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Mediating Role of Child's Executive Function Deficits in the Association of Parenting and School Success

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Abstract

This study aims to explore the role of a child's executive function deficits in the association of positive and negative parenting styles and practices with school success at early school age. A sample consisted of 174 parents who completed the Parenting Style Questionnaire, the Parental Acceptance-Rejection Questionnaire, and the Childhood Executive Functioning Inventory. Structural equation modelling analyses revealed complete mediation of authoritarian parenting style, parental hostility/aggression and indifference/neglect on child's low literacy and mathematics achievement by child's executive function deficits. In contrast, the mediating role of child's executive function deficits in the relationship between authoritative parenting style and parental warmth/affection and school success was not confirmed. The results of the study indicate that executive function deficits act as a risk factor in literacy and mathematics achievement of early school-age children whose parents express high levels of negative parenting style and practices. The study suggests that appropriate interventions would have to be focused on parent training and programmes for improving child's executive functions.

Keywords: parenting style, parenting practices, executive functions, school success, early school age

Introduction

School success is a cumulative process that simultaneously involves mastering new skills and practising the existing ones (Duncan et al., 2007). Information on how children acquire reading and mathematics abilities indicates the significance of specific academic skills, as well as general cognitive abilities such as language and

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conceptual comprehension, leading to successful mastery of more complex language and mathematics tasks. As the complexity of reading tasks increases during schooling, basic language skills are essential for reading comprehension (NICHD Early Child Care Research Network, 2005). Similarly, understanding the concept of number permits a more profound understanding of complex mathematical problems and the use of different problem-solving techniques (Baroody, 2003). Low literacy and mathematics achievement in early childhood are a risk factor for high school dropouts (Jimerson et al., 2000), as well as for mental health problems, lack of education and extended periods of unemployment in adulthood (Aro et al., 2019), indicating the need for further research of the early predictors of school success.

Research has suggested that parents have an important role in developing child's academic skills during childhood (e.g., Hoover-Dempsey & Sandler, 1995; Rogers et al., 2009). Specifically, in a meta-analysis Pinquart (2016) showed that authoritative parenting and parental warmth were associated with higher school success, both concurrently and longitudinally. However, harsh control, psychological control, authoritarian, neglectful, and permissive parenting practices were related to lower school success. According to the attachment theory perspective, parental warmth and responsiveness create a stable emotional base for a child to explore his/her environment (Ainsworth et al., 1978). Additionally, motivational theories posit that warm parent-child interactions enable children to be more responsive to parental values and motivate them to incorporate parental inputs through child-rearing practices (Grolnick et al., 1991), which can enhance child's academic achievement. Hence, positive parenting may provide informal home literacy and mathematics experiences, which could enhance child's academic abilities (Bingham et al., 2017). That is, the relation between parental warmth/responsiveness and child's early literacy and mathematics abilities could be mediated by child's developing social skills (i.e., self-regulation, cooperation), which then can shape improvement in academic skills in early school age (Morrison & Cooney, 2002). In contrast, negative parenting may reduce school success by impeding child's capacity to focus attention and inhibit prepotent responses (Chen et al., 2015).

Child's cognitive capacities have been implicated in the development of academic abilities (Evans et al., 2002; Taub et al., 2008). In detail, research (Jacobson et al., 2011; Röthlisberger et al., 2013) showed that higher-order cognitive functions, namely executive functions, have been implicated in child's academic achievement. Executive functions, particularly working memory (i.e., temporarily remembering information while competitively processing information) and inhibition (i.e., consciously overriding prepotent responses) (Miyake & Friedman, 2012; Miyake & Shah, 1999), have been concurrently (e.g., Best et al., 2011; Neuenschwander et al., 2013) and prospectively (e.g., Diamantopoulou et al., 2007; Wei et al., 2018) associated with child's school success. Development in cognitive mechanisms related to executive functions may also be associated with early academic skills

(Diamond, 2002). That is, by learning to use working memory and develop inhibitory control children become better equipped for successful regulation of their behaviour in the school context, including attention focusing, remembering lengthy instructions, and completing tasks (McClelland et al., 2007). Therefore, child's executive functions have a key role in the promotion of academic and interpersonal skills (Jacobson et al., 2011). On the other hand, child's executive function deficits are a risk factor in the relation between negative parental practices and child's externalizing behaviour problems (Vučković et al., 2021). However, it is less clear whether executive functions have different relations to specific aspects of school success, including literacy and mathematics achievement. For example, previous studies have shown that children with lower mathematics abilities have deficits in both working memory and inhibitory functions, resulting in difficulties in switching and evaluating new strategies for addressing a particular task (Bull & Scerif, 2001). Working memory and inhibition skills were also closely related to literacy (St Clair-Thompson & Gathercole, 2006). Moreover, some research indicates that the child's executive functions-school success link appears to be stronger for mathematics than for literacy (e.g., Allan et al., 2014; Willoughby et al., 2012). However, in their meta-analysis, Jacob and Parkinson (2015) pointed out that there are only a few findings that support the notion that the association between executive functions and school success is stronger for mathematics than it is for literacy achievement. Additionally, they assert that when executive functions are conceptualized as different components, the association between executive functions and mathematics success is stronger when it comes to inhibition than working memory. On the other hand, when operationalized as a single construct, there seems to be no difference in the association between executive functions and mathematics or literacy. Given the differences in the operationalization of executive functions in previous research, further investigation of the association between executive functions and literacy and mathematic abilities in early school-age children is needed.

However, parenting has a well-established link with child's executive functions. Concurrent (e.g., Sosic-Vasic et al., 2017) and prospective (e.g., Sulik et al., 2015) studies suggested that negative parenting decreases child's executive functions, while positive parenting enhances them. That is, positive parenting strategies serve as a protective factor during the development of executive functions, while negative parenting hinders executive functions across childhood. The information regarding the precise mechanism underlying this link is rather limited. There is some evidence that biological (Blair et al., 2011) and genetic factors (Jester et al., 2009) can explain the parenting-child's executive functions link. The most accepted hypothesis is that parents can enhance the growth of child's executive functions by nurturing a responsive emotional climate for a child to advance in executive function abilities, and also model positive behaviour through mutual interactions (Bernier et al., 2010). According to the attachment theory, sensitive and responsive child-rearing practices (i.e., expressing warmth and affection, absence of aggression) seem to promote the internalization of child's self-regulatory abilities (Bernier et al., 2012). However,

social-cognitive theories suggest that parents can promote child's executive functions through sensitive behavioural control or positive discipline (i.e., authoritative parenting) or hinder them by harsh or psychological control (Grolnick & Pomerantz, 2009). Since there is some evidence that negative parenting can have greater influence than positive parental practices (e.g., Lam et al., 2018), the role of child's executive functions, depicted by the association between parental practices and child's school success, should be further explored.

The direction of relations between variables in this research is rooted in the work of Crick and Dodge (1994) who posited that child's problem behaviour is related to existence of specific difficulties in information processing. In detail, children with better executive functions will be able to recognize social signs from their environment (i.e., disapproval of the environment due to poor school performance), which will lead to better management of their behaviour in relation to others. Ultimately, better behaviour control will most likely result in better school performance. In addition, recent studies have indicated that child's executive functions have a protective role in the association of parental practices and academic success (e.g., Chen et al., 2015; Fenesy & Lee, 2018). On the other hand, studies mostly focused on positive behaviours (Bindman et al., 2015) as predictors of child's executive functions and school success, whilst the effect of negative parental practices is less clear. Additionally, early mathematics and literacy skills have a shared variance which may be associated with general cognitive skills (Singer & Strasser, 2017). Acknowledging this covariance should be taken into account when seeking to explore the relationship between child's executive functions and early school success in both academic domains. Hence, this study aims to explore if particular characteristics of positive and negative parental practices and dimensions would produce divergent consequences on child's literacy and mathematics success through the mediation of early school-age child's executive function deficits.

The Present Study

This study aims to broaden empirical findings in the literature by linking specific parental practices and dimensions, parental reports of child's executive function deficits and child's school success using structural equation modelling (SEM). According to the work of Crick and Dodge (1994), we expected that high levels of negative and low levels of positive parenting styles and practices would be associated with school success through the mediation of child's executive function deficits. That is, we hypothesized that low levels of authoritative nurture and parental warmth, as well as high levels of authoritarian and permissive parenting styles, hostility, neglect, rejection, may be positively associated with child's executive function deficits, which in turn would be negatively related to child's school success.

Method

Data and Participants

The study was conducted in Croatia in a middle-sized town. A multistage random sampling procedure was used to choose parents and children. In order to acquire representative samples, 16 kindergartens were randomly selected out of 26. We applied a proportional per size (PPS) random selection method, with 185 children chosen to participate in the second stage of sampling. With respect to possible sample attrition, non-response weighting and numerical adjustment of the sample in the manner of cohort sizes in all selected kindergartens were used. Parent and child were followed into elementary school where present data were taken from. Missing data ($n = 8$) and initial attrition of the parent-child dyads ($n = 3$) were low.

The final sample consisted of 174 parents (139 mothers and 35 fathers; coming from different families). Parents were aged between 30 and 54 years ($M_{age} = 40.22$ years, $SD_{age} = 4.78$ years). The mother's educational level refers to 16% having uncompleted elementary school, 2% completed elementary school, 35% completed high school, 40% completed college degree and 7% completed a post-graduation course. The father's educational level refers to 10% having uncompleted elementary school, 5% having completed elementary school, 49% completed high school, 25% completed college degree and 11% completed a post-graduation course. Parent's marital status includes 1% of unmarried parents, 13% divorced parents, 1% widowed parents and 85% married parents. Parents reported their total monthly family income of 1578 EUR (minimum of 79 EUR, maximum of 3947 EUR). Their children were aged between 7 and 10 years ($M_{age} = 9.10$ years, $SD_{age} = 0.59$ years).

J. J. Strossmayer University of Osijek Institutional Review Board (IRB) provided ethical approval for this research. Parents participated individually in the department laboratory of the University. They were given monetary compensation for their contribution to the study (15 EUR).

Measures

Parenting

Parenting Style. A Croatian short version of the Parenting Style Questionnaire (PSQ; Robinson et al., 1995) was used. Thirty items are divided into three subscales: Authoritative parenting style (13 items; i.e., "I explain to my child how I feel about his/her good/bad behaviour"; $\alpha = .80$), Authoritarian parenting style (13 items; i.e., "I explode in anger towards my child"; $\alpha = .86$) and Permissive parenting style (4 items; i.e., "I find it difficult to discipline my child"; $\alpha = .46$). A 6-point scale (from 1 = *never* to 6 = *always*) was used to rate each item. The dominant parenting style was represented by the highest mean score. The Permissive subscale was excluded

from additional analyses based on internal consistency analysis. This questionnaire was formerly validated in the Croatian sample (Krupić et al., 2020).

Parenting Practices. The Croatian version of the Parental Acceptance–Rejection Questionnaire/Control-Short form (PARQ/Control-SF; Rohner & Khaleque, 2005) was used. The PARQ is composed of five subscales, specifically Warmth/Affection (8 items; i.e., "I am genuinely interested in what my child is doing"; $\alpha = .72$), Hostility/Aggression (6 items; i.e., "I hurt my child's feelings"; $\alpha = .59$), Indifference/Neglect (6 items; i.e., "I don't have time to answer my child's questions"; $\alpha = .62$), Undifferentiated Rejection (4 items; i.e., "I am letting my child know that he is not wanted"; $\alpha = .30$), and Control (5 items; i.e., "I want to control everything my child does"; $\alpha = .42$). Due to low internal consistency, we dropped the last two subscales from additional analyses. A 4-point scale (from 1 = *almost never true* to 4 = *almost always true*) was used to rate each item. Higher scores indicate less parental warmth, more rejection, and lax control. Previous validation of this questionnaire was made in the Croatian sample (Vučković et al., 2021).

Child's Executive Functions

Parents completed the Croatian version of The Childhood Executive Functioning Inventory (CHEXI; Thorell & Nyberg, 2008). CHEXI is comprised of 24 items organized in four subdomains of executive functions: working memory (9 items, i.e., "When asked to do several things, he or she only remembers the first or last"; $\alpha = .89$), planning (4 items, i.e., "Has difficulty telling a story about something that has happened so that others may easily understand"; $\alpha = .83$), inhibition (6 items, i.e., "Has a tendency to do things without first thinking about what could happen"; $\alpha = .78$), and regulation (5 items, i.e., "Has difficulty following through on less appealing tasks unless he or she is promised some type of reward for doing so"; $\alpha = .87$). Parents rated each item using a 5-point Likert type rating scale (from 1 = *definitely not true* to 5 = *definitely true*) was applied to rate items. Higher scores suggest a higher level of child's executive function deficits. The CHEXI has also been formerly validated in the Croatian sample (Vučković et al., 2021).

According to previous studies indicating that the construct of executive functions is unidimensional in early and middle childhood (e.g., Brydges et al., 2012; Karr et al., 2018), we used confirmatory factor analysis (CFA) to evaluate the fit of the CHEXI's one-factor model. After adding the correlation between measurement errors of planning deficits and working memory deficits subscale based on the modification indices, the fit indices of the one-factor model demonstrated a satisfactory fit, $\chi^2 = 1.28$, $df = 1$, $p > .05$, CFI = 1.00, TLI = .99, SRMR = .01, RMSEA = .04 [.00 – .20]. Thus, all following explorations were concluded using the unidimensional latent variable of child's executive function difficulties, $\alpha = .94$.

Child's School Success

Child's Mother Tongue Literacy, namely final school grades in Croatian as a school subject, and Mathematics final school grades from the second grade of elementary school were used as an indicator of school success. Final school grades were assigned by teachers on a scale ranging from 1 (*the lowest score*) to 5 (*the highest score*).

Results

Preliminary Analysis

Due to the missing data (n = 8), the full information maximum likelihood (FIML) estimation method was applied. Descriptives and correlations between research variables can be seen below (Table 1).

Table 1

Means, Standard Deviations and Bivariate Correlations between Parenting Style, Executive Functions and School Success

Variables		*M* (*SD*)	2	3	4	5	6	7	8
1	Authoritative style	5.41 (0.44)	-.06	-.13	**-.17***	**-.28****	-.15	.05	.07
2	Authoritarian style	2.73 (0.81)	-	.05	**.54****	**.17***	**.38****	-.06	-.09
3	Parental low warmth/affection	31.13 (1.55)		-	.14	**.25****	.14	-.16	-.16
4	Parental hostility/aggression	22.22 (1.96)			-	**.23****	**.35****	-.07	-.11
5	Parental indifference/neglect	21.81 (2.15)				-	**.33****	-.07	-.08
6	Executive function deficits	- (2.66)					-	**-.29****	**-.29****
7	Literacy	4.72 (0.53)						-	**.70****
8	Mathematics	4.71 (0.57)							-

Note. $^{*}p < .05$; $^{**}p < .01$.

As can be seen in Table 1, parents who rated themselves as employing harsh discipline also indicated that their child exhibited more executive function deficits. Similarly, parents who showed more hostility and neglect in child-rearing practices rated their child as having more executive function deficits. Authoritative parenting style and parental warmth and affection were not related to child's executive function deficits. Furthermore, children who were rated by their parents as having more

executive function deficits also had lower literacy and mathematics achievement. Child's school success was not related to parenting style or practices.

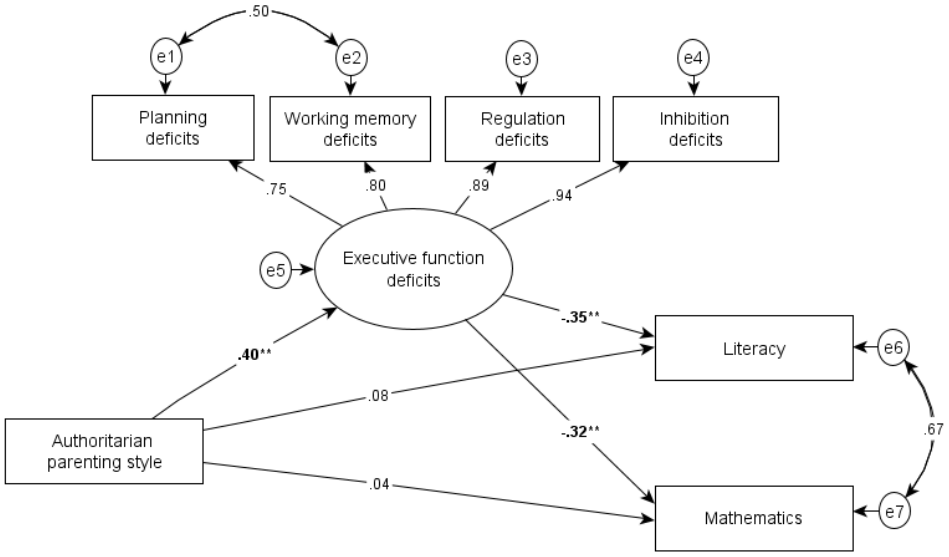
Structural Equation Models

Further, we focused on exploring the potential mediating role of executive function difficulties in the relationship between parenting style/practices and child's literacy and mathematics achievement. Structural equation modelling (SEM) software $AMOS_{18.0}$ (Arbuckle, 2007) was used for testing the predictions of the models. We used robust maximum likelihood to calculate estimates and conducted the bootstrap procedure of 2000 subsamples.

In line with our postulate, a support for complete mediation of authoritarian parenting style on child's literacy and mathematics achievement by executive function deficits was founded (Figure 1; $\chi^2 = 17.43$, $df = 10$, $p > .05$, CFI = .99, TLI = .98, SRMR = .03, RMSEA = .06 [.00 – .11]). Specifically, parents reporting higher levels of authoritarian parenting style also reported their children having greater executive function deficits, which were in turn related to lower literacy and mathematics achievement. On the contrary, the mediation of authoritative nurture on child's school success by executive function difficulties could not be confirmed ($\chi^2 = 18.59$, $df = 10$, $p < .05$, CFI = .99, TLI = .98, RMSEA = .07 [.01 – .11]).

Figure 1

The Effect of Authoritarian Parenting Style on Child's School Success through the Mediation of Child's Executive Function Deficits



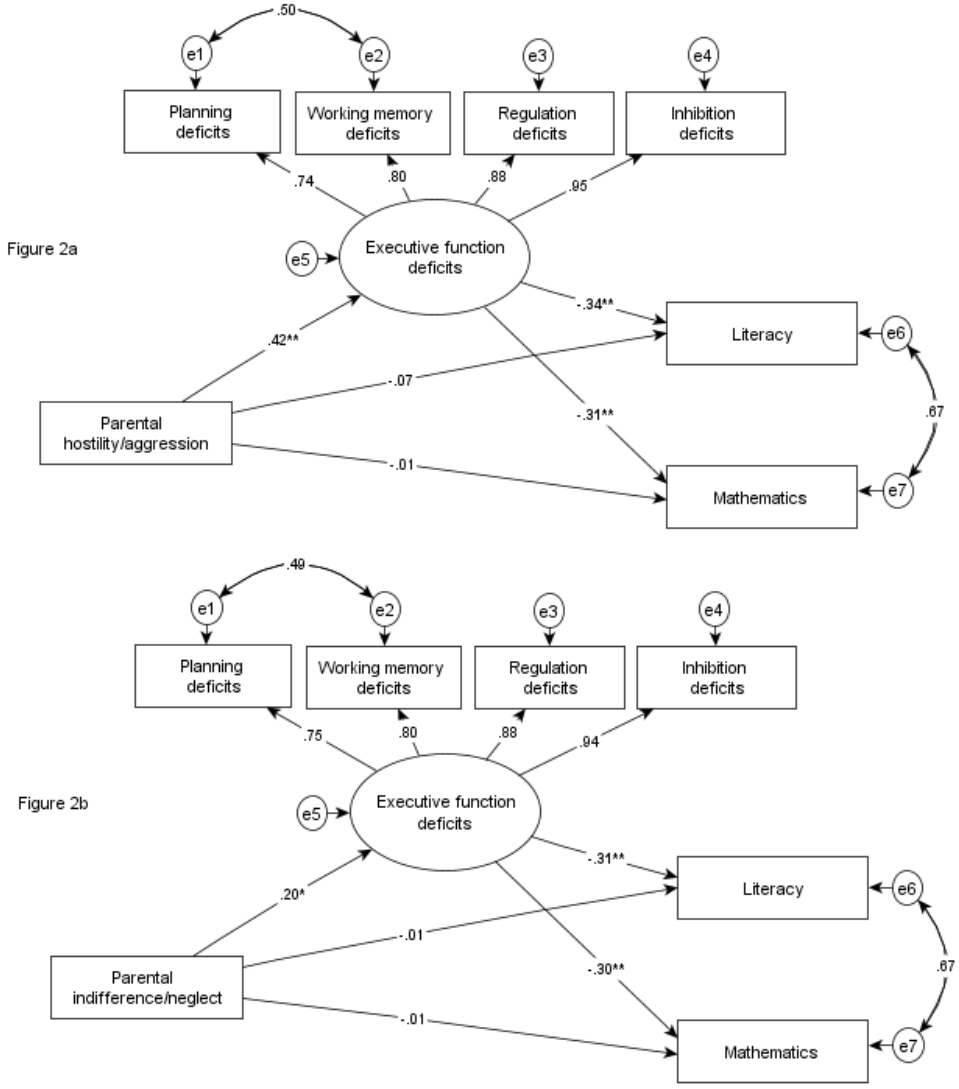
Note. Pathways in figures are presented with beta coefficients (β). $^{*}p < .05$; $^{**}p < .01$.

As regards the parenting practices, we found support for complete mediation of parental hostility/aggression on child's literacy and mathematics achievement by executive function deficits (Figure 2a; $\chi^2 = 15.33$, $df = 10$, $p > .05$, CFI = .99, TLI = .99, SRMR = .03, RMSEA = .05 [.00 – .10]). That is, parents reporting higher levels of parental hostility and aggression reported their children having higher executive function deficits, which were consecutively related to lower literacy and mathematics achievement. Additionally, the association between parental indifference/neglect and child's literacy and mathematics achievement was completely mediated through executive function deficits (Figure 2b; $\chi^2 = 13.61$, $df = 10$, $p > .05$, CFI = .99, TLI = .99, SRMR = .03, RMSEA = .04 [.00 – .10]). In detail, parents reporting higher levels of parental indifference and neglect reported their children having more executive function difficulties, which were in turn related to lower literacy and mathematics achievement. In contrast, the mediation of parental warmth/affection on child's school success by executive function deficits has not been confirmed ($\chi^2 = 19.08$, $df = 10$, $p < .05$, CFI = .99, TLI = .98, RMSEA = .07 [.01 – .11]). Direct, indirect and total effects of parenting style and practices on child's school success are shown in Table 2 (only path analyses with significant indirect effects were presented).

To summarize, partially in line with our hypothesis, high levels of authoritarian parenting style, parental hostility and neglect had positive associations with child's executive function deficits, which were in turn negatively associated with child's literacy and mathematics achievement. However, executive function deficits were not a mediator in the association between authoritative parenting style or parental warmth/affection and child's school success.

Figure 2

Effects of Parenting Practices on Child's School Success through the Mediation of Child's Executive Function Deficits



Note. Pathways in figures are presented with beta coefficients (β). $^{*}p < .05$; $^{**}p < .01$.

Table 2

Direct, Indirect, and Total Effects of Authoritarian Parenting Style and Parental Practices on Child's School Success by Executive Function Deficits

		Direct				Indirect				Total			
				CI 95%				CI 95%				CI 95%	
Predictor	Outcome	β	*SE*	LL	UL	β	*SE*	LL	UL	β	*SE*	LL	UL
Authoritarian parenting style	Literacy	.08	.09	-.07	.22	-.17**	.05	-.29	-.08	-.10	.08	-.25	.04
	Mathematics	.04	.06	-.04	.09	-.16**	.05	-.28	-.07	-.13	.08	-.28	.01
Parental hostility/aggression	Literacy	.07	.09	.02	.14	-.17**	.05	-.29	-.09	-.10	.08	-.24	.04
	Mathematics	.01	.04	-.05	.08	-.16**	.05	-.27	-.07	-.14	.09	-.29	.02
Parental indifference/neglect	Literacy	.01	.04	-.05	.08	-.08**	.03	-.23	.09	-.07	.06	-.22	.09
	Mathematics	.01	.04	-.05	.08	-.08**	.03	-.23	.08	-.07	.06	-.23	.09

Note. $^{*}p < .05$; $^{**}p < .01$.

Discussion

The current study extends previous research by examining the unique associations of individual and familial variables with child's school success. In line with Crick and Dodge's (1994) social information-processing model, and by focusing on early school age, the present study demonstrates how child's cognitive abilities (i.e., executive functions) and proximal family factors (i.e., parenting style and practices) can contribute indirectly to child's literacy and mathematics achievement. Key findings attained in the current study are discussed in detail below.

In support of the hypothesis, the link between authoritarian parenting, parental hostility/aggression and indifference/neglect, and school success in children confirmed in several prior studies (e.g., Pinquart, 2016; Putnick et al., 2015) was fully accounted for by deficits in child's executive functions in our sample of early school-aged children. That is, children raised by parents with high levels of authoritarian parenting (i.e., psychological control), parental hostility/aggression and indifference/neglect tended to exhibit lower literacy and mathematics achievement. This association was mediated by greater difficulties in executive functions, including working memory and inhibition deficits. In line with the attachment theory (Bernier et al., 2012), harsh parenting, and hostile and neglectful child-rearing practices are most likely to severely impede the internalization of child's executive functions. Additionally, social-cognitive approaches suggest that parent-child interactions characterized by elevated levels of parental aggression, punitive discipline, and psychological control behaviours inhibit the development of child's executive functions (Grolnick & Pomerantz, 2009). That is, hostile and indifferent child-rearing practices are likely to mitigate the development of higher-order cognitive capacities in childhood. By observing parental hostile and/or neglectful behaviours that are characterized by a lack of inhibitory skills (i.e., unappropriated aggressive or neglectful reactions toward the information regarding child's low school success) and deficits in working memory (i.e., difficulties maintaining a focus of attention on information within working memory, such as the information that a child needs assistance in education, while concurrently splitting attention among diverse social cues), children are deprived of the opportunity to practice their inhibitory control and working memory skills. Furthermore, child's executive function deficits seem to hinder their academic achievement. According to Toll and colleagues (2010), working memory skills are implied in mathematical achievement because the information from long-term memory needs to be conserved and manipulated during mathematical problem-solving assignments. Additionally, it is assumed that inhibition skills are required in order to actively abolish immature strategies and task-irrelevant information throughout mathematical problem tasks (Bull et al., 2008). Regarding the literacy achievement, children with working memory deficits (i.e., difficulties in simultaneously processing and storing information) are prone to frequent errors in recalling and following instructions, keeping track of places in tasks and writing while producing text (Gathercole et al.,

2006). Additionally, reading a sentence also requires the ability to inhibit irrelevant information (Gernsbacher, 1993).

However, as opposed to the study hypothesis and prior studies (e.g., Fenesy & Lee, 2018; Herbers et al., 2011), difficulties in child's executive functions were not factors of risk in the relationship between authoritative nurture or parental practices including warmth and child's school success. The evidence emerged from this study that negative, but not positive parental behaviours are related to child's executive function deficits, which is in line with the assumption of Lam and colleagues (2018) that negative social interactions may have more impact on child's outcomes than positive ones. For example, according to Zemp and colleagues (2014), parent-child relationship characterised by maintaining a high ratio between positive versus negative parental behaviours toward their child is required for child's positive outcomes. Moreover, child's executive functions questionnaire used in this study is designed to measure executive function deficits, but not competencies. The fact that a child has no executive function deficits is not the evidence of the presence of executive function skills (Lam et al., 2018). As a result, child's deficits or skills and positive or negative parental practices may have differential associations.

To summarize, this study suggests that positive and negative parental behaviours may not have the same relation to child's executive function deficits. Specifically, it seems that child's executive function deficits appear to be a risk factor in the relationship between negative parental behaviours and their literacy and mathematics achievement, while this evidence is not found in the relation of positive parenting practices with child's school success. Hence, future studies should thoroughly inspect the fundamental mechanism of the aforementioned relationships in order to make stronger conclusions regarding the association of parenting with child's school success.

With regard to the limitations of this study, its research design has to be mentioned. The cross-sectional design of this study restricts the exploration of causal associations among the variables used in this study. For example, correlational findings suggest that parental practices promote child's academic achievement, but parents may also react to their child's interests and literacy or mathematics abilities, or child's early difficulties in these academic areas. That is, parents frequently adapt their behaviour to the needs and interests of their child (Blevins-Knabe, 2016). However, the results of this study provide testable hypotheses for future longitudinal research designs. Secondly, this study for the most part relies on the use of parent reports on multiple measures (i.e., parenting styles/practices and child's executive function deficits). Additionally, the associations among the concepts explored in this study may appear stronger than they are in reality on account of common-method variance. Therefore, future studies may benefit from including child's executive function behavioural tasks, with a focus on executive function skills, rather than difficulties. Moreover, Hostility/Aggression subscale had acceptable (Taber, 2017), but rather low internal consistency. There is well-established evidence that some

parents give socially desirable reports regarding their parenting behaviours (Morsbach & Prinz, 2006), which could be even more present when they need to describe their negative parental practices (i.e., hostile or aggressive reactions toward their child, even when a child does not understand the reasons for parental negative behaviours). Nonetheless, the subscale was detained on account of the empirical significance of the concept of parental hostility/aggression in the promotion of child's executive functions (e.g., Blair et al., 2011; Valcan et al., 2018) and their school success (e.g., Pinquart, 2016). Additionally, since the variables of school success in this study showed small individual differences among children, future studies should also include child's results on achievement tests. For example, Pinquart (2016) found that there is a stronger association between specific parental behaviours (i.e., psychological control of the child) and school achievement tests than with the child's school grades reported by others. The use of school grades and a standardized achievement test is thought to provide different, but complementary information about a child's academic achievement (Duckworth et al., 2012). Finally, Pinquart (2016) found that school-specific parental involvement practices (i.e., communication with a child about their homework assignments) can be expected to produce larger effects on child's school success than general parental practices or a broad category of parenting styles. Due to the absence of the direct association between parenting and child's school success found in this study, future studies may benefit from including specific parental behaviours aimed at directly fostering child's school success.

The findings of this study, which suggest that child's executive function deficits are a risk factor in the association of negative parenting with child's literacy and mathematics achievement in early school age, may have some practical implications for child's home and school environment. Since executive function skills can be promoted (Diamond, 2012), children may benefit from interventions aimed at nurturing the development of child's self-regulatory abilities (i.e., circle time games, Tominey & McClelland, 2011). Executive function training programmes, as well as parent training (e.g., Conger et al., 2012), could foster growth in child's academic achievement in middle childhood and adolescence.

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Poteškoće u djetetovim izvršnim funkcijama kao medijatori povezanosti roditeljstva i školskoga uspjeha

Sažetak

Cilj je ovoga istraživanja ispitati ulogu izvršnih funkcija djece u objašnjenju odnosa između poželjnih i nepoželjnih roditeljskih odgojnih stilova i postupaka te školskoga uspjeha djece rane osnovnoškolske dobi. Sudjelovala su 174 roditelja koja su ispunila Upitnik roditeljskoga stila, Upitnik roditeljskoga prihvaćanja/odbijanja i Inventar izvršnih funkcija djece. Rezultati strukturalnoga modeliranja pokazali su da postoji potpuna medijacija poteškoća u izvršnim funkcijama djece u objašnjenju odnosa autoritarnoga stila roditeljstva, roditeljske hostilnosti/agresije i ravnodušnosti/zanemarivanja te školskoga uspjeha iz hrvatskoga jezika i matematike. Suprotno tomu, nije potvrđena medijacijska uloga poteškoća u izvršnim funkcijama djece u odnosu između autoritativnoga odgojnog stila i roditeljske topline/privrženosti te školskoga uspjeha djece. Rezultati ovoga istraživanja ukazuju na to da su poteškoće u izvršnim funkcijama čimbenik rizika slabijega školskog uspjeha iz hrvatskoga jezika i matematike za djecu rane osnovnoškolske dobi čiji roditelji iskazuju nepoželjne odgojne stilove i postupke. Ovo istraživanje upućuje na to da se intervencije trebaju usmjeriti na trening roditeljskih vještina i programe za uvježbavanje izvršnih funkcija djece.

Ključne riječi: roditeljski stilovi, roditeljski postupci, izvršne funkcije, školski uspjeh, rana osnovnoškolska dob

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