

Romanian Parents' and Kindergarten Teachers' Social Representations of the Development of Intelligence in Children

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Abstract: We aimed to explore Romanian parents' and kindergarten teachers' social representations of the development of intelligence in children, how they vary across the three social groups (mothers, fathers and kindergarten teachers) as well as potential connections between parents' social representations of this phenomenon and their choices of kindergarten teachers for their children. The first study was conducted on 120 participants - 40 mothers of kindergarten pupils, 40 fathers and, respectively, 40 kindergarten teachers. The results showed that their social representations of the development of intelligence in children were comprised of four core elements: parental support, school, good results and individual study, and that these representations varied according to the social role of the participants, in line with previous research (e.g. Miguel, Valentim, & Carugati, 2010, 2012, 2013). Our second study was conducted on 241 participants who represented the parents of the kindergarten pupils enrolled in 12 groups and their respective kindergarten teachers. For six of the groups, the parents had the opportunity to choose the group in which their children were enrolled, as the kindergartens had two groups for that educational level, while for the other six, parents did not have the possibility to make this choice due to the fact that there was only one group per level in those respective kindergartens. The results showed that in the condition *choice*, parents' social representations converged more with the teachers'. The findings of this research are discussed in the light of their contribution to the field of social representations of intelligence.

Keywords: social representations, development of intelligence, mothers, fathers, kindergarten teachers, correspondence analysis

Introduction

The concept of *intelligence* has a long history of being studied in the theoretical and methodological framework proposed by the Social Representations Theory (SRT), which emerged with the publication of Moscovici's seminal work "La psychanalyse, son image et son public" (1961; 1976) and has been developing ever since across five paradigmatic approaches (structural, dialogical, ethnographic and anthropological, social positioning and, respectively, modeling), described by de Rosa in 2013. The

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extensive line of researching *intelligence* within the framework of SRT, well represented, among others, by the works of Mugny, Carugati, Miguel and Valentim, (e.g. Mugny & Carugati, 1985, 1989; Miguel, Valentim & Carugati, 2010, 2013), draws its vitality and atemporal relevance out of the existent plurality of the meanings given to *intelligence* in the social arena that are far from being encompassed by the scientific definitions and taxonomies (e.g. Nisbett, Blair, Dickens, Flynn, Halpern & Turkheimer, 2012). Thus, as Carugati explained in 1990, different social actors construct different social representations of intelligence and its development according to the nature of their experiences and sets of motivations within this domain. For instance, the theory of natural inequality of intelligence is an important part of parents' and teachers' social representations of intelligence because it provides support to their social identities, whereas for students in education, whose direct involvement in teaching children still resides at a theoretical level, the theory of natural inequalities does not have a central part in their representations of intelligence (Mugny & Carugati, 1985). The relevance of studying the social representations of intelligence held by the social groups directly involved in children's education lies in the fact that representations are associated with actual social practices (Miguel et al., 2013). Hence, the main goal of our research is to shed light on how different social groups in Romania represent *the development of intelligence* for a better understanding of the current educational practices employed in this socio-cultural context.

Past research on social representations of intelligence

The first empirical studies documenting social representations of intelligence were conducted by Mugny and Carugati (1985, 1989), who studied this construct from a genetic perspective. Social representations as a genetic theory (Duveen and Lloyd, 1990) is an approach of SRT usually integrated within the ethnographic and anthropological paradigm due to the fact that a majority of the studies conducted from the genetic perspective employed ethnographic and/ or anthropological methodologies. This orientation argues that the structures of any and all social representations are the result of construction, of processes that are developmental in nature, and thus “constitute organised wholes with the specific function of making communication and understanding possible” (Duveen & Lloyd, 1990, p. 6). The processes of transformations associated with social representations are sociogenesis, ontogenesis and microgenesis. Ontogenesis describes the interplay between social identities and social representations: representations become psychologically active for individuals as social identities. Basically, when individuals affirm or express a particular social identity, they utilize their social representations as sources; moreover, one social representation may serve as a reference for more social identities (Duveen and Lloyd, 1986). Sociogenesis depicts how social representations emerge and evolve

within social groups, while microgenesis processes reveal the manners in which social identities and the social representations on which they draw are expatiated and negotiated in the contexts of social interaction. Mugny and Carugati's research studied the sociogenesis of social representations of intelligence in groups for which these representations corresponded to the functional need of comprehending an object to which they were exposed every day and for which they perceived themselves to be responsible: children's intelligence. Their findings revealed that in Switzerland and Italy, individuals belonging to groups subjected to conflicting socio-professional identities (such as parent-teachers and working mothers) employ as a means of diminishing their identity conflicts *the readjustment of their social representations of intelligence* (Mugny & Carugati, 1985, 1989). Thus, in the case of parent teachers, their social identity as teachers drives them to place the responsibility for children's academic failures on the pupils rather than on the school, while their social identity as parents pressures them to do the exact opposite. Working mothers, on the other hand, possess a social identity as housewives, which is conducive of their conceptualizing intelligence and its development as the outcome of their efforts to educate their child, while in their identity as workers, they may experience feelings of guilt regarding the aforementioned conceptualization, because much of their time is spent at work, far away from their children (Carugati, 1990). Therefore, to solve these inner contradictions, they re-construct their social representations of intelligence so that the theory of natural inequality regarding intelligence plays a central part in children's development of intelligence, thus decreasing their personal responsibility in this matter.

In 2011, Carugati and Selleri explained onto-genetically that children's "cognitive development is mediated by actual or symbolic social interactions (both with peers and adults) which result in the gradual construction both of cognitive tools and of systems of social knowledge" (Carugati & Selleri, 2011, p. 333). The main social actors involved in and responsible for these interactions are teachers and parents, because they meet the four criteria around which the sociogenesis of social representations of intelligence is organized: 1. they belong to social groups for which these representations posit a functional necessity, as described in the previous paragraph; 2. they are frequently faced with the topic of the development of intelligence, which is highly important to them; 3. due to daily exposure, the development of intelligence is salient for these groups and insufficiently elucidated (the data available on this topic is not sufficient when trying to decipher and explain all the implications of the phenomenon in question); 4. both identity issues and inescapable decision making are triggered by this topic (Carugati & Selleri, 2011). When attempting to understand the inter-individual differences in the development of intelligence, social groups

construct representations from both scientific and lay knowledge (Carugati & Selleri, 1995), defining it in terms of giftedness, success at school, both as logic and as conformity to social norms, and alternatively placing the responsibility for it on pupils themselves as well as on teachers (Carugati & Selleri, 2004). Also, educational practices are viewed as dependent on the emotional atmosphere at school and at home, on strict assessment performed by teachers, on the supplementary work of pupils and on the employment of competitiveness as a strategy in the classroom (Carugati & Selleri, 2004).

In Portugal, Amaral (1997) complemented the aforementioned findings, revealing that the self categorizations of the participants (revealing of their social identities) are stronger predictors of their social representations of intelligence as compared to their actual social backgrounds (their objective social insertions). Faria and Fontaine (1993) also revealed that for Portuguese teachers, their social positioning influences their social representation of intelligence, which corresponds to their social identities. Snellman and Raty (1995) found evidence for the fact that social identities as parents and, respectively, as teachers are organized by social representations of intelligence comprising the theory of natural inequalities, while arguing that the basic themes of these representations center around how to define intelligence and its development and, respectively, suspicion and apprehension toward it. In the same year, Raty and Snellman showed that social representations of intelligence are organized by the positioning of the individuals in social hierarchies (level of education, economic status, adult versus child hierarchy and expert versus layman hierarchy) and that higher intelligence is associated with masculinity, high level of education and social success, while questioning the authenticity of these traits constituted the criteria according to which the social representations of intelligence vary from one group to another (Raty & Snellman, 1995). Regarding Finnish people's lay views on intelligence, Raty, Snellman and Vornanen (1993) showed that their perspectives centered around three dimensions: traditional views, relativistic views and gender stereotypes, thus reinforcing the idea according to which people's perspective on this object is not defined in absolute terms but in multiple, diverse ways. Poeschl (2001) revealed that social comparison had a significant effect on the manner in which social representations of intelligence were organized; thus, when comparing human intelligence to animal intelligence, both men and women were likely to emphasize the differences between these two categories, perceived as having unequal status, while when comparing female intelligence to male intelligence, men focused on differences and women sought to highlight similarities. The author argued that these strategies were employed in all described cases in order to confer legitimacy to the social positioning of the groups to which the participants belonged. Concerning the

transmission of social representations of intelligence, Constans and Leonardis (2003) showed that mothers and daughters tend to co-construct them, especially in families with high economic status and when daughters reach adolescence.

Given that it was theorized that the social representations of the development of intelligence held by children's educators may have a significant effect on their actions in various settings (Mugny & Carugati, 1985), Miguel, Valentim & Carugati (2013) investigated whether parents' representations of the development of intelligence in children impacted their parenting goals and parenting practices, operationalized via parenting styles. Their findings showed that on the one hand, intelligence development is seen as the result of external motivational tactics that reinforce intellectual growth and a set of factors describing parents' roles, such as emotional balance and corrective measures both significantly predicted the authoritative parenting style, along with self-direction parental goals. On the other hand, the view according to which the development of intelligence depends on the formal educational context where children are supposed to be strictly monitored and highly pressured in order to grow intellectually, positively predicted the authoritarian and the permissive parenting styles and also the conformity oriented parenting goals, while also negatively predicting the authoritative parenting style. All in all, Miguel et al. (2013) found that "the type of relationship and parenting styles that parents report having with their children is influenced by their representations about the development of intelligence, as well as by their desired values for children. The multiple definitions and ideas concerning intelligence and its development seem, therefore, to determine behavioral patterns with children reported by parents" (Miguel et al., 2013, p. 1172).

This brief review of the previous findings regarding social representations of (the development of) intelligence reveals several recurrent key points in this domain. First, the social positioning of the groups, as well as their social identities, seem to be highly relevant to their social representations both in terms of content and in terms of the centrality of elements. Second, these representations are likely to be associated with educational practices for both parents and teachers. Given that social representations are a form of knowledge that varies according to the socio-cultural settings in which they are perpetually co-constructed (Jovchelovitch, 2007), and given their connections with educational practices, their exploration in the Romanian social arena becomes a matter of increasing pertinence in the contemporary context in which the official educational policies are undergoing numerous changes over short periods of time (Popescu, 2013).

The present study

As symbolic constructs that permit people to decode reality, social representations impact the type of connection that individuals form with their physical and social spheres. According to the functional principle (Vala, 2002), social representations are thus employed as guides when initiating actions, which may very well impact people's conducts (Abric, 2001; Jodelet, 1989; Mugny & Carugati, 1985). When it comes to intelligence, Miguel et al. (2013) showed that the social representations of the development of intelligence organize and direct parents' educational conduits with their children, particularly in the settings where intelligence is a very protrusive and salient subject. Our aim is to contribute to these findings by exploring the social representations Romanian parents and teachers have regarding the development of intelligence in children and, respectively, the differences among them. In order to do so, we explored the structure of the social representations of intelligence within the structural paradigm (Abric, 1994), which allowed us to identify the central elements pertaining to the nucleus of the representations and, respectively, the peripheral ones, as elaborated in the following sections of the article. Moreover, we aim to explore one potential practical implication of these differences among parents and teachers by investigating their influence on parents' social practices regarding the domain of decision making. Namely, our second study investigates whether in the educational setting parents' social representations of the development of intelligence in children guide their first choices of the academic environment where their children will be taught. Specifically, our goal is to explore whether parents' social representations of the object in question orient themselves in choosing certain kindergarten teachers in favor of others. Miguel et al., 2013 showed that parents' social representations of this construct predict their goals in educating their children; thus, any perceived discrepancies between parents' own representations of the development of intelligence in children and teachers' representations on this subject would make them believe that those teachers pursue other educational goals, which may threaten their own. For instance, if teachers' social representations do not have as a central element the theory of natural inequalities, but the social representations held by the parents do, then the latter would fear they may be held accountable for their children's academic failures. Hence, we expect that parents' social representations of the development of intelligence in children share many common elements with the social representations of the development of intelligence in children of their chosen kindergarten teachers.

The second study investigates *intelligence* from the genetic perspective within SRT, focusing on the microgenesis: "Social representations are evoked in all social interactions through the social

identities asserted in the activity of individuals” (Duveen & Lloyd, 1990). Thus, the social representation of the development of intelligence will be unavoidably evoked by both parents and teachers in the conversation on the topic of the children's enrollment in a certain class (the conversation prior to the actual enrollment, upon which parents make a decision regarding the class in which the child will be placed), because the social identities at play will be those of parents, and, respectively, teachers.

Study 1

The aim of our first study was to investigate the structure of the social representations of the development of intelligence in children on a population of Romanian parents.

Method

Participants

40 fathers and 40 mothers of children aged 3 to 6 years participated in our research, along with 40 kindergarten teachers. Their ages ranged from 25 to 54 ($M = 39.21$, $SD = 7.90$), the mean age for fathers being $M = 38.93$, $SD = 8.07$ within a range from 27 to 51, the mean age for mothers being ($M = 37.2$, $SD = 7.46$) within a range from 27 to 49, while the mean age for teachers was ($M = 41.5$, $SD = 7.75$) within a range from 25 to 54.

Instruments

To identify the structure of our participants' social representations regarding the development of intelligence in children, we employed the Associative Network Technique (de Rosa, 2002). This technique permits the investigation of “the content, structure, polarity and stereotyping dimension of the semantic field evoked by <<stimulus words>>” (de Rosa & Holman, 2011). The participants were required to write down the first terms with which they could come up when exposed to the inductor phrase, “the development of intelligence in children”, and to write down in Arabic characters the exact order in which they thought of those respective words. Afterward, they were asked to assign to each word a negative, positive or neutral valence, and to link the elicited words among them, as they think appropriate. The last step involved the participants' ranking each word according to how important they perceived the word to be in depicting the inductor phrase.

Procedure

All participants were asked to state their gender, their age and the age of their children, after which they drew up the associative network of the stimulus phrase “the development of intelligence in children”.

Results

We began by narrowing the variability of the evocations according to two criteria: synonymy and word families. According to the synonyms provided in the word definitions found in DEX, we gathered all the terms with the same meanings under the same label (e.g. *heredity* and *genetics*, *help* and *support*). The same procedure was applied for the terms belonging to the same word families; for instance, we retained the word “education” for the terms “educated”, “to educate”, “educating” etc. Our participants did not mark any of their associations as being neutral or negative, which shows that this phenomenon is regarded as positive by our Romanian sample.

In order to identify the structure of the social representation of the development of intelligence in children as described by our participants, we conducted our statistical analyses in EVOC 2000, which engendered the results presented in Table 1. We only showed the evocations which had a frequency higher than or equal to 5. The cut off points for the mean ranks and for the frequencies were 3.1 and, respectively, 10. The top left cell comprises the terms that most likely pertain to the nucleus of the social representation, while the bottom right cell presents the words that most likely belong to the peripheral zone of the social representation, while the other two cells describe associations with an ambiguous status within the representation.

Evocations for the inductor phrase “the development of intelligence in children” (N = 120 participants)

		Mean rank
< 3.1		>3.1 and =3.1
		ability 13: 7.30
		aptitude 13: 9.23
		attention 27: 4.85
		books 70: 3.33
		competition 36: 3.94
		contests 17: 3.35
		discipline 37: 7.73
		education 25: 4.24
		efforts 32: 7.47
	parental support	family 73: 3.12
	44: 2.82	heredity 37: 4.05
>10 and = 10	school 85: 2.94	imagination 13: 6.62
	good results 17:	language 16: 6.88
	2.94	memorizing 12: 9.33

Frequency	individual study 58: 3.07	memory 21: 6.91 Olympiad 23: 5.04 play 28: 5.11 practice 48: 7.52 smartness 11: 3.73 teachers support 19: 3.42 thinking 21: 6.71 work 44: 4.80
	<10	career 9: 4.00 communication 9: 5.00 comprehension 5: 11.20 computers 5: 6.00 creativity 9: 5.56 critical thinking 4: 5.25 curiosity 8: 8.00 good at everything 9: 4.67 interest 9: 6.33 involvement 5: 8.40 mind 4: 3.75 motivation 8: 5.75 observation 7: 10.29 patience 9: 7.00 perseverance 5: 6.20 talent 7: 7.86
	mother 7: 2	

Table 1. Structure of the free associations for the inductor phrase “development of intelligence in children

The total number of evocations was 989, of which 65 were different. Thus, the stereotyping index, (de Rosa, 2002), which is calculated according to the formula $x = [(2Y) - 1] / 100 * (-1)$, where Y is the total number of different terms / total number of words evoked * 100 was -0.12 for our evocations. The value of the stereotyping index may fluctuate between -1 and +1, where +1 is the maximum value of the stereotyping (de Rosa, 2002). Since our value is lower than 0, it shows that the degree of differentiation of the evocations we obtained was high, revealing increased diversity in the dictionary expressed by our participants in relation to children's development of intelligence. The inductive power (number of elicited expressions / number of participants) for our sample of participants was 8.24, which shows a relatively high breadth of the semantic corpus evoked by our 120 participants, and thus, a decreased homogeneity in Romanians' discourse

about the development of intelligence in children (de Rosa & Holman, 2011).

A correspondence analysis in R 3.0.2 was conducted on the data in order to investigate how the social representations of our participants vary according to their social roles. The chi-square test (484.42) showed that there is a link between the type of participant (mothers, fathers and teachers) and the words they evoked in the Associative Network task, as the computed p-value was lower than $1.82e-43$, which shows that a difference this large could only happen by chance less than once in $1.82 * 10^{43}$ experiments. The first dimension explains 62.06 per cent of the total inertia (the measure of the spread of the points), while the second explains 37.94 per cent of it. These first two dimensions explain together 100 per cent of the total inertia, which suggests that the two dimensional solution is satisfactory for our data. After equating the synonymous terms evoked by our participants based on DEX (e.g. parental and teacher support was considered synonymous to parental and teacher help or parental and teacher aid, heredity was considered synonymous to genetics, and this label also comprised genetic and hereditary factors), we were left with 65 evoked words, which constituted the rows in our contingency tables, while the categories of participants (mothers, fathers and teachers) represented the columns. Hence, we proceeded to interpret the axes in terms of evoked words, so that we could best describe the dimensions engendered by the correspondence analysis. Given that we had 65 evocations, any contribution greater than $100/65 = 1.51\%$ reflects a level of significance greater than one could expect to obtain for a random distribution of evocations over the axes.

The positive descriptors that contribute to the construction of both dimensions are, as presented in Table 2, teacher support, individual study, school, work, spontaneity, self confidence, career, smartness, mind, physical exercise, patience, openness to new, good at everything, efforts, discipline, mother, while the negative ones are parental support, play, motivation, communication, language, attention, imagination, competition, Olympiad, ability, aptitude, practice, talent, observation. The evocations that contributed the most to the first dimension are, in order, work (+), heredity (+) and discipline (+), play (-), good at everything (+), aptitude (-), parental support (-), competition (-), attention (-), practice (-), ability (-), imagination (-), language (-), school (+), career (+), individual study (+), smartness (+). The second dimension was described, in order, by the following evocations: patience(-), individual study (+), mother (-), efforts (+), communication (-), teacher support (-), motivation (-), good at everything (+), talent (-), Olympiad (-), openness to new (-), physical exercise (-), spontaneity (-), self confidence (-), play (+), smartness (-), mind (-), aptitude (+), observation

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(+). Fathers (+) and teachers (-) were strongly associated with the first dimension, while mothers were strongly associated with the second one (-).

Evocation	Contribution Coordinates				Squared correlation		
	Mass (Weight)* 1000	Ctr1	Ctr2	D1	D2	Cor1	Cor2
Heredity	37	9.09	0.04	0.86	0.05	0.99	0.003
Parental support	43	4.12	0.06	-0.54	-0.05	0.99	0.008
Teacher support	19	0.07	4.19	0.11	-0.64	0.03	0.97
Play	28	7.78	2.15	-0.91	0.38	0.86	0.14
Individual study	59	1.56	8.33	0.28	0.51	0.23	0.77
School	86	1.92	0.03	0.26	0.03	0.99	0.01
Work	44	12.54	1.17	0.93	0.22	0.95	0.05
Motivation	8	0.06	3.66	-0.14	-0.92	0.02	0.98
Communication	10	0.02	5.63	-0.09	-1.02	0.007	0.99
Language	16	2.29	2.17	-0.66	0.50	0.63	0.37
Spontaneity	2	0.02	2.19	0.15	-1.41	0.01	0.99
Self confidence	2	0.02	2.19	0.15	-1.42	0.01	0.99
Attention	29	3.74	0.59	-0.62	0.19	0.91	0.09
Career	9	1.59	0.80	0.72	-0.41	0.76	0.24
Imagination	13	3.18	0.56	-0.86	0.28	0.90	0.09
Competition	36	3.98	0.71	-0.58	-0.19	0.90	0.09
Olympiad	23	0.73	2.49	-0.31	-0.45	0.32	0.68
Smartness	11	1.43	2.09	0.62	-0.59	0.53	0.47
Ability	13	3.19	0.56	-0.86	0.28	0.90	0.09
Aptitude	14	4.26	1.53	-0.96	0.45	0.82	0.18
Mind	4	0.30	1.57	0.48	-0.85	0.24	0.76

Practice	48	3.33	0.70	-0.46	0.16	0.89	0.11
Physical exercise	2	0.02	2.19	0.15	-1.42	0.01	0.99
Patience	9	0.70	9.87	0.15	-1.42	0.01	0.99
Talent	7	0.08	2.72	-0.19	-0.85	0.05	0.95
Openness to new	2	0.02	2.19	0.15	-1.42	0.01	0.99
Good at everything	9	6.28	3.63	1.45	0.86	0.74	0.26
Efforts	32	0.82	6.28	0.28	0.6	0.18	0.82
Observation	7	1.09	1.51	-0.69	0.63	0.54	0.46
Discipline	37	9.09	0.41	0.86	0.05	1	0.003
Mother	7	0.05	7.68	0.15	-1.42	0.01	0.99
Family	74	0.11	0.002	0.07	0.008	0.99	0.01
Books	71	0.02	0.0005	0.03	0.004	0.98	0.02
Education	25	0.11	0.85	-0.12	-0.25	0.18	0.82
Father	2	1.40	0.80	1.45	0.86	0.74	0.26
Comprehension	5	1.07	0.97	-0.80	0.19	0.95	0.05
Team-spirit	1	0.008	1.096	0.15	-1.42	0.01	0.99
Socializing	1	0.008	1.10	0.15	-1.42	0.01	0.99
Interest	9	1.11	0.42	0.61	0.29	0.81	0.19
Memorizing	11	1.35	0.12	-0.61	-0.14	0.95	0.05
Artificial intelligence	1	0.70	0.40	1.45	0.86	0.74	0.26
Music	1	0.008	1.10	0.15	-1.42	0.01	0.99
Experimenting	1	0.70	0.40	1.45	0.86	0.74	0.26
Exploration	1	0.70	0.40	1.45	0.86	0.74	0.26
Involvement	5	1.07	0.1	0.15	-1.42	0.95	0.05
Curiosity	8	1.47	0.03	-0.74	0.09	0.99	0.01
Cheerfulness	1	0.008	1.10	0.15	-1.42	0.01	0.99

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Enthusiasm	1	0.008	1.10	0.15	-1.42	0.01	0.99
Representations	1	0.008	1.10	0.15	-1.42	0.01	0.99
Intellect	2	0.03	0.58	0.20	0.73	0.07	0.93
Contests	17	1.24	0.21	-0.47	0.15	0.90	0.09
Good results	17	1.25	1.32	0.48	-0.38	0.60	0.39
Speed	3	0.06	0.92	-0.24	-0.75	0.10	0.90
Research	2	1.40	0.81	1.45	0.86	0.74	0.26
Emotions	1	0.008	1.10	0.15	-1.42	0.01	0.99
Joy	1	0.008	1.10	0.15	-1.42	0.01	0.99
Love	1	0.008	1.10	0.15	-1.42	0.01	0.99
Critical thinking	4	0.23	0.95	-0.42	0.66	0.29	0.71
Creativity	9	1.24	0.03	-0.64	-0.08	0.99	0.01
Respect	1	0.008	1.10	0.15	-1.42	0.01	0.99
Thinking	21	0.09	0.17	-0.11	-0.12	0.45	0.55
Memory	21	0.58	0.02	-0.29	-0.04	0.98	0.02
Perseverance	5	0.53	0.12	-0.56	-0.21	0.87	0.13
Computers	5	0.75	0.70	0.67	-0.51	0.64	0.36

Table 2. Results of the correspondence analysis between mothers, fathers and teachers and, respectively, their evocations regarding the development of intelligence in children - rows

It seems apparent that the first dimension opposes on its positive and negative axes the conceptions that lay people have on the development of intelligence in children to the conceptions of experts in education (that is, people with specialized knowledge on this topic, such as teachers or well-informed parents) on this topic. Thus, laypeople's social representation of the development of intelligence in children describe a child who is good at everything, who works and studies individually for a future career, a child that is smart hereditarily and disciplined by his educators (parents, relatives, teachers etc.). As it may be observed in the graphical representation in Figure 1, fathers are close to the positive axis, which shows that their social representation of the development of intelligence in children is best described as such (see Table 3). On the other hand, experts acknowledge that in order to develop intelligence in children, aspects such as aptitudes,

abilities, comprehension, attention, language, and imagination must be developed with the help of parental support, while also emphasizing the importance of play as a context for learning. Teachers are closest to this negative axis, which reveals that their social representation of the development of intelligence in children is best described as such (see Table 3).

The second dimension opposes the children's role in the development of their own intelligence on the positive axis to what parents and teachers should do in order to contribute to this process. Thus, children are considered to have the necessary aptitudes in order to develop their intelligence and to cultivate these aptitudes by playing and observing their environment, by individually studying and making efforts to improve themselves for the purpose of becoming good at everything. On the other hand, the others should offer the child patience, communication and support, usually provided by their mothers, while employing methods of motivating the child to study, expanding his / her talent, mind and smartness by, for instance, encouraging him / her to participate in Olympiads. Mothers are closest to the negative axis of this dimension, which suggests that their social representation of the development of intelligence in children is best described as such (see Table 3).

Evocation	Contribution Coordinates				Squared correlation		
	Mass (Weight)* 1000	Ctr1	Ctr2	D1	D2	Cor1	Cor2
Fathers	260	54.64	19.32	0.80	0.37	0.82	0.18
Mothers	329	0.78	66.32	0.08	-0.61	0.02	0.98
Teachers	411	44.57	14.36	-0.57	0.25	0.84	0.16

Table 3. Results of the correspondence analysis between mothers, fathers and teachers and, respectively, their evocations regarding the development of intelligence in children - rows

The evocations well predicted on the first dimension were: heredity, parental support, school, memory, research, perseverance, computers, creativity, contests, curiosity, involvement, exploration, experimenting, artificial intelligence, memorizing, interest, comprehension, books, father, family, observation, good at everything, practice, aptitude, ability, smartness, competition, career, imagination, attention, language, work, school and play. On the second dimension, the well predicted evocations were: teacher support, individual study, motivation, communication, spontaneity, self-confidence, Olympiad, mind, physical exercise, patience, talent, openness to

new, efforts, mother, education, team spirit, socializing, music, cheerfulness, enthusiasm, representations, intellect, speed, emotions, joy, love, critical thinking, respect and thinking (see Table 2).

Study 2

The aim of this study was to explore how the differences between parents' and teachers' social representations of intelligence, as identified in Study 1, influence the formers' social practices. Specifically, our goal was to investigate whether parents' social representations of the development of intelligence in children guide them in choosing certain kindergarten teachers in favor of others.

Method

Participants

We selected our participants according to several criteria imposed by our research design. First, all our participants were recruited from a population of parents who had a child enrolled in kindergarten. In Romania, the kindergarten system is divided into three levels. Children aged three to four are enrolled in the level called “small group”, children aged four to five are enrolled in the level called “middle group” and children aged five to six are enrolled in the “big group”. Depending on their size and on the number of children that live in the neighborhood where the kindergarten is located, some facilities have one or two classes for each of the three levels.

As such, we first chose three kindergartens which had two classes of children enrolled in each of the three levels: small group, middle group and, respectively, big group. We did not include participants recruited from kindergartens which only had one class per level so that parents may have been very likely to have had to choose between the two classes when enrolling their child. We labeled these six groups as A, B, C, D, E, F in the Results section to enhance the clarity of the presentation. Next, we chose six groups (two small groups, two middle groups and two big groups) from kindergartens where only one group of a certain level existed, so that parents could not have chosen between two groups when enrolling their children. These groups were labeled: G, H, I, J, K, L.

Groups	Shapiro – Wilk tests	Parents' scores	Kindergarten teachers' scores	t coefficients & effect sizes
A N = 17	W = .97	M = 41.88 SD = 12.97	M = 38 (x1 = 40, x2 = 36)	t(16) = 1.24 d = 0.30
B N = 19	W = .83	M = 52.26 SD = 12.32	M = 54.5 (x1 = 52, x2 = 57)	t(18) = -0.79 d = -0.18
C N = 18	W = .99	M = 72 SD = 8.88	M = 69 (x1 = 67, x2 = 71)	t(17) = 1.43 d = 0.34
D N = 18	W = .96	M = 70.5 SD = 9.73	M = 75 (x1 = 74, x2 = 76)	t(17) = -1.96 d = -0.46
E N = 18	W = .97	M = 56.83 SD = 9.37	M = 60 (x1 = 63, x2 = 57)	t(17) = -1.43 d = -0.34
F N = 20	W = .98	M = 29.55 SD = 8.91	M = 64 (x1 = 69, x2 = 59)	t(19) = -17.29** d = -3.86
G N = 20	W = .97	M = 50.40 SD = 14.23	M = 34 (x1 = 33, x2 = 35)	t(19) = 5.15** d = 1.15
H N = 21	W = .91	M = 44.52 SD = 22.97	M = 72 (x1 = 76, x2 = 68)	t(20) = -5.48** d = -1.20
I N = 25	W = .97	M = 52.72 SD = 21.02	M = 76.5 (x1 = 74, x2 = 79)	t(24) = -5.66** d = -1.12
J N = 23	W = .92	M = 38.13 SD = 19.52	M = 44 (x1 = 41, x2 = 47)	t(22) = -1.44 d = -0.3
K N = 22	W = .92	M = 42.32 SD = 16.51	M = 50.5 (x1 = 48, x2 = 53)	t(21) = -2.33* d = -0.50
L N = 20	W = .97	M = 56 SD = 19.29	M = 59.5 (x1 = 59, x2 = 60)	t(16) = -0.81 d = -0.18

Table 4. Results of the Shapiro-Wilk tests for normality of distributions and of One-Sample T-tests for parents' and kindergarten teachers' social representations of the development of intelligence in children

The first six groups (A, B, C, D, E, F) pertained to three kindergartens, as follows: groups A and B were two small groups at the same kindergarten, groups C and D were two middle groups located at the same kindergarten and, respectively, groups E and F were two big groups located at the same kindergarten. When parents enrolled their children in these six groups, they could choose between groups A or B, C or D, and, respectively, E or F. The other six groups (G, H, I, J, K, L) were located at different kindergartens, as follows: groups G and H were two small groups at different kindergartens, groups I and J were two middle groups located at different kindergartens and, respectively, groups K and L were two big groups located at different kindergartens. When parents enrolled their

children in these six groups, they most likely did not choose between groups G or H, I or J, and, respectively, K or L, as each of them were located in different neighborhoods. For a better understanding of the distribution of groups per kindergarten, see Table 5.

Kinderg arten	Small	Middle	Big
1	A: 11 mothers, 6 fathers B: 13 mothers, 6 fathers	I: 18 mothers, 7 fathers	K: 11 mothers, 11 fathers
2	G: 16 mothers, 4 fathers	C: 11 mothers, 7 fathers D: 12 mothers, 6 fathers	L: 12 mothers, 8 fathers
3	H: 12 mothers, 9 fathers	J: 16 mothers, 7 fathers	E: 9 mothers, 9 fathers F: 12 mothers, 8 fathers

Table 5: Distribution of groups per kindergartens and number of mothers and fathers per group

The participants were the parents of the children enrolled in those classes and the two kindergarten teachers who were teaching the respective class. All in all, 24 kindergarten female teachers aged 25 to 50 ($M = 38.25$, $SD = 8.53$), who were teaching 12 different groups (two kindergarten teachers per group) participated in our study along with 241 of the parents (153 mothers and 88 fathers) of the children they taught, aged 23 to 54 ($M = 37.87$, $SD = 7.28$). The participants were recruited from three kindergartens in Husi, Vaslui County, each kindergarten located in a different neighborhood. The kindergarten teachers who work together at one group are officially paired up by the headmistresses of each institution, but some leniency exists regarding this policy: the teachers may ask to work with a colleague they prefer, and if the headmistress agrees, then this choice becomes possible.

Measures

Based on the findings of our first study and on an extensive literature review (Amaral, 1997; Constans & Leonardis, 2003; Faria & Fontaine, 1993; Flament, 1999; Matteucci, 2007; Miguel et al., 2008, 2010, 2013; Mugny & Carugati, 1985; Poeschl, 1998, 1999, 2001; Sternberg, 1985, 2004; Sternberg et al. 1981), we developed a questionnaire that assessed social representations of the development of intelligence in children, which we tested on a population of 30 parents of kindergarten children, 21 mothers and 9 fathers. Their ages ranged from 27 to 49, ($M = 35.6$, $SD = 6.09$). The initial form of the questionnaire was made up of 17 items, of which we eliminated 5 in order to increase the reliability of the instrument to an alpha of .85. The final form of the questionnaire was comprised of 12 items, which represented the core elements of Romanians' social representations of the development of intelligence in children as identified in Study 1 (e.g. "School plays an important part in the development of children's intelligence.", "A child needs parental support in order to develop his / her intelligence."), peripheral elements (e.g. "A child needs to be motivated in order to develop his / her intelligence.") and items found to be important in the international scientific literature on this topic and in our correspondence analysis (e.g. "The child's intellectual development depends on discipline"). The answers were provided on a Likert type scale ranging from 1 ("Total disagreement") to 6 ("Total agreement"). Total scores reflected the participants' social positions regarding the social representation of intelligence identified in Study 1. Thus, each item stood for a particular element of the investigated social representation. A high score on a certain item reflected the participant had an affirmative stand toward that element (in other words, a positive attitude towards the role played by the element in the development of intelligence, given that attitudes are subcomponents of social representations according to de Rosa, 1993), while a low score reflected the opposite. For instance, the item "School plays an important part in the development of children's intelligence." reflects the element "school" that was found in Study 1 to be a part of the central core of the representation. The participants who were in Total agreement with this item positioned themselves in the social group that places a high emphasis on the role of school in the development of intelligence, while participants who disagreed with it positioned themselves in the opposite social group, whose representation reflects the rejection of the school as an essential agent in the development of the intelligence. Hence, item scores reflect quantitative aspects about the social positioning of individuals within social groups, while total scores reflect the overall structural profiles (organizations) of their social representations of the object investigated.

Procedure

Kindergarten teachers filled in our questionnaire individually, as well as the parents of children, who were contacted upon arriving at the kindergarten to pick up their children. The parents were asked to write down their age and gender, the group in which their children were enrolled and the respective kindergarten and kindergarten teachers. Kindergarten teachers were asked to write down their gender and age, the kindergarten at which they taught, the name of their colleague and the kindergarten where they taught.

Results

Twelve One Sample T-Tests were conducted in SPSS 17.0 on the scores parents obtained at the questionnaire designed to identify their social representations of the development of intelligence in children in order to evaluate whether their means were significantly different from the means of the scores the kindergarten teachers obtained. Each of the 12 groups was taught by two kindergarten teachers, both of whom filled in our questionnaire. The parents' scores were compared to the average mean of the scores obtained by the two kindergarten teachers. For instance, for Group A, the reference value 38 was computed using the following formula: (score of kindergarten teacher 1 + score of kindergarten teacher 2) / 2. The scores of every kindergarten teacher are presented in Table 4, along with the average values employed in the statistical analyses.

In the case of the groups where parents could choose between enrolling their children either in Group A, C, E or, respectively, in Group B, D, F, the parents' mean scores were not significantly different from the teachers' scores for five groups: A, B, C, D, E (see Table 4), but were significantly different for Group F (see Table 4). Essentially, in five out of six groups, parents' social representations of the development of intelligence in children were not significantly different from the social representations of this same aspect held by the kindergarten teachers that taught their children's groups.

On the other hand, for the groups where parents were not presented with a choice between two different groups when having enrolled their children, only two of the six groups (Group J and Group L) had similar social representations of the development of intelligence in children with the ones held by the kindergarten teachers that taught their children (see Table 4). The other four groups (Group G, Group H, Group I and Group K) had social representations of the development of intelligence in children significantly different from the social representations of this phenomenon held by the kindergarten teachers that taught their children.

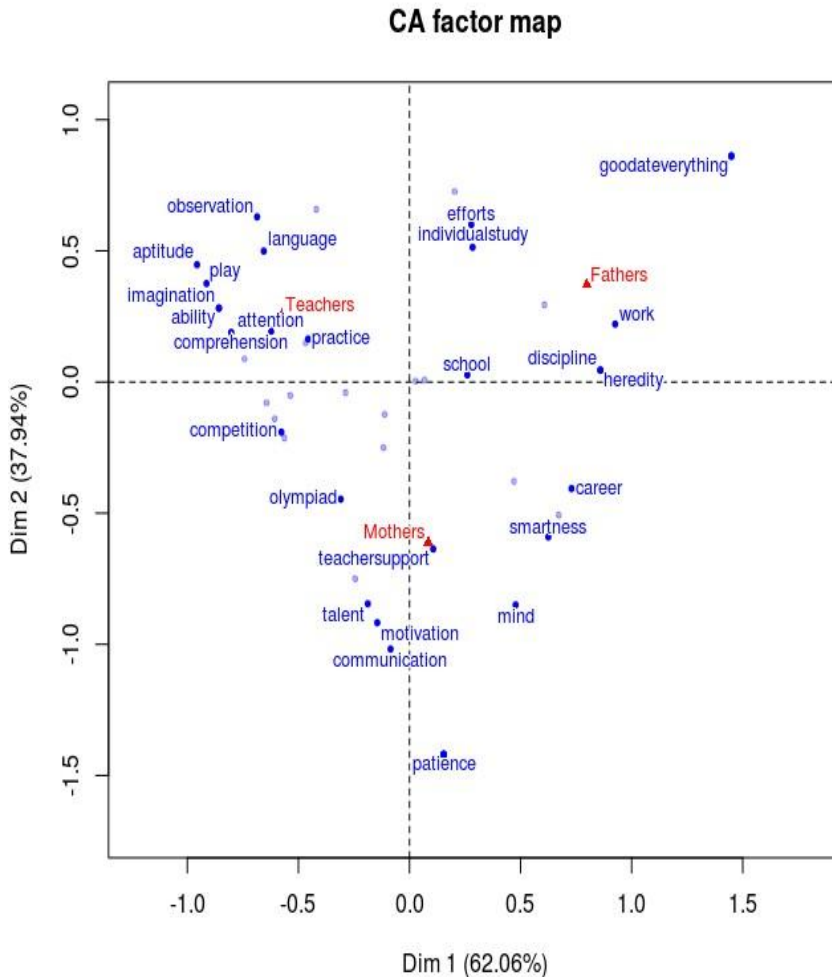


Figure 1: Correspondence analysis on the relationship between evocations for the development of intelligence and participants' group membership (for better visualization, we only included the evocations with a frequency higher than 5)

Discussion

Identifying, understanding and empirically testing the connection between social representations and practices has been a domain of high interest in the field of social phenomena (Miguel et al., 2013). The findings of our research come to expand the already existing corpus of empirical and theoretical literature by both describing the structural components of Romanian parents' social representations of the development of intelligence

in children and by revealing preliminary evidence for the existence of a connection between parents' social representations of this issue and their choices of kindergarten teachers. Moreover, we also showed how different social actors involved in the process of educating children (mothers, fathers and teachers) have different social representations of what the development of intelligence in children means and entails.

The importance of studying intelligence in the context of social representations lies in the fact that it constitutes a social object perceived as positive almost universally, yet not understood via the expert channels only (Carugati & Selleri, 2011). The core elements of the social representations of the development of intelligence in children identified in our first study *were good results, school, parental support and individual study*. Thus, the shared social representations of teachers and parents converge to believing that school is the context primarily responsible for the development of intelligence, as they adhere to a system of beliefs that present school as a thinking environment which models intellectual progress, a view also found by Carugati & Selleri, 2011, but only among teachers, and by Miguel et al., 2012, who identified the dimensions of this type of representation as being *parents' role, school's role and stimuli and incentives*. Our participants did agree that parental support was pivotal in the development of intelligence, which is in line with the research of Miguel et al., 2012, while adding individual study as a central element as well, thus revealing that the Romanian population was investigated regarding the development of intelligence as a matter of *nurture* more than *nature*, since all the core associations depict a child that strives to improve his / her intellectual capacities with the help of his / her environment. This may be included in the social determinism theme that characterized social representations of intelligence in children found by Miguel et al., 2008, 2010, 2012. The identified Romanian social representation is oriented toward a pragmatic purpose, as shown by the presence in the nucleus of a measurable, quantifiable end-result of the process of intelligence development: good results. Two peripheral elements characterize the outcomes and purpose of the development of intelligence in children as well; thus, they are supposed to achieve multi-dimensional abilities which will enable them to have high performances in various domains and lead them to their desired careers. None of the aforementioned international studies have found this pragmatic orientation, which may lead us to conclude that this association may be dependent on the Romanian social economic context. The peripheral area is mainly comprised of practices that may help in developing intelligence, such as encouraging communication (also found by Miguel et al., 2012), facilitating comprehension, using technical devices (also found by Miguel et al., 2012), encouraging creativity, critical thinking and curiosity, motivating

and stimulating the interest of the child (also found by Miguel et al., 2012), being patient with the child, etc. The periphery contains a few descriptors of intelligence, such as mind or talent, which may show a belief in biological determinism as well, similar to the findings of Miguel et al., 2012. The ambiguous elements reveal a subgroup of people for which mothers play the central part in the development of intelligence in children. The representation depicted here is one focused on academic achievement revealed in competitive settings, such as by participating in contests and Olympiads, an academic achievement made possible by reading, working, memorizing (also found by Miguel et al., 2012) etc. These findings are particularly interesting given that our sample was comprised of kindergarten teachers and parents of kindergarten children. It seems that teachers as well as parents believe that intelligence is to be developed in an environment focused on individuality and competition even before these children are enrolled in primary school. Competition as a strategy for the development of intelligence in children was also found to be a central element in the social representations held by Italian teachers (Carugati & Selleri, 2004). Learning through playing should be a more central element for this educational level, but it seems that *play* is also included in the list of evocations with an ambiguous status, which points toward the fact that the Romanian educational system is perceived to be focused on a cybernetic prototype of intelligence by parents and teachers alike (Miguel et al., 2010).

The results of our correspondence analysis refine our aforementioned findings by showing the relationships between the constituents of the social representation of the development of intelligence in children and the different categories of individuals that are usually the most involved in this process: mothers, fathers and teachers. Social representations actually contribute to the formation of group identities because when a particular social representation is common to a certain number of people, the individuals who share it feel they have a common identity due to their similar perspectives on the world (Moscovici & Hewstone, 1983). In the case of the development of intelligence, the educational roles of the three social actors involved had strong organizing effects on their social representations. The social representations of fathers appeared to be the least penetrated by the experts' discourse; thus, they focused on both biological and social determinism, viewing intelligence as a function of heredity, discipline and individual work. Their representations are more undefined as compared to the ones of mothers and teachers, which is in line with previous studies, which have found a gender effect on parents' social representations of the development of intelligence in children, in the sense that fathers do not assume such an active role in this process as much

as mothers do (Miguel et al., 2012). For instance, they do not seem to adhere or reject a particular form of determinism, although the two are antonymic.

Motherhood seems to have preserved a central position in childrearing and education in Romania as well as in other countries (Miguel et al., 2013; Murias & Ribeiro, 2012; Pedro, 2010; Poeschl, 2000); this tendency to preserve the traditional role of the mother as the main educator of children is well represented in our findings, since their social representations on this phenomenon are more infused by specific and specialized notions, such as methods of motivating the child to study, expanding his / her talent by encouraging them to participate in Olympiads etc. Mothers' social representations are the most socially defined ones, as they emphasize the role of communication, patience, openness to new, spontaneity and self confidence, also revealing of their role as socialization agents who have the function of passing on the systems of socially defined norms subsumed to the perspective according to which intelligence is a heritage of the corpus of family values (Faria & Fontaine, 1993).

Teachers seem to place a high degree of emphasis on parental support, which is in line with previous research (Amaral, 1997; Carugati, Selleri, & Scappini, 1994; Miguel et al., 2013; Valentim, 1997), which has found that teachers acknowledge and stress the role of parents in children's development of intelligence as a strategy to preserve their own self-esteem in case children fail academically by shifting the responsibility for this failure from the school setting to the family arena. Their social representation of the development of intelligence revolves around the mental functions and processes that may equip the child to perform optimally when dealing with both abstract and concrete problems (aptitudes, abilities, comprehension, attention, language), while also acknowledging the importance of incentives and pleasant stimulation for the development of intelligence (play), as found by Miguel et al., 2013. This emphasis on cognitive abilities was explained by Miguel et al., 2010 as an effect of "professionalisation", which has penetrated the social representations of teachers due to their constant contact with abstract concepts from the expert discourse and has produced a new set of dynamics inside the initial representation meant to cater to the self-identification of teachers with their own profession. Mugny and Carugati (1989) explain that "teachers demonstrate an institutionalization of the whole definition of intelligence, so that it comes to be seen in terms of success in the most institutionally valorized school subjects" (p. 137). Therefore, our results reveal how social representations evolve and change: by delineating the individual and the group, social representations of the development of intelligence constitute organizing principles of ideas (Carugati et al., 1994) – foundations for the rebuilding or expansion of social representations in accordance with particular social groups and identities (Miguel et al., 2010).

Identities are born and grow via perpetual social interaction and communicational exchanges (Howarth, 2010), thus revealing the manners in which individuals take part in the social and ideological rebuilding of the relationships in their lives (Howarth, 2004).

In line with the findings of Miguel et al., 2010, 2012, 2013, our research brings evidence for the fact that different social positions are conducive of the development of particular social representations in different groups, disclosing the existence of social anchoring processes (Spini & Doise, 1998). Because some of the elements of the social representations of the development of intelligence held by mothers, fathers and teachers are consonant with their need to preserve a positive self-identity (professionalism for teachers, socialization for mothers, detachment for fathers), this may also account for the fluctuations of these social representations across the three groups, as suggested by Miguel et al., 2012. Hence, our results may be interpreted as proof for the fact that the instrumental character of the information held by a social representation may be associated with its structure (Jovchelovitch, 2007), revealing the functional impact of how representations are structured on certain social dynamics, thus shedding light on the relevance of positional and dynamic ideologies (Doise, 1982; Doise & Palmonari, 2011) in the building of reality.

Our second study provides preliminary evidence for the fact that parents with similar social representations on the development of intelligence tend to choose kindergarten teachers that belong to similar social groups and hence, have similar social representations of this phenomenon. The limitations of this study are not to be neglected, seeing that this inference has to be based on stronger statistical analyses, but it is a first step toward what we hope to become a prolific line of research, as it has the potential to shed light on both parents' motivations for the educational choices concerning their children and on the connection between social representations and social practices, upon which Moscovici (1984) argued that "rather than motivations, aspirations, cognitive principles and the other factors that are usually put forward, it is our representations which, in the last resort, determine our reactions" (p. 65). Past research has already shown that parental ideas determine parental practices (Miguel, Valentim & Carugati, 2009), which, along with parental styles, significantly impact child outcomes and behaviours (Clémence, 2007; Cohen & Rice, 1997; Demo & Cox, 2000).

The necessity for studying the connection between social representations of (the development of) intelligence and, respectively, the educational and teaching practices of all the social actors involved in children's upbringing has been emphasized by a wide array of international studies (e.g. Matteucci, 2007; Miguel et al., 2010, 2012, 2013; Mugny &

Carugati, 1985), motivated by the fact that representations have the function of guiding actions (Abric, 1994, 2001; Jodelet, 1989; Moscovici, 1961), orienting practices and social relationships. In this context, our findings point out towards the fact that parents' role in their children's intellectual development reaches higher extents than previously theorized and empirically shown, as the choices they make regarding the first academic context that will mold their offspring's future will enable them to perpetuate their own educational practices via the teachers. Essentially, if parents' educational practices are consonant with their social representations of the development of intelligence, then choosing kindergarten teachers whose social representations of this phenomenon share many similarities with the parents' would actually be conducive of the child being raised and educated according to the same parameters and dimensions.

Another aspect emphasized by the findings of our second study relates to the social sharing of these social representations among the kindergarten teachers who worked together as a group. The differences between their individual scores (Table 4) are very likely to reflect transformations of their initial representations pertaining to microgenesis processes. All social identities and social representations are co-constructed within social interactions (Duveen & Lloyd, 1990), and given that kindergarten teachers have daily interactions regarding their educational strategies, the similarity between their social representations of the development of intelligence could be a result of their negotiating them. Of course, this interpretation of the results is a supposition, due to the fact that we did not investigate their social representations of the development of intelligence in children prior to working together so that we may compare their initial representations to the ones found in our research. It would be useful for such a comparison to be made in future studies.

The limitations of this study reside, as previously mentioned, in the statistical analyses that lack the necessary predictive power in order to validate our conclusions. Future research should replicate and extend our findings by employing more powerful methods of data analysis. In addition to this, when it came to investigating Romanians' social representations of the development of intelligence, more techniques should be employed in order to increase the reliability and validity of the findings. The samples of participants should be more representative of the Romanian population. Future research should select stratified samples and explore these phenomena on different educational levels, such as primary school, secondary school etc. Another limit lies in the fact that we did not control for the socio-economic status of our participants, which should be addressed by future studies, because it may be a source of systematic variation of the results. Furthermore, it would have been useful to investigate whether the

kindergarten teachers who took part in our studies were from the same neighbourhood as the kindergarten, whether they commuted there from another city or from the outskirts of the town as well as their levels of experience and qualifications. Future research should explore these aspects as well. Finally, future research focused on the objectives of our second study should take into account the differences between kindergartens from different neighbourhoods, the social background of their respective teachers and the gender ratio in each parent group, as these variables may impact the degree of similarity or the degree of dissimilarity between the social representations of intelligence held by teachers and parents.

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