teenager are different. The mother listens to teenager's concerns, and in some ways limits his/her will. The father contributes to the independence and self-assertion of a teenager, stimulating the development of his/her inner "sense of maturity."

Children from 11 to 14 years are closer to the mother, than to the father. The mother's well-being is more important for healthy psychological and emotional state of teenager than the father's one. Mothers with great well-being were inclined to establish friendly relations with teenagers, they allow them to express their opinions and participate in family matters. When the mothers establish boundaries, teenagers do not perceive her parenting as hurtful, conversely they have positive feelings.

The fathers with a high level of well-being are involved in parenting and take responsibility. But their wishes to be infallible like a god in teenagers' eyes lead to decreasing teenagers' self-esteem. Healthy self-esteem is developed when the father is able to avoid wishes for deification of himself, because teenagers have an innate psychological need to assert their independence and develop their independent sense of self apart from their parents. The teenager will be able to find that he or she is worthwhile person when the perfect father makes one step back from paternal blamelessness and will be a little bit more permissive for his child.

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Fatherhood in families with a disabled child

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Abstract

The study aims to explore parents' beliefs towards the involvement of fathers in their children's lives (interest in the disabled child's life, care, education, rehabilitation and active help in achieving by disabled children their independence). The total participants' pool was comprised by 53 parents of children with a disability who attend Special nursery and integration classrooms. Parents were administered a structured questionnaire. The first part included demographic information and the second part assessed parental beliefs regarding paternal contribution to children's lives (*The Father Involvement Scale*, Bragiel & Kaniok, 2011). Results of the study revealed that fathers of children with a disability are involved in their child's life, but there are differences between mothers' and fathers' perceptions in terms of father involvement. Professionals should work more on fathers' involvement and relationships with their disabled children and promote family interventions for all family members.

Keywords: fathers, family, disabled child

Introduction

For the majority of parents the birth of a child is a positive experience which is accompanied with feelings of happiness and joy (Barnett, Clements, Kaplan-Estrin, & Fialka, 2003) and changes the dynamics of the family (Bilgin & Kucuk, 2010). Sometimes, however, the birth of a child with a disability may be a traumatic experience for parents with effects on all family members (Di Giulio, Philipov, & Jaschinski, 2014; Terra et al., 2011) and is a challenging process. A great body of research has focused on the demands that follow the birth and raising a child with a disability (Florian & Findler, 2001). Waiting for the birth of a child is a stressing period for partners during which the parents of children with a disability have additionally to cope with their feelings (devastation, shock, denial, grief, guilt, etc.), changes in their expectations, economical and psychological demands, appointments with specialists, caring for a child with a disability and an uncertain future (Eisenberg, Baker, & Blacher, 1998; Hu, Turnbull, Summers, & Wang, 2015; Sen &Yurtsever, 2007). The stress of raising a child with a disability is increased (Emerson, Hatton, Llewellyn, Blacker, & Graham, 2006; Hastings, Daley, Burns, & Beck, 2006; Resch, Elliott, & Benz, 2012) and it can affect family well-being, quality of spousal relationship, social relationships and parental involvement (Barnett et al., 2003). Family members may be influenced by many factors while trying to adapt to the new situation (Florian & Findler, 2001), and need time to achieve it (Hussain, Juyal, & Islamia, 2007). "Psychosocial resources such as perceived control, the ability to utilize social support, and cope with stress appear to be important in helping parents provide the types of parenting behaviors that will support healthy development in their children" (Barnett et al., 2003, p. 186). There are families of children with a disability which successfully cope with the challenges they face (Glazzard & Overall, 2012; Wang, Michaels, & Day, 2011) and others that cannot accept the fact of having a child with a disability within their family (Wang & Michaels, 2009).

Although the existing studies have mainly focused on the impact of mothers (McNeil, 2006), last decades they have focused on the importance of both mothers and fathers on the rearing and welfare of children (Coley & Coltrane, 2007; Hazen,McFarland, Jacobvitz, & Boyd-Soisson, 2010; Pleck, 2007). Fathers of children with disabilities frequently show lower levels of stress than mothers (Hastings, 2003), maybe due to their limited involvement (Kazak, 1986). They are usually responsible for economical burdens (Kazak, 1986) and mothers for daily care (Powers, 2001; Wang et al., 2011), with several factors playing a role (Fragogianni, 2016).

Researchers recognize the crucial role fathers play in their children's development (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2007), as well as their increased involvement in their life and include them in intervention programs (Vaca, 2013). The father-child relationship influences directly the development of children (Hastings, 2003). Moreover, father's involvement reduces the frequency of behavioural problems in

boys and strengthens the cognitive development and coping skills (Coley & Coltrane, 2007; Sarkadi et al., 2008). Studies have shown that involved fathering has also important outcomes for fathers such as happiness and lower frequency of physical illness (Glenn, 2007; Pruett, 1989).

The proportion of studies regarding fathers of children with disabilities is relatively limited and there remains a scarcity of studies examining paternal involvement in children's life and care. This is an exploratory study that aims to examine parental beliefs towards father involvement: a) interest in the disabled child's life, b) involvement in child's care, c) engagement in child's education, d) involvement in rehabilitation of disability, and e) promotion of the disabled child's independence. Moreover, the study examines if there are differences between fathers' and mothers' perceptions towards fathers' involvement.

Methods

2.1. Sample

Fifty three parents (32 female), with an age-range 31-40 years living in Crete, Greece participated in the study. Their child was attending either nursery or primary school and was with Special Educational Needs. The majority of parents had children with developmental disorders 25 (47%), followed by mental retardation 8 (16%), learning disabilities 6 (11%) and speech disorders 6 (11%), and sensory impairments 5 (9%), physical handicap 1 (2%), behavior problems 1(2%) and multiple handicap 1(2%)].

2.2. Design and procedure

Parents were contacted via a letter distributed by the authors and where found through the KEDDY, which is the Centre for Differential Diagnosis, Diagnosis and Support, the national organisation in Greece responsible for the official diagnosis and assessment of special educational needs. The letter contained detailed information about the study and the procedures and asked their consent to participate. Parents were asked to complete a structured questionnaire at home. The parents who consented were sent an envelope containing the questionnaire and a stamped envelope which were addressed to the fourth researcher.

The questionnaire had two distinct subsections. The first part included parents' demographic information (age, gender, marital status, ethnicity, residence, education, occupation, health, number of children in the family) and information regarding their child with SEN (sex, age, kind of disability, psycho-educational support, medication).

The second part was designed to assess fathers' involvement and included the Father Involvement Scale (Bragiel & Kaniok, 2011). The Father Involvement Scale (Bragiel & Kaniok, 2011) is a 40 item scale, which consists of five eight item subscales which relate to the five components of fathers' involvement: a) *interest in the disabled child's life*; for example, "I talk to my child about his/her interests" b) *care*; for example, "I prepare meals and participate in feeding my child" c) *education*; for example, "I teach my child basic principles generally respected by society" d) *rehabilitation*; for example "I seek for equipment and people required for rehabilitation of my child." and e) *active help in achieving by disabled children their independence*; for example "I teach my child how to make new contacts with other people and how to sustain them."

Parents were asked to rate the frequency of fathers' participation in a 5-point rating scale (1=never, 2=rarely, 3=sometimes, 4=often and 5=always). There were 8 questions for each type of involvement.

A total of 53 parents completed and returned the questionnaire. Parents filled the questionnaire at home and were ensured about the confidentiality of their responses.

Statistical Analysis

Chi-square tests were used to determine possible relationships between pairs of variables. In cases where proportions of two-outcome analyses were assessed (i.e. frequency of imitation in father-non-twin and father-twin infant dyads), Binomial tests were used to test equality of outcomes. The significance level for chi-square test was set at 1%, as a safeguard against false rejections of the null hypothesis. The significance level for the Binomial test was set at 5%. All analyses were performed using the SPSS statistical package (Version 17.0, 2008).

Results

Table 1 presents the means and standard deviations of the five subscales measuring involvement. In all five subscales fathers rated their involvement higher than mothers and these differences were highly statistically significant. In addition, the variation in responses was larger for mothers as indicated by the standard deviation (SD) of each scale.

Table 1. Descriptive Statistics of Involvement Subscales by Parent					
	Father		Mother		
	Mean	SD	Mean	SD	p-value
Interest	28.48	4.75	22.88	5.53	<0.001
Care	25.29	5.56	21.06	6.70	0.0203
Education	28.19	5.34	19.69	9.95	<0.001
Rehabilitation	29.38	6.52	15.03	13.67	<0.001
Help	24.43	7.89	13.78	12.65	0.0012
N	21		32		

Differences in the interrelation among the subscales between mothers and fathers were also observed (see Table 2). For fathers, help was not significantly correlated neither with care nor education. In contrast, for mothers, help did not significantly correlate with interest and interest did not correlate with rehabilitation. Difference in the strength of the significant correlations was also observed. The results of Table 2 suggest incongruence between mothers and fathers in terms of the interrelationships of the five dimensions of paternal involvement.

Table 2. Inter-subscale Correlations by Parent				
Father				
	Interest	**Care**	**Education**	**Rehabilitation**
Interest				
Care	0.44*			
Education	0.49*	0.60*		
Rehabilitation	0.68*	0.53*	0.50*	
Help	0.65*	0.25	0.41	0.58*
Mother				
	Interest	**Care**	**Education**	**Rehabilitation**
Interest				
Care	0.64*			
Education	0.45*	0.58*		
Rehabilitation	0.34	0.59*	0.94*	
Help	0.30	0.55*	0.92*	0.94*

At the final step of our analysis we performed multiple regression modelling separately for mothers and fathers adjusting for potential socio-economic differences captured by educational level. The results depicted in Table 1 are further supported by this analysis, where we found the mothers to report highly significant lower ratings of paternal involvement than the ratings of the fathers' regardless of respondent's educational level.

Table 3. Regression Results of Female on Paternal Involvement Subscales Adjusting for Education					
	Interest	Care	Education	Rehabilitation	Help
Mother	-5.633***	-4.287*	-8.636***	-14.46***	-10.80***
	(-3.80)	(-2.43)	(-3.68)	(-4.49)	(-3.50)
Education	0.347	0.707	1.464	1.179	1.653
	(0.55)	(0.94)	(1.46)	(0.86)	(1.26)
Constant	27.72***	23.74***	24.98***	26.80***	20.81***
	(15.39)	(11.07)	(8.76)	(6.86)	(5.56)
t statistics in parentheses					
="* p<0.05	** p<0.01	*** p<0.001"			

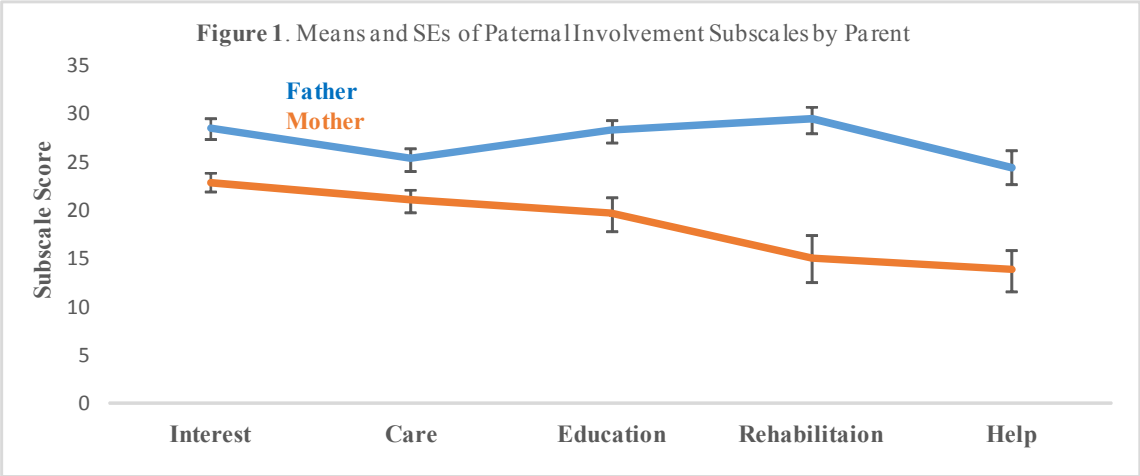

Figure 1 presents the means and standard errors of the five subscales of involvement separated by parent. It is clearly depicted that the widest difference in involvement rating between mothers and fathers is on rehabilitation followed by help and education. The smallest difference seems to be on the care subscale.

Discussion

The present study explored paternal involvement (and especially fathers' interest in their child's life, their involvement in care and education, their engagement in rehabilitation of the disability and their involvement in achieving their children's independence) and possible differences between mothers' and fathers' perceptions regarding paternal involvement. This study extends prior work by examining not only mothers' experience regarding father involvement (information in many studies has been derived from mothers), but also the fathers' perceptions regarding their involvement in child development, rehabilitation and care.

The results of the study support the position that fathers are involved in the lives of their children. They appear to participate in their children's rehabilitation of disability and they are interested in their life and education; they are less involved in their disabled child's care and active help in achieving by their disabled children their independence. These findings are in line with the perception of the 'new nurturant father' (Lamb, 2000, p. 23) and previous research which showed that fathers are involved in areas such as discipline, deciding services, therapy, nurturing, playing, driving to appointments etc. (e.g. Simmerman, Blacher, & Baker, 2001) and that there existed no significant differences in paternal involvement between fathers of children with and without disabilities (Young, Roopnarine, & Jaipaul, 1994). An interesting finding is their high participation regarding child's therapeutic support, a finding which contradicts findings from other research studies (see MacDonald & Hastings, 2010).

The results of the study suggest differences between mothers' and fathers' perceptions in terms of father involvement. Although fathers of children with disabilities are involved in their children's lives, there is a

difference in involvement rating between mothers and fathers. Maybe this is due to the burden mothers undertake and they do not 'realize' or 'appreciate' the expressive support by fathers. There is a gap between the desired and the perceived father involvement among mothers due to the increased demands of rearing a child with a disability such as physical, emotional, and psychological burdens. These findings contradict the findings of other research studies (Simmerman et al., 2001), which showed that there is high agreement between mothers and fathers regarding father involvement especially in areas such as nurturing, playing, discipline and deciding on services.

The findings of the study demonstrate that mothers suggested lower ratings of father involvement independently of their educational level. Mothers reported less involvement of fathers and educational factors did not play a significant role for their response. In other studies education plays a role (see Ahmeduzzam & Roupnarine, 1992). This may indicate social stereotypes of people living in the closed society of an island such as Crete, where fathers are detached from child rearing in general. The study also showed that there is incongruence between mothers and fathers in terms of interrelations of the different dimensions of father involvement. Moreover the widest difference in involvement rating between mothers and fathers is on rehabilitation, followed by help, education, interest and care. This can be explained by the active involvement of mothers in children's lives (Lillie, 1993) and by the fact that the majority of fathers undertake the economical burden (Powers, 2001; Wang et al., 2011); they usually work fulltime and mothers in part-time jobs (Svedberg, Englund, Malker, & Stener-Victorin, 2010) and they have less time for involvement (McNeil, 2006).

Although this study explores mothers' and fathers' perceptions towards paternal involvement, there are also some limitations. There is a need for studies examining a nationally representative sample in Greece as well as in other ethnicities and surveys examining the impact of various disabilities on father involvement and perceived father involvement by mothers. The findings of the study have implications for community and family services. Programs should include, support and encourage father involvement in families of children with a disability in order to avoid stress and marital conflict and plan effective interventions.

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I'm still learning. A web platform for the intervention in reading disabilities

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Abstract

In 2014, 20% of the 4th graders had an unsatisfactory evaluation in the national exam of Portuguese language. This percentage is similar in the 6th and 9th grades indicating that a large number of Portuguese students have reading difficulties. The e-learning platform *"I'm still learning"* was developed to provide a systematic intervention with students (from 1st to 4th grade) experiencing reading difficulties. This free access platform provides a set of didactic sequences to promote phonological awareness, word reading, reading fluency and comprehension. Informal tasks for reading assessment are also included. In this paper we describe the platform and the theoretical framework adopted in its construction.

Keywords: Reading disabilities, assessment, intervention.

Introduction

1.1 Reading skills: implications for academic achievement, professional and career development, and civic and social participation

Reading skills serve as the foundation to acquire content knowledge in different domains (Lonigan et al., 2009; National Reading Panel, 2000), both in school and throughout life, influencing academic success during children's school years (Best, Floyd, & Mcnamara, 2008). On a lifelong perspective "poor literacy limits individuals' capabilities and civic participation, increases poverty, hinders innovation, reduces productivity and holds back economic growth" (European Comission, 2012, p. 21). Therefore the consequences of low literacy are a matter that concerns not just the individual but also the society as a whole. The 2012 report of the European Commission (pp. 23-25) identifies some of the reasons why reading literacy becomes increasingly important: (a) the digital world is centered on the written word; (b) the labour market requires high literacy levels; (c) social and civic participation are more literacy dependent and; (d) living longer requires the ongoing development of skills. The digital world in which children are now born requires better reading skills than in the past decades. Consequently, in the future, adults who are not proficient readers will be at a disadvantage (Torgesen, 2002). An effective intervention on reading difficulties in the early years of reading acquisition is therefore mandatory since this is a critical period in the development of reading skills (Best et al., 2008).

Research in the last decades has contributed to characterize reading difficulties, to set guidelines for assessment and intervention and to describe the necessary conditions for an effective intervention (Mathes & Denton, 2002; Torgesen, 2002). Regardless of these developments, some problems persist in ensuring that students with reading difficulties receive the intervention they need. Two important problems are: (a) the large number of children who experience these difficulties and (b) their heterogeneity. All children with reading difficulties require specific and intensive instruction (Scholin & Burns, 2012) and consequently specialized human resources and appropriate didactic materials. In order to overcome these issues, the digital environment is an outstanding tool for working with students with reading disabilities because it provides classroom teachers more support inside and outside the classroom to help struggling readers and it allows reaching a larger number of children (European Commission, 2012).

In this article we present a web-based intervention program called "I'm Still Learning" [AEA – *Ainda Estou a Aprender*] which was constructed to provide teachers with: (a) a theoretical foundation of literacy

learning, reading disabilities assessment and intervention; (b) informal tasks to assess phonological awareness, letter-sound correspondences, word recognition, reading fluency and comprehension; and (c) didactic, playful and enjoyable activities that can be chosen in order to plan an intervention program/curriculum that meets the needs of children with reading difficulties in grades 1 to 4. It aims at supporting the students of the first cycle of elementary education (grades 1 to 4) with reading difficulties.

This paper is organized into two sections. In the first section we present the model of the simple view of reading, we analyse the relationship between the components of the model and analyse its usefulness to characterize profiles of struggling readers and to organize the assessment and intervention. In the second section we describe the e-learning platform "I'm still learning".

1.2 The simple view of reading and the profiles of reading difficulties

According to the simple view of reading, (SVR, Hoover & Gough, 1990) reading is the product of two components: decoding and linguistic comprehension (LC). Decoding refers to "the ability to rapidly derive a representation from printed input" (Hoover & Gough, 1990, p. 130) and LC "is the ability to take lexical information (i.e., semantic information at the word level) and derive sentence and discourse interpretations" (Hoover & Gough, 1990, p. 131). The two components are necessary for reading success but none is a sufficient condition *per se* to ensure reading comprehension (Perfetti & Hogaboam, 1975).

Difficulties in decoding have been related with phonological awareness, i.e., the ability to attend to and manipulate the sounds in words (Stanovich, 1986). Research suggests that gains in phonological awareness leads to gains in reading (e.g. National Reading Panel, 2000; Snowling & Hulme, 2005). The relationship between phonological awareness and learning to read is associated with the ability to link phoneme awareness and letter knowledge (Hulme et al., 2002). When acquiring links between the two (the alphabetic principle), children become able to read (decode) new words. Children with reading difficulties demonstrate weaknesses in these skills (Snowling, 2000).

Fast and accurate word reading is mandatory, not only when words are presented in isolation, but also when embedded in connected text. Reading fluency, which is defined as "the ability to read a text quickly, accurately, and with proper expression" (National Reading Panel, 2000, p. 3-5), is a critical component of reading. A systematic relationship has been found between reading fluency and reading comprehension (Fuchs, Fuchs, Hosp, & Jenkins, 2001; Lane et al., 2008) at different grade levels (Kim, Park, & Wagner, 2014; Padeliadu & Antoniou, 2014; Valencia et al., 2010). Slow reading disturbs reading comprehension (Rasinski, 2000), given that the low reading rate makes children unable to retain the meaning of words they have read. The difficulty in reading isolated words is present in a large number of children with reading problems. In some cases these problems are thought to be related with an underlying phonological processing deficit, with children experiencing a great difficulty in using the alphabetic principle to decode words accurately and efficiently: decoding is slow and laboured and, consequently, it has a negative impact on reading comprehension (Fletcher et al., 2002). The influence of decoding on reading comprehension has been explained on the basis of the attentional resources that the reader possesses. According to Laberge and Samuel (1974) the attentional resources are limited. If a child must use them in decoding, there will be few attentional resources available to execute the higher-order processes involved in reading comprehension. There are evidences of differences in word reading between skilled and less skilled comprehenders, and one of the reasons suggested by Perfetti and Hogaboam (1975) is that less skilled readers' word reading is underdeveloped and less automatic, consequently they "require more of the limited capacity needed for the higher processes of comprehension" (p. 467).

Poor language comprehension can be present in children with normal phonological processing skills. Despite being able to decode, these children demonstrate difficulties in comprehending what they listen or read. A third group of children experiences simultaneously difficulties in decoding and in comprehension (Mathes & Denton, 2002).

The program "I'm still learning": an online platform for the assessment and intervention in reading disabilities

Reading fluency (whether considering isolated word reading or connected text reading), linguistic comprehension and reading comprehension influence each other. Several studies provide evidence of the complex pattern of relationships between these reading skills across school grades (Cain & Oakhill, 2006; Kim, Wagner, & Lopes, 2012; Nation & Snowling, 2000; Petscher & Kim, 2011; Stanovich, Cunningham, & Feeman, 1984).

Considering the SVR framework, students with reading difficulties may have different profiles: a) poor decoding coupled with poor linguistic comprehension; b) poor linguistic comprehension without problems in decoding; and c) poor decoding without problems of linguistic comprehension (Duff & Clarke, 2011). This description does not consider the aetiology of reading difficulties (for a review, see Elliott & Grigorenko, 2002)

nor other factors, in addition to fluency and listening skills, that influence reading comprehension, such as vocabulary, working memory, reasoning or rapid automatic naming (Norton & Wolf, 2012; Ouellette, 2006; Perfetti & Hogaboam, 1975; Ribeiro, Cadime, Freitas, & Viana, 2015). However, it is particularly useful for planning an evaluation and intervention focused on reading skills, and it was, therefore, used in the elaboration of the platform "I'm still learning".

The e-learning platform intends to provide teachers with a set of assessment materials and intervention activities for children with learning difficulties aimed at improving struggling readers' skills. The designation adopted reflects a set of principles and options: (a) the goal is to help students with reading difficulties switch from a narrative that highlights personal failure, to a view that emphasizes the idea that learning to read is an ongoing process; (b) the open-access platform provides teachers, parents and students a set of materials and activities that allow the evaluation of reading skills and the selection of a set of tasks that can help students overcome their reading difficulties. All the activities and material are available online and can be accessed at school or at home by teachers, parents or students. It is expected that teachers select the activities that are more appropriate to each student's needs. Consequently, intervention is individualized and there is the possibility to continue at home the work done at school; (c) "Assessment" is conducted under the framework of the Curriculum-Based Assessment (Deno, 2003). Although standardized tests can be used to assess the students' reading skills (Cadime, Ribeiro, Viana, Santos, & Prieto, 2014; Cadime, Viana, & Ribeiro, 2014; Cadime et al., 2013; Chaves-Sousa, Ribeiro, Viana, Vale, Santos, & Cadime, 2015; Carvalho, 2010; Ribeiro, Viana, Santos, Cadime, Chaves-Sousa, Vale, & Spinillo, 2014; Santos et al., 2015; Sucena & Castro, 2008, 2012; Viana et al., 2015; Viana, Ribeiro, Maia, & Santos, 2006) we chose to provide assessment materials similar to those used in the instructional settings. A classification of the students is not required (e.g., dyslexic, poor comprehenders, etc.), but a description of the skills where training is required is needed instead (phonological awareness, word reading, oral reading fluency and comprehension). This assessment will allow the teacher to select the activities of intervention from the ones available in the platform in order to individualize each student's intervention, to monitor student's progress and evaluate the efficiency of the intervention. Evaluation is, therefore, conducted under the perspective of "assessment for intervention". Because students can access the activities and material in different settings and according to a plan specifically designed for them, three requisites of effective intervention are met: a systematic, individualized and integrated approach (Outón, 2004). The intervention includes a set of tasks aimed at developing phonological awareness, fluency in reading isolated words and texts and comprehension (listening and reading).

The platform is composed of three panels (cf. Fig. 1): a) a review of literature on reading disabilities *(Knowing more)*; b) curriculum-based measures of reading *(I already know)* and; c) computer assisted reading activities *(Learning more)*. The platform was designed to allow modifications and updates of its contents and the introduction of new materials and activities.

2.1. Knowing more

The panel "Knowing more" presents the theoretical background and framework for assessment and intervention. The platform is free access but to use the resources available in the panel "I already know" and "Learning more" it is necessary to make a registration. This requirement is not necessary to consult the panel "Knowing more". In "Reading Disabilities" (cf. Fig. 1) the concept of reading disabilities, classificatory issues, the prevalence of reading disabilities and the long term effects of reading disabilities are discussed. The second section *"*The platform "I'm still learning"*,* provides general information regarding the major goals of the platform, how to access, the target population and implementation*.* In the section *"*Assessment: I already know" issues related with the assessment of reading difficulties and the options made in the construction of the tasks are addressed. Moreover, the following questions are discussed: where to start with the evaluation? Is it mandatory to do the assessment before starting the intervention process? Is it necessary to assess all the reading skills included in the platform? Is the evaluation organized per school grade? Can an evaluation be interrupted and then restarted? Is it possible to repeat the application of the assessment tasks? Where is the evaluation made? What information is obtained at the end of the evaluation? How can the results of the evaluation be accessed?

The section "Intervention: learning more" includes a review of the guidelines for an effective intervention in reading difficulties. Information regarding the resources available in the panel "Learning more" is also provided. Answers are given to the following set of questions: Does the platform allows to individualize the intervention? How are the intervention activities selected? Can a student work on activities related with different reading skills (e.g. fluency and listening comprehension)? What is the sequence for the activities? How can we monitor the student's progress? In sections 5 to 10 (phonological awareness, letter naming, production of syllables and diphthongs, word recognition, oral reading fluency and comprehension) we present a definition of the concepts and analyse the relationship between the skills and their particular contribution to reading comprehension.

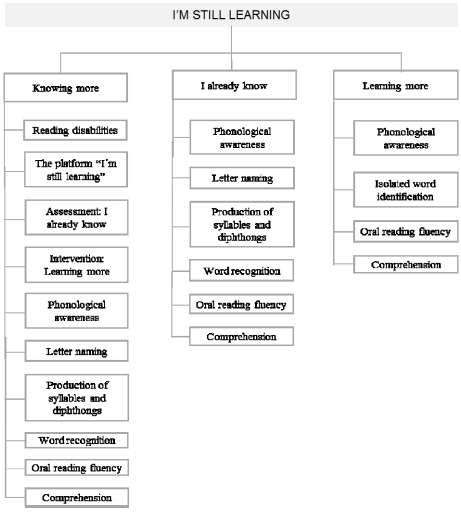

Fig. 1. Structure and major panels of the platform "I'm still learning"

2.2. I already know

The evaluation process was planned to allow teachers to obtain information regarding the reading strengths and weaknesses of the students. The purpose of the assessment is: (a) to plan the instruction and the development of an intervention plan adjusted to the students' needs; (b) to measure progress over time and; (c) to determine if the intervention is effective. Children should be actively involved in the evaluation process and in the definition of the specific reading goals that they should achieve, so it is important to share with them the results of their evaluation, describing the skills and knowledge already acquired and those where further training is required. Assessment is organized in the panel "I already know" and intervention in the panel "Learning more". The choice of the topics was done in order to convey an approach that does not emphasizes failure, instead we help children to construct a personal narrative that emphasizes "there are things" they know and other things that they must learn. This option is compatible with the philosophy that guided the development of the web platform "I'm still learning".

We privileged the assessment of the skills that we aim to improve via the intervention, namely phonological awareness, word reading, oral reading fluency and comprehension. We recognize the relevance of using a heuristic model of assessment (Fletcher et al., 2002) that comprises not only the description of the problems that characterize students' difficulties but also students' traits (cognitive or psychosocial), environmental variables and biological variables. However, the assessment of these dimensions is beyond the teacher's role and skills. Consequently, we provide instructions in the platform for teachers to request for a specialized assessment if they find it necessary, but we maintain the indication to evaluate reading difficulties. In this sense our approach is aligned with the one of Elliot and Grigorenko (2002): "In respect to pedagogy, however, the crucial task is to identify the individual reading strengths and weaknesses and address these directly" (p.165).

Different classifications of reading disabilities have been proposed along the last decades (Elliott & Grigorenko, 2002; Snowling & Hulme, 2005) with implications in the diagnostic of reading disabled children. However, classifying children in a particular category is not a goal in this project. Instead, the goal is to help teachers to describe children's difficulties in order to plan an intervention.

Fig. 1 presents the major skills that are assessed: phonological awareness, letter naming, production of syllables and diphthongs, word recognition, oral reading fluency and comprehension. It is not mandatory that the evaluation process follows the order shown in the platform. The teacher's knowledge about the difficulties the student has may be considered when deciding where to start the assessment. Once the assessment is completed, a qualitative report describing the strengths (I already know) and the weaknesses (Learning more) is generated by the platform. This report should be discussed with the student in order to define educational goals adjusted to his needs.

2.3. Learning more

Evidence suggests that certain instructional approaches are equally effective for children with reading difficulties and typically developing children (National Reading Panel, 2000) and that intervention should supplement and not replace general classroom literacy instruction (Torgerson, Brooks, & Hall, 2006). However, in the intervention with children with reading difficulties: a) skills must be taught more directly; b) training must

include more learning opportunities and work in small groups; and; c) the tasks should include more support (Duff & Clarke, 2011). These aspects were attended in the construction of the intervention in the platform.

The platform was designed to allow the development of an individualized and systematic intervention. Each student can follow a distinctive sequence of training, depending on their own pattern of difficulties. The start and the sequence of activities (panels) are differentiated for each student depending on the results of the initial assessment and of the monitoring that spans through time.

Each student's progress can be monitored by accessing: a) the results of each student in the proposed activities of each panel; b) the materials used in the initial assessment to monitor changes throughout time. Each student needs a computer with internet access, printed materials, microphone and headphones. Activities should take between 15 to 30 minutes per session. Moreover, to ensure a systematic training, the sessions should be implemented on a daily basis. Activities can be performed at school and at home. Doing activities at home is actually important to consolidate the training.

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Children in Danger: Parental Reactions and Underlying Values

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Abstract

What should parents do when their children risk falling from the balcony, or walk around holding a knife? Should they yell? Physically punish? Do nothing? According to the narrative approach, our actions reflect our values, our conclusions about what is important in life, our identities. The present study aimed to collect reactions of parents when they perceive their children as being in danger and the values underlying these reactions. We interviewed 20 mothers and fathers of children aged 0 to 6 years on instances in which their children were in physical danger, their reactions and their ideas about what led them to these reactions. The recollected incidences of danger concerned the child being at risk or injured. Some of the parental reactions concerned short-term (what parents did at the time of risk) and some concerned long-term action (what parents did later). A variety of emotions were reported, some concerning the situation, some concerning the respondents themselves, and some concerning other parental figures. Finally, a large variety of underlying values emerged. Assuming that parents are the experts in their own life, this collection of experiences can be used as an incentive for discussing with parents about their own ideas on what it means to be a parent.

Keywords: Parenting, childrearing attitudes, narrative approach, preschool age

Introduction

The family is important for the children's development (e.g., [1]). The literature has investigated a broa range of related variables. Examples of such variables constitute the emotional climate (including attachment, marital relationships and family expressiveness [2]), the family structure and the household composition [3], and the parental behaviors [4]. This study focuses on parental behaviors. The literature usually focuses on specific behaviors or on parenting styles. For instance, Belsky [5] suggested that one such specific behavior is the sensitive attunement to the child's capabilities, while Baumrind [6] distinguished between the authoritative, the authoritarian and the permissive parenting styles.

In this study, we adopted a narrative approach with respect to parenting. We viewed parents (and not theorists or researchers) as the experts in the parental role. We decided to focus on one context in which parents are very important in the lives of their children, namely, what parents do when their children are in physical danger. We were interested in finding out what parents do and what values are underlying these reactions. In the following paragraph, we summarise important aspects of the narrative approach in order to clarify this aim.

1.1 An introduction to the narrative approach

This is a post-modern approach to therapy and community work. It is based on the idea that people live their lives by means of the stories they narrate about themselves and about the world. These stories are powerful; they affect the ways in which people behave, feel and think. There are many stories that can be said for people's lives. People, however, usually narrate few (or one) dominant ones. These stories are not formed in a vacuum; rather they are affected by the people's meaning making processes, their past, their immediate environment, but also by the broader social, historical, and cultural context in which they live [7, 8].

One of the metaphors that Michael White [7] introduced for this work concerns the landscape of action and the landscape of identity. The landscape of action contains the specific actions of individuals, actions that took place at a specific point in time and at a specific place. These actions extend from the past (what the individuals already did) to the future (what the individuals are likely to do). Actions reveal the actors' identities, including their values, their dreams, their aspirations, their characteristics and their motives. These are contained in the landscape of identity.

According to the narrative approach, the consultant's role is not to direct the persons consulted as to what they should or should not do, but rather to help in uncovering their hidden values and aspirations. Remembering these forgotten identities helps people lead their lives differently. A main idea in this approach, then, is that the individuals who consult a therapist are the experts in their own lives.

1.2 Aim of the present study

In accordance with the principles of the narrative approach presented above, the aim of the present study was to map the reactions of parents when their children are in danger (landscape of action) and the values underlying these reactions (landscape of identity).

Method

1.3 Participants

A convenience sampling technique was used in this study. Participants were 20 fathers and mothers. As the aim of the study was to map possible reactions to danger, new participants were recruited until the researchers felt that the answers were saturated. The only inclusion criterion was that the participants were parents of at least one child aged 0 to 6.

1.4 Instruments

We prepared a semi-structured interview on the basis of the narrative approach. In particular, we asked the participants to recollect an incidence in which they felt that their child was in physical danger. We were careful to reach a specific incidence and not a general idea about how parents should behave (cf. the focus on incidences in the Life Story Interview [9]). The parents were invited to describe what happened, how they reacted and how they felt. These questions referred to the landscape of action. Then, the parents were invited to reflect on why they think that they reacted and felt this way. This question referred to the landscape of identity. We were free to ask clarifying questions as deemed appropriate. We ended the interview with a question on how the participants viewed the interview.

1.5 Procedure

We interviewed the participants at a time and place convenient for them. We informed them that they could quit the interview at any time if they wished to. The interviews lasted from 10 to 30 minutes.

Results

We read repetitively the answers to the interview questions and we discussed possible ways of coding them. In this section, we present the final results of these discussions. In particular, we provide a coding scheme per question and some illustrative examples.

1.6 What happened?

Some answers described *real injury* ("fell from the bookcase", "swallowed oil", "slipped on a toy") and some others *risk* (e.g., "almost hit by a car", "almost fell from the balcony", "almost choke from a marble"). The common characteristic of the first category is the use of the past tense, which denotes an action that started and finished in the past. The common characteristic of the second category is the use of the word "almost", which denotes an action that nearly but never really started.

1.7 What did you do?

Some answers referred to *short-term action* (e.g., "I got up to check if the child is ok", "I left the room", "I run on the street to stop the traffic") and some to *long-term action* (e.g., "I did not know and after a while I asked for information on what to do", "I was explaining to my son how we cross the street for weeks"). The common characteristic of the first category was an immediate action, while the common characteristic of the second category was a subsequent reflection on what happened.

1.8 How did you feel?

Some answers described emotions concerning the *situation* (e.g., "fear", "stress", "cool"), some concerning the *respondents* themselves ("guilt", "stupid because I had not thought about putting railings on the

window"), and some concerning *other persons* involved in parenting (e.g., "I got angry with my wife"). In addition, some answers described *no emotional reaction* (e.g., "I felt nothing").

1.9 Can you reflect on how you felt?

Some answers attributed the emotional reaction to *nature* ("reflexive reaction"), while some to the characteristics of the *situation* ("I left the responsibility to the ones who could deal with it"). Some answers attributed the emotional reaction to *individual aspect* of the parent, such as his/her childhood experiences ("I was the eldest sister, I have always taken care of others"). Finally, some answers attributed the reaction to *societal expectations* such as the responsibility of being a parent ("Where did he get the knife?" and "Since I decided to have a child, I am responsible for him") and gender stereotypes ("that's how a boy becomes a man" and "typical Greek mother").

1.10 How was this interview for you?

The variety of the answers to this question did not allow the distinction of specific themes. Therefore, here we report some answers for illustrative purposes: "You made me think", "It is difficult to be a parent", "Was that all?" and "Let me know about the results [of the study]."

Discussion

This study aimed to initiate collecting parental reactions to their children's being in danger and of the underlying values. The main conclusion one can draw from these interviews is that there is a) a relatively limited number of emotions reported, b) a wider number of reactions and c) an even wider number of values underlying these reactions. In this section, we discuss some thoughts and remarks concerning the interviews.

First, not all parents easily recollected an instance of their child being in danger ("I don't know, this has never happened"). After some explanations or persistence on behalf of the researchers, these parents as well managed to recollect some instance to report. The common theme in the remaining interview of these people was that they all discretely controlled the environment so that the child would never be in danger. On the other extreme, some parents recollected so many instances that they found it difficult to decide on which one to refer.

Second, the parents' gender seemed to play a role in their reactions and in the underlying values. Recollect the answer reported in the Results, "I got angry with my wife", which implies that the mother is more responsible for the child's safety than the father. Similarly, the children's gender seemed to be important for some parents. Recollect the answer reported in the Results, "That's how a boy becomes a man", which implies that accidents are useful for boys but not for girls. Given the young age of the parents interviewed, we found the importance of the parents' and the children's gender surprising. On the other hand, this importance may represent the traditional values that are still prevalent in contemporary Greece [10].

Third, it appeared that the parents' relationship with each other was an important factor underlying their answers to our questions. In the case of a couple in which both partners were interviewed, they both reported the same incidence and this was one in which the mother called the father to take control of the situation. In this case, the implied feeling was one of very good relationship. In one other case, the one in which the father said "I got angry with my wife", the overall tone of the interview implied some tension between the couple, also concerning the children's upbringing.

Finally, an aspect that seemed important in the interviews as well as in our conclusions was our own attitude towards the interviews and the study in general. In our personal discussions concerning the interviews we took, we found out that when we expected rich descriptions from the participants, we also took rich descriptions. In addition, our own personal and professional characteristics may have affected the results that we found interesting or the ones that we found surprising. This last point is in line with the co-constructivist ideas of the narrative approach, according to which a story is extracted both by the person who narrates the story (here, the parents) and by the person who listens to it and interprets it (the researchers; [11]).

Conclusion

The conclusion is that there is no uniform reaction to the children's danger that could be deemed as correct. The reactions collected have roots in the personal histories and in the societal contexts of the parents' lives. This supports our decision to adopt a narrative approach, according to which the parents are the experts in their parental role and the way that defines them as parents is related to a broader spatio-temporal context.

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The influence of gender and ethnic essentialization on intergroup attitudes in preschool children

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Abstract

In two studies I investigate gender differences and the impact of gender and ethnic essentialization on intergroup attitudes in preschoolers. Social identity development theory (SIDT, Nesdale, 1999, 2004), and the developmental intergroup theory (DIT, Bigler & Liben, 2006) show that social identity start to develop in preschool years and that intergroup attitudes go from preference to prejudice, towards the end of preschool years. Essentialism of social categories increases out-group discrimination in adults (Haslam, Rothschild & Ernst, 2002). Children are known to essentialize some categories more than others, which may be seen as inherited, especially based on physical features (Deeb, Segall, Birnbaum & Diesendruck, 2011. Sixty-three 5-6 year old children (25 male) answered adapted forms of Essentialist Component Questionnaire (Diesendruck & Haber, 2009) and Preschool Racial Attitude Measure (Williams, Best & Boswell, 1975) for same and opposite sex, in the first study, and for the same and other ethnic group, in second study. The results of first study show an interaction effect of essentialism level and own vs other gender attitude. The difference between own and other gender attitude is higher in the high essentialist group. In the second study the same interaction effect was found: the difference between own and other ethnic group attitude is higher in the high level essentialist group. Further results show that girls essentialize gender and ethnicity more than boys, and boys have a more positive attitude toward the opposite gender compared to girls. In conclusion, although essentialization may help preschoolers form categories, the impact on social categorization has to be educated. Also, gender differences on essentialism in preschool age need further investigation.

Keywords: essentialism, intergroup attitudes, ethnic attitudes, gender attitudes

Introduction

In-group preference and prejudice in childhood

Developmental psychologists were interested in the development of children's social identities, particularly gender identity, ethnic identity and national identity (Powlishta, 2004).

Nesdale, Maass, Griffiths and Durkin (2003) reported that children showed more liking for the in-group than for the out-group. Importantly, however, while the children showed greater sympathy for in-group, they did not report dislike or hatred for the out-group, only that they liked it less. Clearly, the perception of differences between groups is an important component of ethnic prejudice (Durkin & Judge, 2001). Prejudices regarding ethnicity are well described in children (Aboud & Doyle, 1988). At the age of four, children begin to have preferences for their own group or show negative attitudes towards other groups. Prejudice appears to increase with age up to six to seven years old, but some studies claim that bias decreases with age (Aboud & Doyle, 1988).

Aboud and Doyle (1988) argue that ethnic identification and preferences for the in-group do not necessarily coincide with the formation of attitudes towards the out-group. Between four to seven years old, children's preferences are not necessarily determined by identification with the in-group, but these preferences may depend on social knowledge which has a central role in shaping and forming intergroup attitudes (Bigler & Liben, 2006).

Based on social identity theory, social identity development theory (SIDT, Nesdale, 1999, 2004), argues that ethnic prejudice is the end point of a process that involves four consecutive phases: undifferentiated, awareness of ethnicity, ethnic preferences and ethnic prejudice. Change from one phase to another depends on specific social motivations, observed behaviors and the events the child participates to, which may lead to transition from one phase to another.

SIDT (Nesdale, 1999, 2004) shows that the transition from preference from in-group preference to out-group bias depends on: (1) the extent to which children identify with their social group, (2) if bias is shared and expressed by members of the social group the child belongs to, (3) whether there is competition or conflict between in-group and out-group. Prejudice is not likely to occur in children younger than six or seven years old, because their social motives are not yet very important.

By the age of at least five years old, in-group preferences in terms of gender are developed. The development of the in-group preference was explained in terms of processes of identification and self-categorization with own group (Bennett, Lyons, Sani & Barrett, 1998).

An important step, which occurs in this series of identifications, is ethnic self-identification, referring to the children understanding that they are members of a particular ethnic group. Research shows that ethnic self-identity begins to appear shortly after the children become aware of ethnic categories. An early ethnic self-identification has been reported in three year old children in a dominant group (e.g. majority) and in almost all dominant groups of children from multiethnic communities between six to seven years old (Aboud & Doyle, 1988).

At this age children prefer to be members of a higher status group, than a low status group. Children of dominant groups up to four or five years old enter a phase where they focus on ethnic preference for in-group (Nesdale, Durkin, Maass & Griffiths, 2005).

Essentialism

Essentialism became known in the field of social sciences and cultural studies, particularly in relation to criticism of theories of gender, race and sexual orientation (Haslam, Rothschild & Ernst, 2002). Essentialist theories argue that social differentiation is made on the basis of innate traits (which have a biological basis) invariable throughout history and across cultures, universal, with well-defined limitations and which are not subject to socio-cultural modeling. This can be a criticism of essentialism, promoted by social constructivism (Haslam, Rothschild & Ernst, 2002).

Essentialism of social categories increases out-group discrimination in adults (Haslam, Rothschild & Ernst, 2002). Children are known to essentialize some categories more than others, especially based on physical features perceived to be inherited (Deeb, Segall, Birnbaum & Diesendruck, 2011). Gender and ethnicity are seen as inherited, therefore essentialized (Rhodes, 2012).

Children have ideas about essences, essential properties and the nature of causal relations. Children have a representation of "something" even when they know nothing about that thing, which means they represent essences, even if they have no conviction that the essences are there (Gelman, 2004).

Although there is a discussion about the precise moment at which this essentialism occurs, we can say it appears around the age of six, and in some studies at age four. This happens when children are thinking or reasoning about categories of animals, plants and social categories. Because children are more nativist about categories, they essentialize them more than adults. For example, children of five years old predict that children who are changed at birth will speak as their natural parents, rather than their adoptive parents (Rhodes & Gelman, 2009).

Studies have shown that preschoolers essentialize social categories (Deeb, Segall, Birnbaum & Diesendruck, 2011). In accordance Medin and Ortonty's theory, regarding essentialization of social categories, children assume that social categories are real in nature; they have an essence, which represents almost a quarter of the identity of the category (Woo-kyoung, Kalish, Gelman, Medin & Luhmanna, 2001). First, children make inferences about the properties related to internal and surface features of a member of a category, which distinguish it from another member; secondly children make inferences, even if the affiliation of a member to a category competes with its conceptual similarities to other categories. Once they discover a new reality about a member of a category, children generalize this reality to other members of that category, even if class members look totally different (Haslam & Rothschild, 2000). Children see social categories as natural, innate discrete (Haslam & Rothschild, 2000), unchanging, stable and necessary (Haslam & Rothschild, 2000). Both gender and ethnic types are treated as natural, innate and stable (Rhodes, 2012).

Rhodes (2012) states that children treat physical characteristics (skin color) as inherited and stable, but not see them as "natural kinds" .Some research shows that gender and its perception as a "natural kind" develops in childhood, this essentialization appearing even in communities where older children and adults have flexible beliefs about gender (Rhodes & Gelman, 2009). Although children develop essentialism since kindergarten it tends to decrease with age as demonstrated by Rhodes and Gelman (2009).

Developmental studies argue that social essentialism appears early, with manifestations in preschool children (Gelman, 2004, Birnbaum, Deeb, Segall, Diesendruck & Ben-Eliyahu, 2010). In fact, some attitudinal consequences of essentialism were also observed in children. Specifically, essentialism was positively associated with feelings of helplessness in children and stereotyping (Birnbaum et all, 2010).

The overall aim of this study is to explain intergroup attitudes in preschoolers based on the level of their essentialization of social categories.

Hypotheses

There is an effect of a social category' essentialization (ethnicity or gender) on the attitudes towards that social category.

1. The attitude towards the opposite sex is influenced by gender essentialization, meaning that participants who have high levels of gender essentialization will show higher in-group bias in relation to the opposite gender group, compared to participants who have a low level of gender essentialization. (Study 1)
2. The attitude towards a different ethnic group is influenced by ethnic essentialization, meaning that participants who have high levels of ethnic essentialization will show higher in-group bias in relation to the other ethnic group, compared to participants who have a low level of ethnic essentialization. (Study 2)
3. There are gender differences in essentialization of gender (Study 1)
4. There are gender differences in essentialization of ethnicity (Study 2)
5. There are gender differences in attitudes towards own and different gender group (Study 1)
6. There are gender differences in attitudes towards own and different ethnic group (Study 2)

Materials and method

The participants were sixty-three 5-6 year old children (25 male) who answered adapted forms of Essentialist Component Questionaire (Diesendruck & Haber, 2009) and Preschool Racial Attitude Measure (Williams, Best & Boswell, 1975) for same and opposite sex, in the first study, and same and other ethnic group, in second study.

Study I- variables

Independent variables: gender (male/female), gender essentialization level (high/low). Dependent variables: attitude towards own gender group, attitude towards opposite gender group, variables within subjects.

Study II- variables

Independent variables: gender (male/female), ethnic essentialization level (high/low). Dependent variables: attitude towards own ethnic group, attitude towards different ethnic group, within subjects variables.

Results

To test the first two hypotheses, a 2 gender (male/female) x 2 essentialization level (high/low) x 2 attitude towards gender (own/opposite) ANOVA Repeated Measures was run.

Study 1

The first hypothesis, that participants who have high levels of gender essentialization will show higher in-group bias in relation to the opposite gender group, compared to participants who have a low level of gender essentialization, is confirmed.

There is a main effect of attitude towards gender: $F(1, 59) = 222.15$; $p<.001$, $M_{\text{same gender}} = 32.37$, $M_{\text{dif gender}} = 15.38$. Participants show a more positive attitude towards same gender group, which shows the presence of an in-group bias, a well-documented bias in intergroup relations, which is related to social identification and preference for their own group. As children develop a preference for their own group in preschool years, around the age of four, they start showing in-group bias.

There is also an interaction effect between the repeated measure of attitude towards gender and essentialization level $F(1, 59) = 5.63$, $p = .021$ (see Table 1). In the low level essentialization group, the difference between the attitude towards own and opposite gender (the in-group bias) is lower than in high level essentialization group.

Table 1. Interaction effect between gender essentialization and attitude towards same vs other gender

	Same gender attitude M(*SD*)	Diff gender attitude M(*SD*)
High essentialism	33.48	13.79
	(1.30)	*(1.02)*
Low essentialism	31.26	16.98
	(.86)	*(.68)*

To test the third hypothesis, a t test with gender as independent variable and gender essentialization as dependent variable was run. The assumption that there are gender differences in gender essentialization is confirmed: t(61) = -2.32; p = .026; M_{masc}=27.76, M_{fem}=33.78, girls showing a higher level of gender essentialization than boys.

To test the fifth hypothesis, a t test with gender as independent variable and own and opposite gender attitude as dependent variables was run. The assumption that there are gender differences in the attitude towards own gender is disconfirmed: t(61) = -1.02; p = .30. The assumption that there are gender differences in the attitude towards opposite gender is confirmed t(61) = 2.67, p = .013, M_{masc}=17.92, M_{fem}=14.00, boys have a more positive attitude towards the opposite gender than the girls. This difference could be explained by the previous results in the present study, because girls are higher in gender essentialization, and higher essentialization level increases in-group bias. Therefore the fifth hypothesis is partially confirmed.

Study 2

The second hypothesis, that participants who have high levels of ethnic essentialization will show higher in-group compared to participants who have a low level of ethnic essentialization, is confirmed.

There is a main effect of attitude towards ethnicity: F(1,59) = 808.06, p ‹ .001 $M_{same\ ethnic}$=32.08, $M_{dif\ ethnic}$=9.26. Participants show a more positive attitude towards same ethnic group, which shows the presence of an in-group bias. Although ethnicity is less essentialized than gender, preschoolers show preference for their own ethnic group, especially through information they receive from others, such as parents and teachers, about their group membership (Bigler & Liben, 2006).

There is also an interaction effect between the repeated measure of attitude towards own and other ethnicity and essentialization level F(1,59) = 11,56; p = 0,001 (see Table 2). In the low level essentialization group, the difference of attitude towards own and different ethnicity (the in-group bias) is lower than in high level essentialization group.

Table 2. Interaction effect between ethnic essentialization and attitude towards same vs other ethnicity

	Same ethnic attitude M(*SD*)	Diff ethnic attitude M(*SD*)
High essentialism	34.01	8.46
	(1.10)	*(.52)*
Low essentialism	30.05	10.06
	(.97)	*(.46)*

To test hypothesis 4, a t test with gender as independent variable and ethnic essentialization as dependent variable was run. The assumption that there are gender differences in ethnic essentialization is confirmed: t(61) = -2.14; p = .039; M_{masc}=33.96, M_{fem}=41.6, girls showing a higher level of ethnic essentialization than boys.

To test hypothesis 6, a t test with gender as independent variable and own and different ethnicity attitude as dependent variables was run. The assumption that there are gender differences in the attitude towards own ethnicity is disconfirmed: t(61) = -1.38, p = .89. The assumption that there are gender differences in the attitude towards other ethnicity is also disconfirmed t(61) = 1.68; p = .09. Therefore hypothesis 6 is disconfirmed.

Conclusion

The overall aim of this paper is to explore intergroup attitudes in preschoolers based on the level of their essentialization of social categories. Additionally, gender differences in essentialization and intergroup attitudes were explored. The two studies were focused on two social categories with different levels of essentialization and salience in preschool years: gender and ethnicity. Regarding gender attitudes it is more probable that children are more influences by their essentialist beliefs. Whereas, for ethnicity, information from significant others may play a more important role, since external features used as cues for essentialization are mode subtle.

First study results show that, in the low level essentialization group, the difference in attitude towards own and opposite gender (the in-group bias) is lower than in high level essentialization group. Previous research showed that when gender essentialization is stronger, the attitude towards opposite sex is less favorable (Birnbaum et all, 2010). The more children essentialize a category, the more they notice the differences between

members of that category. Based on social identity theory, Sani, Bennett and Ashley (2005) point out that the process of categorization reflects the effects of assimilation and contrast, where the differences within a category are minimized and those between categories are maximized; perceiving the others as more different and own group as more similar, children tend to favor the members of the in-group and form negative attitudes towards members of the out-group. The essentialization of social groups may lead to the formation of stereotypes and out-group prejudices (Birnbaum et all, 2010).

Results of the second study show that in the low level essentialization group, the difference of attitude towards own and different ethnicity (the in-group bias) is lower than in high level essentialization group. Previous studies have shown that essentialization of social categories help preschoolers to differentiate between members of social groups. Ethnicity essentialization involves awareness of ethnic diversity an awareness of the fact that members of a category belong only to that particular category. Previous research has shown that preschoolers who have a high level of ethnic essentialization will differentiate between members of a social category and other categories and they will identify with their own ethnic group.

Based on the theory of social identity development (Nesdale, Maass, Griffiths & Durkin, 2003), ethnic self-identification facilitates early understanding of children that some members of some groups are more appreciated than others, and they do comparisons between their status as a member of an ethnic group and members of other ethnic groups (Nesdale, Maass, Griffiths & Durkin, 2003); as long as individuals categorize themselves as members of a particular group, they are motivated to make positive assessments to that group.

Nesdale, Maass, Griffiths and Durkin (2003) argue that preschoolers identify with the group to which they belong, and this subjective identification to the group induce children to perceive their own group in a favorable manner, thus enhancing social identity. This facilitates the adoption of thoughts, feelings and behaviors consistent with the group they belong to. According to the theory of social identity development (Nesdale, 1999), individuals who highly identify with the group they belong, evaluate their own group in a positive manner and tend to favor their own group; in addition, they have display cognitive biases such as stereotypes and prejudices against the out-group members. Preschoolers express negative attitudes towards members of another ethnicity easier than to those of the same ethnicity as themselves (Kowalski, 2003).

Gender diferences

Regarding the essentialization of social categories, female subjects have higher levels of essentialization of gender and ethnicity compared to male subjects. This may be due to an earlier awareness in girls of the importance of social factors, such as social values, associated with different social categories. Girls' gender role socialization involves early orientation towards others and the group. Therefore girls are more interested and trained to recognize the markers of power, value and hierarchy. Essentialization helps children understand categories, including social categories. Being more competent about social structure at this age may equal to being more essentialist. This result may be explained by both the relation between essentialization, social identity and ingroup bias (Birnbaum et all, 2010) and by the developmental identity theory emphasizing the role of child's social environment in forming attitudes towards out-group (Bigler & Liben, 2006).

Regarding attitudes towards gender, no significant differences in attitudes toward same sex were found, but there are significant differences between boys and girls regarding the attitude towards opposite sex; boys have a more positive attitude towards opposite sex than girls. These differences may be due to the fact that boys have lower levels of gender essentialization. In-group bias is stronger in girls as an effect of their higher level of essentialization.

Regarding attitude towards ethnic group, there are no significant gender differences in the attitudes towards own or different ethnic group. This is a very interesting result. This result may suggest that ethnicity is indeed less essentialized due to the more subtle external features of the members of different groups, which could serve as cues for essentialization. Further research should investigate the role of social environment and the nature of essentilization for ethnicity, which could be more psychological than biological in nature, and more susceptible to social influence.

Limitations. There should be further investigations about the basis for essentialization of certain categories and the weight of environmental factors on in-group preference and out-group bias. Also, intergenerational studies would be shading more light into the role of social information from significant others in shaping intergroup attitudes. This would allow more effective ways of intervention for prevention of discrimination.

In conclusion, although essentialization may help preschoolers form categories, its impact on social categorization has to be limited and guided through education. Also, gender differences in essentialism in preschool age needs further investigation.

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Predictors of reading competence

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Abstract

On a sample of 120 German fourth graders, variables regarding cognitive and metacognitive competencies, the ability to process information, and reading socialisation were analysed as possible predictors of reading competence. Regression analyses point out that the ability to decode written language and to read aloud fluently correlates positively with verbal intelligence, mental speed, joy of reading and gender in favour of girls. The reading quality, measured as the ability to pronounce adequately, is connected similarly with verbal intelligence and gender, but furthermore positively with the ability to use complex metamemorial strategies and negatively with the number of siblings. The relevance of these results is discussed in regard to promoting reading competence in primary school.

Keywords: reading ability, reading competence, reading promotion

Introduction

To promote the abilities of reading, writing and calculating is a core task of primary school. In our society, these skills are indispensible since they allow us to participate in social and cultural life (Artelt, Stanat, Schneider & Schiefele, 2001). Therefore, to identify and to analyse predictors of these basic competencies is an important task of developmental and educational psychology. Empirical studies which reveal or confirm factors influencing the process of learning these skills not only allow for a deeper understanding of the cognitive process connected with reading, writing and calculating, but also enable us to build better training and teaching programs. Against this background, our study pursues the goal to examine the relevance of cognitive and metacognitive competencies, information processing and reading socialisation as possible predictors of basic reading abilities.

Theory

Reading is an active process, in which data encoded as letters or symbols is reconstructed and transformed into (oral) language. It is a cognitive procedure in which a written code is decoded and translated into a (potentially) spoken code. Therefore, reading competence contains the basic ability to decrypt letters, words, sentences, and texts (Verhoeven, 2013). The result of the reading process is spoken out in case of reading aloud or formulated in mind in case of silent reading.

Furthermore, reading is connected with cognitive and affective attributions which are made during the process of reconstructing the content of written language. Against the background of its structural characteristics (van den Broek, Helder & Van Leijenhorst, 2013) and the reader's individual knowledge, experiences, and preconceptions (Oakhill, Cain, McCarthy & Nightingale, 2013), an understanding of the text is developed (Christmann & Groeben, 1999). Readers assess its content not only considering the correctness of statements which are made in the text, but also in regard to the question if and to what extent they like or dislike it (Hurrelmann & Groeben, 2006). Therefore, reading competence additionally contains the ability to comprehend written language and to take up a position on the text.

Therefore, reading competence can be modelled as a cognitive process in which reading comprehension is based on the ability to extract and process information from a text effectively (Artelt, Stanat, Schneider & Schiefele, 2001). With this in mind, Rosebrock and Nix (2013) model reading competence more differentiated as a process of increasing complexity starting with fluent decoding to comprehensive understanding, which, following Bronfenbrenner's theory of development, at last allows for follow-up communication in social systems (cf. fig. 1).

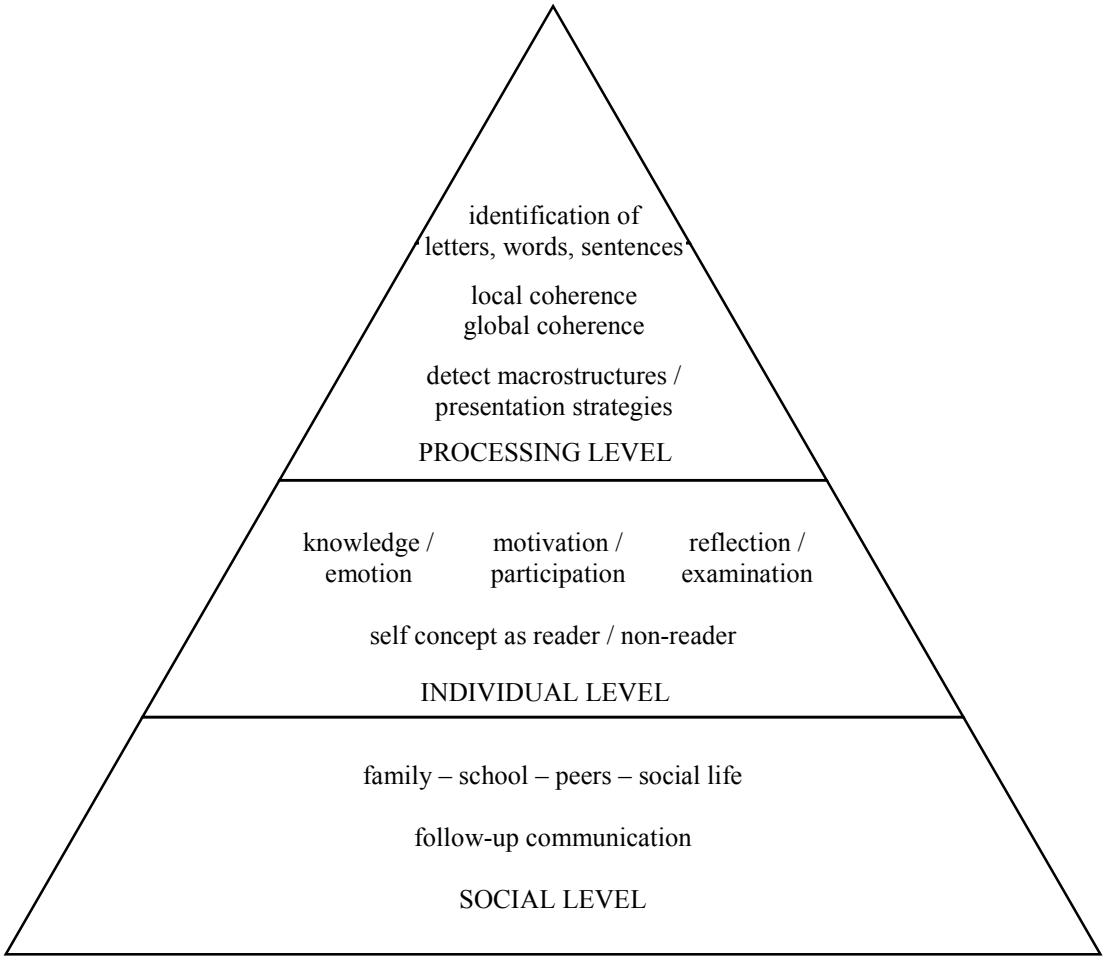

Fig. 1. Model of reading competence based on Rosebrock & Nix (2013)

Whereas readers have a subjective experience of reading as a holistic process, it can be objectively analysed on a process-related, an individual, and a social level. On the processing level, reading contains different cognitive aspects. Firstly, pupils learn to perceive and decipher letters, words and sentences. To become proficient in automatic word recognition is a difficult and rather lengthy learning process for some early readers. Phonological awareness, such as the ability to identify syllables or to judge spoken rhymes, supports this process (Elbro, 1996). As a result, experienced readers profit from the word superiority effect: letters can be recognised more easily in words than in non-words, pseudowords, or when presented isolated (McCelland & Rumelhart, 1981, Coltheart, Rastle, Perry, Langdon & Ziegler, 2001). Therefore, the availableness of the semantic meaning of words is helpful for the process of reading, too. But only after readers mentally construct sequences of words which are semantically connected, early readers can comprehend sentences as a whole. Then early readers learn to connect sentences to coherent units. A high level of general knowledge and a profound feeling for language benefit this process. Broad cognitive maps as well as good intuitions about linguistic idioms initiate reasonable expectations about the progress of a text which supports the process of constructing coherent units. Subsequently, 'know-that' and 'know-how' (Röhr-Sendlmeier & Käser, 2012) about macro- / superstructures and presentation strategies is acquired. Especially, the ability to read more complex texts requires some knowledge about text structure and presentation strategies. In the process of reading, experienced readers construct a cognitive model of the text and its content step by step, whereat the different levels of processing interact holistically (Rosebrock & Nix, 2013).

The subject level contains motivational and emotional aspects of reading. Motivation as well as volition are necessary to deal with a text in the long run. It is not sufficient to be interested in a text with regard to its context from a merely cognitive point of view. The charm and the flow of reading (Conde, 1996) can only be experienced if reading comes along with an inner involvement. This motivates to read texts reasonably in a way which allows for participation in the content as well as its reflection and examination. To which extent and in which way an interaction between reader and text takes place depends on the one hand on the reader and his reading socialisation and on the other hand on the content and the quality of the text. Hereby, the socialisation as a reader (or as a non-reader) depends on the influence of various groups, like family, teachers, peers etc. (Hurrelmann & Groeben, 2006). At last, the social level of the reading process describes the possible follow-up

communication about what was read. Such a communication deepens the understanding of the text, reinforces the reading process and gives new reasons to read or even re-read the text. All in all, Rosebrock and Nix (2013) point out that the different levels are not organised hierarchically or chronologically: all three levels are essential and take place simultaneously.

Furthermore, e. g. the current PISA-framework (OECD, 2013) points out that in our modern information society there is a shift from the importance of the ability of remembering to the ability to find and to use information. In this sense, reading literacy skills also include the ability to find, select, interpret and evaluate information from the full range of possible texts. Actually, such a perspective on interdisciplinary competencies of pupils is nothing new – merely metacognitive competencies are described, which enable the organisation of reading and learning processes effectively (van Kraayenoord & Schneider, 1999, Käser & Cummings, 2012) and which now are subsumed under the term 'reading'. Such an extension of the term 'reading' is problematic from a diagnostic and an educational perspective, because findings about reading competencies of pupils are diluted: in practice it becomes unclear which specific weaknesses a pupil exhibits if a broad use of the term is applied. An extension of the term 'reading' instead of a differentiated approach yields less results for diagnostic and educational practice.

The promotion of the fundamental process variables takes place in the first years of elementary school and ideally draws on the results of preschool education – particularly with a view to the importance of phonological awareness (Elbro, 1996, Röhr-Sendlmeier & Krag, 2007). Decoding ability respectively reading fluency and a good quality of reading aloud, which directly reflects a fundamental understanding of the text, are common objectives towards the end of primary school. Besides educational training concepts (cf. Rosebrock & Nix, 2013), which are planned arrangements to affect the acquisition of reading ability in learning groups directly, a multitude of influencing psychological and sociological factors can be discerned on an individual level: cognitive and metacognitive variables are of importance as well as variables of information processing, factors affecting the socialisation of pupils and specific personal characteristics (Artelt et al., 2007).

(Verbal) intelligence and memory capacity as basic cognitive dimensions also influence reading competence. The knowledge and command of reading strategies as specific metacognitive competencies open up the possibility to optimise the process of reading (Artelt et al., 2007). Attention describes the ability to select and to focus on certain stimuli and thus make them available for consciousness while irrelevant information is blended out. For the process of reading, selective attention is highly important since readers have to differentiate and choose between relevant and irrelevant information (Rosebrock & Nix, 2013). To control and to coordinate reading activities for a longer period of time, concentration is needed. With regard to reading, mental speed is particularly important for hierarchically low processes, since it depicts how quickly data can be processed. Someone who is able to identify words and sentences faster, not only reads more easily and fluently, but also possesses more resources to comprehend the content of the text (Artelt et al., 2007, Rosebrock & Nix, 2013).

The self concept contains the cognitions of individuals regarding their own abilities, motives, and characteristics. In this respect, one's self concept as a reader / non-reader is of great importance for the reading ability (Rosebrock & Nix, 2007). It can be assumed that self concept and reading skill interact with each other. Motivational factors like joy of reading or reading interest are important to initiate and maintain reading processes (Wigfield & Guthrie, 1997). They can be understood as the result of processes of socialisation, which can be ascribed personally to e. g. parents, teachers or peers, but can also occur through contact with media which require the ability to read. Therefore, personal characteristics like gender or the number of siblings have an influence on reading competence, too, since they go along with different socialisation backgrounds (Hurrelmann & Groeben, 2006). Regularly, the results are found that girls read better than boys and that the number of siblings correlates negatively with reading competence.

Research question and research method

Against the theoretical background of reading competence, our study examines the question which variables are actually connected with the fluency and the quality of reading aloud. It aims to further reveal the mechanism by which pupils learn basic reading skills on the one hand and gives advices for a psychological foundation of measures to promote reading competence. Fig. 2 shows possible predictors of reading competence as they are analysed in our study.

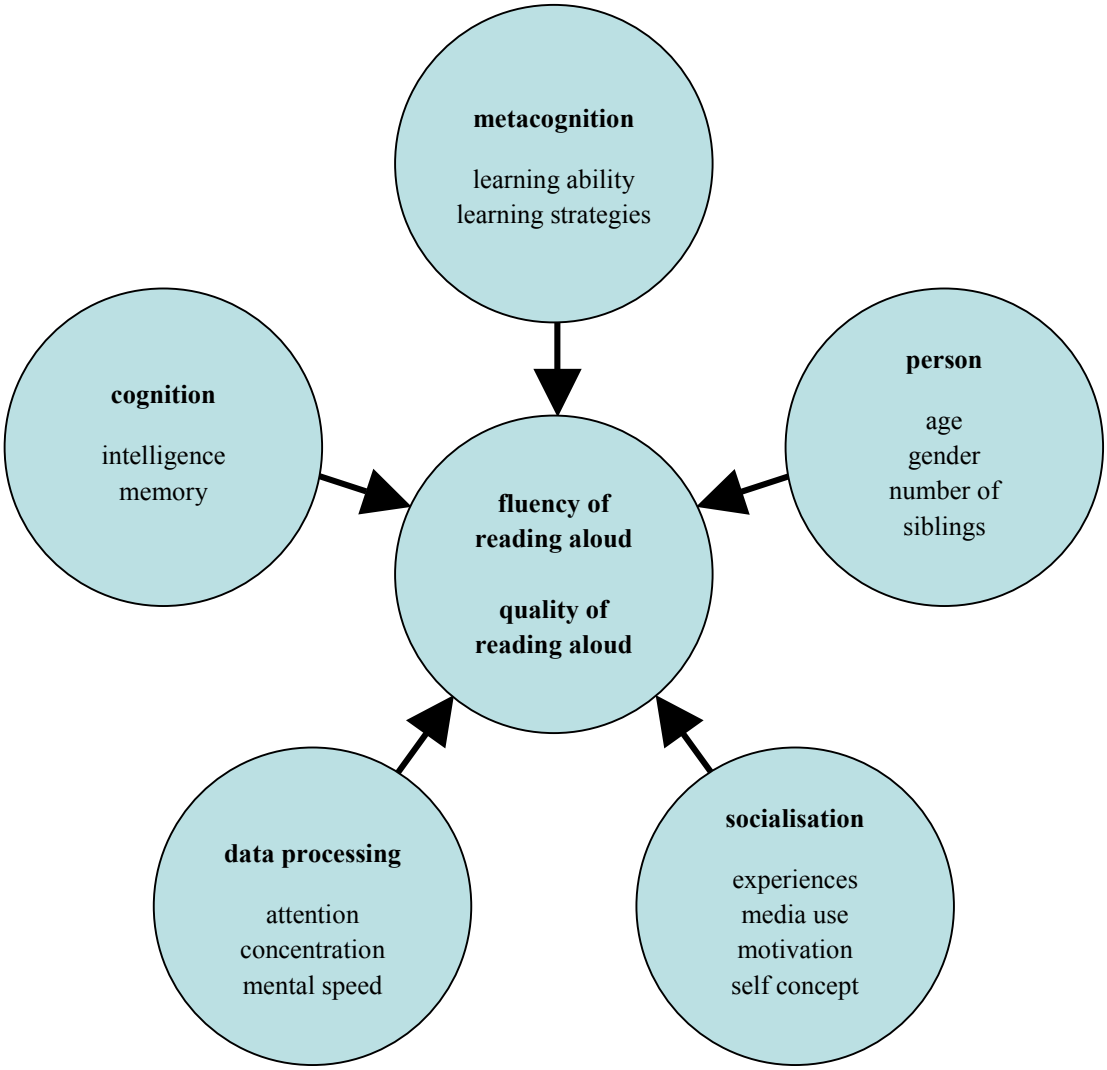

Fig. 2. Possible predictors of reading fluency and quality of reading as analysed in the present study

The study was realised in a cross-sectional design ex-post-facto. 120 fourth graders, 59 girls and 61 boys, of four different German elementary schools from the area of Bonn were examined. On average, the pupils were M = 9.6 years old (SD = .6 years). All pupils spoke German fluently. A group survey was combined with individual tests. The group survey took place in a double period of about 90 minutes in the classroom. It was followed by individual tests which were realised in separate rooms and lasted about 10 minutes each.

In the group survey, attention span and concentration were measured via d2-R. Intelligence and learning ability (in regard to verbal stimuli) were recorded by KLI. The use of metacognitive strategies was measured by self report (Lompscher, 1995) as well as self concept (SESSKO) and motivational aspects of reading (FHLM). Furthermore, demographic data and data about the socialisation of the pupils as readers were asked for. In the individual tests, reading fluency (as the ability to decode the written code into a verbal code) and reading quality (as the ability to pronounce adequately while reading aloud) were measured via LDL and ORFS. In LDL, pupils read aloud short texts for a minute. The number of words which are read correctly (self corrections and repetitions within three seconds are allowed) minus the number of words which are misspoken or read with large delay (more than three seconds) is taken as a measure for reading fluency. If a pupil cannot read a word within three seconds, the experimenter says the word and marks an error. In doing so, the ORFS was used. It is a 4-level-scale by which the quality of reading is judged by an observer (level 1: reading word for word; level 2: mostly reading groups of two words; level 3: mostly reading small groups of three or four words; level 4: well pronounced reading of semantic units). Furthermore, information processing and memory capacity were recorded by KAI. All instruments have good psychometric properties which were confirmed in the recent study.

Results

Firstly, a regression analysis shows verbal intelligence, mental speed, joy of reading and gender in favour of girls as significant predictors of reading fluency (R^2 = .491). More intelligent pupils and pupils with higher mental speed are able to decode written language more easily and to read texts more fluently than pupils with low intelligence respectively slow cognitive processing speed. Pupils with a higher mental speed of 1 bit / second have a better reading performance of four per cent. Furthermore, pupils who like reading have an edge as well as girls who outperform boys regularly. Only 10 boys (16.4%) score higher than the median of the reading performance in the subsample of the girls (Md = 140) and only 14 girls (23.7%) perform worse than the median in the subsample of boys (Md = 117).

Secondly, the quality of reading aloud correlates significantly with verbal intelligence, gender in favour of girls, the number of siblings and the use of complex memory strategies (R^2 = .447). Here again, verbal intelligence is the strongest predictor and girls perform better than boys regularly. Knowledge about complex strategies like categorial organisation or elaboration is connected with a better reading quality. Pupils who are an only child (M = 3.47, SD = .64) show a significantly better reading quality than other pupils. Although pupils with one sibling (M = 3.25, SD = .84) score better than pupils with two siblings (M = 3.07, SD = .73) who perform better than pupils with three siblings (M = 2.91, SD = .94), these differences are not significant. However, pupils with four siblings score significantly worse (M = 2.50, SD = .71). Tab. 1 shows these results.

Tab. 1. Regression analyses predicting fluency and quality of reading aloud

	reading fluency				reading quality		
predictor	β	t	p	predictor	β	t	p
verbal intelligence	.354	4.92	< .001	verbal intelligence	.405	5.39	< .001
mental speed	.285	4.09	< .001	gender (1: ♂, 2: ♀)	.260	3.66	< .001
joy of reading	.250	3.47	.001	number of siblings	-.246	-3.35	.001
gender (1: ♂, 2: ♀)	.175	2.47	.015	strategic skills	.170	2.40	.018

Conclusions

Besides the gender of the pupils, the analyses indicate that a combination of psychological and sociological variables effect the reading competence of fourth graders. Nearly half of the variance of the reading fluency and the quality of reading aloud are explained.

With regard to cognitive variables and aspects of data processing, the importance of verbal intelligence in general and mental speed in particular (especially in regard to reading fluency) is confirmed. This is in line with an analysis of Munser-Kiefer (2014). From her point of view, a larger crystalline intelligence allows for a better identification and comprehension of words because of a richer vocabulary and a more complex cognitive map. Therefore, crystalline intelligence supports hierarchically low reading processes. Those are requirements for hierarchically higher reading processes which are influenced directly by fluid intelligence. Better information processing enables readers a faster access to their cognitive map and strategic resources. This can explain our result that a higher mental speed of 1 bit / second goes along with a four per cent better reading performance.

Concerning sociological variables, the result that pupils with no siblings show a better reading quality than children of larger families confirms earlier studies (e. g. Baumert et al., 2003, Geserick, Dörfler und Kaindl, 2013). In Germany, pupils often benefit of a position as an only child with regard to their cognitive development. This can be explained by the distribution of resources. However, our study only shows significant findings for reading quality but not for reading fluency. A possible explanation might be that parents promote well pronounced reading through activities like reading to their child more likely than reading fluency. The results in regard to gender are still a provocation to reading didactics and reading promotion in school (Hurrelmann & Groeben, 2006). They underline that the concerns of boys should be taken stronger into account. Furthermore, the results indicate that educational concepts (cf. Rosebrock & Nix, 2013) should be complemented with psychological components focussing on verbal intelligence, mental speed, and metacognitive strategies like categorial organisation (cf. Munser-Kiefer, 2014, Vogelsberg et al., 2014). In addition, it is interesting that joy of reading is a significant predictor of reading fluency, since reading interest and media use are not. Therefore, programms for early readers as well as parental measures should focus more on the emotional than on the rational reading experience or on a variety of media offers. Reading in tandem respectively reading together are examples of possible methods to enhance reading enjoyment (Rosebrock & Nix, 2013, Munser-Kiefer, 2014).

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Intelligence, learning ability, and metamemorial competence as predictors of memory performance

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Abstract

On a sample of 764 German fifth graders, the relationship between intelligence, learning ability, and categorial organisation as a particular important form of metamemorial competence on the one hand and memory performance on the other hand is analysed in an explicit (n = 390) and an implicit (n = 374) learning condition. Memory performance and categorial organisation are measured in an experimental setting. Intelligence and learning ability are recorded by psychometric test procedures. In the explicit condition, intelligence, learning ability, as well as categorial organisation ability are significant predictors of memory performance. In the implicit condition, only intelligence and memory performance correlated significantly. Furthermore, the results make clear, that only high-achieving pupils show efficient metamemorial competencies. These competencies are not learned systematically at primary school, but en passant.

Keywords: categorial organisation, learning strategies, memory performance, memory strategies, metacognition

Introduction

Metacognitive and metamemorial competencies have a large impact on the cognitive development of children since such competencies contain the knowledge about cognition and memory as well as the ability to organise learning and memory processes successfully (Perleth, 1992, Schneider, 2010). Already at a young age, simple metacognitive and metamemorial facts are known and basic strategic abilities are mastered regularly (Pramling, 1988, Manning, White & Daugherty, 1994). An example is the strategy to simplify addition tasks in which the second summand is noticeably larger than the first summand by interchanging the order of the summands. The use of this elementary mathematical strategy (based on the law of commutativity of addition) can easily be learned by first graders or even at pre-primary age.

After fourth grade, when primary school ends in Germany, pupils can have a command of more complex metacognitive competencies like knowledge about the usefulness of strategies based on repetition or the ability to organise stimuli by a generic term (Kreutzer, Leonard, Flavell & Hagen, 1975, Hasselhorn, 1990, Lockl & Schneider, 2007). Such metamemorial strategies are more efficient and improve the success of learning processes to a great extent. Particularly the ability to cluster similar objects semantically enables us to organise our environment clearly and to learn efficiently (Schneider 2010, Käser & Cummings, 2012). Therefore, the advancement of metacognitive and metamemorial competencies, especially the ability of categorial organisation, is not only a possible, but an indispensable task of primary school (Klauer & Phye, 1994, Nietfeld & Shraw, 2002, Vogelsberg, Hömberg, Potthoff, Torspecken & Käser, 2014, Vogelsberg, 2015).

However, recent studies point out that German pupils from third to fifth grade actually often only have a very limited metamemorial knowledge (Käser & Cummings, 2012, Dahlmanns, Pucker, Cummings & Käser, 2014). The (efficient) use of declarative knowledge succeeds even more seldom: at this age most pupils are not able to organise the stimuli appropriately and therefore do not profit by using categorial organisation in regard to their memory performance. These results indicate deficits of German primary schools. They do not promote metacognitive and metamemorial skills as interdisciplinary abilities sufficiently.

Against this background, in our study we will examine the question, to which extent and under which circumstances German pupils at the beginning of secondary school organise stimuli semantically to learn more efficiently.

Theory

Metacognition in general and metamemorial competencies in particular can be differentiated into declarative and procedural knowledge. Metamemorial declarative knowledge is the knowledge about facts regarding memory processes ('know that'). The ability to self-monitor, self-control, and self-regulate memory processes is labelled as procedural knowledge ('know how') (Schneider, 2010, Röhr-Sendlmeier & Käser, 2012, Vogelsberg, 2015).

Since our declarative metamemorial knowledge increases continuously, microgenetic studies indicate a rather abrupt rise of procedural metamemorial skills towards the end of primary school age (Schlagmüller & Schneider, 2002, Vogelsberg, 2015). A closer look at the development of strategic problem solving behaviour allows for an explanation. In a first phase of a mediation deficiency (Reese, 1962), learners do not have a conceptional understanding of the strategy. Therefore, they are not able to show a corresponding behaviour even after it was demonstrated. In the second phase, there is a production deficiency (Flavell, 1970). After a demonstration or an instruction, children can imitate a strategic behaviour but they cannot show it on their own. In the third phase of a utilisation deficiency (Miller, 1990), learners act strategically. But the cognitive load is so high, that there is no or just a minor positive effect. In this phase, a lack of routine restricts the efficiency of the strategy. At last, a strategic behaviour is used automatically and is now highly efficient (Hasselhorn & Gold, 2009). Therefore, the presumption of a rather abrupt increase of procedural metamemorial knowledge is equivalent to the proposition, that the utilisation deficiency is overcome quickly in general. This is quite convincing, as declarative knowledge of a strategy leads to strategy use. Through practice the performance improves, which entails a reinforcement of the strategy use.

The example of the strategy to interchange the order of the summands in addition tasks, in which the second summand is noticeably larger than the first one, can be used to illustrate this development. Firstly, children learn to count but still lack a true concept of number (Rips, Bloomfield & Asmuth, 2008). Hence, they cannot understand the strategy (mediation deficiency). Secondly, children have a conceptual understanding of numbers and can imitate the strategic behaviour, but only after the strategy was demonstrated or after they were reminded to interchange the two summands (production deficiency). Thirdly, children interchange the summands on their own without their calculations being faster and more reliable (utilisation deficiency). E. g. a task like '3 + 8', at the beginning a child might count ‚4 5 6 7 8 9 10 11' and after eight operations came to the result ‚11'. In the phase of utilisation deficiency, it interchanges '3' and '8' and counts '9 10 11' to get the correct sum after only four operations. But the cognitive process of interchanging the two summands takes so long that the procedure is only slightly efficient. Already after a short training, the child learns to calculate faster and more accurately: the utilisation deficiency is overcome. The same applies to the development of procedural metamemorial strategies like categorial organisation or elaboration (Käser & Cummings, 2012). Utilisation deficiency should be resolved quickly after declarative knowledge of the memory strategy was acquired and adequate training took place.

Furthermore, besides a general increase of cognitive skills in childhood (e. g. an enhanced information processing), the improvement of metamemorial competencies in general and of the competence to organise stimuli semantically causes a large increase of learning performance and memory capacity at primary school age (Krajewski, Kron & Schneider, 2004). Therefore, the correlation between metacognition, strategic abilities and memory performance increases from the beginning to the end of primary school. Based on metaanalysis, Schneider (1985) reports a correlation of $r = .41$ for older primary-school pupils which can be attributed to the impact of categorial organisation on processes of learning and memorising. Hence, Perleth (1992) labels categorial organisation as a 'mighty' strategy.

In contrast, Käser and Cummings (2012) found a correlation of only $r \leq .15$ between memory capacity and categorial organisation based on a study with a sample of $n = 3469$ German pupils from third to fifth grade. Furthermore, less than 60% of the pupils reported to use metamemorial strategies in an explicit and only 12% in an implicit learning condition. In particular, the strategy of categorial organisation was only reported of 12% respectively of only 3% of the pupils. In addition, no significant age differences could be found (Dahlmanns, Pucker, Cummings & Käser, 2014). The studies of Vogelsberg, Hömberg, Potthoff, Torspecken and Käser (2014) as well as Vogelsberg (2015) showed similar results.

Based on these results the authors of the studies come to the conclusion, that "[...] it can be doubted whether metacognitive declarative knowledge and procedural know-how are indeed well imparted to pupils in German primary school" (Dahlmanns, Pucker, Cummings & Käser, 2014, 81). Therefore, in this study we will examine to which extent this deficit of primary school is compensated at different types of German secondary schools (Hauptschule, Realschule, Gymnasium). The following research questions are analysed:

1. Intelligence and learning ability are analysed in regard to school type. As pupils with the best school achievement in primary school afterwards usually visit German Gymnasium, whereas pupils with the worst performance leave for German Hauptschule, it is expected that pupils of German Gymnasium perform better than pupils of German Realschule who should perform better than pupils of German Hauptschule.

2. Categorial organisation and memory performance are analysed in regard to learning condition and school type. Concordant with Käser and Cummings (2012), we expect differences in favour of the explicit learning condition. Differences regarding school type are expected comparable to the first research question.

3. The connection between intelligence, learning ability, and categorial organisation is analysed explorative with regard to memory performance. The possible relevance of learning condition and school type has to be considered.

Method

In a quasi-experimental correlation study, German fifth graders (N = 764) were examined in an explicit (n = 390) and an implicit (n = 374) learning condition. In the sample, gender and school type were nearly equally distributed (female: n = 367, male: n = 397; German Hauptschule: n = 246, German Realschule: n = 256, German Gymnasium: n = 262). The age of the pupils varied between nine and 14 years (M = 11.4 years, SD = 0.6 years). There were no significant differences comparing the distributions of gender and school type with regard to learning condition. Pertaining the age of the participants, pupils of German Hauptschule were significantly older than pupils of German Realschule and Gymnasium. The difference only amounted to half a year and the effect was rather small (Hauptschule: M = 11.7 years, SD = 0.6 years; Realschule: M = 11.3 years, SD = 0.4 years; Gymnasium: M = 11.2 years, SD = 0.4 years; $p < .001$, $\square^2 = .163$).

A two-part study plan was realised. Concordant with former studies (Käser & Cummings, 2012, Dahlmanns, Pucker & Käser, 2014), in the first part of a lesson a memory experiment was realised with a three-minute-acquisition phase and a recall phase to measure memory performance and categorial organisation. Different instructions in the acquisition phase were used to apply the explicit respectively the implicit learning condition. In both conditions, a story of a wizard was told who had forgotten the spell to conjure gold. So he took his wand and his crystal ball, went into an empty room and spoke every incantation which came to his mind. A picture of this wizard and all the things he had conjured was shown to the pupils (cf. fig. 1).

Fig. 1. The picture presented as learning material to the pupils in the explicit condition and as picture puzzle to the pupils in the implicit learning condition (Käser & Cummings 2012, Dahlmanns, Pucker & Käser, 2014).

In the explicit setting, the pupils were instructed to memorise as many objects as possible. In the implicit setting, the pupils were asked to look for a hidden pair of glasses and a pacifier. While the pair of glasses could be found in the shoe, no pacifier was included in the picture, so it could be ensured that the pupils would study the picture intensively. In the following recall phase, the pupils were asked to list all objects which they remembered on a prepared sheet of paper. The memory performance was operationalised through the number of objects remembered correctly (0-36) and the amount of categorial organisation through the ARC-coefficient (Roenker, Thompson & Brown 1975), whereat negative coefficients are set to 0 and 1 is the maximum in case of a perfect organisation of the remembered items (Käser & Cummings, 2012). The difficulty of the objects ranged from low to high while most objects had a medium difficulty. All objects had high discriminatory power and the homogeneity of the test was satisfactory ($\alpha = .85$) (for a more detailed description of the first part of the study-plan, cf. Käser & Cummings 2012, Dahlmanns, Pucker & Käser, 2014).

In the second phase, two subtests of KLI 4-5 R (Schröder, 2005) were used to record verbal intelligence and learning ability. Verbal intelligence was measured by the subtest "groups of words". To measure the verbal learning ability, the subtest "cipher" was applied. In the subtest "groups of words", five terms are presented in each item. Three terms can be subsumed under a generic term. The other two terms are similar, but do not fit exactly (e. g. 'painting', 'picture', and 'drawing' as visual forms of display vs. 'music' and 'song' as auditive forms of display). Probands have to mark the three terms. It is not necessary to name the generic term. In the subtest "cipher", probands learn how to encrypt sentences. Afterwards, a code and possible decryptions are presented in each item. The probands are to mark the correct one. An explanation is not necessary. The results of both subtests are expressed as a percentage (0-100) rating each. The KLI 4-5 R holds good psychometric properties. The split-half-reliability amounts to $r = .93$ for verbal intelligence respectively $r = .90$ for learning ability. A criterion validity of $r = .88$ (verbal intelligence) respectively $r = .85$ (learning ability) with performance in school as external criterion is reported. Likewise, the data of our present study speak for a good homogeneity of both subtests ($\alpha = .77$ each).

Results

Intelligence and learning ability differ significantly in regard to school type (intelligence: $F(2, 761) = 187.3$, $p < .001$, $\eta^2 = .330$; learning ability: $F(2, 761) = 151.5$, $p < .001$, $\eta^2 = .285$). As expected, pupils of German Gymnasium score better than pupils of German Realschule who score better than pupils of German Hauptschule (cf. tab. 1). All paired comparisons are significant ($p < .001$).

Tab. 1. Intelligence and learning ability in regard to school type

	verbal intelligence		learning ability	
n	M	SD	M	SD
Gymnasium	262	74.6	25.5	69.9	23.6
Realschule	256	54.8	31.0	46.8	27.2
Hauptschule	246	26.4	27.8	30.7	25.8

Categorial organisation ($p < .001$, $\eta^2 = .087$) and memory performance ($p < .001$, $\eta^2 = .465$) both differ significantly regarding learning condition. The memory effect is much larger than the metamemorial effect. With regard to school type, only memory performance differs significantly ($p < .001$, $\eta^2 = .089$) (cf. tab. 2).

Tab. 2. Categorial organisation and memory performance in regard to school type and learning condition

		categorial organisation			memory performance		
	n	M	SD	M	SD		
Gymnasium	explicit	129	.403	.283	23.6	4.6	
	implicit	133	.170	.201	14.6	3.7	
Realschule	explicit	133	.382	.268	21.7	4.5	
	implicit	123	.188	.213	14.0	3.7	
Hauptschule	explicit	128	.342	.253	19.3	4.8	
	implicit	118	.215	.262	12.3	4.1	

Regression analyses on the sample of all pupils prove categorial organisation ($p < .001$, $\beta = .335$), intelligence ($p < .001$, $\beta = .186$), and learning ability ($p = .003$, $\beta = .109$) as significant predictors for memory

performance as dependent variable (R^2 = .187). A separate analysis for subsamples of the two learning conditions is revealing. In the explicit learning condition, we find a similar result compared with the regression analysis on the sample. All three variables are significantly correlated with memory performance ($p < .001$ each, categorial organisation: $\beta = .215$, verbal intelligence: $\beta = .199$, learning ability: $\beta = .255$, $R^2 = .222$) and only the values of the beta weights differ slightly. However, in the implicit learning condition, only verbal intelligence ($p < .001$, $\beta = .347$) is a significant predictor of memory performance ($R^2 = .121$). Furthermore, the results differ for the three types of school. Whereas categorial organisation is the most important predictor for pupils of German Gymnasium ($p < .001$, $\beta = .501$), the values of the beta-weights are significantly lower (comparison Gymnasium-Realschule: $z = 2.465$, $p = .007$, comparison Gymnasium-Hauptschule: $z = 3.685$, $p < .001$) in the subsamples of pupils of German Realschule ($p < .001$, $\beta = .321$) or German Hauptschule ($p < .001$, $\beta = .218$). This result becomes more extreme if you differentiate by the interaction of learning condition and school type. Then categorial organisation is a significant predictor only in the subsample of pupils of German Gesamtschule in the explicit learning condition ($p < .001$, $\beta = .425$).

Conclusions

First of all, the higher efficiency when learning rather salient stimuli explicitly is confirmed (Röhr-Sendlmeier & Käser, 2012). Furthermore, the presented data indicate that the distribution of primary-school pupils to Hauptschule, Realschule and Gymnasium, which is practiced in (parts of) Germany, represents the cognitive abilities of pupils quite well. With regard to intelligence, learning ability, and memory performance pupils of German Gymnasium perform better than pupils of German Realschule who surpass pupils of German Hauptschule. However, categorial organisation skills do not differ significantly regarding school type.

The average performance in categorial organisation is mediocre at best. Additionally, on the one hand, the results of the pupils in the explicit learning condition on average are only slightly better than the results which are reported by Käser and Cummings (2012) for pupils of primary school. On the other hand, an experienced use of the categorial organisation strategy was extremely rare for pupils in the implicit learning condition. Despite its usefulness, to organise stimuli semantically is not yet a strategic behaviour which is shown by most of the pupils automatically. Therefore, for most pupils a production respectively a utilisation deficiency must be stated.

It can be assumed that an impulse is needed to initiate a strategic memorising behaviour for most of the pupils. The major difference between pupils of German Gymnasium compared to other pupils is their ability to react more adequately to such impulses. Only those fifth graders who were attending a Gymnasium took profit of higher metamemorial abilities of categorial organisation in the explicit learning condition.

These results fit well in an overall context. Acquiring the metamemorial competence to organise stimuli semantically actually leads to a better memory performance (Hasselhorn & Gold, 2009). Mostly, fifth graders of German Hauptschule or Realschule did not learn this strategy during their first four years in primary school and during their first year in secondary school. In contrast, pupils of German Gymnasium compensated respectively overcame the deficit of primary school usually during fifth grade. For this reason, production and utilisation deficiencies are still common in fifth grade of German Hauptschule and Realschule, whereas these deficiencies are eliminated for pupils of German Gymnasium regularly. However, it is an open question to which extent teaching in school, family support or individual cognitive resources are responsible for this success.

Besides, this outcome underlines that on the one hand metamemorial skills can be trained and that on the other hand an expertise in categorial organisation influences memory performance strongly (Hasselhorn & Gold, 2009, Schneider, 2010): For pupils of German Gymnasium, the ability of categorial organisation explains up to 25 per cent of the variance in memory performance. Therefore, a more intensive advancement of metamemorial competencies for pupils of primary schools and for low-achieving pupils of secondary schools is of great importance to enable these pupils to organise learning processes successfully on their own. This would require a conceptual change of curricula as well as an altered practice of teaching (Käser & Cummings, 2012, Vogelsberg, Hömberg, Potthoff, Torspecken & Käser, 2014, Vogelsberg, 2015). There is a need of a stronger focus on subject spanning skills as well as on subject-related and interdisciplinary strategic competencies. For this, several successful programs are already available (e. g. Klauer & Phye, 1994, Nietfeld & Shraw, 2002, Vogelsberg, Hömberg, Potthoff, Torspecken & Käser, 2014, Vogelsberg, 2015). But, in Germany, they are rarely used and they are not an integral part of the different subjects in primary school.

At last, such a conceptional change should go hand in hand with a stronger impact of psychology as a part of teacher training. In Germany, psychology still only has a small relevance in the academic training of teachers. But how shall metacognitive and metamemorial competencies be promoted if psychological concepts hold only a minor share in the training of student teachers?

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The weight of phonemic awareness on spelling in Portuguese across elementary school years

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Abstract

The importance of phonemic awareness as a predictor of literacy acquisition in Portuguese, as in various alphabetic orthographies, is convincingly evidenced. However, whereas there is reliable data showing that the weight of phonemic awareness decreases as learning progresses in reading, evidence on its impact on spelling development is lacking. Furthermore, studies ran on different orthographies present mixed support toward the maintenance of the influence of phonemic awareness along the developmental trajectories of spelling. The aim of this study was to examine the relative contribution of phonemic awareness for alphabetic and orthographic spelling across the elementary school years. We tested 103 Portuguese young spellers (53 girls) from grade one to fourth using a set of cognitive (general cognitive ability, verbal memory, phoneme deletion) and alphabetic tasks (word and pseudo-word spelling). Regression results showed that phonemic awareness was the best predictor of spelling in all grades except the second, where verbal memory better explained alphabetic spelling. Interestingly, in fourth grade phonemic awareness explained unique variance of orthographic spelling only. Additionally, it was also verified that phoneme deletion contributed similarly for alphabetic and orthographic spelling in grade one but not in the other grades where different patterns of results occurred. The overall findings indicate that spelling development in Portuguese is largely underpinned by phonemic awareness at the earliest phases of acquisition but less so at the subsequent ones. The results suggest that as spelling progression occurs phoneme-grapheme correspondences give place to more complex mechanisms regulating the rendition of phonology to orthographic forms.

Keywords: Spelling, Portuguese, Phoneme awareness, Predictors, Elementary grades.

Introduction

Many studies have shown that phonological awareness is as critical for spelling acquisition as for reading [1]. However, whereas there is reliable data showing that the weight of phonemic awareness as a predictor decreases as learning progresses in reading [2], evidence on its impact on spelling development is scarce.

Spelling is a complex task that encompasses essentially two main processes: an alphabetic one and an orthographic one which, although related, depend on different types of knowledge. The beginning path of spelling development is characterized by children predominantly relying on phonological procedures, that is, using almost only their knowledge about simple phoneme – grapheme renditions [3]. This spelling strategy is designated as alphabetic. In turn, the orthographic spelling involves not only phonological recoding but also knowledge about permissible letter patterns, contextual dependences constraints, regularities of sub-lexical orthographic forms not entirely determined by phonology and specific word orthographic patterns [1]. Some kinds of orthographic knowledge are typically mastered only in later grades [4]. For instance, Keuning and Verhoeven [4] observed that Dutch children from grades two through six gradually mastered, in the following order but with some overlapping, the spelling of contextual rule based, analogy based and irregular words. Since these developmental changes reflect a greater reliance on orthographic specificities that are beyond phonological processing we can reason that phonemic awareness may have less impact in more sophisticated orthographic spellings than in alphabetic ones.

Recent studies ran on different orthographies present mixed support toward the maintenance of the influence of phonemic awareness along the developmental trajectories of spelling learning. Some studies show that phonological processing remain important even in more experienced spellers, suggesting an enduring reliance on phonology-orthography (and grapheme-phoneme) mappings during spelling development [5]. These studies are in line with models that claim that although gradual changes may occur in spelling strategies' frequency throughout development, all type of learned strategies can be adopted at a given time [4].

Other models assume that there is a qualitative stage-like shift from the skills and knowledge supporting initial spelling to more diverse and complex ones [6], implying that there is a decline of the use of phonological strategies along the pathway toward skilled spelling. In agreement with this perspective, Jongejan, Verhoeven and Siegel [7] have shown that the strength of the phonological awareness relationship with spelling diminished from grade one to fourth. Furthermore, instead of phonological awareness, verbal memory was the best predictor of later spelling in their study, as well as in the Berninger and colleagues one's [8].

Portuguese orthography is considered to be of intermediate consistency regarding spelling [9]. Coherently with that Portuguese children rely mostly on phonological mediation at the beginning of spelling learning [10]. However, there is no information on the impact of phonemic awareness in orthographic spelling in Portuguese.

The aim of this study was to examine the relative contribution of phonemic awareness to alphabetic and orthographic spelling development across the elementary school years.

Method

Participants - A hundred and three elementary school children from grade 1 to grade 4 were tested in the last trimester of the school year. In each grade two classroom participated. Half of the children in each classroom was randomly chosen. Table 1 shows the sample characteristics and the descriptive statistics for cognitive tasks.

Table 1

Sample Characteristics, Mean Scores and Standard Deviations on Predictor Variables

N=103	*Gender*		*Age**		*CPM – Raven Percentile*		*Digit WISC*	*Span***	*Phoneme Deletion****	
	Masc.	*Fem.*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Grade 1	*13*	*11*	*6;10*	*0;04*	*65.00*	*28.13*	*8.29*	*1.57*	*11.08*	*6.76*
Grade 2	*11*	*11*	*7;09*	*0;03*	*68.82*	*30.93*	*9.35*	*2.18*	*17.72*	*4.15*
Grade 3	*11*	*17*	*8;10*	*0;04*	*65.57*	*22.13*	*9.64*	*2.26*	*16.96*	*4.12*
Grade 4	*15*	*14*	*9;09*	*0;06*	*73.74*	*24.80*	*9.97*	*2.51*	*20.32*	*2.37*

*Note. *years; months; **standardized score; *** max. 24; M = mean; SD = Standard Deviation.*

Tasks

Cognitive tasks

General Cognitive Ability - the non-verbal CPM-Raven test was used [11]. Answers were scored according to the test manual and the Portuguese norms [12].

Verbal Memory – The Digit Span subtest from WISC-III was used. Performance was scored according to the manual and the Portuguese norms [13].

Phonemic Awareness – an experimental Phoneme Deletion task was used. This task consists of 24 experimental trials arranged into three blocks of eight words each presenting an increasing complexity. In each trial children should delete a required phoneme and produce the resulting phonological expression (e.g., "say /duʃ/, now say /duʃ/ without /d/" - the child should respond /uʃ/). One point was given for each correct answer.

Spelling

A list of 52 words and another of 52 pseudo-words were dictated to spelling. Words contained target structures that required orthographic knowledge in order to be spelled. Pseudo-words maintained the orthographic structures target in the words. Three types of sub-lexical orthographic complexities were examined: contextual rule-based orthographic patterns (e.g., /R/ between vowels - <rr>); orthographic regularities (e.g., /ʃ/ after diphthong - <x>); syllable stress motivated spellings (e.g., stressed /u/ - <u>).

The words were scored 1 or 0 according to the spelling accuracy of the target orthographic pattern (W-target). That is, only the orthographic spelling was considered, not the grapheme-phoneme strict alphabetic correspondences of the word's remainder. The pseudo-words were scored two ways: an orthographic scoring (PW-target) where 1 point was given if the target orthographic pattern was accurately spelled; and a phonological/alphabetic scoring (PW-Phon) where 1 point was given to any possible sequence of graphemes that could accurately represent the entire phonological string (pseudo-word) orally presented, even if it was not orthographically correct.

Children were tested individually on cognitive measures and in small groups of 4 on spelling in a quiet school room. Half of the children spelled the words first.

Results

Table 2 presents the accuracy level attained in alphabetic and orthographic spelling across grades.

Table 2

Mean number and Standard Deviations of Correct Spellings in Alphabetic (PW-Phon) and Orthographic (PW-Target; W-Target) Scorings

	*Pseudo-word Phonological		*Pseudo-word Target		*Word-Target	
	M	*SD*	*M*	*SD*	*M*	*SD*
Grade 1	*24.30*	*12.43*	*15.13*	*8.01*	*18.58*	*10.19*
Grade 2	*41.30*	*9.95*	*33.00*	*6.60*	*39.30*	*7.28*
Grade 3	*43.21*	*7.75*	*34.93*	*7.71*	*42.43*	*8.48*
Grade 4	*46.44*	*5.04*	*38.83*	*6.88*	*48.03*	*3.87*

*Note. *max. = 52; M = mean; SD = Standard Deviation.*

To determine the associations between the predictors and the different spelling outcome measures a series of correlations were performed. As can be observed in Table 3 no significant correlation was found between the cognitive general skills and the spelling measures. However, general cognitive ability was significantly associated with phonemic awareness and verbal memory in grade 2. Phoneme awareness and alphabetic spelling were significantly correlated only in grade 1 and grade 3. The associations between phoneme awareness and orthographic spelling, both within words and pseudo-words, attained all significantly moderate effect sizes in all the grades. Moderate positive correlations were also found between alphabetic spelling and verbal memory in grades 2 and 3.

Table 3

Correlations among predictors and between predictors and spelling

	2	*3*	*PW-Phon*	*PW-Target*	*W-Target*
1. Phoneme Deletion					
Grade 1	*.223*	*.147*	*.697**	*.489***	*.658**
Grade 2	*.415****	*.507***	*.395*	*.435****	*.452****
Grade 3	*.046*	*.172*	*.592**	*.521***	*.484***
Grade 4			*.229*	*.598**	*.482***
2. Digit Span	*-*				
Grade 1	*-*	*.85*	*.388*	*.336*	*.411****
Grade 2	*-*	*.635***	*.437****	*.396*	*.241*
Grade 3	*-*	*.097*	*.485***	*.231*	*.255*
Grade 4	*-*	*.114*	*.169*	*.235*	*.220*
3. Cognitive General Ability					
Grade 1	*-*	*-*	*.077*	*.038*	*.082*
Grade 2	*-*	*-*	*.362*	*.369*	*.162*
Grade 3	*-*	*-*	*.131*	*.106*	*.167*
Grade 4	*-*	*-*	*.046*	*.266*	*.019*

**p < .001; ** p < .01; *** p < .05*

To examine the extent to which alphabetic and orthographic spelling were differently predicted by phonemic awareness across elementary school grades a series of separate simple and multiple regression analyses were computed for children from each grade. As verbal memory was significantly correlated with orthographic spelling in first grade and alphabetic spelling in second and third grades, Digit Span scores were entered in the regression models of the respective analyses. The results of the regression analyses are displayed in Table 4.

Table 4

Regression Models of Predictors of Spellings in Alphabetic (PW-PhON) and Orthographic (PW-Target; W-Target) Scorings

		PW-Phon			*PW-target*			*W-target*		
		B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
	Predictors									
Grade 1	*Step 1*									
	Constant	*9.99*	*3.63*		*8.70*	*2.85*		*7.57*	*3.13*	
	Phoneme Deletion	*1.28*	*0.28*	*.70**	*0.58*	*0.22*	*.49**	*0.99*	*0.24*	*.66**
	Step 2									
	Constant							*-9.36*	*10.0*	
	Phoneme Deletion							*0.90*	*0.24*	*.60**
	Digit Span							*2.27*	*1.28*	*.28*
*Note: PW-Phon: R2 = .49 (p < .001); *p < .001; PW-target: R2 = .24 (p < .01); *p < .001*										
*W-target: R2 = .43 for Step 1, ΔR2 = .07 for Step 2 (p < .09); *p < .01*										
		PW-Phon			*PW-target*			*W-target*		
		B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Grade 2	*Constant*				*20.44*	*5.80*		*24.91*	*6.35*	
	Phoneme Deletion				*0.71*	*0.32*	*.44**	*0.81*	*0.35*	*.45**

	Constant	*12.21*	*13.24*	
	Digit Span	*2.92*	*1.31*	*.44**

*Note: PW-Phon: R2 = .19 (p < .05); *p < .05; PW-target: R2 = .19 (p < .05); *p < .05*
*W-target: R2 = .20 (p < .05); *p < .05*

		PW-Phon			*PW-target*			*W-target*		
		B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Grade 3	*Step 1*									
	Constant	*25.60*	*4.85*		*19.51*	*5.12*		*26.67*	*5.77*	
	Phoneme Deletion	*1.04*	*0.28*	*.59**	*0.90*	*0.29*	*.52***	*0.93*	*0.33*	*.48**
	Step 2									
	Constant	*6.75*	*6.81*							
	Phoneme Deletion	*1.00*	*0.23*	*.57**						
	Digit Span	*1.78*	*0.52*	*.46***						

*Note: PW-Phon: R2 = .35 for Step 1, ΔR2 = .21 for Step 2 (p < .01); *p < .001 ; ** p < .01*
*PW-target: R2 = .52 (p < .01); **p < .01; W-target: R2 = .23 (p < .01); *p < .01*

		PW-Phon			*PW-target*			*W-target*		
		B	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Grade 4	*Constant*				*3.67*	*9.12*		*26.93*	*7.78*	
	Phoneme Deletion				*1.74*	*0.45*	*.60**	*1.09*	*0.38*	*.48***

*Note: PW-target: R2 = .36 (p < .001); *p < .001; W-target: R2 = .23 (p < .01); **p < .01*

Table 4 shows that phonemic awareness was the best predictor of alphabetic spelling in grades 1 and 3, but not in grade 2, where verbal memory was the only predictor, nor in grade 4 where none of the predictive measures explained any variance of the phonological scoring of pseudo-words spelling. Phoneme awareness was also the best predictor of orthographic spelling in all grades. In first grade phoneme deletion uniquely predicted 49% of the individual differences observed in alphabetic spelling which was similar to the percentage explained in orthographic spelling measured in words (43%). In third grade, phoneme deletion similarly predicted alphabetic spelling (35%) better than words orthographic spelling (23%). However in upper grades (3 and 4), phoneme deletion explained a larger amount of variance in orthographic spelling than in alphabetic spelling when stimuli were pseudo-words (respectively, 52% and 35% in grade 3; respectively 36% and non-significant in grade 4). When comparing orthographic spelling in words and pseudo-words, phonemic awareness better predicted pseudo-words spelling than words spelling variance in grades 3 and 4 but not in grades 1.

In second grade, when general cognitive ability was added to the regression models none of the results' patterns was significantly different or better explained spelling accuracy than those depicted in Table 4. However, when entered alone in the model with alphabetic spelling as the outcome variable, non-verbal ability just failed to explain circa 17% of the individual differences observed ($R^2 = .167$; $\beta = .41$, $p = .053$).

Discussion

This study addressed the relative contribution of phonemic awareness to alphabetic and orthographic spelling development across the elementary school years.

Regression results showed that phonemic awareness was the best predictor of spelling in all grades except the second, where verbal memory better explained alphabetic spelling. The finding that phonemic awareness better accounted for individual differences in spelling than verbal memory or general cognitive ability is in accordance with many evidences across orthographies [5].

Additionally, it was also verified that phonemic awareness contributed similarly for alphabetic and word orthographic spelling in grade 1. This indicates that first graders probably adopt a similar strategy, supported by phonemic analysis, when spelling a new or a known word. Interestingly, in third grade phonemic awareness predicted alphabetic spelling better than word orthographic spelling but in fourth grade orthographic spelling only was predicted by the level attained in phoneme deletion. This probably means that phonemic awareness no longer manifests as a strong supporter of alphabetic spelling as learning attained higher alphabetic levels but it keeps important to orthographic spelling. These findings indicate that spelling development in Portuguese follows a similar pattern as in other orthographies, being largely underpinned by phonemic awareness at the earliest phases of acquisition but less so at the subsequent ones [14] [5].

The results of second grade were not entirely expected. In fact, the lack of phonemic power to predict alphabetic spelling is not in accordance with studies showing that second grade Portuguese speaking children predominantly use phonological strategies in spelling [15]. Since the children were randomly selected to the study, general cognitive ability was not controlled and, as the results suggest, probably some of its association with phoneme deletion acted indirectly upon spelling, which altered the presumed relation between alphabetic spelling and phonemic awareness.

The pattern of differences in phonemic awareness prediction power of orthographic spelling between words and pseudo-words is different when comparing lower grades (1 and 2) with upper grades (3 and 4). Word orthographic spelling is better explained by phonemic awareness ability than pseudo-word orthographic spelling in grades 1 and 2, but the reverse pattern occurred in grades 3 and 4. This suggests that the weight of phonemic awareness in spelling probably depends not only on the learning level but also on the type of word to be spelled. In upper grades, where more words are known, orthographic spelling apparently depend more than in the lower grades on knowledge beyond phonemic awareness.

It is important to mention that phonemic awareness as predictor and spelling abilities as outcomes were measured concurrently; thus, the present findings do not imply that the strengths of the predictions decrease or increase over time. Even though, on the whole, the results of this study suggest that as spelling progression follows simple phoneme-grapheme correspondences give place to more complex mechanisms regulating the rendition of phonology to orthographic forms. These findings also seem to support theories sustaining that different spelling strategies can occur at one point time of the developmental path [4].

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The quality of grandparent-grandchild relationship and the role of the family

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Abstract

The aim of the present study was to explore grandparent involvement in the life of their preschool grandchildren. More specifically, the study examined the types and extent of grandparent involvement, the quality of the grandparent-grandchild relationship and how factors related to the grandparent (e.g. age, distance, health) associate with the quality of the grandparent-grandchild relationship. Taking an ecological perspective the study examined the role of the parent-grandparent relationship in affecting the grandparent-grandchild relationship. Eighty-two grandparents (49 grandmothers) - the majority of whom had retired - participated in the study. Grandparents filled a structured questionnaire examining demographic characteristics, aspects of their involvement and the quality of their relationship both with the grandchild and the parents. Results suggest that grandparents are more involved in the care of their grandchild than in school life. Factors such as distance and frequency of contact associated with the quality of their relationship. Closer grandparent-parent relationship and frequency of contact related to closer relationship between the child and the grandparent. The findings call for a thorough insight into grandparents' role in the upbringing of the next generation.

Keywords: grandparent-grandchild relationship, parent-grandparent relationship

Introduction

Due to increasing longevity people on average spend more time being grandparents with underage children (Harper & Levin, 2005). Family changes are also responsible for grandparent involvement in the child's upbringing. Their support has been demonstrated to be especially significant for employed parents, by giving work opportunities and less expenditure in caring (Wheelock & Jones, 2002), for divorced parents (Bridges, Roe, ALSPAC, Dunn, & O' Connor, 2007; Ferguson, Douglas, Lowe, Murch, & Robinson 2004), for single parents (Harper & Levin, 2005), for noncustodial parents (Hayship & Kaminski, 2005) and for young mothers (Mitchell & Green, 2002). Grandparents are a significant source of support for the family members (Luo, LaPierre, Hughes, & Waite, 2012) and are actively engaged in their grandchild's rearing. Research is now recognizing the importance of grandparents in shaping their grandchild's social life from early childhood into adolescence (Attar-Schwartz, Tan, & Buchanan, 2009). Their involvement has beneficial outcomes for the child as well as for the parents (Hastings, 1997; McCluskey & McCluskey, 2000). Closeness and involvement have been found to be positively associated with the child's well-being (Griggs, Tan, Buchanan, Attar-Schwartz, & Flouri, 2010). Children and young people who hold close relationships with their grandparents have less adjustment difficulties (Lussier, Deater-Deckard, Dunn, & Davis, 2002; Ruiz & Silverstein, 2007).

Grandparent involvement spans a continuum ranging from no contact or relationship with their grandchild to full-care provision. Their support may vary from kinship where grandparents are legal care providers to informal child care (Dench & Ogg, 2002). Research shows that they can be the confidants to whom children tell their secrets, the protectors who provide help when the grandchild is in trouble, the benefactors who cover the cost of clothing, school fees and who buy presents, and the live history of the family (Ross, 2006). They undertake influential roles in the lives of their grandchildren by transmitting the family and culture traditions to the next generation. Kornhaber (1996) claims that grandparents play the role of the historian as they offer firsthand accounts of the family rituals, customs and habits. They act as role models, mentors (Kornhaber, 1996), family watchdogs (Bengtson, 1985), story tellers and partners in play (Katz & Kessel, 2002). In times of family crisis grandparents undertake a more active role in the lives of their grandchildren (Wood & Liossis, 2007). At times of parental divorce and in single-parent families they often become replacement parents (Harpen & Levin, 2005).

Previous literature has examined a number of factors that associate with grandparent involvement. The geographic distance from the child's home and the frequency of contact are among the

stronger predictors (Baranowski & Schilmoeller, 1999; Mueller & Elder, 2003). There is evidence that the frequency of contact tends to lessen during adolescence years when children develop strong bonds with their peers (Bridges et al., 2007). However, the literature provides contradictory evidence on whether this decline in contact affects the feelings of emotional closeness (Attar-Schwartz et al., 2009; Taylor, Robila, & Lee, 2005). Other factors that regulate their involvement are their age (Schilmoeller & Baranowski, 1998), their health status (Coutts-Clarke, 2002; Schilmoeller & Baranowski, 1998), and their education (King & Elder, 1997).

The effect of gender of the grandparent and kin status suggest that maternal rather than paternal grandparents are more involved and develop a closer relationship with their grandchildren. Maternal grandmothers are a significant source of support (Baranowski & Schillmoeller, 1999; Findler, 2000). Studies on the effect of the child's gender propose that granddaughters have a closer relationship with their grandparents (Creasy & Koblewski, 1991), while others have shown stronger bonds between same-sex grandparent-grandchild dyads (Dubas, 2001). The role of the child's gender is a contradictory issue. Many studies have report no differences between boys and girls regarding the communication with the grandparent (Block, 2000; Triado, Villar, Sole, Osuna, & Pinazo, 2005). Some studies have though shown that granddaughters develop a closer bond with their grandparents compared to grandsons (Creasy & Koblewski, 1991; Dubas, 2001).

Studies on the role of race and ethnicity are scarce and controversial. Some suggest that in U.S.A. families African-American and Mexican-American grandparents are more involved with their grandchild than the White-Caucasian grandparents (Giarruso, Feng, & Silverstein, 2001; Hirsch, Mickus, & Boerger, 2002). Other studies though found no effect of ethnicity on the quality of the grandparent-grandchild relationship (Bengtson, 2001).

Apart from examining the contribution of factors related to the child or the grandparent, resent studies guided by the ecological perspective (Bronfenbrenner, 1979) turn their attention to the role of parents in encouraging and promoting the child-grandparent relationship. It is reasonable to assume that parents play a crucial role in regulating the relationship between their child and the grandparent. They are the ones who provide opportunities for interaction between the two and who set the example by supporting a close relationship (Attar-Schwartz et al., 2009; Tan, Buchanan, Flouri, Attar-Schwartz, & Griggs, 2010).

Within this perspective the current pilot study aims to examine: a) grandparent involvement in the daily life of their preschool grandchildren, b) the quality of the grandparent-grandchild relationship, c) to what extent factors related to the grandparent (age, health, distance, and frequency of contact) are associated with the quality of the grandparent-grandchild relationship, and d) how the quality of the parent-grandparent relationship associates with the quality of the grandparent-grandchild relation. The cultural context of this study is of importance. Although it is widely known that Greek family holds strong generational bonds, grandparents' contribution has not been sufficiently investigated. This study aims to fill this gap by examining the extent of grandparent involvement and some of the factors associated with it.

Methods

Participants

Eighty-two grandparents - who had at least one grandchild attending nursery school -took part in the study. There were 49 grandmothers and 32 grandfathers with a mean age of 68.4 years (age range 48-81 years). The majority of grandparents had retired. Only 10.5% we employed. Their educational level was up to primary school (77.6%) and only 3.5% had a higher education degree. Sixty percent of grandparents lived in the same neighbourhood or in the same town as their grandchild, while 40% lived more than 20 kilometres away. The vast majority of grandparents in our sample (90%) reported having average or good health. All grandparents were Greek and lived in the island of Crete, Greece.

Design and Procedure

Grandparents were contacted via a letter distributed through their grandchild's nursery school. The letter contained detailed information about the study and the procedures and asked their consent to participate. The grandparents who consented were sent an envelope containing a questionnaire and a stamped envelope addressed to the researcher.

The questionnaire had three distinct subsections. The first part elicited demographic information (age, gender, education, occupation, health, geographical distance from their grandchild, frequency of contact).

The second part was designed to assess grandparents' involvement: a) in the *care* of the child (e.g. cooking, dressing). For example, "How often do you prepare your grandchild's meal?" b) in *indoors activities* (e.g. playing, story-telling/reading). For example, "How often do you play at home with your grandchild?", and c) in *school life* (e.g. participation in school activities, school-type activities at home). For example "How often do you attend the school concerts?" Grandparents were asked to rate the frequency of their participation in the

above activities in a 4-point rating scale (0=never – 3=very often). There were 4 questions for each type of involvement.

The third part was designed to assess: a) the *quality* of the *grandparent-grandchild* relationship (their emotional closeness), and b) the *quality* of *grandparent-parent* relationship. For example, "How close do you feel to your grandchild?" "How well do you get on with your grandchild's parents?" respectively. Grandparents' ratings ranged from 0=not at all/poor to 3=a lot/excellent. There were 4 questions assessing the quality of each type of relationship.

Some of the items of the questionnaire were developed by taking into account the questionnaire developed by King and Elder (1997).

A total of 82 grandparents (87.2% of those who consented to participate) completed and returned the questionnaire. Grandparents filled the questionnaire at home and were ensured about the confidentiality of their responses.

Results

The majority of grandparents reported having a frequent contact with their grandchild. About 44% had a daily contact, 9.8% met 3 or 4 days per week and 17.1% met once or twice per week. There were grandparents though who had a less frequent contact with their grandchild: 7.3% reported meeting once or twice per month and 22% reported meeting a few times within the year.

In terms of their involvement grandparents seem to have an active role. As shown in Table 1 the mean score of their participation in daily care (M=1.70, SD=1.03) and in in-door activities (M=1.57, SD=.78) was above the mean. The majority of grandparents were responsible for the child's meals as 63.4% reported cooking often and very often for him/her. The favourite indoor activity was story reading/telling: 67.2% reported reading and telling stories often and very often to their grandchild. However, grandparents were less involved in the child's school life (M=.66, SD=.68). Their involvement was restricted to the attendance of school concerts and performances. About a third reported attending these activities. However, they did not get involved in the child's homework (86.6% answered "never" or "rarely") or visited the school to discuss their grandchild's progress (66.5% answered "never" or "rarely").

Almost all grandparents described the quality of relationship with their grandchild in the positive spectrum (M=2.80, SD=.43). Similarly, they reported having a close relationship with the parents (M=2.55, SD=.42).

Spearman's correlation was employed to examine the association of grandparents' age, health status, distance from their grandchild's home, and frequency of contact to the quality of their relationship with the child and the parents. As shown in Table 2 there was a moderate negative correlation between the quality of the relationship with the child and the distance from him/her (r = -.26, p=.02) and a positive correlation with the frequency of contact (r = .31, p=.004). That means that the closer they live together the higher the quality of their relationship is. Also, the more frequently they met the closer they felt to each other.

There were a number of interesting correlations between the measures employed as noted in Table 2. There is a strong positive association between the grandparent-parent relationship and the grandparent-grandchild relationship (r=.27, p<.01). Also, the frequency of contact between the grandparent and the child had a negative association to his/her age (r=-.45, p<.0001) and the distance of his/her residence (r=-.77, p<.0001).

Table 1. *Mean scores of grandparent involvement across the types of activities*

Type of Activities	M	SD
Daily care	1.70	1.03
Indoor activities	1.57	.78
School activities	.66	.68

Table 2. *Pearson's R correlations between the explored measures*

	1	2	3	4	5	6
Quality of grandparent-child relationship	1	-	-	-	-	-
Quality of grandparent-parent relationship	.27*	1	-	-	-	-

Age	.03	.21	1	-	-	-
Health	-.10	.22	-.17	1	-	-
Distance	-.26*	.13	.15	.06	1	-
Frequency of contact	.32**	.-16	-.45**	-.08	-.77**	1

** Corrrelation is signigicant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed).

In order to examine which of the measures studied best predicted the grandparent-grandchild relationship, a linear regression was performed with the quality of the grandparent-grandchild relationship as the dependent variable, and the measures that had a significant association with it as independent variables (Table 3). The overall model was significant, $R^2 = .22$, F (3, 77) = 7.08, $p < .0001$. The quality of the relationship with the parents had a significant contribution. The closer the relationship with the parents the better the relationship with the child (B =.37, p =.001). The frequency of contact also had a significant contribution (B = .10, p= .01).

Table 3. Summary of regression analyses predicting grandparent-grandchild relationship

	B	***SE B***	***β***	***p***
Quality of grandparent-parent relationship	.37	.10	.36	.001
Distance	.02	.04	.06	.66
Frequency of contact	.10	.04	.38	.01

Discussion

This study examined the extent and the kind of grandparent involvement, the quality of the relationship with their grandchild, and the factors that may affect it. The findings underline the role of grandparents' in the lives of their families and their contribution in childcare and in fostering intergenerational relationships. Grandparents in Greece play an important role in the upbringing and development of their grandchildren following traditional values and attitudes (Vitalaki & Pratikaki, 2013).

The results of the study support the position that grandparents have a significant role in the lives of their grandchildren. They appear to participate in the daily care and in indoor activities, especially in story reading/telling. These findings are in line with previous research (Clarke & Roberts, 2004; Simmons & Dye, 2003; Smith & Drew, 2002). Another interesting finding is that grandparents are less involved in the child's school life. It is possible that grandparents feel inadequate to play this role because of the excessive school demands. They might not feel confident to get involved in the child's school life perhaps because the majority of grandparents examined had a low educational level. Nevertheless, they attended school activities such as school concerts and performances, a finding that shows that they want to follow the grandchild's important moments.

The findings of the study demonstrate that grandparents enjoy an emotionally close relationship with their grandchild. They also reported having a close relationship with the parents. The frequency of contact between the grandparent and the child had a negative association with his/her age and the distance of his/her residence. Previous research found similar results, suggesting that older grandparents are less likely to get involved (Fuller-Thomson & Mikler, 2000; Mickler & Fuller-Thomson, 2000). Distance has often been reported to be the number one factor affecting the frequency of contact (Uhlenberg & Hammill 1998). The study also showed that grandparent-parent relationship associates with the grandparent-grandchild relationship. This finding demonstrates that "family relationships do not occur in isolation" (Attar-Schwartz et al., 2009, p. 1064). When parents experience a poor or distant relationship with their parents they are less willing to encourage grandparent involvement in their family life. As a result, it is unlikely that the child will develop emotional ties with the grandparents. Previous studies have also shown that parents who had poor relationships with their own parents were not keen to promote grandparent involvement with their own children (Tan et al., 2010). This finding suggests that parents are in fact the gatekeepers to grandparent involvement. According to Attar-Schwartz et al. (2009, p. 1059) "parents can bridge the generation gap between grandparents and grandchildren" because they operate as the intermediaries between the generation of the grandparent and the generation of the child. The findings of the hierarchical regression analyses showed that the grandparent-parent relationship and the frequency of contact with the child predicted grandparents' higher levels of emotional closeness.

Several limitations frame the interpretation of the current findings. The study relied only on grandparent's perception. Besides, as there was only one informant, the grandparent, the data are susceptible to recall or social desirability bias. Future studies should take into account both parents' and children's accounts regarding grandparent involvement and contribution. The grandparents of this study reported their involvement

and relationship with a young preschool grandchild. Thus, the findings of the study can not be extended to grandparents with older or adolescent grandchildren. The changing needs of the child and his family might differentiate and affect grandparent involvement. There is evidence that children spend less time with their grandparents in adolescence, but there is no agreement whether this affects the feelings of emotional closeness, respect and their sense of importance (Attar-Schwartz et al., 2009; Wiscott & Kopera-Fyre, 2000). Longitudinal research is needed to inform us on the roles of grandparents during the course of their grandchild's development. There is a need for a study examining the role of grandparents in a nationally representative sample. In Greek culture where intergenerational bonds are very strong grandparents are expected to play a critical role both in the upbringing of their grandchildren and in supporting their families. This role remains to be explored systematically.

In summary, this preliminary study showed that grandparents develop an emotionally close relationship with their grandchildren. They are actively involved in their daily care, participate in indoor activities, but have a limited partaking in their school life. Factors such as the geographical distance and frequency of contact are associated with the quality of this relationship. Guided by an ecological perspective it was found that the quality of the grandparent-parent relationship along with the frequency of contact were the best predictors of the quality of the grandparent-grandchild relationship. The findings of the study have implications for family and community services. Despite their contribution grandparents are "almost invisible on the social policy" (Tan et al., 2010, p. 993) and receive no help and support. Their contribution and their needs need to be acknowledged.

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Fathers of children with Autism Spectrum Disorders: a case study on their experiences and relationships

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Abstract

Recent studies have noted the need to investigate fathers' adaptation, experiences and perceptions regarding raising a child with Autism Spectrum Disorder (ASD). The aim of the present qualitative study is to explore father's experiences and relationships with the family members and the social network from the child's birth up to the time the present research was conducted. Qualitative research project was conducted using a purposing sampling technique and semi-structured interviews to examine the paternal experiences in case of a child with Autism Spectrum Disorder as well as his experiences through several contexts. As father's experiences were considered his feelings after the diagnosis and during the different transition-phases, his perceptions towards disability, his relationship with his child, spouse, other siblings, grandparents, relatives, specialists and educators. It was also considered father's experience from the programs and the social network, his worries about the child's future etc. Results showed that father experienced negative feelings after the diagnosis; the relationship with the spouse remained positive and father's relationship with the other child was crucial. It was also highlighted grandparents' role as an important source of support, specialists' and educators' positive impact on the child, and the limited relationships with friends. Worries about the child's development are discussed and recommendations for future research are provided, so that fathers can be supported in early stages.

Keywords: fathers, children in autism spectrum disorder

Introduction

Parents share a variety of parenting roles, but mothers usually undertake more responsibilities on their children's upbringing, care and development (Meadan, Stoner & Angell, 2015). Nevertheless, fathers' involvement on the development and child's welfare is also fundamental (Pleck, 2007; Sarkadi, Kristiansson, Oberklaid, Bremberg, 2008). Studies have focused on mothers and they have typically been the major participants in studies of parental involvement in children's life; nevertheless, last decades fathers' involvement and other members' engagement in children's care and development is increasingly recognized by professionals and policy makers (Ahmad & Dardas, 2015* Flippin & Crais, 2001) in order children's rehabilitation and family relationships to be improved.

Considering that there is a scarcity of studies investigating fathers' roles, experiences and involvement regarding typically developing children compared with mothers there is also little information on fathers of children with disabilities (Meadan et al., 2015; Vacca, 2006). Professionals recognize the multiple needs of a family with a child with a disability and the need all family members to be supported and get involved in early intervention and therapeutic process.

Autism Spectrum Disorder (ASD) is a developmental disorder which involves impairments in social communication and restricted repetitive behaviors (APA, 2013) and imposes particular needs for parents of children with ASD. Parents of children with ASD are confronted with many demands and challenges including getting a diagnosis, adapting in the new circumstances, facing emotional and economical burden, deciding about intervention programs and effective strategies, remaining a high quality in relationships with family members and friends/relatives, as well as dealing with their worries about child's future. Comparing to parents of typically developing children and children with other disabilities, parents of children with ASD report higher levels of parenting stress (Davis & Carter, 2008; Hastings, Kovshoff, Ward, degli Espinosa, Brown, & Remington, 2005; Sanders & Morgan, 1997; Wolf, Noh, Fisman, & Speechley, 1989) higher affective symptoms (Bristol & Schopler, 1984; Dumas, Wolf, Fisman, & Culligan, 1991) and lower well-being (Ekas & Whitman

2010; Ekas, Whitman, & Shivers, 2009), as well as increased risk of divorce (Hartley, Barker, Seltzer, Floyd, Orsmond, Greenberg, et al., 2010).

Most of the studies focus on the mothers of children with ASD while little is known about fathers. The aim of the present qualitative study is to explore fathers' feelings, adaptation and involvement in child care and also their relationships with the family members and social network.

Methods

Participant

The participant in this case study was a 45 years old father of a child with ASD who attended the elementary school in Crete. He was married and had two children, one with ASD (boy, age 9) and one typically developing child (girl, age 12). He was married and had one brother who lived far away and with whom he used to have a harmonious relationship. The criterion for his selection was that he was a father of a child with ASD who had been diagnosed by the interdisciplinary team in KEDDY, the Centre for Differential Diagnosis, Diagnosis and Support, the national organisation in Greece responsible for the official diagnosis and assessment of special educational needs.

Measures and procedure

The research team (authors) consisted of two faculty members from the Department of Preschool Education at the University of Crete. The researchers have had experience working with individuals with ASD and their families and have been trained in qualitative research methods. Members of the research team conducted ten semi-structured face-to-face interviews with the participant at a place and time convenient for the participant. Topics were identified from a review of the literature.

Qualitative research project was conducted using a purposing sampling technique and semi-structured interviews, as already mentioned, to examine the experiences a father of a child with ASD has from his child's birth up to the time of data collection (9 years). Each interview lasted about 50 minutes. Father's perceptions/experiences included:

- **Perceptions towards disability** (21 questions, e.g. *"Describe your attitudes and those of your family members towards children with special educational needs", "Do you think parents and siblings of children with disabilities face problems such as isolation by society? If so, why?"*
- **Feelings and reactions** after the diagnosis and in different ages of the child (31 questions, e.g. *"What were your first feelings and reactions after your child's diagnosis?", "What did you do to help yourself and your family after the diagnosis?"*
- **Mother-father relationship** (27 questions, e.g. *"did the child's problem change your partner's behavior towards you and towards the child?" "Are you satisfied with your marriage?"*
- **Father-child with SEN relationship** (20 questions, *"How would you describe the relationship with your child with SEN?", "What would you like to improve in this relationship?"*
- **Relationships with other siblings** (28 questions, *"Do you think that you devote enough time to your child without SEN? Justify your answer", "How do you evaluate the support offered to you by your child without SEN and his/her sibling with SEN?"*
- **Father-grandparents relationship** and with other members of the extended family (31 questions, *"Do maternal or paternal grandparents held you mostly? What kind of support do they offer?", "How important do you consider this relationship to be for your child and for you?"*
- **Interventions and relationship with the specialists** (24 questions), *"Did you follow a specific support and treatment program for your child?" "Did you feel that the "experts" tried to impose your programs, treatments etc. for your child?"*
- **Interventions and relationship with the educators** (27 questions, *"Can you refer to your experiences with your child's teachers each school year?", "How do you appreciate the help you received from teachers for your child? Are you satisfied with their contribution?"*
- **Relationships and access to social network** (10 questions, *"What kind of difficulties do you face, when you associate with friends and relatives?", "How important do you consider this relationships to be for your child with SEN and for you?"*
- **Concerns about the child's future** (12 questions, *Do you worry about where your child will stay and who will ensure him/her in the future? If so, why? Is there any kind of support from social services?"*

Consent was obtained from the father for his participation in the study. More specifically, a phone communication was obtained and a letter was sent to inform him of the research study; two personal meetings

followed with the father, in order a climate of trust to be created. The duration of the ten interviews was almost 6 months. All the interviews were tape-recorded and transcribed.

Results

Perceptions towards disability

The father in our study reported acceptance of diversity. He noticed that through the difficulties they faced, all members of the family accept and respect the *different.* Very important in this direction was that parents made daily efforts; nevertheless, the supportive services are inadequate.

There is love, we behave with respect to the different…I believe that the system is to blame, the most important-among others- is the lack of information.

Feelings and reactions

Father's initial feelings were fear and stress for the *unknown* future. Worries about the development of the child, disappointment for having a child with ASD and difficulties came from unawareness and social exclusion of children with Special Educational Needs (SEN) in Greece.

…very anxious and stressed, because we did not know what was exactly this thing [ASD], this diagnosis, we knew that we would meet many difficulties…

Mother-father relationship

The *ideal* family is based on mother's strengths and willingness to keep the family united. He stated a balanced relationship with his spouse. His wife is responsible for household and the child's upbringing and education, and he is very satisfied with his marriage. Very positive sexual relationships emerged from the interview and the father describes his wife as a *perfect* character.

Our communication is very good, because we have the same perceptions …also our sexual relationships are very satisfying…

Father-child with SEN relationship

Spending much time with his son, especially in sport activities (e.g. football /basketball) and going at the beach and in playgrounds. His wife is responsible for helping with his homework and educational activities, while the father helps him only in Mathematics. He is very pleased with the child's progress.

I try to help [my son] with his problems in social communication, and do things that he likes…I am very interested in what he is doing at school, if he is involved in educational process, in activities…unexpectedly, I am very pleased with his progress, I thought his problem would be a barrier…

Relationships with other siblings

The father suggested that he is very supportive for both children. His daughter has accepted her brother with ASD, and helps him a lot. He [the father] supports the relationship between the two siblings and thinks that it is extremely important.

When she [my daughter] was young, she understood that something was going wrong with her brother, she cried a lot, and afterwards she realized it was something we could manage, something we could really face. Now she is used to this reality, she plays with him, helps a lot and they have a supportive relationship.

Father-grandparents' relationship and father's relationship with other members of the extended family

They all have accepted the child and the disability-at the beginning it was difficult for them to understand the symptoms of ASD. There is a close relationship with them and they are helpful members, especially the maternal grandmother. The father also receives psychological support from his brother, although he lives far away.

At the beginning they were stressed too… Panic gripped them, over time they realized and accepted the situation…I try to encourage the contact between them and my children, I want them to have close relationship with my child…and their involvement is not a necessity, it is my own choice….the relationship with my brother is close, but he lives far away, he helped me psychologically a lot.

Interventions and relationship with the specialists

The diagnosis was conducted in 2.5 years after the child's birth. The interdisciplinary team was very cooperative, informative and helpful. They offered psychological support to all family members. There has been enormous progress in many aspects and especially in social relationships and behavioral problems.

The individualized program for our child was very helpful for all of us…our cooperation was really satisfying, and our relationships were as good as possible to help my son.

Interventions and relationship with the educators

The father mentioned that the child was in an integration classroom from the beginning, but he was unsatisfied at first with the educational practices. He tried to find some common methods and solutions with the educators. Afterwards, there were better circumstances for the child in the classroom and the educators were more helpful in school inclusion and in facing the child's behavioral problems.

The educators were good enough, although some problems existed at the beginning, for example, the interdisciplinary team had made some suggestions and they tried to do something else. However, we solved those problems, and the child made progress in all aspects, especially in communication…they managed to help my son especially regarding his relationships with his classmates.

Relationships and access to social network

Supportive relationships with friends were stated, although they don't meet each other often. The father suggested that he can rely more on grandparents' support than on friends' help.

My friends were sad when I told them about my son's disability, our relationships are normal, nothing special though…we do not go out very often…they support me and my son, but no… I do not see them a lot...

Concerns about the child's future

The father mentioned several worries regarding his son's future, regarding social relationships, his profession and future development.

My worry is mostly his relationships with other people, and especially with his friends…. I worry a lot about his occupational rehabilitation…his future…I rely a lot on his sister, she will help him a lot, I am sure about that…this relationship is the key…

Discussion

The present qualitative study explored the feelings, adaptation and involvement of a father in child care and also his relationship with the family members and social network. The findings underline the necessity of fathers' involvement in their children' lives as they constitute a major component of the family system and influence the family well-being.

The results of our study support the position that fathers have tolerance towards disability and accept diversity. Maybe this is associated with the upbringing of a child with ASD and in our study involves all family members and not only the father. Moreover, father's feelings and reactions included stress, fear, worry and disappointment, feelings that are common in fathers of children with disabilities, as well as in fathers of children with ASD. Our findings are in line with other research findings which showed that fathering a child with autism was related with going through different emotional situations and states (Martins, Walker, & Fouche´, 2013; Stoner & Stoner, 2014).

Another interesting finding is that the father noted the relationship with his wife as positive and stated satisfaction in his marriage. He appeared to have positive sexual relationships with his spouse and noted that his spouse is responsible for household and mostly for child's upbringing. These findings contradict the findings ofother research that support the opinion that having a child with ASD can negatively influence the relationship between the spouses and creates conflicts especially on decisions regarding the child with ASD (Martins et al., 2015). In addition, previous research showed that sexual relationships of partners raising a child with autism were less frequent compared to those of having a typically developing child (Fisman & Wolf, in: Eddy & Walker, 1999).

The findings of our study demonstrate that the father is involved in sport activities with his child and his spouse is more involved in household and in child's education. Previous research findings have also shown that sport activities can have a positive impact in father-child with ASD (Meadan et al., 2013); Moreover, fathers in other research studies play mainly the role of the breadwinner and the supporter of their wives, than energetically participate in their child' life (Gray, 2003; Martins et al., 2015). The father of our case study tries to have a supportive relationship with his typically developing child and relies a lot on the relationship between the two siblings. This is common in families of children with disabilities, where siblings of children with disabilities undertake many responsibilities regarding their sibling (Martin & Colbert, 1997).

Findings of our study suggested that grandparents contribute a lot in their grandchild's care and play an active and supportive role in parents' and grandchildren' lives. These findings are in line with previous research findings in families of children with ASD (Margetts, LeCouteur, & Croom, 2006; Kornilaki & Kypriotaki, 2014), which state the close grandparent-grandchild and parent-grandparent relationship. Regarding the father-friends relationship, father stated positive relationship with them, although the frequency of their contact is very limited. Maybe this is due to the fathers' concerns about friends-child interaction or the child's behavior problems. In other research studies mothers of children with ASD stated higher levels of support than fathers

(Kaniel, & Siman-Tov, 2011), mothers suggested that friends and relatives where almost a similar source of support (Thoits 1995) and fathers experienced social isolation and inadequate social support (e.g. Martins et al., 2015; Stuart, & McGrew, 2009).

Regarding the interventions and the relationships with specialists and educators, the present case study underlines the importance of all the subsystems that are involved in an individualized program for a child with a disability. More specifically, the father emphasizes on the usefulness of the father-specialists cooperation and the positive impact on the child's progress. In addition he focuses on the changes that followed the successful cooperation and creation of trustful relationships with the educators of the child, so that the improvement of child's behavior and inclusion in the classroom was achieved. Another interesting finding is that the father worries a lot about the future of his child with ASD, especially regarding the development of social relationships and the possibility of a profession. This finding is in line with other research findings that showed that fathers of children with disabilities as well as fathers of children with ASD express concerns at their children's future (Kypriotaki & Georgiadi, 2004; Martins et al., 2015).

Although this study explores experiences and relationships of fathers of children with ASD in several contexts, there are limitations. We should not generalize the findings to a broader population of fathers of children with ASD; there is a need for studies examining a nationally representative sample in Greece as well as in other ethnicities.

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Basic aspects of imitation in mother-twin infants' triangular interactions from 2nd to 6th month of life

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Abstract

We compared basic aspects of imitation, such as the frequency, direction, structure and the kind, in spontaneous mother-non-twin infant and mother/twin-twin infant dyadic and mother-twin-twin triangular interactions during the first semester of life. Three pairs of healthy full-term twin infants with their mothers (N=9) were matched to 6 full-term non-twin infants with their mothers (N=12), based on sex (N= 6 boys and 6 girls), gestational age and birth-weight. Dyadic and triangular interactions were videotaped in 5 7- and 5-minute, respectively, free play settings from the 2nd to the 6th month, in infants' homes. Similarities in the direction in dyadic imitations and in kinds of imitation in dyadic and triangular imitative interactions provide evidence of an intersubjective sharing in twins similar to that of non twins. *Differences* in the frequency, direction and the structure of imitative sequences and the developmental trajectories of imitation across the age range of this study in dyadic and triangular interactions highlight the complexity of multi-person communication contexts early in infancy. The redefinition of the *innate intersubjectivity* concept is suggested for better understanding of multi-subject sharing, as that in the case of twins.

Keywords: imitation, twin infant, mother, innate intersubjectivity

Introduction

Recent findings from naturalistic studies have shown that children are active partners in playful imitative interactions with their parents, siblings and grandparents from the moment of birth. The main corpus of studies on imitation in infancy is focused on early adult-infant dyadic interactions according to criteria, measures and definitions suited only for communicative partners in dyads. As imitative partners, adults (parents, grandparents) and siblings are shown to imitate more their infants than vice versa. Vocal imitation predominates over other kinds of imitation and it occurs more frequently in simple turn takings (Kokkinaki & Pratikaki, 2014; Kokkinaki & Vitalaki, 2013; Kugiumutzakis, Kokkinaki, Makrodimitraki, M., & Vitalaki, 2005; Kugiumutzakis & Trevarthen, 2014; Markodimitraki, 2012). However, no matter how important dyadic interactions and imitative exchanges in dyadic context are, as a basis for further multi-person interactions, children's participation in such multi-person contexts are still inadequately investigated. More specifically, children's active social participation in three-person setting has been explored in studies where triadic setting was consisted of the following partners: (a) the mother, the infant and the experimenter; (b) the mother, the infant and the father, and (c) the mother and siblings of different age. On one hand, adult-adult-infant interactions during the first year of life have shown that infants are sensitive to the new social configuration that includes a third person (Fivaz-Depeursinge, & Corboz-Warnery, 1999; Fivaz-Depeursinge, & Favez, 2006; Fivaz-Depeursinge, Favez, Lavanchy, De Noni, & Frascarolo, 2005; Murray & Trevarthen, 1985; Tremblay-Leveau & Nadel, 1995; Tremblay & Rovira, 2007;). Moreover, they alternate their looking first at the mother and then at the experimenter during pauses in the joint-attention session, (Scaife & Bruner, 1975) and express positive affect in cases where adult interactive partners are their parents (Fivaz-Depeursinge, Burgin, Corboz-Warner, Lebovici, Stern, Byng-Hall, & Lamour, 1994). On the other hand, the few existing mother-infant-sibling studies are focused on the effects of siblings on both the quality and the quantity of adult linguistic and non-linguistic interactions (Jones & Adamson, 1987; Mannle & Tomasello, 1987; Shaffer, 1989; Woollett, 1986). Studies are even fewer in case of twins. Tomasello, Mannle and Kruger (1986) studied the linguistic environment of 1 and 2-year old twins in their interactions with their mothers and suggested the negative effect from directly

addressing each child with fewer utterances as a possible explanation for the slower rate of their vocabulary growth. In summary, literature has described triangular interactions and trilogue play in infancy at different systems: mother-experimenter-infant, mother-father-infant, and mother-sibling-infant. It has been focused on infant in the attachment perspective; on older siblings' role on infant's cognitive development; on infant's language development; and on infant with parents in the family system. To the authors' knowledge, however, the social function of imitation has not been studied in a triangular context early in human life, where two of the three partners are twin infants. In this paper we add the exploration of basic aspects of imitation in a multi-person context with an adult and two twin infants. Within the frame of Innate Intersubjectivity (Trevarthen, 1993) we focused on triads containing a mother along with her twin infants and compared them with mother-singleton dyads in order to investigate the development of imitation in various communication systems. Fivaz-Depeursinge, Favez and Frascarolo (2004) suggested the term *triangular* as the most proper one to describe three person interactions instead of *triadic* which refers to *infant-object-other* interactive system (Bakeman & Adamson, 1984). We chose the term *triangular* instead of *triadic imitation* as we were focused on imitation that occurred in mother-infant-infant interactive system. This is a developmental study since basic aspects of imitation are investigated on a developmental trajectory (from the 2nd to the 6th month). It is also a naturalistic study since all free playful interactions took place in participants' homes. Comparing basic aspects of imitation in spontaneous dyadic and triangular interactions of mothers with their non-twin and twin infants in early infancy is important because it may extend our understanding on the role of imitation both at the level of mother-twin-twin triad, and the development of inter- and multi-subjective sharing in a primary domain (primary intersubjectivity).

Methods

2.1. Sample

Participants were part of a longitudinal and naturalistic study which aimed to compare basic aspects of spontaneous imitation in interactions of mothers with their non-twin and twin infants (Note). Our sample consisted of two Groups, Group 1 with three boys and three girls (N=6) and their mothers (N=6) and Group 2 with three pairs of dizygotic twins (DZ from now on) (1 pair of boys, 1 pair of girls and 1 pair of different sex, N=6) with their mothers (N=3). All participants (N=21) were coming from Crete, Greece. All infants were first-born, healthy and born without complications. They came from families in which at least one parent was employed and mothers were >20 years of age. No twins who were in medical risk or with birth weight less than 1,700 gr. or with gestational age less than 34 weeks were selected. Opposite-sex twin infant pairs were classified as DZ on the basis of the sex difference (Wilson, 1983). For same-sex twin infant pairs, the zygosity was established according to the Zygosity Questionnaire for Young Twins (Goldsmith, 1991).

2.2. Procedure

Video recordings were made at 30-day intervals (5 temporal points) from the 2nd till the 6th month. The first author was videotaping the following natural interactions: (a) 7-minute mother-non-twin infant interactions and (b) 5-minute mother-twin-twin infant interactions. The duration of mother-twin-twin observation was two minutes less due to practical reasons (mothers often could not hold both their twins on arms or direct their speech and gaze on both twins and that made them nervous and the conditions unsuitable for video-recording). A total of 45 video recordings were made (6X5 for dyads and 3X5 for triads) or 210 minutes of dyadic and 75 minutes of triloque play. All recordings were made with a Handy Cam SONY DCR-HC90E digital video camera recorder. The only instruction given to the mothers was "Please, play as you normally do with your baby/babies".

2.3. Coding

An *imitative sequence* was defined as a period from the moment that the model's act started until the completion of the imitator's last imitative activity. *Imitation* was defined in the following three contexts: a) *dyadic imitation* was defined as an exchange in which one partner did something that hadn't be done by either partner in the immediately preceding 10 seconds, and in which the other partner reproduced this activity within a 10-second interval and with no other intervening activities; b) *dyadic imitation in triad* was defined as an exchange similar to the one described above [see (a)], in which, apart from the two actively engaged partners (model-imitator), there was also another one, in a third-party position, as an observer; and c) *triangular imitation* was defined as an exchange in which all three partners were actively engaged. One of them did something that hadn't be done by the other two partners in the immediately preceding 10 seconds, and this activity was reproduced by them within a 10-second interval and with no other intervening activities. In the present study, the following aspects of imitation were analyzed: (a) the *frequency* of imitation as an entire sequence across the age range of the study; (b) the d*irection* of the imitative sequence, which indicates who initiates the modeled

behavior and who reproduces it; c) the *structure* of the imitative sequence, which indicates the timing between the model's and the imitator's expressive behavior. Imitative sequences were categorized in three types: turn-taking, co-action and turn-taking with co-action; and d) the *kinds* of imitative expressive behaviors, which were categorized in five types: vocal imitations, facial imitations, non speech sound imitations, imitation of movements and combinations of the above imitated behaviors (Kokkinaki, 1998).

Statistical Analysis

Descriptive analysis was used for the presentation of the results that regard the direction and the structure of dyadic and triangular imitation (types of imitation). Chi-square tests were used to determine possible relationships between pairs of variables (such as type of imitation*structure, type of imitation * vocal imitation, type of imitation * facial expression imitation type of imitation * non-speech sound imitation and type of imitation *imitation of movements). The significance level of chi square test was set at 1%.

Results

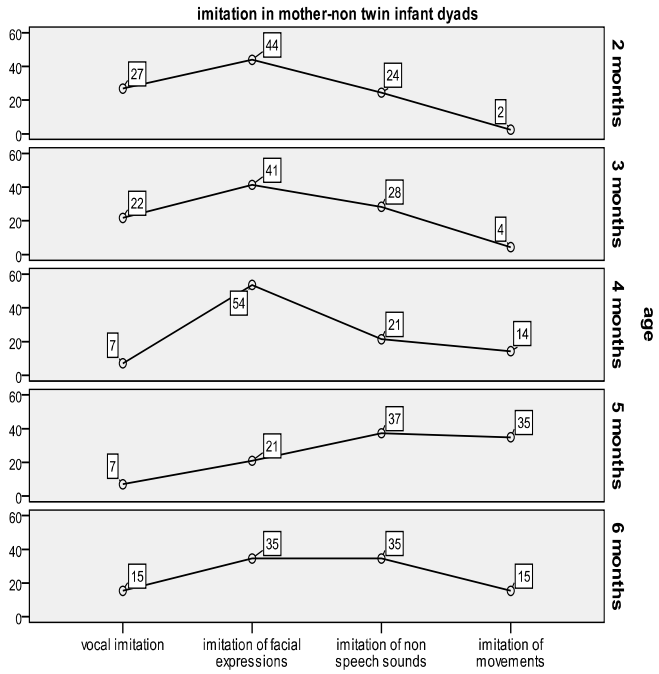
Frequency of Imitation: 283 imitative episodes took place from the 2nd to the 6th month. 184 (65%) of them occurred in mother-non-twin infant dyads, 85 (30%) in mother/twin-twin dyads and 14 (5%) in mother-twin-twin infant triads. In dyadic imitation in triads, 28 (33%) imitations occurred in twin-twin infant dyads and 57 (67%) in mother-twin infant dyads.

Direction of imitation: In mother-non-twin infant dyads, mothers imitated their infants [125 (67.9%)] more than vice versa [59 (32.1%)]. In mother-twin infant dyads, mothers imitated more their twin infants [33 (38.8%)] than vice versa [(24 (28.2%)] although they imitated their twin infants almost equally [first-born twins: 16 (18.8%), second-born twins: 17 (20%)]. In mother-twin infant dyads, second-born twins imitated their mother more [16 (18.8%)] than their first-born co-twins [8 (9.4%)]. However, in twin-twin infant dyads, first-born twins were quite more imitative [22(25.9%)] than their second-born co-twins [6 (7.1%)]. In 7 out of 14 imitations in mother-twin-twin infant triads, the mother was one of the two imitators, in 12 imitations first-born twins were one of the two imitators and in 9 imitations second-born twins were one of the two imitators.

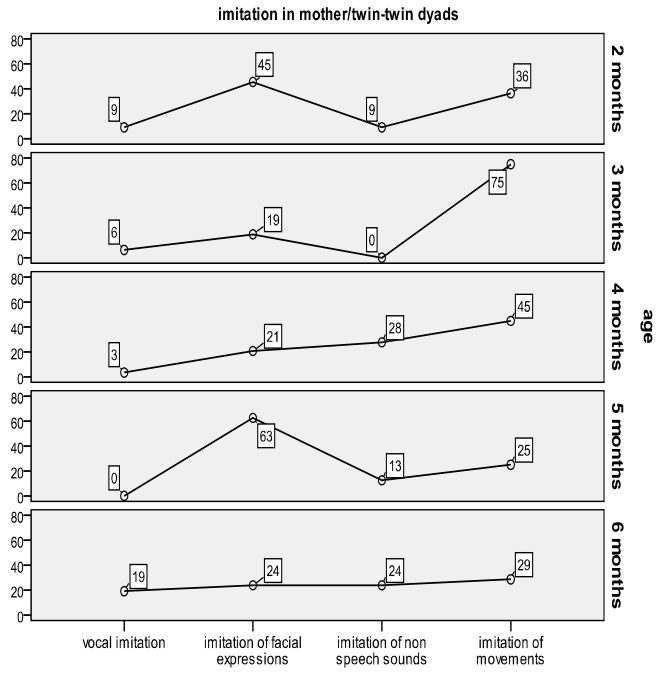
Structure of Imitation: Imitative sequences in mother-non-twin infant dyads were mostly structured in turn-taking [83 (45.1%)], then in co-action [57 (31%)] and less in turn-taking with co-action [44 (23.9)]. In mother/twin-twin dyads turn-taking with co-action [34 (40%)] predominated over co-action [27 (31.8%)] and turn-taking [24 (28.2%)]. Imitative sequences in mother-twin-twin infant triads were mostly structured in turn-taking with co-action [13 (92.9%)] and then in co-action [1 (7.1%)] while no imitations occurred in turn-taking.

Kinds of Imitative Expressive Behaviors: No significant differences were found in the frequency of vocal, facial and non speech sound imitations in dyads and triads while significant difference was found in the frequency of movement imitation in mother/twin-twin dyads where 37 (43.5%) imitations took place (Fisher's exact test=26.81, $p<0.01$).

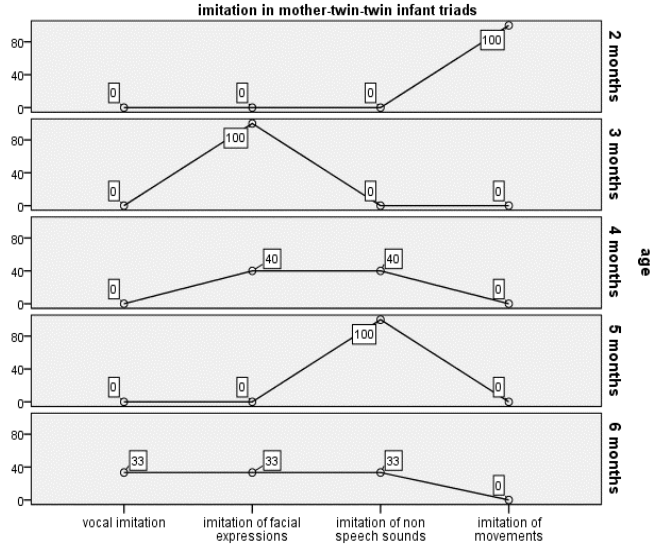
The Developmental Pattern of Imitative Sequences: Imitation follows different developmental patterns in interactions of mothers with their twin and non twin infant(s).



Graph 1: Percentages of each kind of imitation per age in mother-non-twin infant interactions



Graph 2: Percentages of each kind of imitation per age in mother/twin- twin infant interactions



Graph 3: Percentages of each kind of imitation per age in mother- twin-twin infant interactions

In mother-non-twin infant dyads (Graph 1) the percentage of imitation reaches a peak in 4rth month (54% imitation of facial expressions) while in mother/twin-twin dyads (Graph 2) the percentage of imitation reaches a peak in 3rd month (75% imitation of movements). In mother-twin-twin triads (Graph 3) all imitations (100%) that occurred during the 2nd month were imitations of movements; during the 3rd month only facial expressions were imitated (100%) and during the 4rth month all imitations (100%) were those of non speech sounds.

Discussion

In the present study we investigated basic aspects of imitation in mother-non-twin, mother/twin-twin infant dyadic and mother-twin-twin infant triangular interactions. According to the social unit perspective family is considered as a small group composed of two parents and an infant with asymmetrical relationships among

them (Corboz-Warnery, Fivaz-Depeursinge, Bettens, & Favez, 1993). Based on this perspective, we investigated asymmetrical relationships in dyadic and triangular interactions with twin and non twin infants. Methods used until now approach the triad inadequately, as family dynamics have been studied only through mother-infant, father-infant and mother-father dyads and family has not been studied as a whole. We studied imitation in triangular interactions where each partner was either the model, or the first imitator, or the second imitator or played an even more peripheral role, that of the observer. In other words, imitation seemed to occur in parallel, circular or transitive triadic exchanges, according to Chase's model of triadic social organisation (1979). What is new in the present study is that partners initiated spontaneously an action that was imitated afterwards and their roles changed during their imitative exchanges in free play interactions in contrast with the elicited conditions of the Lausanne Triadic Play (Corboz-Warnery, Fivaz-Depeursinge, Bettens, & Favez, 1993) where the role of the third partner was strictly oriented.

The comparison of certain basic aspects of imitation in spontaneous mother-non-twin infant and mother/twin-twin infant dyadic interactions and mother-twin-twin triangular interactions in five temporal points during the first semester of life provided evidence of both *similarities and differences between: (a) dyads, and (b) dyadic and triangular imitations.* More specifically, the comparison between mother-non-twin infant and mother/twin-twin infant dyads showed:

a) *Similarity in the direction of imitation*. Mothers imitated their infants more than vice versa regardless if they were twins or not. This finding is in line with findings from the similar comparative study of Pateraki, Markodimitraki, Kaklamani, and Kugiumutzakis (2008) and indicates the effectiveness of early maternal scaffolding on the maintenance and enrichment of mother-infant communication.
b) *Similarity in the direction of imitation in mother-twin infant dyads.* Mothers imitated almost equally their twins [first-born twins: 16 (18.8%), second-born twins: 17 (20%)] while their second-born twins imitated them more frequently [16 (18.8%)] than their first-born twins [8 (9.4%)].These results are also in line with the findings of Pateraki et. al. (2008). The almost equal maternal response to first-born and second-born twins may indicates mothers' effort to treat their twins alike from the beginning of their coexistence and thereby avoid family conflict later that might result from preferential treatment of one twin. This finding is also a challenge for the Theory of Attachment according to which mother prefers one of the twins during the first year of life, or changes preference while father keeps the balance by taking care the non preferable twin (Minde, Corter, & Goldberg, 1984). However, we may not acknowledge the possibility first-born twins' mood during the 7-minute interactions to be responsible for mothers' equal imitative response or even the possibility first-born twins to be really less imitative than second-born. Both explanations need to be supported by further research.

In addition, the comparison between dyadic (mother-non-twin infant and mother/twin-twin infant) and triangular (mother-twin-twin infant) interactions showed:

a) *Similarity in the kinds of imitation* which indicates that mothers and their twin/non twin partners, in dyads and triads, used all possible ways (vocalizations, facial expressions, non speech sounds, head and body movements, etc.) to communicate through imitation, as no significant differences were found in the frequency of vocal, facial and non speech sound imitations in dyads and triads.
b) *Similarity in non sound speech imitation, in mother-non-twin infant and mother-twin-twin infant interactions,* where it reached a peak in the fifth month. This similarity implies that no matter what the context is, dyadic or triangular, imitation in early infancy serves mainly through every possible uttered sound the mother-infant communication and the language development afterwards.
c) *Similarity in vocal imitations in mother/twin-twin infant dyadic and mother-twin-twin infant triangular interactions*. In dyadic and triangular interactions with twin participants vocal imitation reached a peak in the 6^{th} month while in mother-non-twin dyads vocal imitation reached a peak in the 2^{nd} month. A possible explanation is that twin children receive less individually directed speech and participate in fewer and shorter episodes of joint attention, resulting to delayed vocal imitation. Recent findings confirm the relation of environmental factors with slightly delayed vocabulary in twins (Bishop, 1998; Seung, Holmes, & Colburn, 2004; Tomasello, Mannle, & Kruger, 1986).
d) *Difference in the direction of imitation in mother/twin-twin infant dyadic and mother-twin-twin infant triangular interactions.* In triangular imitations mothers of twins were more frequently models than imitators. Interacting with two infants simultaneously presupposes limited attention addressed by the mother to each twin in order to prevent her twins from having the sense of being an "outsider" when she pays less attention to one of them. Mothers of twins facilitate the triangular interactions with two equally immature partners who fight for gaining their gaze and attention. This competitive strategy makes twin infants more alert in imitation.
e) *Differences in the structure of imitative sequences* which reflect the variety in which imitation occurs in mother-non-twin infant and mother/twin-twin infant dyads, and mother-twin-twin triads. It also indicates that infants do not learn these types of structure during their interactions with their mothers but they already exist and serve twin- twin infants' contact. Mothers and their non twin infants have all the time to themselves.

Their interactions are not conducted in a hurry, so there are no interruptions except for a pause between the modeled activity and its imitation, which indicates the partners' calm emotional state. On the contrary, co-actions show that twin infants and their mothers are more ready and hasty to move on to the imitation of a modeled activity without waiting for the model to finish it. Moreover, in mother-twin-twin triads we detect alternations of calm and haste in the same imitative sequence. A calm readiness and the dialogic form in turn-taking (my turn-pause-your turn) combined with an increased readiness, haste and lack of dialogue compose the most complex structure of triangular imitations.

f) *A significant difference in the frequency of movement imitation* was found in mother/twin-twin dyads where 37 (43.5%) imitations took place [26 (14.1%) for mother-non-twin dyads and 4 (28.6%) for mother-twin-twin triads]. Mothers and their twins prefer a rather kinetic (non vocal, silent) way of imitation than a vocal one in their dyadic interactions. This preference shows how fast proprioceptive and motor systems function and their precise tuning within each partner and between the two partners.

g) *Difference in the kinds of imitation occurred in dyadic and triangular interactions.* All kinds of imitation were achieved in mother-non-twin infant dyadic interactions, even in low frequencies, while vocal imitation never occurred in mother/twin-twin infant dyads during the 5th month. In addition, in mother-twin-twin infant triangular interactions the only imitation achieved in the 2nd month was the movement imitation and the only imitation achieved in the 6th month was the vocal one. This may confirm the lower vocal level in interactions where the majority of the partners (two out of three) are young and immature. Moreover, partners were probably carried away from one kind of imitation because they shifted their interest from the imitation itself to whose turn it is to continue until the outcome of the activity at hand.

h) *Differences in the developmental trajectories of dyadic and triangular imitation* which might be due to individual differences based on cultural, biological, temperamental, age-related factors ,and, possibly, several other factors that determine the meaning of imitation in ontogeny (Markodimitraki, 2003) on one hand and differences in the type of imitative interaction (dyadic or triangular) on the other hand.

Finally, *differences in the frequency of imitation* between first-born twins and their co-twins may reflect individual differences and confirm the notion that twins may be alike but they are not the same.

In sum, similarities found in this preliminary study led us to the following interesting conclusions: a) asymmetric imitation characterizes mothers' imitative behavior when they interact with their twin/non twin infants in dyads; b) symmetric imitation characterizes mothers' imitative behavior when they interact with their first- and second-born twin infants in triads; and c) mothers and their twin and non-twin infants prefer similar kinds of imitation in their dyadic and triangular imitative interactions. In addition, differences found in the present study reflect expected differences in the ways mothers and infants, twins and non-twins, communicate as individuals and partners on one hand, and differences deriving from the twin situation (Piontelli, 2002) on the other hand. The most challenging finding of the present study is that in triangular imitative exchanges during the first semester of life partners do not act imitatively in order the less immature partner (twin infant) to learn something new from the most mature partner (mother). However, although twin infants of our study had a better chance than non twins to co-construct daily, more complex imitative exchanges, they did not do it. Our restricted Greek twin sample may be responsible for this. The *intersubjectivity* concept should be extended in order to include a great variety of multi-person communication contexts, as imitation in triangular or quaternary interactions is, in the case of twins, a daily experience. Valentine's assumption that the more partners involved in the imitative games, the greater the infant's pleasure is deserves to be empirically tested. Further observation of the triad as a whole, while systematically varying the contributions of the parts, will highlight the complex coordination which is necessary in triadic engagement.

Note

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Portuguese Foundation Graphogame: Preliminary Results

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Abstract

The Portuguese Foundation Graphogame is an adaptation of the Graphogame software to European Portuguese. The Graphogame contributes to reading and spelling acquisition. It has been designed and implemented for different languages with results that reveal that this is an effective tool to the reading and spelling acquisition. In this paper the methodology adopted in Portuguese Graphogame and the results of its implementation in schools are described.

Keywords: *Graphogame; reading acquisition; word reading*

Introduction

The Graphogame is a software that contributes to the reading and spelling acquisition. The software was developed as a friendly computer game, focusing on the training of grapheme-phoneme relationships with children at risk of experiencing difficulties learning to read. Graphogame was developed at the University of Jyväskylä (Finland) aiming to be a complementary and free tool to regular education [1;2] When playing Graphogame children listen to a sound corresponding to a letter (or word /nonword, in more advanced levels) and, at the same time, several written options appear on the screen. The child's task is to select the correct match to the sound she has heard.

The game presents the same stimuli hundreds of times, at different playing levels and through different tasks. In addition, during the game, the child has to make quick phoneme-grapheme associations thus promoting reading automation. There are two types of tasks: the main tasks require the child to associate an audio segment to the correct written representation; more active tasks require the child to write the word or nonword she has heard.

The Graphogame has been adapted to various languages (English, German, Finnish, among others) with results that suggest that this software is an effective tool for the promotion of the reading and spelling acquisition.

Saine et al (2011) administrated Graphogame to Finnish children identified as at risk of developing difficulties in reading acquisition. After the intervention there was a significant progress in terms of letter knowledge, reading and spelling skills [3] In addition, about sixteen months after the intervention, children presented reading and spelling accuracy and fluency skills similar to the rest of the classroom. In Austria, a six weeks intervention using the German Graphogame improved the accuracy and speed reading of children attending the second and fourth grades [4] In the UK, after twelve weeks of intervention, children with ages 6–7 in the experimental group improved reading, writing and phonological skills compared to children in the control group, maintaining the gains four months after the intervention [5].

The Portuguese Foundation Graphogame (PFG) study was conducted with a group of children attending the first grade, identified as at risk of failure in reading acquisition. The aim of the study was to assess the impact of Graphogame to the acquisition of reading foundation skills, specifically: phonemic awareness, the relationship between letters and sounds and decoding skill.

Materials and Methods

2.1. Design

A longitudinal study was conducted to assess the impact of a sixteen weeks implementation of PFG. Appropriate schools and parent's authorization were obtained for each child to participate.

Participants were assessed before the intervention (pre-test M1, February) and by the end of sixteen weeks of intervention (post-test M2, June). On both occasions, the evaluations were conducted individually in a room adjacent to the classroom.

2.2. Participants

Thirty-eight monolingual first grade native speakers of European Portuguese took part in this study (see Table 1). Children were selected for being at risk of experiencing reading difficulties. Participants were divided between experimental and control group. In both groups the socioeconomic context was controlled by selecting children from economically deprived school areas (TEIP) and children from non-economically deprived school areas (N-TEIP).

Table 1: Participants description by experimental and control group, school area economical context and sex

Characteristics	Control Group		Experimental Group	
	TEIP	N-TEIP	TEIP	N-TEIP
N	15	10	8	5
Sex (F;M)	5;10	6;4	2;6	2;3
Age (years; months)	7;0	6;5	6;7	6;7
IQ *	17,4	18,2	15,9	20,6
Playing time(minutes)	----	----	451	474
Percentage of success	----	----	75,10%	78,90%

* Results fall between percentiles 35-65, corresponding to "average intellectual ability" [6]

2.3. Assessment tests

The vocabulary was assessed with the vocabulary WISC subtest [6]. The letter-sound knowledge was assessed with a task integrated in the PFG. The remaining assessments were conducted using the ALEPE [5] a Portuguese reading and spelling assessment battery that includes: Letter Spelling, Metalinguistic Phonemic Awareness; Word Reading; and Pseudoword Reading.

2.4. Research questions

Our expectation for the results of the intervention was (i) to find a more pronounced learning curve in the experimental group than in the control group, (ii) the extinction or the decrease of TEIP effect, i.e. after intervention, results of children in the experimental group in TEIP schools should be closer to those in N-TEIP schools and (iii) to find a steady motivation throughout the training to play Graphogame.

2.5. Procedure

The Graphogame training was conducted at schools with groups of five children, ten minutes a day five days a week, under the supervision of a specially prepared professional (speech therapist, psychologist or teacher). The Graphogame was administered to children in the experimental group, whereas children in the control group followed the normal schooling.

Results

The results of the Graphogame training are shown in Table 2. In all measurements the learning effect is stronger in the experimental group than in the control group.

As for the TEIP effect, when it was not extinguished (in the M2 assessment) it was less pronounced in the experimental group than in the control group.

Table 2: Description of correct answers per task between the experimental group and the control group (expressed as a percentage for all tasks except for the Vocabulary – a WISC subtest – expressed in rough values).

Tasks	Assessment	Control Group		Experimental Group	
		TEIP	N-TEIP	TEIP	N-TEIP
Letter-sound knowledge	M1	44,4	66,4	53,7	57,1
	M2	64,1	69,7	74,9	82,9
Letter spelling	M1	47,3	73,9	50,4	58,7
	M2	68,5	85,2	89,6	91,3
Phonemic awareness	M1	31,3	36,7	29,4	34,2
	M2	60,4	53,3	83,3	84,2
Word reading	M1	6,3	16,7	4,1	18,3
	M2	17,4	50	32,2	51,1
Pseudoword reading	M1	3,3	17,3	4	15,3
	M2	15	45,3	30,7	48,7
Vocabulary	M1	10,1	8,6	7,7	11,3

Letter-sound results revealed, as expected, a learning effect, F (1,34) = 126.763, p < .05) with better results for the experimental group (ca. 80 % in M2) when compared to the control group (ca. 65% M2), F (1,34) = 6.917 , p < .05. Although the economically deprivation effect was not extinguished, it is important to notice that TEIP children in the experimental group achieved better results than TEIP children in the control group (75 % vs. 64%), F (1,34) = 4.126 , p = .05. There was a triple interaction which was due to the learning effect (between M1 and M2), more expressive in the experimental group than in the control group (respectively 24% and ca. 12%), along with a learning effect more expressive in TEIP than in N-TEIP groups (respectively 20 % and 15 %), F (1,34) = 4.794 , p = . 036 .

As for the spelling letter task, the learning effect was once again significant, F (1,34) = 45,505, p <.05, with superiority of the experimental group (ca. 35% vs.10%), F (1,34) = 14,956, p <.05. The economically deprivation effect disappeared in M2 in the experimental group, F(1,34) = 4,748, p <.05, (89,6% *vs.* 91,3), whereas in the control group it was maintained. Finally, it is important to highlight that all children attained ceiling results, with exception to those in the TEIP schools in the control group.

The results of the phonemic awareness task reveal a significant learning effect (F (1,34) = 33,939, p <.05), more pronounced for the experimental group (50% evolution *vs.* 25%). The economically deprivation effect was extinguished in M2, F (1,34) = 5,103, p <.05).The results of the word reading task also revealed a larger learning effect, favoring the experimental group (30 % *vs.* 20%), F (1,34) = 60.729, p <.05. The economically deprivation effect has not disappeared, but a better performance is observable among TEIP schools in the experimental group, when compared with TEIP schools in the control group (32 % vs. 17%), F (1,34) = 10.210, p = .003. There was an interaction between Moment of Assessment and TEIP, which was due to significantly higher progression between Moment of Assessment for those children in N-TEIP schools compared to those in TEIP schools (respectively, 30% and 22%) , F (1,34) = 6.046, p = . 019.

Finally, the pseudoword reading task results revealed a significantly more pronounced learning effect for the experimental than for the control group, F(1,34) = 34,799, p<.05 (30% *vs.* 10%). As observed in the word reading task, although the economically deprivation effect did not disappear, children from the experimental group in TEIP schools attained, in the second assessment, better results than those in TEIP schools in the control group (31% *vs.* 15%)**,** F(1,34) = 10,725 , p = .002.

Conclusions

For all measures explored in this study there was a more expressive learning effect for the experimental than for the control group. These results are promising, because they reveal the efficacy of the PFG.

The typical disadvantage of children in economically deprived schools was present during the first assessment. After the intervention this disadvantage was less pronounced between children in the experimental group, whereas for those children in the control group the effect remained. Finally, children were motivated to play the PFG throughout the weeks along all the training period.

The preliminary results of the impact of the Portuguese Foundations Graphogame are strong enough to sustain its adoption with children at risk for experiencing reading acquisition difficulties.

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Resilience in Times of Recession: Psychological Well-Being and Sense of Financial Security

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Abstract

Assuming an adult work and becoming financially independent can be viewed as two important hallmarks of adulthood. Usually these two transitions take place concurrently. This is less likely in the context of an economic crisis. We conducted a longitudinal study to investigate how psychological well-being and sense of financial security are related over time in the context of the economic crisis in contemporary Greece. This paper presents a cross-sectional investigation of this link in a sample of 99 full-time workers (60 women), aged 25 to 63 years. They completed the Greek version of the Scales of Psychological Well-Being and a measure of the Sense of Financial Security. Spearman rho correlations exhibited that the more security individuals derived from their financial condition, the more they managed their life situations (environmental mastery) and the more they knew and accepted themselves (self-acceptance). No associations were found with the remaining psychological well-being scales. We consider these results from a varieties-of-resilience perspective: Psychological well-being and perceived financial security are viewed as demonstrations and as protectors of positive functioning in times of adversity.

Keywords: psychological well-being, financial security, resilience, recession, Greece, positive psychology.

Introduction

When do individuals become adults? The answer to this question largely depends on the historical and cultural contexts in which individuals live [1]. In some contexts, adulthood is marked by an age (such as 18 or 21 years), in others by social role transitions (such as getting married or becoming a parent), and in others by the subjective feeling that one has reached adulthood. In this paper, we focus on social role transitions, and, in particular, on assuming adult work and on becoming financially independent. These two transitions may happen concurrently. In the condition of an economic crisis, however, it is more likely that assuming an adult work will not lead to financial independence.

Since 2007, Greece has been undergoing such a crisis [2], one that has profound consequences on both an economic and a psychological level. The economic consequences include more unemployment, more flexible employment contracts and reduced salaries [3], while the psychological ones include an increase in mental health issues [4]. It is likely that these two levels are related to each other. A longitudinal study was designed to assess this association. The participants filled two questionnaires, one on their mental health and one on their sense of financial security three times over three month intervals. This paper describes a part of the data collected.

In particular, it focuses on a cross-sectional investigation of the association between psychological well-being and sense of financial security in 99 participants who were older than 25 and who were employed full-time at the first wave. By focusing on full-time workers only, it is more likely that whatever differences are found in mental health can be attributed to the sense of financial security rather than to other benefits that may stem from work [5].

1.1 *Psychological Well-Being*

One can investigate mental health in two ways. The first is to report on mental health problems and to define health by means of absence of illness. The second is to describe aspects of what it takes to be psychologically well [6]. In this study we followed the latter way. In particular, we adopted the model of psychological well-being that was introduced by Ryff [6]. According to this, major psychological theories converge in six characteristics of being psychologically well: deep connections with significant others (positive relations), managing life situations (environmental mastery), making use of one's personal talents and potential

(personal growth), knowing and accepting oneself (self-acceptance), viewing oneself as living in agreement with one's own personal convictions (autonomy), and feeling one's life as having meaning, purpose and direction (purpose in life). Extensive research has investigated how psychological well-being relates to personality, family experiences, work and other life engagements, and biological health [7].

1.2 Sense of Financial Security

One can investigate the economic component of human life by looking at objective measures (such as the absolute level of income) or at subjective measures (such as the subjective comparison of one's and other people's incomes) [8]. In this study, we were interested in the subjective aspects of the economic component. In particular, we adopted the model that was introduced by Wasovicz-Kirylo [9]. This model focuses on three domains of human life (namely, the economic, the social and the psychological domain) which are viewed from five aspects: sense of safety, sense of independence, comparisons to the past, comparisons to other people, and comparisons to the ideal situation. Here, we focus on the economic domain. This model was chosen because it was developed in an economic context similar to the one present in contemporary Greece.

1.3 Aim of the Present Study

This study investigated the association between psychological well-being and sense of financial security. We assumed a bidirectional link between the two variables. In particular, we expected that psychological health buffers against feeling financially insecure and, reversely, that feeling financially secure buffers against psychological problems. This bidirectional link is in line with a recent conceptualization of resilience [10], according to which mental health can function both as a protective factor and as a positive outcome in the process of adapting to adversity.

Methods

1.4 Participants

We used a snowball sampling procedure to invite potential participants. We sent an e-mail to our acquaintances asking them to participate in a longitudinal study concerning "Well-being in times of crisis." In this e-mail, we explained the setup of the study and addressed issues of confidentiality and anonymity. We also provided the potential participants with the e-mail address of the principal investigator for clarifications. This procedure yielded a sample of 168 participants. The data for the analyses presented in this paper come from a subsample of 99 participants, the ones who were full-time employed at the time of the data collection. Their age ranged from 26 to 63 years (M=37.9, s=7.7). Tab. 1 exhibits their demographic characteristics.

Tab. 1. Demographic characteristics of the 99 participants

		f	%
Gender	Men	39	39.4
	Women	60	60.6
Marital status	Single	53	53.5
	Married or in steady relationship	46	46.5
Education	Secondary or postsecondary	6	6.1
	Higher	50	50.5
	Postgraduate	42	42.4
Residing in	City	43	43.4
	Urban area	52	52.5
	Rural area	4	4.0
Living	With parents	8	8.1
	Alone	29	29.3
	With partner or family	62	62.6

1.5 Measures

The participants were asked to fill an electronic Google form that included the following sections:

A demographic sheet that requested for the participants' gender, age, marital status, educational level, place of residence, who one lives with, and employment status.

The Scales of Psychological Well-Being [6]. The 84-item version of these scales was adapted in the Greek language in the past [11]. Here, we used the 54-item version, which forms a part of the 84-item version. These scales measure the six dimensions of being psychologically well as described in the Introduction. For example items and for the alpha coefficients in the present sample, see Tab. 2. The participants were asked to

rate on a 6-point Likert-type scale the degree to which they agreed with these items. Note that some items were worded positively and some items were worded negatively.

A scale on Sense of Financial Security. In an unpublished study, we piloted the 45 items of the Questionnaire of the psycho-socio-economic well-being [9] in the Greek context. These items were constructed in accordance with the respective model presented in the Introduction. In the present study, we chose the items that concerned the economic situation and in particular the ones that functioned best in this pilot study. We refer to these as the Scale of Sense of Financial Security (for an example item and the alpha coefficient in the present sample, see Tab. 2). The participants were asked to rate on a 5-point Likert-type scale the degree to which each item suited them

Tab. 2. Example items and alpha coefficients of the Scales of Psychological Well-Being and of Sense of Financial Security (N=99)

Scale	Example item	Alpha
Positive relations	Most people see me as loving and affectionate	.78
Environmental mastery	I have been able to build a lifestyle for myself that is much to my liking	.63
Personal growth	I have a sense that I have developed a lot as a person over time	.71
Self-acceptance	In general, I feel confident and positive about myself	.74
Autonomy	My decisions are not usually influenced by what everyone else is doing	.80
Purpose in life	I live life one day at a time and don't really think about the future	.62
Sense of financial security	I often worry whether I have enough money to cover my needs.	.91

Results

1.6 Preliminary analyses

At a preliminary level, we tested for normality the distributions of the seven scales described in Tab. 2. The Kolmogorov-Smirnov test exhibited that the distributions of Positive relations with others, Personal growth, Self-acceptance and Autonomy differed from the normal distribution. The corresponding coefficients were .11 ($p<.01$), .16 ($p<.001$), .11 ($p<.01$) and .10 ($p<.01$). The visual inspection of the stem-and-leaf plots and the extreme values also exhibited problems with the normality assumption. Therefore, in the analyses to follow, we opted for non- parametric tests.

We used the Mann-Whitney U criterion to test for differences in the seven scales by gender and marital status. We found no statistically significant differences. We used the Kruskal Wallis criterion to test for differences in the seven scales by education, place of residence and living condition. We found no statistically significant differences by education and by place of residence. In terms of the living condition, we found statistically significant differences in Positive relations with others, $H(2)= 8.4$ ($p<.05$), and marginally significant differences in Autonomy, $H(2)=4.7$, $p<.10$. In both cases, individuals living with their parents ranked higher than individuals living alone or with a housemate and than individuals living with their partners or own family in the respective variables.

1.7 Primary analyses

Since we assumed a bidirectional link between psychological well-being and sense of financial security and the data did not meet the normality assumption, a Spearman Rho coefficient was calculated for each of the assumed associations (Tab. 3). We found that the higher one scores in sense of financial security, the higher one scores in environmental mastery (moderate correlation) and in self-acceptance (weak correlation). These coefficients are statistically significant also if the participants who live with their parents (N=8) are excluded from the analyses.

Tab. 3. Correlation coefficients (Spearman rho) between the Scales of Psychological Well-Being and the Sense of Financial Security (N=99)

	1	2	3	4	5	6
1. Positive relations	-					
2. Environmental mastery	.40***	-				
3. Personal growth	.36***	.32***	-			
4. Self- acceptance	.32***	.47***	.39***	-		
5. Autonomy	.32***	.47***	.42***	.37***	-	
6. Purpose in life	.30**	.34***	.42***	.45***	.28**	-
7. Sense of Financial Security	.03	.42***	.09	.35***	.14	.06

Note: ** p<.01, *** p<.001

Discussion - Conclusion

In line with the theoretical model adopted, we found that there is an association between sense of financial security and two aspects of psychological well-being, namely, environmental mastery and self-acceptance. The former link may be related to the practical utility of having enough money in order to deal with everyday life challenges, while the latter link may show that, especially at time of economic crises, money becomes an important aspect of one's life and, consequently, one's self-concept [12]. Both links are in line with the bidirectional theoretical assumption presented in the Introduction. Thus, it appears that environmental mastery and self-acceptance function both as buffers against financial insecurity and as outcomes of financial security.

1.8 Limitations – Directions for future research

This study has limitations. First, the sample was very restricted in terms of absolute size and of the demographic groups represented. This limitation constrained the generalizability of the results and the statistical analyses that were conducted. Second, the internal reliability coefficients of the Scales of Psychological Well-Being are acceptable but lower than the ones reported in previous research. This limitation may also be related to the sample size [13]. Third, the cross-sectional design of the study does not allow a proper test of the dynamic associations suggested in the Introduction. Consequently, future research should aim at a larger sample size, of more variation in demographic characteristics (e.g., in terms of whom one lives with or of employment status) and at a longitudinal design that will allow to test which aspects of well-being are buffers and which aspects of well-being are positive outcomes of sense of financial security.

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Parenting Styles Perceived by Teenagers and School Achievement

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Abstract

Parenting styles (PS) are parents' attitudes towards their children's overall development and education. By establishing the family's environment and parents' behaviours, PS have been the focus of developmental psychology and family studies, namely in relation to child outcomes. This cross-sectional study analyses the impact of perceived PS by adolescents regarding their school achievement. 110 boys and 118 girls in years 5-9 of schooling (*M*= 12.60, *SD*= 1.82) from a state school in Lisbon answered a demographic form and the Parental Authority Questionnaire for both parents. Their grades and the number of retentions were analysed. Results show that authoritative parenting correlates to higher grades and better school achievement. Permissive and authoritarian styles correlate to worse school results (grades and number of years held back). Although PS may vary according to cultural contexts, these results are in line with previous international research findings that show that parents' authoritativeness is associated with better children outcomes and school achievement. Age and school level have a significant effect on PS. Older and more educated parents are perceived as less permissive and authoritarian. No level of agreement between the PS of mother/father-teenager was found, suggesting that the parents perceive themselves differently than their children. The results contribute to parenting styles' knowledge within the Portuguese cultural context. They are also useful for organizing future, evidence-based interventions regarding parenting programmes and school underachievement and dropout preventing programmes.

Keywords: Authority Parenting Styles; School Achievement; Parents-teenagers dyads

Introduction

Authority Parenting Styles (PS), a tripartite construct initially developed by Baumrind (1971) based on the control and responsiveness dimensions that result in different standards of educating and rearing a child, has been pointed out as a relevant variable for child and family health. Darling and Steinberg (1993) define it as childrearing standards adopted by parents in the relationship with their children that create the emotional climate in which parents educate their children. Baumrind's tripartite model establishes that permissive parents are very responsive to their children's needs but do not monitor their children's behaviour; authoritarian parents have opposite educational standards (high control/demandingness and low responsiveness) seen often as harsh and strict. Authoritative parents encourage children autonomy/independence, allow them to explore but set up rules and limit their activity, using control whenever it is needed, and are affectionate and responsive to their children's development, characteristics, needs, and interests. Later, as a result of the combination of dimensions, PS led to other forms of PS (neglected, indulgent; inconsistent) (Maccoby, & Martin, 1983). The effects of different PS on children (positive and negative outcomes) are not constant across cultures and ethnic groups. Considering this, in 1993 Darling and Steinberg presented a contextual model of parenting that includes both individual and contextual aspects (Spera, 2005). Education and child rearing should always be studied in context, namely across groups and culture specifications and values and not from an ethnocentric viewpoint.

Several studies conducted in western cultures have identified authoritative PS as the one related to more positive outcomes for children, namely, high self-esteem, better school achievement and social adaptation and less disruptive symptoms. (Baumrind, 1972; 1991; 2005; Buri, 1991, Dornbusch, et al., 1987). However, these relations were not found in countries considered to have collectivist values and traditions, as opposed to an individual-oriented culture. Studies involving Latin-American, Afro-American, Asian-American and other oriental samples (China and Japan) have revealed that authoritarian PS is associated with more positive outcomes, namely higher school achievement (Huang & Gove, 2015; Nguyen, 2008; Weber, Prado, Viezzer, & Brandenburg, 2004). Heath (2012), Huang and Gove (2015) argue that there is an ethnic minority parenting

style, particularly in Asian-American families, that is seen as authoritarian and hierarchically rigid, whereby children have a high school achievement.

Considering the countries' growing proximity, globalization and continuous development, cultural values may be changing. Nevertheless, we must not mistake the "part" for the "whole" and consider that the effect of PS is the same across cultures. Although part of the western culture, Mediterranean countries have also a collectivist tradition. In Spain, Musito and Garcia (2005) found that teenagers who perceive their parents as being permissive-indulgent presented the same self-concept as those with authoritative parents. In Portugal, previous research found that the majority of parents are considered to be authoritative, with this PS being associated with positive outcomes for children (e.g.: more social adaptation and less stress) (Morgado, Maroco, Miguel, Machado, & Dias, 2006; Pires, 2011; Pires, Hipólito & Jesus, 2014; Silva, Morgado, & Maroco, 2012).

Previous research in western cultures has underlined that authoritative PS is an important predictor of teenagers´ school performance and achievement (Baumrind, 1972; Cohen, & Rice, 1997; Dornbusch, et al., 1987; Rebecca 2006; Steinberg, Elmen, & Mounts, 1989), while authoritarian and permissive PS are related to low achievement. In Portugal, parents are considered to be more authoritative, with scores similar to other western cultures.

Most studies on the subject include only teenagers' reports. The objective of this study is to examine Parenting Styles (PS) perceived by adolescent-parent dyads and explore the correlation and effects of PS on school achievement (overall grades, need for extra school support and number of flunked years). Other sociodemographic variables, identified as significant in previous studies, are also included (parents' age, educational level). The relevance of this cross sectional study conducted in a Portuguese state school concerns the need to address PS and its relation to school achievement from a cultural context perspective. Also, in family studies, due to the complexity of family dynamics, it is necessary to identify the perceptions of different family members, in this case parent-teenager PS perceptions (Bengtson, Acock, Allen, Dilworth-Anderson, & Klein, 2005). From our viewpoint these different perceptions establish the communication and interaction between parents and their teenagers.

Method

1.1. Participants and procedures

This is a community-based sample of 228 teenagers and their parents, 118 girls (51.80%) and 110 boys (48.20%) aged 10-18 (M = 12.60%; SD = 1.82). Participants were recruited from a Lisbon primary and junior state school in equal groups according to school year /grade (25% 5th; 22% 6th; 15% 7th; 17% 8th and 21% 9th). In a classification scale from 1 to 5, the majority of students (n = 166, 72%) had a pass overall grade (M = 3.53; SD = 0.60); 27 (12%) had a very good overall grade, and 35 (15%) had a fail overall grade. Most of the students (n = 177, 77.6%) had never been held back a year and 51 (22.4%) had flunked at least one year. Some of the teenagers had extra class support (n = 61, 33.2%). This measure is used whenever special needs and learning difficulties are identified. Only 184 parents were included, 154 mothers (83.70%) and just 30 fathers (16.30%) aged 23-58 (M = 41.45, SD = 5.95). Most parents were married (69%); 10% were single and 20% divorced or separated. Concerning educational levels, only 16% parents had a college degree; 38% completed high school, 26% finished year 9 of schooling or equivalent, and 19% did not complete mandatory schooling. Over half of the parents had a low monthly income, 22% lived on minimum wage (505€) and 54% earned between 505€ up to 1420 €.

Following the authorization granted by the national Education General Directorate and the school's executive board, parents filled a consent form, authorized their children's participation, and willingly filled the parents' questionnaires, which were returned in a sealed envelope. Teenagers' forms were completed in groups in the classroom, outside the class period. Confidentiality was assured.

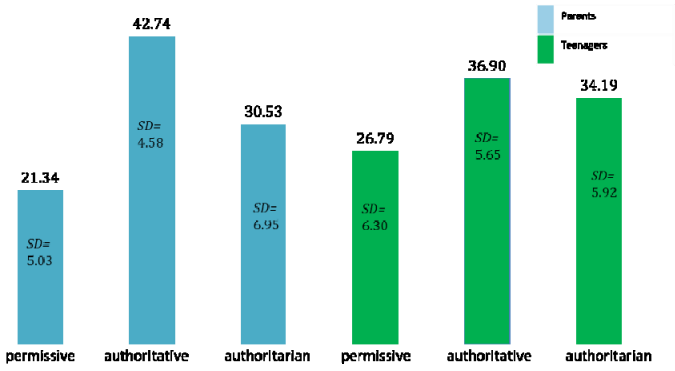
1.2. Measures

Along with the sociodemographic questionnaire, school achievement was determined according to middle term school overall grades; number of years held back/flunked and having extra school support. Parenting authority styles perceived by teenagers were established according to the Parent Authority Questionnaire – PAQ (Buri, 1991), a 30-item questionnaire that evaluates three major PS, authoritative, authoritarian and permissive (10 items by PS) answered in a five point Likert scale. The Portuguese version of PAQ (Morgado, et al, 2006) presents a lower, but acceptable, reliability than the original version (α= .78; . α = 77; . α = 66). Parents answered PAQ-P, an adaptation of PAQ for parents (Pires, et al. 2010, 2011) that presents the same structure as the teenagers' version with acceptable reliability (α= .75; . α= 83;. α= 77). Both measures - reliability and adequacy - were tested for this specific sample. A Cronbach's alpha of .73 was found for all the PAQ scales, and… of 83 for authoritative and authoritarian and .67 for permissiveness for PAQ-P.

Results and Discussion

Results show that for parents and their children, authoritative is the most prevalent perceived PS, followed by authoritarian and permissive. Although mothers and fathers mostly agree on the PS adopted (no significant *t* test differences were found between genders), there is no agreement between parents and their children. No significant correlations were found between parent-child perceptions, which was confirmed by Cohen's Kappa coefficient (mother-teenager and father-teenager dyads with all PS *p*'s > .05). Teenagers tend to consider their parents as less authoritative, more permissive and more authoritarian than parents perceive themselves (Fig. 1).

Figure 1.Descriptive Values of Parents and Teenagers Parenting Styles Perceptions



Note. Based on descriptive values, no agreement was found between mother-teenager permissive, authoritative and authoritarian parenting styles (k = -.01, p > .05; k = -.00, p > .05; k = -.01, p > .05) and father-teenager scores (k = .02, p > .05; k = -.03, p > .05; k = -.00, p > .05)

Regarding parents' individual characteristics, no significant differences were found between mothers and fathers. Older parents tend to be less authoritarian (r = - .20; p = .01). Significant correlations were found between educational level and PS parents' perceptions, with authoritativeness being positively correlated to more schooling (*rho* = .15; p < .05), and negatively correlated to authoritarian and permissive PS (*rho* = -.46; p < .01; *rho* = -.23; p < .01). When analysing teenagers' PAQ scores correlations with parents' educational level, similar results were found. Educational level is positively correlated to parents' authoritativeness (*rho* = .20; p < .01) and negatively correlated to permissiveness (*rho* = -.18; p < .01). No significant correlation values were found between teenagers' age and parents' and teenagers' PS scores.

Whereas no significant values were found in relation to authoritativeness and permissiveness, authoritarian PS perceived by parents seems to have an impact on teenagers' school achievement. We noticed that the authoritarian PS correlates negatively to overall grades (r = -.19; p = .01) and positively to the number of fail grades (< 3 in a 1 to 5 grade scale). (r = .17; p = .03). After the required test assumptions regarding normal distribution, residual and collinearity analysis (d = 1.52, *K-S* = .60, VIF= 1.0 ≈ 1.1), a linear regression was conducted (enter method) including PS as predictors of academic overall grade. Only authoritarian PS has a small but significant effect on school achievement, explaining 9% (R= 0.29; R^2= 9%; β = -.26; $F_{(3.173)}$ = 5.45, p < .01).

Contrasting with the parents' results, in teenagers' perceptions, authoritative and permissive PS are the ones that better explain school achievement. Parents' authoritativeness correlates significantly, in a positive way, to their school average (r = .23, p < .05) and negatively to the number of fail grades (r = -.15, p < .05), whereas parents permissiveness is negatively correlated to overall grades (r = - .29; p < .05) and positively correlated to fail grades (r = .21; p < .05). After the required test assumptions to conduct a multivariate regression analysis (d = 1.81, *K-S* = .18, VIF= 1.0 ≈ 1.2), these two PS together explain 27% of the overall grade variation (R = .52; R^2 = 27%; $F_{(3.211)}$ = 26.04, p< .01). Using the enter method, we then identified the permissive PS as the stronger predictor of overall grade (β = -.42; $t_{(211)}$ = -7.01, p< .01) followed by authoritative PS (β = .37; $t_{(211)}$ = 6.28; p < .01). Moreover, the relevance of permissiveness is confirmed with regard to extra educational support and school year retentions.

Teenagers who have extra school support see their parents as more permissive (M = 20.20; SD = 4.57) compared to those not receiving such help (M = 21.66; SD = 4.99; $t_{(176)}$ = 4.06; p< .01). Also, students who have been held back at least one year perceive their parents as significantly more permissive (M = 29.38; SD = 4.61) comparing to those who never flunked (M = 25.76; SD = 6.53; $t_{(150)}$ = 3.02; p < .01). In this matter, no differences were found regarding the other two PS.

The results are in line with previous Portuguese studies on the subject, as well as with other studies using western samples, namely that authoritative parenting style is the most perceived by both parents and children (Pires, 2011, Pires et al., 2014; Soares, 2012; Silva et al., 2012). In contrast to previous studies (Dornbusch, et al., 1987), in this sample older parents tend to consider themselves as less authoritarian and, therefore, more available and responsive to children' needs, valuing a democratic approach. Following findings from previous studies, parents with higher education levels tend to be more authoritative in both parents' and teenagers' perceptions (Pires, 2011, 2012, 2014). Having a higher education can imply more resources and opportunities for seeking information and knowledge on educating and accompanying their children.

The main objective of this research was to explore the relation between parents' educational styles and their children's success in school. Like Baumrind (1972) and later other researchers (Cohen, & Rice, 1997; Dornbusch, et al., 1987; Rebecca 2006; Steinberg, et al., 1989), we found that parents' authoritativeness contributes positively to children's school success and achievement (higher overall grades, fewer fail grades and retentions). This is confirmed by the perceptions of mothers, fathers and teenagers. Moreover, authoritarian and permissive PS have a negative effect on school achievement, not promoting teenagers' positive adjustment to school demandingness. Parents who are responsive to their children but also demanding whenever needed, particularly in the adolescence period, provide a more stable and "reliable" family atmosphere. Although tending to promote children' autonomy, they also provide more support and probably engage more in their children's school affairs and commitment. Results are in line with other western findings that point to authoritative Parenting Style as the one leading to better outcomes for children and teenagers. Although authoritativeness was the most prevalent PS in this sample, by finding that teenagers see their parents as more authoritarian and permissive than the parents themselves, we underlie the need to assess different family members' perceptions. It is this perception that may have implications on family interactions, communication and climate/atmosphere.

This study contributes to the discussion on PS construct in a European-Mediterranean cultural context. Currently, in Portugal, school achievement and national school rankings are being scrutinised by public opinion. In future research, the educational systems and media should consider other family and school contextual variables when addressing school achievement. If not, we are at risk of promoting competitiveness instead of facilitating school conditions and parents' competence that promote school adaptation and success. Family and school climate are relevant aspects for children's adaptation. Discussion on parenting educational authority styles and school, achievement and adaptation should continue to be tested in a contextual model.

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