

Maternal Attachment and Children's Emotional and Cognitive Competences

Tatjana Stefanović-Stanojević

Department of Psychology, Faculty of Philosophy, University of Nis, Serbia

Milica Tošić-Radev

Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia

Dejana Velikić

Primary school "MatkoVuković", Subotica, Serbia

Abstract

The goal of the study was to examine the relation between dimensions which lie in the basis of maternal attachment (anxiety and avoidance) and the development of children's competences in the emotional domain (reflective functioning, mixed emotions understanding, sequential emotion understanding) and cognitive development (verbal comprehension, logic, graphomotor skills and understanding quantities).

For this purpose, 60 children and their mothers were tested. Revised Adult Attachment Scale (RAAS; Collins, 1996), was used to assess the two attachment dimensions. The Affect Task (Steele, Steele, & Fonagy, 1994) contains several subscales, including those intended to assess children's reflective functioning, mixed emotions understanding and sequential emotion understanding. Children's cognitive competences were assessed through their success on the Readiness for Elementary School Test (POŠ; Tolčić, 1986).

Results indicate significant negative correlations between dimensions of maternal attachment and emotional competences. Also, *avoidance* is a significant predictor of mixed emotions understanding and sequential emotion understanding. Furthermore, *anxiety* negatively correlates with the success of children in logic, and *avoidance* is in a negative correlation, and is also a significant predictor of children's verbal comprehension from the cognitive domain. Also, better emotional competences of the child, especially reflective functioning, predict better cognitive competences.

Our results emphasize the role of the father figure, more precisely the education of the father, in prediction of children's success in verbal comprehension and logic.

It is justified to conclude that the obtained results indicate that the phenomena of attachment, emotional, and cognitive competences are essentially interrelated aspects of psychological life.

Keywords: dimensions of attachment, cognitive and emotional competences, reflective functioning

Introduction

Over the past decades attachment theory has been an ever more used and increasingly successful explanatory framework for the occurrence and development of many psychological functions. In fact, researchers emphasize that the role of attachment is still important from the evolutionary perspective, no longer in the function of survival and protection of *the young*, but on a level of subservient brain structures in the direction of the development of social cognition, i.e. for the purpose of adequate collaborative existence with others (Fonagy & Target, 2005). Furthermore, attachment is a necessary precondition for pre-semiotic communication, from which the semiotic function is developed (Ivić, 1978). Although it has been neglected for a long time, the effect that emotions have on cognition has become an increasingly significant question and more and more studies examine the connection between the emotional environment and the quality of a child's cognitive functioning (Jacobsen, Edelstein, & Hofmann, 1994). Studies are different in the size of their samples and the duration of the following, used instruments, measures and numerous demographic variables. The results, however, converge toward the findings of longitudinal studies which indicate that the mother-child interaction, especially in the first two years of life, is a powerful determinant of a child's present and later competences (Blumenthal, 1985; Loudermilk, 2007).

Attachment is a system that is established already in the earliest childhood; it covers different behaviors with the same predictable result, which is establishing or maintaining the closeness with a person that takes care of a child. Based on the quality of this early established relation, children form mental representations of themselves and the others (inner working model of self and others). Securely attached children form positive representations of both themselves and others, and this is based on the consistent and adequate behavior of the mother. If a person who takes care of a child is consistently unresponsive to the needs and signals of a child, that child will form a negative representation of others and, defensively, a positive representation of self. There is also a modality in which a mother is selectively available for the needs and signals of a child, so the child is forced to invest energy in discovering signals to which the mother reacts, and in the production of those signals which ensure the mother's attention. The representation of others in this case is positive, and the representation of self is negative, primarily because the child receives a message that he or she does not deserve attention of others except under certain conditions. Finally, if a person who takes care of a child is in an adverse situation herself, the child may form a negative representation of both self and others (Stefanović-Stanojević, 2011).

These early formed mental representations persist during the period of growing up and influence both the socio-emotional and the cognitive development of a child. In an emotional sense, children who are securely attached have a

privilege to grow into persons who have faith in others, developed reflective functioning and, later on, developed other emotional competences, such as mixed emotions understanding and sequential emotion understanding. On the other hand, the secure attachment style, which is developed in a relation with a trusted caregiver, results in many advantages in the cognitive development (Tošić, Baucal, & Stefanović-Stanojević, 2013).

According to Fonagy (Fonagy & Target, 1997), reflective functioning is a capacity for explaining the behavior of others by their mental states (attitudes, intentions, plans, emotions) and thus for making this behavior meaningful and predictable to us. A requirement for a biologically prepared capacity for reflective functioning to start running is that a caregiver treats a child as an intentional being. This means that one attempts to understand the child, and to respond to him or her by trying to see the world through the child's eyes. Thanks to this ability of adjusting to the current level of a child's mental activity, the mother is able to present alternative perspectives on the reality which can be easily assimilated in this way (Meins, Fernyhough, Russel, & Clark-Carter, 1998). Accordingly, securely attached children can develop a superior understanding of world views of others which determine behavior (Lewis & Carpendale, 2002). There are findings that confirm and, at the same time, explain the mentioned relation. Mothers of securely attached children treat them like mental agents, persons that possess reason from the earliest days. When they describe their children, they use mental terms rather than behavioral or physical characteristics (Meins et al., 1998). Mothers of securely attached children are more skillful and effective in informal education of children (Meins et al., 2002) and they are more gladly and more frequently engaged in different interaction types within the family (Dunn, 1996).

Numerous studies have already confirmed that securely attached children have more developed reflective functioning than children who are not securely attached (Fonagy, Redfern, & Charman, 1997; Fonagy & Target, 2005; Meins, 1997; Meins et al., 1998). It has been found, for instance, that 83% of securely attached children successfully solve false belief tasks, while only 33% of insecurely attached children have a success in solving the same tasks (Meins, 1997). In other words, they understand better that human knowledge is conditioned by information and they are more capable of predicting and explaining an emotional response of a person by means of knowing what the person knows (Meins et al., 1998). In a Serbian setting, there is also evidence of the correlation between the secure attachment and reflective functioning development in six-year-olds (Stefanović-Stanojević, 2014).

The described mechanism can also explain the development of other competences in the emotional domain: mixed emotions understanding and sequential emotion understanding.

The capability to recognize mixed emotions is a capacity of a child to understand that in certain circumstances a single person can have more than one emotion (Steele, Steele, & Fonagy, 1994). This ability is very important, because it

increases chances for success in solving social and emotional problems in everyday life. If a six-year-old child is capable of recognizing a facial expression which displays any of the mixed emotions, and if a child can understand the meaning of those emotions, he or she will accommodate him or herself more easily to a new environment, such as a new school (Hubbard & Coie, 1994). Data from the six-year follow-up of a longitudinal study show that performance on the *Affect task*, assessed in terms of mixed emotions understanding, was predicted by the security of the infant-mother attachment relationship, as assessed in the *Strange Situation* at one-year, and security or autonomy in the mother's representations of, and reflections upon, her attachment history, as assessed with the *Adult Attachment Interview* during pregnancy (Stelle, Steele, Croft, & Fonagy, 1999).

Evidence of competence and flexibility in communicating a wide range of feelings has been consistently found in attachment narratives obtained from parents who are likely to have securely attached infants (see Van IJzendoorn, 1995) and this is the basis from which children derive capacity to recognize and understand emotions, including the mixed ones, and capacity for sequential emotion understanding or child belief that a person can change an emotion in relation to certain circumstances (Steele et al., 1999).

When it comes to cognitive development, it was suggested long ago that the first relationship between a baby and a caregiver is a foundation for the child's development in other domains, such as the cognitive one (Bretherton, 1985), and many findings confirm this correlation (Coates & Lewis, 1984; Jacobsen et al., 1994; Loudermilk, 2007; Tošić et al., 2013). Namely, there are findings that indicate that a consistent responsiveness, which results from the secure attachment, can increase a child's communication and verbal skills (Gersten, Coster, Schneider-Rosen, Carlson, & Cicchetti, 1986). The method and success in solving cognitive tasks also vary depending on the mother-child attachment pattern. In fact, the secure attachment pattern is related to task orientation, seeking help when in trouble, flexibility and openness in processing information (Loudermilk, 2007), which is very important for solving problems. Early attachment also affects the later cognitive development, which is confirmed by findings that securely attached children at the age of seven have an advantage over insecurely attached children when it comes to cognitive performances assessed by the battery of Piagetian tasks which tests concrete and formal reasoning – two latest stages of development according to Piaget's theory (Jacobsen et al., 1994). Without measures of earlier competences, there are only vocal and generally proximal maternal responsiveness in early childhood (a smile, a look) which explain, however, still a significant part, 17% of the variance on conservation later in childhood (Coates & Lewis, 1984). Children assessed as securely attached at the time they start school are later more successful in syllogistic reasoning and formal operations (Vukčević, 2009) and they give the least contradictory answers on deduction tasks during adolescence (Jacobsen et al., 1994).

Interpretation of the relation is reduced to an assumption that many parameters of the secure attachment pattern, such as the quality of communication and care, greater readiness of children to explore their environment, better social relations and behavior during testing (Van Ijzendoorn, Dijkstra, & Bus, 1995), and greater self-esteem and self-efficacy, in accordance with early formed working models (Tošić et al., 2013), result in better cognitive development.

In order to examine the described correlations, we have formulated research question: Is there a relationship between dimensions which are found in the basis of maternal attachment (*anxiety* and *avoidance*) and the development of children's competences in emotional and cognitive development?

Relying on the presented theoretical considerations and accessible empirical findings, we have formed two main research hypotheses. Our first hypothesis is related to an expectation that a better quality of attachment (lower *anxiety* and *avoidance*) will contribute to better emotional competences in children (reflective functioning, mixed emotions understanding and sequential emotion understanding). Also, we assume that a better quality of attachment, directly or indirectly, through success of children in understanding complex emotions, will contribute to better children's success in cognitive tasks (verbal comprehension, logic, graphomotor competence, understanding quantity) and the total score of children on the school readiness test.

Method

Participants and Procedure

The sample of respondents was comprised of 60 preschool children (33 boys and 27 girls), aged 6 and 7 ($M=6.5$ years) and 60 mothers, aged 25 to 51 ($M=34$ years of age). Most commonly there were two children per family (53.3%), which is followed by families with one child (16.7%) and three children (15%). In the sample of children, 18.3% were only children, 36.7% were firstborns, and 31.7% were born as second children, while the third or later children make up to 13.3%. Most children (85%) live in a family with both parents. More than a half of the mothers have a secondary school degree, and 53.3% of them are employed.

The survey was conducted in four preschool establishments in the territory of Subotica. Teachers of the preschool groups had previously talked with the parents who had given consent for their children to participate in the survey. The interviews with children were conducted individually in the duration of half an hour. Mothers filled in the questionnaires on their arrival to collect their children. Testing for the school readiness was conducted in a group in the presence of interviewers and according to their instructions.

Instruments

The Revised Adult Attachment Scale (RAAS; Collins, 1996) was used for measuring dimensions of attachment of mothers. The questionnaire is composed of 18 items; next to each item respondents indicate the level of their agreement (1 – *not at all characteristic of me*, 5 – *very characteristic of me*). The questionnaire measures four attachment patterns (secure, preoccupied, anxious, avoidant) based on the level of distinction of two dimensions which are found in the basis of an attachment pattern. The anxiety dimension, which is related to the inner working model of self, measures anxiety and concern over a potential abandonment, as well as a need for an excessive closeness (for instance, *I often worry that my partner does not really love me*), while the *avoidance* dimension has acceptance at one end of the spectrum and, at the other, rejection of closeness and it represents the inner working model of others (for instance, *I find it difficult to allow myself to depend on others*). In our study, we found statistically significant and positive correlation between two dimensions of attachment ($r=.55, p<.001$).

Children's readiness for school was measured by the *Readiness for Elementary School Test* (Pripremljenost za osnovnu školu – POŠ; Tolčić, 1986). The POŠ is a group test consisted of five subtests, two of which measure graphomotor skills (fine motor skills), and the other three measure logical reasoning (ability to draw conclusions and to use experience), understanding quantities, and verbal comprehension (understanding verbal instructions, demands, words, sentences). An instruction is given to children verbally, after which they respond by marking the correct answer. The total score on all subtests can be minimally 0 and maximally 60. The standardized C score is calculated from the total score on all scales and it shows the success of a child in comparison to other children of the same age. Values of the C score that range from 7 to 10 are good predictors of school performance, while critical values of 0-2 are predictors of poor school performance even at the beginning of schooling.

The Affect Task (Steele et al., 1994, 1999) test contains line drawings of basic and complex emotional expressions (happiness, sadness, anger, surprise, disgust, fear, mischievousness, and a neutral expression) as well as a set of cartoons of a child that is in the center of interactions with significant others (mother, brother, sister, friend, and teacher). The story always ends unexpectedly and provokes strong emotional reactions in the main character – the child. The drawings are divided into eight sequences which are separately given to a child and a narrative prepared for each sequence separately is read. Each sequence is followed by a set of the same questions used to assess a child's reflective functioning (*What do the presented characters feel and why?*), understanding of mixed emotions (*Can the presented characters feel something more in the given situation?*) and sequential emotions understanding (*Will these emotions change in the future?*). The capability

to use reflective functioning is related to the capability of a child to precisely identify mental states of the presented characters, as well as their intentions, feeling and attitudes. For each response, a child is given a score from 1 to 4 (1 – *if a child does not think about motives for the feeling of the main character*; 4 – *a complete understanding and explanation of the motivation*).

A questionnaire for assessing socio-demographic characteristics: gender, age of the child and the mother, education and employment of the parents, whether the child lives in a complete or incomplete family, a number of children in the family, birth order and financial status of the family (total income of the family).

Results

Table 1 shows measures of descriptive statistics and data of internal consistency of the instruments used in the study.

Table 1. *Descriptive Statistics and Internal Consistency of Scales Used in the Current Study*

	Scale	Min	Max	<i>M</i>	<i>SD</i>	α
	Reflective Functioning	1	4	3.08	0.95	.92
Affect task	Mixed emotions Understanding	1	4	1.49	0.79	.85
	Sequential Emotion Understanding	1	4	2.32	1.07	.87
Adult Attachment Scale	Anxiety	1	5	2.72	0.61	.84
	Avoidance	1	5	2.44	0.59	.62
	Verbal Comprehension	0	15	10.20	3.90	.86
	Logic	0	15	6.60	3.27	.77
POŠ	Graphomotor Skills	0	20	9.53	5.70	.88
	Understanding Quantities	0	10	7.97	3.10	.89
	Standardized Score of the Child on the School Readiness Test	0	10	4.37	2.43	

Concerning the average expression of the basic dimensions, our findings indicate a good development of reflective functioning in our preschool children, but averagely very poor development of the capacity to understand mixed emotions. Also, before they begin school, children on average achieve much better results in tasks that test their understanding of the verbal content than in logical tasks.

Concerning the reliability of the instruments, the results show that all used instruments have adequate inner consistency. It is an especially significant finding that the *Affect task* instrument, or more precisely, three subscales of this instrument used in the study, have very high reliability, and this finding is very important

because this was the first use of this instrument on a sample of children in Serbia. As can be seen in the Table, other instruments used in this study, POŠ and *Adult Attachment Scale*, have satisfactory or high inner consistency.

The results concerning the correlation between research variables are given in Table 2. The results confirm the hypothesis that both dimensions which lie in the basis of the maternal attachment pattern, *anxiety* and *avoidance*, are in a negative correlation with all emotional and cognitive competences of children.

Table 2. *Correlation Coefficients Between the Children's Emotional and Cognitive Competences and Dimensions of Maternal Attachment*

Scale	Avoidance	Anxiety	Reflective Functioning	Mixed Emotions Understanding	Sequential Emotion Understanding	
Affect Task	Reflective Functioning	-.27*	-.26*	-		
	Mixed Emotions Understanding	-.37**	-.19	.44***	-	
	Sequential Emotion Understanding	-.42**	-.33*	.69***	.55***	-
POŠ	Verbal Comprehension	-.28*	-.29*	.79**	.39**	.58**
	Logic	-.20	-.36**	.66**	.39**	.51**
	Graphomotor Skills	-.17	-.19	.58**	.40**	.47**
	Understanding Quantities	-.14	-.24	.60**	.27*	.40**
	Standardized Score of the Child on the School Readiness Test	-.25	-.29*	.70**	.47**	.54**

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

More precisely, the *avoidance* dimension statistically significantly and negatively correlates with all variables from the domain of emotional development of children: reflective functioning, mixed emotions understanding and sequential emotion understanding, while the maternal *anxiety* dimension is statistically significantly and negatively correlated with children's reflective functioning, as well as sequential emotion understanding, but not with children's mixed emotions understanding. Regarding the correlation between the dimensions of maternal attachment and readiness for school, the *avoidance* dimension is in a negative correlation with children's verbal comprehension, and the *anxiety* dimension is negatively correlated with the success of children in logical tasks. Also, maternal *anxiety* is statistically significantly and negatively correlated with the verbal comprehension and the standardized score of the child on the school readiness test,

which determines a child's position in the population of pupils at the enrollment in the first grade. The graphomotor skills and understanding quantities are not correlated with the dimensions of maternal attachment.

As expected, we have confirmed that there are correlations between children's emotional and cognitive competences. The correlation coefficients given in Table 2 indicate that children with higher scores on dimensions that measure emotional competences (reflective functioning, mixed emotions understanding and sequential emotion understanding) also show better cognitive competences when tested before school. In fact, children with a better ability to recognize and name emotions of their own and of others, who understand that people can have mixed, ambivalent emotions at a given moment and believe that emotions can change in the future, have simultaneously better scores on verbal comprehension, logic and graphomotor tasks and tasks which assess understanding quantities on the cognitive test which examines readiness for school of six-year-olds.

In order to check whether the dimension in the basis of maternal attachment can explain, to some degree, some of the emotional competences, we have used a linear regression analysis procedure (Table 3).

Table 3. *Linear Regression Analyses Relating Maternal Dimensions of Attachment and Children's Emotional Competences*

Predictors	Reflective Functioning		Mixed Emotions Understanding		Sequential Emotion Understanding	
	β	R^2	β	R^2	β	R^2
Anxiety	-.16	.09	.00	.14*	-.14	.19**
Avoidance	-.18		-.37*		-.34*	

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

The results indicate that the *anxiety* and *avoidance* dimensions explain 14% of the variance of a child's mixed emotions understanding ($F(2,57)=4.48$, $p < .05$, $R^2=.14$, $R^2_{Adjusted}=.11$), as well as 19% of the variance of a child's sequential emotion understanding ($F(2,57)=6.47$, $p < .01$, $R^2=.19$, $R^2_{Adjusted}=.16$). Furthermore, the significant predictor of a child's sequential emotion understanding ($\beta = -.37$, $t(59)=2.52$, $p < .05$) and mixed emotions understanding ($\beta = -.34$, $t(59)=2.39$, $p < .05$) is *avoidance* dimension of maternal attachment. Surprisingly, the dimensions of maternal attachment are not statistically significant predictors of children's reflective functioning.

Also, we assume that a better quality of maternal attachment and children's competences in the emotional domain will contribute to a greater success of children on cognitive tasks (verbal comprehension, logic, graphomotor skills, understanding quantities and standardized score of a child on the school readiness test).

In order to avoid a very fragmented analysis, we conducted hierarchical regression analysis. We put demographic variables as predictors in the first step, attachment dimensions in the second step and emotional competence variables in the third step.

First of all, the results suggest that maternal anxiety and avoidance, as well as children's emotional competences, cannot predict, to a statistically significant degree, the success of children on graphomotor and quantity understanding tasks, but they can predict children's success on verbal comprehension and logic tasks, as well as their position in the population of pupils at the enrollment in the first grade, defined as standardized score of a child on the school readiness test. Summary of hierarchical regression analysis for variables predicting cognitive competences is presented in Table 4.

Table 4. *Summary of Hierarchical Regression Analysis for Variables Predicting Cognitive Competences*

Predictors	Verbal Comprehension			Logic			Standardized Score of the Child on the School Readiness Test		
	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2
<i>Step 1</i>									
Education of the Father	.51***	.32***		.34*	.20*		.52***	.33*	
<i>Step 2</i>									
Education of the Father	.48**			.33*			.49**		
Avoidance	-.33*	.36***	.06	-.17	.21*	.03	-.25	.35***	.04
<i>Step 3</i>									
Education of the Father	.24*			.11			.32*		
Avoidance	-.10			-			-		
Reflective Functioning	.73***			.51**			.43*		
Mixed Emotions Understanding	-	.62***	.24***	-	.36**	.17**	.25*	.48***	.14**

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. R^2 – Adjusted R^2 .

All variables included in the regression analysis explain a great amount of the variance on some cognitive competences. More precisely, demographic variables, attachment dimensions of mothers and children's emotional competences explain 62% of the variance on the verbal comprehension ($F(12,44)=8.63, p < .001, R^2=.70, R^2_{Adjusted}=.62$), 36% of the variance of success on logical tasks ($F(12,44)=3.65, p < .01, R^2=.50, R^2_{Adjusted}=.36$) and almost a half, 48%, of the variance of the accomplishment of the child on the school readiness test ($F(12,44)=5.23, p < .001, R=.59, R^2_{Adjusted}=.48$). In the first step, demographic variables explain 32% of the

variance on the verbal comprehension, 20% of the variance of success on logic and 33% of the variance on the school readiness test. From all of the demographic variables: age of the child and of the mother, education of the parents, a number of children in the family, birth order and financial status of the family (in terms of total income of the family), only the education of the father is a significant predictor of children's cognitive competences on verbal comprehension, logic and standardized score of the child on the school readiness test. Dimensions of maternal attachment, added in the second step do not improve prediction of cognitive achievement significantly. In fact, anxiety and avoidance explain additional 6% of the variance on the verbal comprehension (F -change (2,47)=2.68, $p>.05$, R^2 change=.06), 3% of the variance on logical tasks (F -change (2,47)=1.15, $p>.05$, R^2 change = .03) and 4% of the additional variance in standardized score of the child on the school readiness test (F -change (2,47)=1.62, $p>.05$, R^2 change=.04).

Moreover, in the process of hierarchical regression analysis, in the third step, aspects of emotional development of the child as predictors explain statistically significant additional percentage of the variance of a child's standardized score on the test for assessing cognitive readiness for the first grade of school (F -change (3,44)=4.88, $p<.05$, R^2 change = .14), and separately 24% on verbal comprehension (F -change (3,44)=11.70, $p<.001$, R^2 change = .24) and 17% additional percentage of variance on logic task (F -change (3,44)=4.85, $p<.01$, R^2 change = .17). Among individual indicators from the second step, only dimension avoidance statistically significantly predicts verbal comprehension of the child (β =-.33, $t(59)$ =-2.25, $p<.05$). On the third step of regression, the most important predictor of cognition is the child's competence of reflection. Reflective functioning or children's ability to recognize, name and understand emotions of their own and of others contributes to the better standardized score of the child on the school readiness test (β =.43, $t(59)$ =2.55, $p<.05$), especially improving achievement on verbal comprehension (β =.73, $t(59)$ =5.09, $p<.001$) and logic scale (β =.51, $t(59)$ =2.72, $p<.01$). Another emotional competence, mixed emotions understanding, statistically significantly predicts the child's standardized score on cognitive test (β =.25, $t(59)$ =2.01, $p<.05$), although it does not predict success in verbal and logic tasks.

Discussion

Starting from an expectation that the quality of parental care for the child significantly determines the quality of the child's attachment, and that this serves as a base from which socio-emotional and cognitive competences are later developed, in this paper we have examined whether the dimensions that lie in the basis of maternal attachment are in relation with the development of certain emotional competences (reflective functioning, mixed emotions understanding and sequential emotion understanding) and with the success of children in cognitive tasks (verbal comprehension, logic, graphomotor skills, understanding quantities, and

standardized score of the child on the school readiness test) which are included in the test that is a standard part of testing readiness for school in Serbia.

Our first hypothesis is related to an expectation that better maternal attachment (low *anxiety* and *avoidance*) is in relation with better emotional competences in children (reflective functioning, mixed emotions understanding and sequential emotion understanding). The results indicate that a mother's failure to display closeness (high *avoidance*) and her insecurity (high *anxiety*) are correlated with reflective functioning and sequential emotion understanding of the child, his ability to precisely name mental states of others and adequately interpret emotions and his belief that emotions can change. Also, the dimensions of maternal attachment (*anxiety* and *avoidance*) are significant predictors of children's competences from the emotional domain: mixed emotions understanding and sequential emotion understanding.

Such results are logical and can be interpreted from every aspect of insecure attachment. Namely, a mother who scores high on the *anxiety* dimension is overwhelmed by her own emotions, and therefore, in a situation when she has to process her child's emotions and bring the child back to the state of balance, she reflects a storm of her own inner world and instead of creating an adequate response in a child, she overwhelms and disables the child to genuinely understand emotions of others. A mother with a high score on the *avoidance* dimension probably ignores the state of overexcited emotions of a child, sending him or her a message that concealing emotions is a way to coexist. The child accepts the message and demonstrates that he or she does not care for understanding others, which potentially means that he or she does not invest much energy in the development of reflective functioning and of other complex emotions. Finally, a mother with high scores on both the *avoidance* and *anxiety* dimensions frequently and chaotically shifts from the state of preoccupation with the child into the state of disinterest, seeking to regulate her own worries and fears which disables the child to develop his or her own capacities for understanding emotions of others, for assessing the possibility of shift in emotions, and so on. Also, a mother's failure to display closeness and her negative expectations from others adversely affect a child's capability to understand that in the same situation people may have contradictory emotions, and it also hinders the belief that present emotional states can change.

The only one correlation that is not significant is correlation between the *anxiety* dimension of the mother and mixed emotions understanding of the child, as competence in the emotional domain. We assume that children who are focused on anxious mothers spend much energy on interpretations of ambivalent and overwhelming emotions emitted by their mothers, so they do not lack the ability to understand ambivalent or mixed emotions.

It is certainly an unexpected finding that the maternal attachment dimensions are not significant predictors of reflective functioning of six-year-olds, which is not

in accordance either with theoretical assumptions or with some of the previous empirical findings (for instance, Fonagy & Target, 2005; Stefanović-Stanojević, 2014). Nevertheless, since a statistically significant correlation between these variables has been obtained, it can be expected that a research conducted on a larger sample would indicate the prediction possibility.

Our next hypothesis was an expectation that the better quality of attachment is related to better achievement on tests of cognitive maturity for school. Significant negative correlations have been obtained between maternal *avoidance* and *anxiety* dimensions and success of the six-year-olds on the tasks of verbal comprehension, as well as between the maternal *anxiety* dimension and logical skills of the six-year-olds. Finally, high *anxiety* of the mother results in lower standardized score of children on the school readiness test which determines a child's place in the population of pupils. The finding can be explained by the fact that anxious mothers overwhelm the world of a child by numerous and contradictory emotions, and thus make the development harder for many competences in the cognitive domain.

Although dimensions of maternal attachment do not explain a large percentage of the variance, we find that the maternal *avoidance* dimension is a statistically significant predictor of the success of children, or the lack of it, on the verbal comprehension scale.

Our finding is in accordance with previous findings on the correlation between maternal *anxiety* and the development of cognitive competences, suggesting that the wrong timing in occupying oneself with a child, intrusiveness, excessiveness in expressing emotions of mothers probably contaminates the emotional world of a child and impedes logical thinking. Also avoiding the child, logically, can decrease the child's chances and possibilities to develop language and verbal skills. Our results are in accordance with previous findings that securely attached children who grow up with responsive parents (low *anxiety* and low *avoidance*) have better language comprehension (Belsky & Fearon, 2002). Also, insecurely attached children show lower success in problem solving tasks both on their own and with the help of an adult (Valsiner, 1988), especially ambivalently attached children who show limited exploration and engagement in tasks because of their *anxiety* about availability of their mother and clinginess to her.

According to our findings, emotional competences are significant predictors of success of six-year-olds in cognitive tasks used to assess school readiness. Namely, the more successful children are in the emotional domain, the more they are successful in all competences in the cognitive domain, too. Besides, the only significant predictor of the readiness for school, yet very important one, is reflective functioning of children, i.e. the capability of children to name mental states and to use them for explaining and interpreting behaviors of their own and of others. In the context of leading theories of the cognitive development, this process of children's interpretation of their behavior or the behavior of others can be explained as a weakening of children's egocentrism, as proposed in the theory of Piaget (Piaget &

Inhelder, 1978) or as a result of internalized perspectives of others in an interpersonal context and establishing a "dialogic" way of thinking, according to Vygotsky (Ferryhough, 1996). Since this emotional competence is correlated with cognitive changes which occur simultaneously, it is not surprising that the capability of reflection determines, to a large extent, success in cognitive tasks and a child's general readiness for school. There are similar empirical findings that indicate that more intelligent children show more sensitivity to other people's emotions and more empathy (Walker & Shore, 2011), and that intellectually more gifted pupils are more oriented toward emotions and more ready to recognize them (Altaras-Dimitrijević, 2012).

In the end, we found that understanding quantities and graphomotor skills, as cognitive competences, were not in relation to the dimensions of maternal attachment and emotional competences of the child. This finding can be explained in certain ways. First, it is a fact that developing competences as understanding quantities and graphomotor skills is not in the focus of parents care and education, at least not as much as the developing of logic and verbal skills. So, these skills can be more related to stages of development and maturation. In the end, development of these competences is influenced by exercises and the training process to which children can be exposed to or not in kindergartens.

One finding, an interesting and important one, is that the degree of the father's education is a significant predictor of the development of cognitive competences of children. Education of a father explains a great amount of the variance on the verbal and logic tasks, and it affects the total score that the child gets on the school readiness test. Even more interestingly, our results suggest that education of the father is very important for the development of some cognitive competences, while the education of the mother is not. We believe that since the mother is mostly a dominant figure of attachment, it may be that the mother's education is not correlated with the quantity and quality of the interaction and care for the child, so our finding is understandable and consistent with previous findings that in environments with a multiple matrix, a so-called non-mother-caregiver is more important for emotional and cognitive competences, while the mother is more important for the health status of children (Van IJzendoorn & Sagi, 1999).

The main value of our research is that it supports the claim of the proponents of emotional intelligence that people with more developed emotional capabilities are in better position to take control over the reason and become effective, while people who lack the control over their emotional lives fight their inner battles, which prevents them from focusing on work and rational thinking (Goleman, 2009). Also, we clarify and specify that the anxiety dimension of maternal attachment has greater influence on verbal development, while avoidance of the mother affects logical development in addition to its great influence on emotional competences. Also, in a large influence of emotional competences of the child on cognitive competences, we identify reflective functioning as the most important

predictor. This finding is important for its pedagogical implications, and it can be explained by more curious and more thorough exploration of environments of children who grow up with good emotional capacities.

In the end, we will take a look at certain limitation of this study and consider an improved design of a future one. The weakest point of our research is possibly the assessment of the emotional competences. It is an instrument that we have used for the first time, and the interpretation relies on certain skills obtained by the experience in giving the test. We will certainly have more of the needed experience in future studies. Also, from the aspect of confirming the obtained correlations, it would have been valuable if we had conducted a longitudinal study in which, beside the presented assessments, attachment of children (at the age of one, for example) had been assessed. It would have also been significant if we had controlled possible stress to which the families had been exposed, which would have additionally contributed to the development of the dependent variables.

Conclusion

The current study allows us to conclude that dimensions of maternal attachment negatively correlate with children's success in competences in emotional development (reflective functioning, mixed emotions understanding and sequential emotion understanding). In the cognitive domain, *avoidance* is in a negative correlation with children's verbal comprehension, and *anxiety* negatively correlates with the success of children in logic. Furthermore, the avoidance of the mother is a significant predictor of children's success in mixed emotions understanding and sequential emotion understanding (emotional competences) and verbal comprehension (cognitive competence). It can be also concluded that the examined emotional competences, especially reflective functioning of a child, are responsible for success in tasks that measure readiness for school (verbal comprehension and logic). Therefore, the obtained results justify our conclusion on the importance of dimensions of maternal attachment for numerous emotional and (indirectly) for some important researched cognitive competences.

Some other cognitive competences, understanding quantities and graphomotor skills, are not in relation with the dimensions of maternal attachment and emotional competences of the child.

Besides the main variables and problems of the research, one important finding is concerned with the socio-demographic variables in our research. In fact, we find that education of a father is a statistically significant predictor of children's success in many competences in the cognitive domain, which brings us back to the importance of the father's role in the growth and development.

Finally, we think that it is justified to conclude that the correlations and predictions obtained in our study indicate that the phenomena of attachment,

emotional, and cognitive competences are essentially interrelated aspects of psychological life. Knowing their mutual relations has implications that, in addition to theoretical and psychotherapeutic significance, are valuable for practical educational purposes.

References

- Altaras-Dimitrijević, A. (2012). A faceted eye on intellectual giftedness: Examining the personality of gifted students using FFM domains and facets. *Psihologija*, 45(3), 231-256.
- Belsky, J., & Fearon, R.M.P. (2002). Infant–mother attachment security, contextual risk, and early development: A moderation analysis. *Developmental and Psychopathology*, 14(2), 293-310.
- Blumenthal, J.B. (1985). *Mother-child interaction and child cognitive development in low-income black children: A longitudinal study* (ERIC Document Reproduction Service No. ED262892).
- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research in Child Development*, 50(1-2), 3-35.
- Coates, D., & Lewis, M. (1984). Early mother-infant interaction and infant cognitive status as predictors of school performance and cognitive behavior in six-year-olds. *Child Development*, 55(4), 1219-1230.
- Collins, N.L. (1996). Working models of attachment: Implications for explanation, emotion, and behavior. *Journal of Personality and Social Psychology*, 71(4), 810-832.
- Dunn, J. (1996). The Emmanuel Miller Memorial Lecture 1995. Children's relationships: Bridging the divide between cognitive and social development. *Journal of Child Psychology and Psychiatry*, 37(5), 507-518.
- Fernyhough, C. (1996). The dialogic mind: A dialogic approach to the higher mental functions. *New Ideas in Psychology*, 14(1), 47-62.
- Fonagy, P., Redfern, S., & Charman, T. (1997). The relationship between belief-desire reasoning and a projective measure of attachment security (SAT). *British Journal of Developmental Psychology*, 15(1), 51-61.
- Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self-organization. *Development and Psychopathology*, 9(4), 697-700.
- Fonagy, P., & Target, M. (2005). Bridging the transmission gap: An end to an important mystery of attachment research? *Attachment & Human Development*, 7(3), 333-343.
- Gersten, M., Coster, W., Schneider-Rosen, K., Carlson, V., & Cicchetti, D. (1986). The socio-emotional bases of communicative functioning: Quality of attachment, language development, and early maltreatment. In M.E. Lamb, A.L. Brown, & B. Rogoff (Eds.), *Advances in developmental psychology* (Vol. 4, pp. 105-151). Hillsdale, N.J.: Erlbaum Associates.

- Goleman, D. (2009). *Emocionalna inteligencija*. [Emotional intelligence]. Beograd: Geopoetika.
- Hubbard, J.A., & Coie, J.D. (1994). Emotional determinants of social competence in children's peer relationships. *Merrill-Palmer Quarterly*, 40(1), 1-20.
- Ivić, I. (1978). *Čovek kao animal symbolicum*. [Man as animal symbolicum]. Belgrade: Nolit.
- Jacobsen, T., Edelstein, W., & Hofmann, V. (1994). A longitudinal study of the relation between representations of attachment in childhood and cognitive functioning in childhood and adolescence. *Developmental Psychology*, 30(1), 112-124.
- Lewis, C., & Carpendale, J. (2002). Social cognition. In P.K. Smith & C. Hart (Eds.), *Blackwell handbook of social cognition* (pp. 375-393). Oxford: Blackwell.
- Loudermilk, S.M. (2007). *Early attachment security: Relations with cognitive skills and academic achievement*. Greensboro: The University of North Carolina.
- Meins, E. (1997). *Security of attachment and the social development of cognition*. East Sussex, UK: Psychology Press.
- Meins, E., Fernyhough, C., Russel, J., & Clark-Carter, D. (1998). Security of attachment as a predictor of symbolic and mentalising abilities: A longitudinal study. *Social Development*, 7(1), 1-24.
- Meins, E., Fernyhough, C., Wainwright, R., Gupta, M.D., Fradley, E., & Tuckey, M. (2002). Maternal mind-mindedness and attachment security as predictors of theory of mind understanding. *Child Development*, 73(6), 1715-1726.
- Piaget, J., & Inhelder, B. (1978). *Intelektualni razvoj deteta – izabrani radovi*. [The intellectual development of the child - selected studies]. Beograd: Zavod za udžbenike i nastavna sredstva.
- Steele, M., Steele, H., Croft, C., & Fonagy, P. (1999). Infant mother attachment at one year predicts children's understanding of mixed emotions at 6 years. *Social Development*, 8(2), 161-178.
- Steele, M., Steele, H., & Fonagy, P. (1994). *The affect task protocol & coding guidelines*. Unpublished manuscript, University College London.
- Stefanović-Stanojević T. (2011). *Afektivna vezanost, razvoj, modaliteti i procena*. [Attachment, development, modalities and evaluation]. Niš: Filozofski fakultet Niš.
- Stefanović-Stanojević, T. (2014). *The development of reflective function at 6-year-olds in relation to early patterns of attachment*. Paper presented at the meeting Open days of Psychology, Department of Psychology, Faculty of Philosophy in Banja Luka.
- Tolčič, I. (1986). *POŠ - test za ispitivanje spremnosti dece za školu*. [POS - School readiness test]. Zavod Slovenije za produktivnost dela.
- Tošić, M., Baucal, A., & Stefanović-Stanojević, T. (2013). The relationship between attachment and cognitive development. *Zbornik instituta za pedagoška istraživanja*, 45(1), 42-61.

- Valsiner, J. (1988). *Child development within culturally structured environments: Parental cognition and adult-child interaction*. Nerwood, New Jersey: Ablex Publishing Corporation.
- Van IJzendoorn, M.H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin*, 117(3), 387-403.
- Van IJzendoorn, M.H., Dijkstra, J., & Bus, A.G. (1995). Attachment, intelligence and language: A meta-analysis. *Social Development*, 4(2), 115-128.
- Van IJzendoorn, M.H., & Sagi, A. (1999). Cross-cultural patterns of attachment: Universal and contextual dimensions. In J. Cassidy & P. Shaver (Eds.), *Handbook of attachment, theory, research, and clinical applications* (pp. 713-734). New York: Guilford Press.
- Vukčević, B. (2009). The patterns of attachment and formal-operational thinking. *Godišnjak za psihologiju*, 6(8), 95-111.
- Walker, C.L., & Shore, B.M. (2011). Theory of mind and giftedness: New connections. *Journal for the Education of the Gifted*, 34(4), 644-668.

Apego materno y competencias emocionales y cognitivas de los hijos

Resumen

El objetivo del estudio fue investigar la relación entre las dimensiones que forman base del apego materno (ansiedad y evitación), el desarrollo de las competencias del niño en el dominio emocional (funcionamiento reflexivo, entendimiento de las emociones mezcladas, entendimiento de las emociones secuenciales) y el desarrollo cognitivo (comprensión verbal, lógica, destrezas grafo-motoras y entendimiento de cantidades).

Con este fin, 60 niños y sus madres fueron investigados. La Escala de Apego en Adultos (RAAS; Collins, 1996) revisada fue usada para evaluar las dos dimensiones del apego. La tarea afectiva (Steele, Steele & Fonagy, 1994) contiene varias subescalas, incluido aquellas destinadas a la evaluación del funcionamiento reflexivo, entendimiento de las emociones mezcladas y entendimiento de las emociones secuenciales de los niños. Las competencias cognitivas de los niños fueron evaluadas a través de su éxito en la Prueba de Aptitud para la Escuela Primaria (POŠ; Tolčić, 1986).

Los resultados indican una considerable correlación negativa entre las dimensiones de apego materno y las competencias emocionales. Además, la evitación es un predictor importante del entendimiento de las emociones mezcladas y entendimiento de las emociones secuenciales. Es más, la ansiedad está en correlación negativa con el éxito de los niños en lógica, y la evitación está en correlación negativa y también es un predictor significativo de comprensión verbal de los niños del dominio cognitivo. Además, mejores competencias emocionales del niño, especialmente funcionamiento reflexivo, predicen mejores competencias cognitivas.

Nuestros resultados acentúan el papel de la figura del padre, más preciso, la formación del padre, en la predicción de éxito que el niño tendrá en comprensión verbal y lógica.

Está justificado concluir que los resultados obtenidos indican que el fenómeno del apego y las competencias emocionales y cognitivas son básicamente aspectos interrelacionados de la vida psicológica.

Palabras claves: dimensiones del apego, competencias cognitivas y emocionales, funcionamiento reflexivo

Received: September 26, 2014

