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To cite this article: Sema Büyüktaşkapu Soydan & Nihal Akalin (2020): The moderating effects of a child's self-regulation skills in the relationship between a child's temperament and the behaviour of the parents, Early Child Development and Care, DOI: [10.1080/03004430.2020.1755666](https://doi.org/10.1080/03004430.2020.1755666)

To link to this article: <https://doi.org/10.1080/03004430.2020.1755666>



Published online: 23 Jul 2020.



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# The moderating effects of a child's self-regulation skills in the relationship between a child's temperament and the behaviour of the parents

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## ABSTRACT

This study investigated the moderating effect of the self-regulation skills of children on their temperamental traits and on the mother's parenting behaviour. The random sampling method was used to obtain the study's participants: 253 children attending pre-school and their mothers. Research data was collected using the 'The child behaviour list short form' 'Alabama Parenting Questionnaire' 'Self-regulation assessment'. The results reveal that diligent control and self-regulation skills directly influence positive parental behaviour and that the relationship between diligent control and positive behaviour is differentiated depending on the self-regulating capacity of a child. Second, this study determined that negative affect temperament and self-regulation skills directly influence negative parental behaviour and that the relationship between negative affect and negative parental behaviour differs in accordance with a child's self-regulation skills.

## ARTICLE HISTORY

Received 9 March 2020  
Accepted 10 April 2020

## KEYWORDS

Self regulation; child's temperament; behaviour of the parents

## Introduction

Parenting styles reveal the feelings and experiences of parents and are defined as the values and beliefs parents evince with regard to the education and nurture of their children. Parenting approaches may be classified into three groups: democratic, authoritarian, and permissive (Baumrind, 1971). Extant scholarly literature emphasizes that parents with similar parenting styles can evince discrete parenting methods (Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994; Stevenson-Hinde, 1998). Darling and Steinberg (1993) have proposed a holistic model to better understand parenting patterns and claim that parenting goals and practices combine with the emotional atmosphere of a particular parent-child relationship to reveal parenthood. Parenting practices are defined as the observable behaviour of parents toward their children seeking to socialize and enable their progeny to achieve set goals (Darling & Steinberg, 1993). In other words, parental practices include behaviour parents exhibit when they deal with their children to help their offspring attain certain objectives determined via the influence of the society to which they belong.

Studies have reported that negative parental behaviour causes an increase in externalizing and internalizing behavioural problems in children, who then exhibit difficult or negative temperamental attributes as a response (Belsky, 2005; Slagt, Dubas, Dekovic, & van Aken, 2016). Temperament plays an important role in the relationship in the parent-child behaviour; it is a significant aspect of the psychological adaptation and social conduct of children and it also influences the development of a child's personality (Berdan, Keane, & Calkins, 2008; David & Murphy, 2007; Ortiz & Gándara, 2006;

Rothbart, Ahadi, & Evans, 2000; Sterry et al., 2010). Temperament is defined as the type of behaviour or the reaction style that emanates from the unique nature of an individual. It influences a person's interactions with the environment in the form of emotional responses and behaviours (Bee, 2000). The extent to which an individual's temperament is formed by hereditary characteristics or through experiences is unclear. However, scholars generally agree that temperament is observable in every individual and that it entails distinguishing characteristics or a series of distinct attributes that influence an individual's interactions with the world (Prior, Sanson, Smart, & Oberklaid, 2000). Rothbart and his colleagues have defined temperament as the individual difference between reactivity (ease of arousal) and self-regulation (Putnam & Rothbart, 2006; Rothbart, 2011; Rothbart & Bates, 2006).

Reactivity is a dimension of temperament. It refers to the intensity through which a person focuses on emotional, motorized, or attention-demanding situations in an environment (Rothbart, 2011; Rothbart, Derryberry, & Hershey, 2000). The temperament controller section refers to the processes used by an individual to regulate reactivity. The reactive and regulatory components of the temperament work together to respond to environmental requirements (Rothbart, 2011). There is growing evidence that even though the temperament of children is influenced by biological factors such as differences in underlying brain structures, it is also modifiable on the basis of environmental experiences, including parenting (Rothbart & Bates, 2006).

Maternal warmth has particularly been associated with less negative emotionality across time (Belsky, Fish, & Isabella, 1991). Maternal warmth provides children with appropriate models of emotion regulation, especially in emotionally charged contexts, and it is likely to reduce the negative reactivity of children over time (Laible, Thompson, & Froimson, 2014). In addition, positive parental behaviour is negatively associated with internalization and externalization problems in children (e.g. Cheah, Leung, Tahseen, & Schultz, 2009; Im-Bolter, Yaghoub Zadeh, & Ling, 2013; Querido, Warner, & Eyberg, 2002). Interestingly, permissive parenting attitudes are positively associated with internalization and externalization problems in children (e.g. Pinquart, 2017; Sheh, 2013; Tavasolizadeh, Dudding, Madigan, Thorvardarson, & Winsler, 2016).

However, the above mentioned studies have merely revealed the effects of positive/negative parental behaviour on the conduct of children. Parental behaviour develops through the process of interactions among all family members. Every member of a family influences the other and these effects occur mutually and continuously (Bukatko & Daehler, 1992). Therefore, parents who display negative behaviours cause children to express their difficult or negative attributes and to exhibit increased behavioural problems. Conversely, a child's behavioural display of negative traits influences parental conduct.

In fact, the two-way relationship between the temperament and behaviour of children and the subsequent parenting responses has been revealed by numerous studies (Acar, Pérez-González, Kutaka, & Yıldız, 2019; Combs-Ronto, Olson, Lunkenheimer, & Sameroff, 2009; Pearl, French, Dumas, Moreland, & Prinz, 2014; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004). Kiff et al. (2011) found that a child's impulsiveness grows and repression threshold decreases in congruence with negative parenting attitudes. However, according to them, this finding can be misleading as the higher the child's impulsiveness and barrier to repression, the greater the chance that the parents will evince negative attitudes. Low parental responsiveness seems to decrease infant soothability and to increase negative reactivity in infants over 5 months. In turn, the child's irritability appears to further decrease maternal sensitivity (Ghera, Hane, Malesa, & Fox, 2006).

Similar patterns are seen in middle childhood. The negative reactivity of a child predicts self-reported punitive and distress reactions by parents 2 years later; such disciplinary and negative parental reactions are further associated with the increased expression of negative emotions by the child 2 years thereafter (Eisenberg et al., 1999). In middle childhood, child irritability predicts the rise of inconsistent maternal discipline; in turn, inconsistent discipline and maternal rejection predict the increase in child irritability and fear (Lengua, 2006; Lengua & Kovacks, 2005).

Tests have also been conducted on the bidirectional effects between effortful control and parenting. Effortful control predicts a decrease in maternal rejection even though maternal rejection has not been found to envisage changes in effortful control (Lengua, 2006). Taken together, the findings of previous studies suggest that complex bidirectional relations exist between specific dimensions of temperament and aspects of parenting and that they predict mutual changes in each other over time.

An examination of the existing literature reveals that intervention studies are conducted either to identify the variables that mediate the bilateral relationships between parental behaviour and child temperament, or to change the direction of the relationship. Much research has been accomplished to demonstrate that the variables of parental well-being, depressive symptoms in mothers, stress levels, and levels of self-efficacy mediate the relationship between parental behaviour and the temperament of a child. (Belsky, 1984; Belsky & Jaffee, 2006; Cutrona & Troutman, 1986; Gelfand, Teti, & Fox, 1992; Mäntymaa, Puura, Luoma, Salmelin, & Tamminen, 2006; Mertesacker, Bade, Haverkock, & Pauli-Pott, 2004; Mulsow, Caldera, Pursley, Reifman, & Huston, 2002; Pauli-Pott, Mertesacker, Bade, Bauer, & Beckmann, 2000; Porter & Hsu, 2003; Putnam, Spritz, & Stifter, 2002; Sanson & Rothbart, 1995; Solmeyer & Feinberg, 2011; Teti & Gelfand, 1991; Teti & Gelfand, 1991; Webster-Stratton & Hammond, 1988). In addition, studies have shown that parents display more positive parenting behaviour, including reduced controlling actions (McMillin et al., 2015) and increased emotionally supportive interactions (Huang, O'Brien Caughy, Genevro, & Miller, 2005), when they are informed about how they can be developed. Only the intermediary factors that influence the behaviour of the parents are taken into consideration in these studies and factors that can influence the temperament of the child in the bilateral relationship between parental behaviour and the temperament of the child have not yet been investigated.

The reactive and regulatory characteristics of temperament are defined as individual differences between reactivity (ease of arousal) and self-regulation. They are said to function significantly in the development of self-regulation skills in early childhood (Bates, Goodnight, Fite, & Staples, 2009; Blair, Denham, Kochanoff, & Whipple, 2004; Chang & Burns, 2005; Kochanska & Aksan, 2006; Posner & Rothbart, 2000; Rothbart, Ellis, & Posner, 2004; Sheese, Rothbart, Posner, White, & Fraundorf, 2008). Moreover, scholars have investigated the interactions between the social and psychological responses of children and their differing dispositions on self-regulation. (Rudasill & Konold, 2008; Zentner & Bates, 2008). Given that temperament is an obvious feature for the development of self-regulation, it is important to jointly investigate the reactive and regulatory processes of self-regulation and temperament (Bates et al., 2009; Eisenberg et al., 2009; Graziano, Keane, & Calkins, 2010). Therefore, the present study investigated the interaction effects between the self-regulation skills of a child's temperament and the influence of the child's temperament on parental behaviour.

When the reactive component of a child's temperament is active, and the child experiences a negative effect, this characteristic of the temperament is expected to alter the direction of the child's reactions and behaviour through interaction with the self-regulation skills of the child. The present study assumed that a child's reactions from a negative affect temperament would be modified through interaction with the child's self-regulation skills, and thus the subsequent effect on parental behaviour would also change.

Moreover, when the regulating component of the child's temperament is active, and the child experiences diligent control, the child's self-regulation skills will work with this characteristic of the temperament. In the present study, the temperament of the child was expected to increase the power of the impact on the positive behaviour of the parent. When the child's self-regulation skills interacted through the diligent control temperament, it was expected that the child's reactions would be amended and would therefore also influence parental behaviour. In other words, this study hypothesized that the self-regulating capacity of a child would exert a moderating effect on the relationship between the diligent control of the child and the positive behaviour of the parents.

## Method

### *Research model*

A quantitative research methodology called the relational screening model was used for this study. In this context, the study investigated the relationships between the parenting behaviour evinced by mothers, the temperament of children, and the self-regulation skills of children. SPSS PROCESS 24 was employed to evaluate the predictive relationships between the variables.

### *Sample*

The random cluster sampling method was used to obtain the study's participants: 253 children attending pre-school in the central districts of the city of Niğde in the academic year 2019–2020 and their mothers. Of the total sample of children, 51.38% ( $n = 130$ ) were girls and 48.62% ( $n = 123$ ) were boys. The average age of the girls in months was 67.11 ( $\pm 2.07$ ) and the corresponding age of the boys was 68.12 ( $\pm 2.15$ ). Of the participating mothers, 28.45% ( $n = 72$ ) had primary school education, 21.73% ( $n = 55$ ) had high school qualifications, 49.80% ( $n = 126$ ) graduated from university. In socio-economic terms, 47.43% (120) of the child–parent units belonged to the lower echelons of society and 52.17% ( $n = 132$ ) occupied the higher social and fiscal levels.

### *Data collection tool*

The Child Behaviour List Short Form: The Child Behaviour List Short Form was developed by Rothbart, Ahadi, Hershey, and Fisher (2001) and was adapted to Turkish by Sarı et al. (2012), tries to reveal 15 temperament characteristics with a Likert Scale. The scale consisting of 94 questions measures the temperament characteristics of 3–7-year-old children and has 0,78 as the reliability coefficient for the scale with 94 problems. These domains of behaviour are measured along the following 15 sub-scales: activity level, anger/frustration, positive anticipation/approach, attentional focusing, discomfort, falling reactivity/soothability, fear, high-intensity pleasure (HIP), impulsivity, inhibitory control, low-intensity pleasure (LIP), perceptual sensitivity, sadness, shyness, and smiling/laughter (Rothbart et al., 2001). Activity level describes the level of the child's gross motor activity. Anger/frustration refers to negative affectivity related to the interruption of an ongoing task, or goal blocking. Approach anticipation refers to the amount of excitement and anticipation of expected pleasurable activities. Attentional focusing refers to the capacity to maintain attentional focus on task-related activities. Discomfort described negative affectivity related to sensory qualities of stimulation, including intensity, rate, and complexities of light, movement, sound and texture. Falling reactivity and soothability (the recovery parameter of distress) refers to the rate of recovery from peak distress, excitement or general arousal. Fear is expressed by negative affectivity including unease, worry or nervousness, which is related to anticipated pain or distress and/or potentially threatening situations. HIP refers to enjoyment related to situations involving high levels of stimulus intensity, complexity, novelty and incongruity. Impulsivity refers to speed of response initiation. Inhibitory control is the capacity to plan and to suppress inappropriate approach responses under instructions or in novel or uncertain situations. LIP describes enjoyment related to situations involving low stimulus intensity, complexity, novelty and incongruity. Perceptual sensitivity is the detection of slight, low-intensity stimuli from the external environment. Sadness refers to negative affectivity and lowered mood and energy related to exposure to suffering, frustration and object loss. Shyness refers to slow or inhibited speed of approach and discomfort in social situations. Finally, smiling/laughter is related to positive affect in response to daily events. Negative affect; it includes discomfort, anxiety, anger/frustration, unhappiness and calmness (for example, not being easily soothed). Extraversion; impulsiveness, activity, approach, satisfaction with an intensive stimulus and shyness. Diligent control; includes satisfaction, smile/laughter, barrier control, perceptual sensitivity and attention

with low intensity stimulation. Negative affect includes discomfort, anxiety, anger/frustration, unhappiness and calmness (for example, not being easily soothed) as well as extraversion, impulsiveness, activity, approach, shyness and satisfaction through intensive stimuli. Diligent control incorporates satisfaction, smiles/laughter, barrier control, perceptual sensitivity and attention through low-intensity stimulation.

### ***Alabama parenting questionnaire***

The Alabama Parenting Questionnaire (APQ) was developed by Frick (1991). The scale comprising 35 items was adjusted by Çekiç, Türk, Buğa and Hamamcı (2018). APQ includes 5 sub-dimensions: Child-care (CC) measures whether parents spend adequate time with their children and whether they help children fulfil their responsibilities and hobbies; Positive Parenting (PP) evaluates parental awareness of the positive behaviour displayed by the child and determines whether the child is informed of this knowledge; Poor Parental Supervision (PPS) assesses whether parents know what their child is doing; Inconsistent Discipline (ID) examines the differences in the conduct of parents in disciplining the behaviours demonstrated by the child; and Corporal Punishment (CP) investigates whether parents use physical violence to eliminate the unwanted behaviour of their child. Apart from CP, 7 other items of the APQ relate to methods of discipline. These items are not measured as a sub-dimension and are only used in scale applications to ensure that parents do not show a bias in the CP sub-dimension (Shelton, Frick & Woolton, 1996). While the subscales of CC and PP measure positive parenting behaviour, the PPS, ID and CP subscales evaluate negative parental behaviour (Frick, 1991).

### ***Self-regulation assessment***

The Pre-school Self-Regulation Assessment adapted by Findık Tanrıbuyurdu and Güler Yıldız (2014) includes 10 tasks that assess the self-regulation performance of children. These tasks are toy packaging, waiting for toys, candy storage and holding a candy on the tongue to measure pleasure procrastination levels; a balance board, towage and pen clicking to determine how well the children follow instructions; and the collection of towers, allocation of toys and returning of toys to ascertain the social adaptation skills of children. A Practitioner Assessment Form also finds a place on the scale, giving the researcher the opportunity to evaluate the emotions, attention level, and behaviours of the children. The Practitioner Assessment Form is a rubric type instrument comprised of items scored from 0 to 3. An adaptation study conducted in Turkey found that the scale demonstrated the same factor validity in Turkey as the original version. In addition, the reliability coefficient in the Attention/Impulse Control subscale was determined at  $(\alpha).88$ ; the Positive Emotion in the sub-dimension was computed at  $.80$  and  $.83$  throughout the scale.

### ***Data analysis***

Parental behaviour was accepted as a criterion variable in this study, and it was assumed that the child's temperament would modify parental behaviour. Moreover, it was assumed that the relationship between the behaviour of the parents and the temperament of the child would differ depending on whether the child's self-regulating capacity was high or low. This is defined as the moderation effect in multiple regression analysis. In causal terms, moderators always function as independent variables while mediators are positioned between independent and dependent variables. According to Baron and Kenny (1986), 'whereas moderator variables specify when certain effects will hold, mediators speak to how or why such effects occur'.

A moderation analysis is a type of regression analysis that elucidates the impact of the independent variable on the dependent variable through or under the influence of a moderator, which is a third variable (Preacher, Rucker, Hayes, 2007; Wu & Zumbo, 2008). This study used the Hayes process (v. 3) (Hayes, 2019) through the IBM-SPSS (v. 25) computer software to validate the moderation

hypotheses of a recent study. The Hayes process is considered more effective and powerful than its alternatives (Hayes, 2017), and 5000 bootstrapping-based resamples were selected. Bootstrapping does not assume a normal distribution. Moreover, the analysis of the relationship between parental behaviour, the temperament of the child, and the self-regulation skills of the child was performed using the Pearson Product-Moment Correlation Coefficient technique.

## Findings

### Descriptive statistics

The mean scores, standard deviations, correlation and alpha reliabilities of all variables are depicted in Table 1.

Table 1 demonstrates a positive relationship between the diligent control and the positive behaviour ( $r = .32$ ;  $p < 0.02$ ) of a child. A negative relationship was evinced between negative affect and positive behaviour ( $r = -0.12$ ;  $p < 0.00$ ) and a positive relationship was observed between negative affect and negative behaviour ( $r = 0.11$ ;  $p < 0.01$ ). Moreover, no correlation was found between the child's self-regulating capacity, the child's temperament, and the parent's positive and negative behaviour.

Table 2 shows that the diligent control temperament ( $B = 0.14$ ,  $p < 0.02$ ) and the self-regulating capacity ( $B = 1.37$ ,  $p < 0.04$ ) directly influence positive parental behaviour. Moreover, the relationship between diligent control and positive behaviour shows differentiation depending on a child's self-regulatory capacity ( $B = 0.008$ ;  $P = 0.01$ ). In other words, since the regression weight of the interaction variable was positive: the effect of the child's diligent control temperament on the positive behaviour of the parent increased by 0.008 units as the child's self-regulation skill increased by one unit. The point determination approach was utilized in the final phase of the analysis process to enable researchers to evaluate the differences that occur in the effects of a child's diligent control on the positive behaviour of the mother because of the child's self-regulating capacity. Table 3 exhibits the diligent control slope values for different levels of self-regulation calculated in accordance with this approach. Figure 1 illustrates these slope values in the form of a graphic.

The relationship between the diligent control temperament of the child and positive parental behaviour was not found to be significant for children with low self-regulation and significant for children with high and average self-regulation. (Figure 1). Children with low self-regulation demonstrated similar positive behavioural results from the parents regardless of the diligent temperament of the child. The diligent control of children with high and medium self-regulation skills increased positive behavioural responses in the participating mothers.

Table 4 evidences that negative affect temperament ( $B = 0.52$ ,  $p < 0.00$ ) and self-regulating capacity ( $B = 1.97$ ,  $p < 0.00$ ) of children directly influence the negative behaviour of the parent. Moreover, the relationship between negative affect and negative behaviour shows differentiation depending on a child's self-regulatory capacity ( $B = -0.01$ ;  $P = 0.00$ ). In other words, since the regression weight of the interaction variable was negative, the effect of a child's self-regulation skill on the negative behaviour of the parent decreased by 0.01 units as the child's self-regulating skill increases by

**Table 1.** Descriptive statistics for all variables.

Variable	Sub Dimension	M	SD	1	2	3	4	5	6
Parental behavior	1. Positive Behavior	34.18	7.62						
	2. Negative Behavior	69.74	5.54						
Temperament of the child	3. Diligent Control	168.68	19.68	0.32*	-0.22				
	4. Negative affectivity	133.07	17.96	-0.12*	0.11*				
The child's self-regulatory capacity	5. Attention Impulse	17.29	2.77	0.01	-0.03	0.00	0.04		
	6. Positive Emotion	12.66	3.61	-0.02	-0.09	0.10	0.12*	0.09	
	7. Total	29.95	4.90	-0.08	0	0.07	0.12*	0.05	

\*\*Correlations are significant at the 0.01 level (2-tailed). Bold values reveal coefficient.



**Table 2.** Final model parameters for main and moderation effects of diligent control and self-regulation skills on positive parental behaviour.

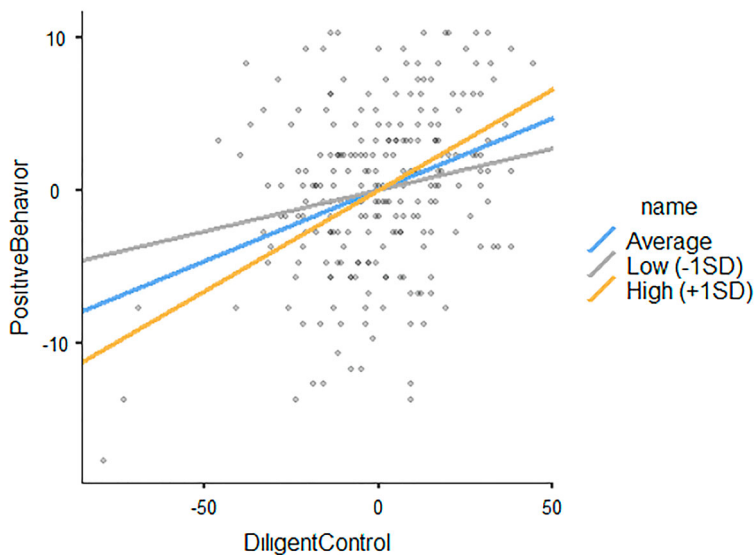
VARIABLES	B	SE	T	P	95% Bootstrapping Confidence Interval	
					LLCI	ULCI
CONSTANT	95.11***	20.25	4.69	0.00	55.19	135.03
DILIGENT CONTROL	0.14**	0.12	1.20	0.02	0.38	0.09
SELF-REGULATION	1.37**	0.67	2.04	0.04	2.70	-0.04
DILIGENT CONTROL * SELF-REGULATION	0.008**	0.004	1.99	0.04	0.0001	0.01

Dependent variable: POSITIVE BEHAVIOUR. \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.

**Table 3.** Situational effects of children's diligent control temperament on different values of children's self-regulation skills.

Self-regulation	B	Se	t	P
Low	0.05	0.02	2.09	0.08
Medium	0.09***	0.01	5.30	0.00
High	0.13***	0.02	4.96	0.00

**Figure 1.** Interaction between diligent control temperament and self-regulation skills.**Table 4.** Final model parameters for main and moderation effects on negative parental behaviour of negative affect temperament and self-regulation skill.

VARIABLES	B	SE	T	P	95% Bootstrapping Confidence Interval	
					LLCI	ULCI
CONSTANT	-29.67	21.24	-1.39	0.16	-71.54	12.19
NEGATIVE AFFECT	0.52***	0.16	3.23	0.00	0.20	0.83
SELF-REGULATION	1.97***	0.71	2.76	0.00	0.56	3.37
NEGATIVE AFFECT * SELF-REGULATION	-0.01***	0.005	-3.00	0.00	-0.02	-0.005

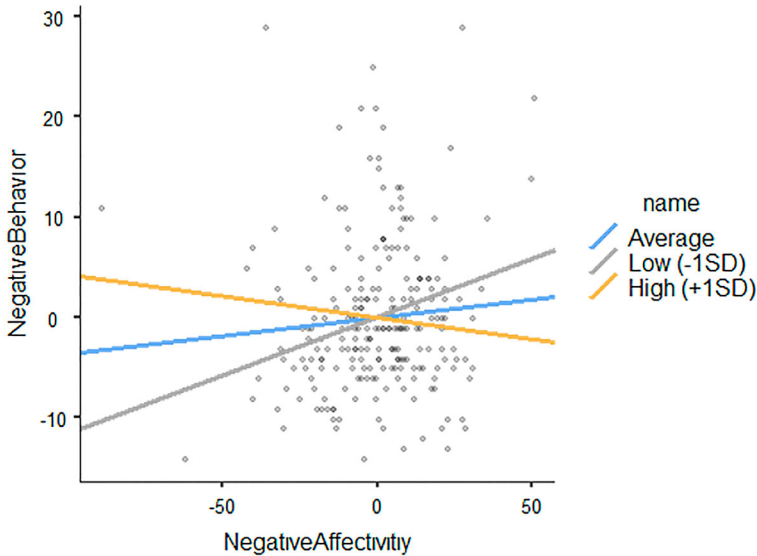
Dependent variable: NEGATIVE BEHAVIOUR, \*  $p < 0,05$ , \*\*  $p < 0,01$ , \*\*\*  $p < 0,001$ .

SE = standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.



**Table 5.** Situational effects of children's negative affect temperament on different values of children's self-regulation skills.

Self-Regulation	B	Se	t	P
Low	0.11***	0.03	3.19	0.00
Medium	0.03	0.02	1.32	0.18
High	-0.04	0.04	-1.06	0.28

**Figure 2.** Interaction between negative affect temperament and self-regulation skill.

one unit. The point determination approach was used in the final phase of the analysis process to enable the investigation of the manner in which the effects of negative affect on the negative behaviour of a mother differ depending on a child's self-regulating capacity. Table 5 displays the negative affect slope values for different levels of self-regulation calculated on the basis of this approach. Figure 2 presents these slope values in graphic form.

The relationship between a child's negative affect and negative parental behaviour was not found to be significant for children with medium and high self-regulation and was significant for children with low self-regulation (Figure 2). Children with high and medium self-regulation elicited similar negative behavioural results from the parents, regardless of the mood of the child's affect. The negative affect of children with low self-regulation skills heightened the negative behaviour of their mothers.

## Discussion

This study investigated the moderating effect of the self-regulation skills of children on their temperamental traits and on the mother's parenting behaviour. The results reveal that diligent control and self-regulation skills directly influence positive parental behaviour and that the relationship between diligent control and positive behaviour is differentiated depending on the self-regulating capacity of a child ( $B = 0.008$ ;  $P = 0.01$ ). These results imply that encouraging a child to develop self-regulation skills is likely to increase the positive effects of the child's diligent control characteristics on positive parenting behaviour. Second, this study determined that negative affect temperament and self-regulation skills directly influence negative parental behaviour and that the relationship between negative affect and negative parental behaviour differs in accordance with a child's self-regulation skills ( $B = -0.01$ ;  $P = 0.00$ ). Since the regression weight of the interaction variable was negative, the effect of negative affect temperament on negative parental behaviour

decreased by 0.01 units as the self-regulating capacity of a child increased by one unit. These findings enable the assertion that promoting the development of a child's self-regulation skills is likely to reduce the effects of negative affect temperament on negative parenting behaviour.

Much research has been conducted to support the results of the present investigation on the manner in which a child's temperament affects parental behaviour. These studies have revealed that temperament is a characteristic feature that influences the expression of adult behaviour. (Bates, Schermerhorn, & Petersen, 2012; Rimm-Kaufman et al., 2002; Rothbart, 2011; Rydell, Bohlin, & Thorell, 2005). Parents treat children of different dispositions differently (Kochanska, Freisenborg, Lange, & Martel, 2004; van den Boom & Hoeksma, 1994). Mothers of active children exhibit less supportive and sensitive behaviours and display more hostile and controlling conduct of lower quality (Deater-Deckard et al., 2001; Katainen, Raikkonen, & Keltikangas-Jarvinen, 1997; van Bakel & Riksen-Walraven, 2002; Webster-Stratton & Eyberg, 1982). In addition, the tendency of a child to resist the wishes of the parent during parent-child interactions activates negative emotions in a parent. Consequentially, parents who experience negative feelings resist behaviour by their children that disrupts the parental interest. At such moments, parents are likely to experience feelings of anger or frustration (Dix & Branca, 2003). Research into maternal behaviour that highlights negative parental emotions has evidenced the parental tendency towards anger after receiving negative emotional reactions from children (Katainen et al., 1997; Kochanska et al., 2004). Bryan and Dix (2009) discovered that mothers display an elevated tendency to behave in a non-supportive way towards children aged between 14 and 27 months who exhibit emotionally negative expressions and who are somewhat unwelcome because of their gender.

Studies demonstrating that early reactive and regulatory temperament characteristics of children contribute to their later self-regulation skills (Bates et al., 2009; Chang & Burns, 2005; Kochanska & Aksan, 2006; Sheese et al., 2008) also support the outcomes of the present investigation which prove that self-regulation skills play a moderating role in the relationship between the temperament of a child and parental behaviour. For example, Chang and Burns (2005) found that higher scores on effortful control significantly predicted more accuracy in children's structured orienting (attention-shifting tasks) and executive tasks (spatial conflict task). Otherwise, temperament along with other covariates (e.g. environment) can influence self-regulation. A large body of research has shown that children's fearful temperament emerges as either an advantage for regulation or disadvantage for regulation depending on parenting context (Kochanska, 1997; Kochanska, Aksan, & Joy, 2007; Zentner & Bates, 2008). For example, more fearful children developed better internalized self-regulation when they experienced gentle and warm parenting in which mothers used a warm and sensitive approach with their children (Kochanska, 1997). In addition, Yagmurlu and Altan (2010) found that preschool children with high levels of approach (aka surgent temperament) had a positive significant association with emotion regulation when they had responsive mothers. These studies, which reveal the strong link between self-regulation and temperament, support our finding that the child's self-regulation skills have an interaction effect.

Considering development of self-regulation occurs through the interplay between children and their social environment, social experiences within families influence children's development of self-regulation (Kochanska, Coy, & Murray, 2001; Kopp, 1982; Morris, Silk, Steinberg, Myers, & Robinson, 2007). Children's developmental trajectory of self-regulation is shaped through transactional processes between the environment and the child (Olson & Lunkenheimer, 2009). For example, when a parent of an unmanageable child (e.g. highly emotional) receives supportive resources, she/he can support the child's development of self-regulation (Olson & Lunkenheimer, 2009). Otherwise, the foremost parenting behaviour pertaining to children's self-regulation is parental control (Feldman & Klein, 2003; Karreman, van Tuijl, van Aken, & Deković, 2006; Kochanska & Knaack, 2003). Parental control is twofold; positive and negative (Karreman et al., 2006). Positive parental control refers to parental behaviours that are encouraging, warm, and sensitive (Kiss, Fecheté, Pop, & Susa, 2014; Kochanska et al., 2001; Lengua, Honorado, & Bush, 2007). Positive parental control is related to behavioural control that refers to regulation or structuring the child's behaviour (Bean, Barber, & Crane, 2006).

In contrast, negative parental control refers to power-assertion and intrusiveness that include anger, harshness, and physical intervention in children's behaviours (Feng, Shaw, & Moilanen, 2011; Karreman et al., 2006). Negative parental control is related to parents' psychological control that refers to interference and manipulation of the child's psychological state (e.g. constricting verbal expression and interactions of a child) (Bean et al., 2006). Parental control and development of self-regulation can work reciprocally (Bates et al., 2012; Putnam et al., 2002; Sameroff, 2009). For example, children who grow up in a family context where parents use positive controlling strategies may develop better self-regulation skills because parents can foster children's self-regulation (Kiss et al., 2014; Putnam, Sanson, & Rothbart, 2002). In reciprocity, children with better self-regulatory skills may elicit positive parenting behaviours such as sensitivity and guidance, in return, children benefit from these positive parenting behaviours to develop self-regulation (Kiss et al., 2014; Rothbart & Bates, 2006; Silverman & Ragusa, 1990). On the other hand, a family context where negative parental control is present may impair self-regulation due to lack of parental strategies for development self-regulatory skills (Sanders & Mazzucchelli, 2013). A child who struggles with self-regulation may thus elicit more negative parental control. These theoretical foundations demonstrate the effects of parenting behaviour and a children's temperamental attributes on self-regulation. They reveal that the temperament and self-regulation of the child and parental behaviour are interdependent factors. These extant studies confirm the findings of the present investigation that the combined effects of a child's temperament and self-regulation skills influence and alter the direction of parental behaviour.

In addition, this study ascertained that children with low self-regulation elicited similar positive parental behaviour regardless of the child's diligent control rate and that diligent control in children with high and medium self-regulation skills increased positive maternal behaviour. It was determined that children with high and medium self-regulation evoked similar negative parental behaviour regardless of the child's negative affective temperament and that negative affect in children with low self-regulation skills increased negative maternal behaviour.

From the perspective of the transactional model of development, self-regulation is conceptualized as a contextual developmental construct where demands and stressors influence self-regulation, and self-regulation of children reciprocally influences the environmental context (Blair & Raver, 2014; Murray, Rosanbalm, Christopoulos, & Hamoudi, 2015). For example, environmental stressors such as low family income, poor parenting, and dangerous and unhealthy environments may undermine development of self-regulation (McClelland & Cameron, 2011; Murray et al., 2015). However, if children experience manageable levels of stress and access to social and cognitive resources such as positive parenting support and higher levels of executive function, children can use these as protective resources that can ameliorate risk factors (Blair, 2010; Murray et al., 2015). From this point of view, children can balance their self-regulation in response to environmental demands. Therefore, previous research has suggested that intervention programmes should mitigate the effects of risky environments by decreasing effects of negative environment (e.g. improving caregiver supports) or helping children to improve their self-regulation skills (e.g. training children's executive functions) to manage environmental risks (Blair, 2010; McClelland & Cameron, 2011; Murray et al., 2015; Raver et al., 2011). These findings regarding the contextual nature of self-regulation and its impact on the management of risky environments confirm our findings that diligent control in children with high and moderate self-regulation skills improves maternal positive behaviour; and that negative affection in children with low self-regulation skills increases maternal negative behaviour.

In sum, The results of the current study evince that the temperamental traits of a child influence parental behaviour and that the self-regulating capacity of a child plays a controlling role in the association between a child's temperament and parental behaviour. These results prompt the deduction that encouraging the development of a child's self-regulation skills will help to ameliorate the quality of parent-child interactions by exerting a positive impact on the bidirectional interface between a child's disposition and parental behaviour. It is thus recommended that intervention programmes should include children along with their parents to strengthen parent-child communication.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## References

- Acar, Hİ, Pérez-González, S., Kutaka, T. C., & Yıldız, S. (2019). Difficult temperament and children's peer relations: The moderating role of quality of parent-child relationships. *Early Child Development and Care*, 189(13), 2141–2155. doi:10.1080/03004430.2018.1439941
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bates, J. E., Goodnight, J. A., Fite, J., & Staples, A. D. (2009). Behavioral regulation as a product of temperament and environment. In S. L. Olsen & A. Sameroff (Eds.), *Regulatory processes in the development of child behavior problems: Biological, behavioral, and social-ecological perspectives* (pp. 116–143). New York: Cambridge University Press.
- Bates, J. E., Schermerhorn, A. C., & Petersen, I. T. (2012). Temperament and parenting in developmental perspective. In M. Zentner & R. L. Shiner (Eds.), *Handbook of temperament* (pp. 425–441). New York: Guilford.
- Baumrind, D. (1971). Harmonious parents and their preschool children. *Developmental Psychology*, 4(1), 99–102.
- Bean, R. A., Barber, B. K., & Crane, D. R. (2006). Parental support, behavioural control, and psychological control among African American Youth. *Journal of Family Issues*, 27(10), 1335–1355. doi:10.1177/0192513X06289649
- Bee, H. (2000). *The developing child*. New Jersey: Pearson Education Company. Santrock, J.W.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, 55, 83–96.
- Belsky, J. (2005). Differential susceptibility to rearing influence. In B. J. Ellis & D. F. Bjorklund (Eds.), *Origins of the social mind: Evolutionary psychology and child development* (pp. 139–163). New York, NY: Guilford.
- Belsky, J., Fish, M., & Isabella, R. (1991). Continuity and discontinuity in infant negative and positive emotionality: Family antecedents and attachment consequences. *Developmental Psychology*, 27(3), 421–431. doi:10.1037/0012-1649.27.3.421
- Belsky, J., & Jaffee, S. R. (2006). The multiple determinants of parenting. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology. Risk, disorder, and adaptation* (2nd ed., pp. 38–85). Hoboken, NJ: Wiley.
- Berdan, L. E., Keane, S. P., & Calkins, S. D. (2008). Temperament and externalizing behavior: Social preference and perceived acceptance as protective factors. *Developmental Psychology*, 44, 957–968. doi:10.1037/0012-1649.44.4.957
- Blair, C. (2010). Stress and the development of self-regulation in context. *Child Development Perspectives*, 4(3), 181–188. doi:10.1111/j.1750-8606.2010.00145.x
- Blair, C., & Raver, C. C. (2014). Closing the achievement gap through modification of neurocognitive and neuroendocrine function: Results from a cluster randomized controlled trial of an innovative approach to the education of children in kindergarten. *PLoS ONE*, 9(11), 1–13. doi:10.1371/journal.pone.0112393
- Blair, K., Denham, S., Kochanoff, A., & Whipple, B. (2004). Playing it cool: Temperament, emotion regulation, and social behavior in preschoolers. *Journal of School Psychology*, 42(6), 419–443. doi:10.1016/j.jsp.2004.10.002
- Bryan, A. E., & Dix, T. (2009). Mothers' emotions and behavioral support during interactions with toddlers: The role of child temperament. *Social Development*, 18(3), 647–670. doi:10.1111/j.1467-9507.2008.00502.x
- Bukatko, D., & Daehler, M. W. (1992). *Child development: A topical approach*. Boston: Houghton Mifflin.
- Çekiç, A., Türk, F., Buga, A., & Hamamcı, Z. (2018). Adapting the Alabama scale for parental behaviour to Turkish: Research into validity and reliability. *Electronic Journal of Social Sciences*, 17(66), 728–743. doi:10.17755/esosder.355515
- Chang, F., & Burns, B. M. (2005). Attention in preschoolers: Associations with effortful control and motivation. *Child Development*, 76, 247–263. doi:10.1111/j.1467-8624.2005.00842.x
- Cheah, C. S. L., Leung, C. Y. Y., Tahseen, M., & Schultz, D. (2009). Authoritative parenting among immigrant Chinese mothers of preschoolers. *Journal of Family Psychology*, 23, 311–320. doi:10.1037/a0015076
- Combs-Ronto, L. A., Olson, S. L., Lunkenheimer, E. S., & Sameroff, A. J. (2009). Interactions between maternal parenting and children's early disruptive behaviour: Bidirectional associations across the transition from preschool to school entry. *Journal of Abnormal Child Psychology*, 37, 1151–1163. doi:10.1007/s10802-009-9332-2

- Cutrona, C. E., & Troutman, B. R. (1986). Social support, infant temperament, and parenting self-efficacy: A meditational model of postpartum depression. *Child Development, 57*, 1507–1518.
- Darling, N., & Steinberg, L. (1993). Parenting style as context. An integrative model. *Psychological Bulletin, 113*(3), 487–496. doi:10.1037/0033-2909.113.3.487
- David, K. M., & Murphy, B. C. (2007). Interparental conflict and preschooler's peer relations: The moderating roles of temperament and gender. *Social Development, 16*(1), 1–23.
- Deater-Deckard, K., Pike, A., Petrill, S. A., Cutting, A. L., Hughes, C., & O'Connor, T. G. (2001). Non-shared environmental processes in socio-emotional development: An observational study of identical twin differences in the preschool period. *Developmental Science, 4*, 1–6. doi:10.1111/1467-7687.00157
- Dix, T., & Branca, S. H. (2003). Parenting as a goal-regulation process. In L. Kuczynski (Ed.), *Handbook of dynamics in parent-child relations* (pp. 167–187). Thousand Oaks, CA: Sage.
- Eisenberg, N., Fabes, R. A., Shepard, S. A., Guthrie, I. K., Murphy, B. C., & Reiser, M. (1999). Parental reactions to children's negative emotions: Longitudinal relations to quality of children's social functioning. *Child Development, 70*, 513–534. doi:10.1111/1467-8624.0003
- Eisenberg, N., Valiente, C., Spinrad, T. L., Cumberland, A., Liew, J., Reiser, M., ... Losoya, S. H. (2009). Longitudinal relations of children's effortful control, impulsivity, and negative emotionality to their externalizing, internalizing, and cooccurring behaviour problems. *Developmental Psychology, 45*(4), 988–1008. doi:10.1037/a0016213
- Feldman, R., & Klein, P. S. (2003). Toddlers' self-regulated compliance to mothers, caregivers, and fathers: Implications for theories of socialization. *Developmental Psychology, 39*, 680–692. doi:10.1037/0012-1649.39.4.680
- Feng, X., Shaw, D. S., & Moilanen, K. L. (2011). Parental negative control moderates the shyness– emotion regulation pathway to school-age internalizing symptoms. *Journal of Abnormal Child Psychology, 39*, 425–436.
- Findık Tanrıbuğurdu, E., & Güler Yıldız, T. (2014). Preschool Self-Regulation Questionnaire (PSRQ): Studies for adaptation to Turkey. *Education and Science, 39*(176), 317–328. doi:10.15390/EB.2014.3647
- Frick, P. J. (1991). *The Alabama parenting questionnaire*. Unpublished rating scale, University of Alabama.
- Gelfand, D. M., Teti, D. M., & Fox, C. R. (1992). Sources of parenting stress for depressed and nondepressed mothers of infants. *Journal of Clinical Child Psychology, 21*, 262–272. doi:10.1207/s15374424jccp2103\_8
- Ghera, M., Hane, A., Malesa, E., & Fox, N. (2006). The role of infant soothability in the relation between infant negativity and maternal sensitivity. *Infant Behavior & Development, 29*, 289–293. doi:10.1016/j.infbeh.2005.09.003
- Graziano, P. A., Keane, S. P., & Calkins, S. D. (2010). Maternal behaviour and children's early emotion regulation skills differentially predict development of children's reactive control and later effortful control. *Infant & Child Development, 19*, 333–353. doi:10.1002/icd.670
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY, USA: Guilford Publications.
- Hayes, A. F. (2019). *Model templates for PROCESS for SPSS and SAS*. Retrieved from <http://afhayes.com/spss-sasand-mplus-macros-and-code.html>
- Huang, K.-Y., O'Brien Caughy, M., Genevro, J. L., & Miller, T. L. (2005). Maternal knowledge of child development and quality of parenting among White, African-American and Hispanic mothers. *Journal of Applied Developmental Psychology, 26*, 149–170. doi:10.1016/j.appdev.2004.12.001
- Im-Bolter, N., Yaghoob Zadeh, Z., & Ling, D. (2013). Early parenting beliefs and academic achievement: The mediating role of language. *Early Child Development and Care, 183*, 1811–1826. doi:10.1080/03004430.2012.755964
- Karremans, A., van Tuijl, C., van Aken, M. G., & Deković, M. (2006). Parenting and selfregulation in preschoolers: A meta-analysis. *Infant & Child Development, 15*(6), 561–579. doi:10.1002/icd.478
- Katainen, S., Raikkonen, K., & Keltikangas-Jarvinen, L. (1997). Childhood temperament and mothers' child-rearing attitudes: Stability and interaction in a three year follow up study. *European Journal of Personality, 11*, 249–265.
- Kiff, C. J., Lengua, L. J., & Zalewski, M. (2011). Nature and nurturing: Parenting in the context of child temperament. *Clinical Child Family Psychological Review, 14*(3), 251–301. doi:10.1007/s10567-011-0093-4
- Kiss, M., Fecheté, G., Pop, M., & Susa, G. (2014). Early childhood self-regulation in context: Parental and familial environmental influences. *Cognitie, Creier, Comportament/Cognition, Brain, Behavior, 18*(1), 55–85.
- Kochanska, G. (1997). Multiple pathways to conscience for children with different temperaments: From toddlerhood to age 5. *Developmental Psychology, 33*(2), 228–240. doi:10.1037/0012-1649.33.2.228
- Kochanska, G., & Aksan, N. (2006). Children's conscience and self-regulation. *Journal of Personality, 74*, 1587–1617. doi:10.1111/j.1467-6494.2006.00421.x
- Kochanska, G., Aksan, N., & Joy, M. E. (2007). Children's fearfulness as a moderator of parenting in early socialization: Two longitudinal studies. *Developmental Psychology, 43*, 222–237. doi:10.1037/0012-1649.43.1.222
- Kochanska, G., Coy, K. C., & Murray, K. T. (2001). The development of self-regulation in the first four years of life. *Child Development, 72*, 1091–1111. doi:10.1111/1467-8624.00336
- Kochanska, G., Freisenborg, A. E., Lange, L. A., & Martel, M. M. (2004). Parents' personality and infants' temperaments as contributors to their emerging relationship. *Journal of Personality and Social Psychology, 86*, 744–759. doi:10.1037/0022-3514.86.5.744
- Kochanska, G., & Knaack, A. (2003). Effortful control as a personality characteristic of young children: Antecedents, correlates, and consequences. *Journal of Personality, 71*, 1087–1112. doi:10.1111/1467-6494.7106008



- Kopp, C. B. (1982). Antecedents of self-regulation: A developmental perspective. *Developmental Psychology, 18*(2), 199–214. doi:10.1037/0012-1649.18.2.199
- Laible, D., Thompson, R., & Froimson, J. (2014). Early socialization: The influence of close relationships. In J. Grusec & P. Hastings (Eds.), *Handbook of socialization* (Rev. ed., pp. 35–60). New York, NY: Guilford.
- Lengua, L. J. (2006). Growth in temperament and parenting as predictors of adjustment during children's transition to adolescence. *Developmental Psychology, 42*(5), 819–832. doi:10.1037/0012-1649.42.5.819
- Lengua, L. J., Honorado, E., & Bush, N. (2007). Cumulative risk and parenting as predictors of effortful control and social competence in preschool children. *Journal of Applied Developmental Psychology, 28*, 40–55.
- Lengua, L. J., & Kovacks, E. A. (2005). Bidirectional associations between temperament and parenting, and the prediction of adjustment problems in middle childhood. *Journal of Applied Developmental Psychology, 26*, 21–38. doi:10.1016/j.appdev.2004.10.001
- Mäntymaa, M., Puura, K., Luoma, I., Salmelin, R. K., & Tamminen, T. (2006). Mother's early perception of her infant's difficult temperament, parenting stress and early mother-infant interaction. *Nordic Journal of Psychiatry, 60*, 379–386. doi:10.1080/08039480600937280
- McClelland, M. M., & Cameron, C. E. (2011). Self-regulation and academic achievement in elementary school children. *New Directions for Child and Adolescent Development, 2011*(133), 29–44. doi:10.1002/cd.302
- McMillin, S. E., Hall, L., Bultas, M. W., Grafeman, S. E., Wilmott, J., Maxim, R., & Zand, D. H. (2015). Knowledge of child development as a predictor of mother-child play interactions. *Clinical Pediatrics, 54*, 1117–1119. doi:10.1177/0009922815581763
- Mertesacker, B., Bade, U., Haverkock, A., & Pauli-Pott, U. (2004). Predicting maternal reactivity/sensitivity: The role of infant emotionality, maternal expressiveness/anxiety, and social support. *Infant Mental Health Journal, 25*, 47–61. doi:10.1002/imhj.10085
- Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development, 16*(2), 361–388. doi:10.1111/j.1467-9507.2007.00389.x
- Mulsow, M., Caldera, Y. M., Pursley, M., Reifman, A., & Huston, A. C. (2002). Multilevel factors influencing maternal stress during the first three years. *Journal of Marriage and Family, 64*, 944–956. doi:10.1111/j.1741-3737.2002.00944.x
- Murray, D. W., Rosanbalm, K., Christopoulos, C., & Hamoudi, A. (2015). *Self-Regulation and Toxic Stress: Foundations for Understanding Self-Regulation from an Applied Developmental Perspective*. OPRE Report #2015–21, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- Olson, S. L., & Lunkenheimer, E. S. (2009). Expanding concepts of self-regulation to social relationships: Transactional processes in the development of early behavioral adjustment. In A. J. Sameroff (Ed.), *Transactional processes in development* (pp. 55–76). Washington, DC: APA Press.
- Ortiz, M. A. C., & Gándara, V. B. (2006). Study on the relations between temperament, aggression, and anger in children. *Aggressive Behavior, 32*(3), 207–215. doi:10.1002/ab.20127
- Pauli-Pott, U., Mertesacker, B., Bade, U., Bauer, C., & Beckmann, D. (2000). Contexts of relations of infant negative emotionality to caregiver's reactivity/sensitivity. *Infant Behavior & Development, 23*, 23–39. doi:10.1016/S0163-6383(00)00029-1
- Pearl, A. M., French, B. F., Dumas, J. E., Moreland, A. D., & Prinz, R. (2014). Bidirectional effects of parenting quality and child externalizing behavior in predominantly single parent, under-resourced African American families. *Journal of Child and Family Studies, 23*, 177–188. doi:10.1007/s10826-012-9692-z
- Pinquart, M. (2017). Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis. *Developmental Psychology, 53*, 873–932. doi:10.1037/dev0000295
- Porter, C. L., & Hsu, H.-C. (2003). First-time mothers' perceptions of efficacy during the transition to motherhood: Links to infant temperament. *Journal of Family Psychology, 17*, 54–64. doi:10.1037/0893-3200.17.1.54
- Posner, M. I., & Rothbart, M. K. (2000). Developing mechanisms of self-regulation. *Development and Psychopathology, 12*, 427–441. doi:10.1017/S0954579400003096
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*, 185–227. doi:10.1080/00273170701341316
- Prior, M., Sanson, A., Smart, D., & Oberklaid, F. (2000). *Pathways from infancy to adolescence. Australian temperament project 1983–2000*. Melbourne: Australian Institute of Family Studies.
- Putnam, S. P., & Rothbart, M. K. (2006). Development of short and very short forms of the children's behavior questionnaire. *Journal of Personality Assessment, 87*, 103–113. doi:10.1207/s15327752jpa8701\_09
- Putnam, S. P., Sanson, A. V., & Rothbart, M. K. (2002). Child temperament and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting. Vol. 1. Children and parenting* (Vol. 2, pp. 255–277). Mahwah, NJ: Erlbaum.
- Putnam, S., Spritz, B., & Stifter, C. (2002). Mother-child co-regulation during delay of gratification at 30 months. *Infancy, 3*, 209–225. doi:10.1207/S15327078IN0302\_6
- Querido, J. G., Warner, T. D., & Eyberg, S. M. (2002). Parenting styles and child behavior in African American families of preschool children. *Journal of Clinical Child & Adolescent Psychology, 31*, 272–277. doi:10.1207/S15374424JCCP3102\_12
- Raver, C., Jones, S., Li Grining, C., Zhai, F., Bub, K., & Pressler, E. (2011). CRSP's impact on low-income preschoolers' pre-academic skills: Self-regulation as a mediating mechanism. *Child Development, 82*, 362–378. doi:10.1111/j.1467-8624.2010.01561.x

- Rimm-Kaufman, S., Early, D., Cox, M., Saluja, G., Pianta, R., Bradley, R., & Payne, C. (2002). Early behavioral attributes and teachers' sensitivity as predictors of competent behavior in the kindergarten classroom. *Applied Developmental Psychology, 23*, 451–470. doi:10.1016/S0193-3973(02)00128-4
- Rothbart, M. K. (2011). *Becoming who we are: Temperament and personality in development*. New York, NY: The Guilford Press.
- Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78*(1), 122–135. doi:10.1037//0022-3514.78.1.121
- Rothbart, M. K., Ahadi, S. A., Hershey, K. L., & Fisher, P. (2001). Investigations of temperament at 3-7 years: The children's behavior questionnaire. *Child Development, 72*(5), 1394–1408. doi:10.1111/1467-8624.00355
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In R. L. W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (6th ed., Vol. 3, pp. 465–501). New York: Wiley.
- Rothbart, M. K., Derryberry, D., & Hershey, K. (2000). Stability of temperament in childhood: Laboratory infant assessment to parent report at seven years. In V. J. Molfese & D. L. Molfese (Eds.), *Temperament and personality development across the life span* (pp. 85–119). Hillsdale, NJ: Erlbaum.
- Rothbart, M. K., Ellis, L. K., & Posner, M. I. (2004). Temperament and self-regulation. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 357–370). New York: Guilford Press.
- Rudasill, K. M., & Konold, T. R. (2008). Contributions of children's temperament to teachers' judgments of social competence from kindergarten through second grade. *Early Education and Development, 19*(4), 643–666. doi:10.1080/10409280802231096
- Rydell, A.-M., Bohlin, G., & Thorell, L. B. (2005). Representations of attachment to parents and shyness as predictors of children's relationships with teachers and peer competence in preschool. *Attachment and Human Development, 7*, 197–204. doi:10.1080/14616730500134282
- Sameroff, A. J. (2009). *The transactional model of development: How children and contexts shape each other*. Washington, DC: American Psychological Association.
- Sanders, M., & Mazzucchelli, T. (2013). The promotion of self-regulation through parenting interventions. *Clinical Child & Family Psychology Review, 16*(1), 1–17. doi:10.1007/s10567-013-0129-z
- Sanson, A., & Rothbart, M. K. (1995). Child temperament and parenting. In M. Bornstein (Ed.), *Applied and practical parenting* (Vol. 4, pp. 299–321). Mahwah, NJ: Lawrence Erlbaum.
- Sarı, B. A., İşeri, E., Yalçın, Ö., Aslan, A. A., & Şener, Ş. (2012). Turkish reliability study of the short form with the behaviour list for children and the preliminary study on its validity. *Journal of Clinical Psychiatry, 15*(3), 135–143.
- Sheese, B. E., Rothbart, M. K., Posner, M. I., White, L. K., & Fraundorf, S. H. (2008). Executive attention and self-regulation in infancy. *Infant Behavior and Development, 31*, 501–510. doi:10.1016/j.infbeh.2008.02.001
- Sheh, N. O. (2013). *Parenting styles and early childhood behavioural functioning: A comparison between self-reported and observed parenting styles* (Unpublished Master thesis). Edmonton, Alberta, Canada: University of Alberta.
- Shelton, K. K., Frick, P. J., & ve Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. *Journal of Clinical Child Psychology, 25*, 317–329. doi:10.1207/s15374424jccp2503\_8
- Silverman, I. W., & Ragusa, D. M. (1990). Child and maternal correlates of impulse control in 24-month-old children. *Genetic, Social, and Psychology Monographs, 116*, 435–473.
- Silverman, I. W., & Ragusa, D. M. (1990). Child and maternal correlates of impulse control in 24-month-old children. *Genetic, Social, and Psychology Monographs, 116*, 435–473.
- Slagt, M., Dubas, J. S., Dekovic, M., & van Aken, M. A. (2016). Differences in sensitivity to parenting depending on child temperament: A meta-analysis. *Psychological Bulletin, 142*, 1068–1110. doi:10.1037/bul0000061
- Smith, C. L., Calkins, S. D., Keane, S. P., Anastopoulos, A. D., & Shelton, T. L. (2004). Predicting stability and change in toddler behavior problems: Contributions of maternal behavior and child gender. *Developmental Psychology, 40*, 29–42. doi:10.1037/0012-
- Solmeyer, A. R., & Feinberg, M. E. (2011). Mother and father adjustment during early parenthood: The roles of infant temperament and coparenting relationship quality. *Infant Behavior & Development, 34*, 504–514. doi:10.1016/j.infbeh.2011.07.006
- Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbusch, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 65*(3), 754–770. doi:10.2307/1131416
- Sterry, T. W., Reiter-Purtill, J., Gartstein, M. A., Gerhardt, C. A., Vannatta, K., & Noll, R. B. (2010). Temperament and peer acceptance: The mediating role of social behavior. *Merrill-Palmer Quarterly, 56*(2), 189–219. doi:10.1353/mpq.0.0047
- Stevenson-Hinde, J. (1998). Parenting in different cultures: Time to focus. *Developmental Psychology, 34*(4), 698–700. doi:10.1037/0012-1649.34.4.698
- Tavassolie, T., Dudding, S., Madigan, A. L., Thorvardarson, E., & Winsler, A. (2016). Differences in perceived parenting style between mothers and fathers: Implications for child outcomes and marital conflict. *Journal of Child and Family Studies, 25*, 2055–2068. doi:10.1007/s10826-016-0376-y
- Teti, D. M., & Gelfand, D. M. (1991). Behavioral competence among mothers of infants in the first year: The mediational role of maternal self-efficacy. *Child Development, 62*, 918–929. doi:10.1111/j.1467-8624.1991.tb01580.x



- van Bakel, H. J. A., & Riksen-Walraven, J. M. (2002). Parenting and development of one-year olds: Links with parental, contextual, and child characteristics. *Child Development, 73*, 256–273. doi:10.1111/1467-8624.00404
- van den Boom, D. C., & Hoeksma, J. B. (1994). The effect of infant irritability on mother-infant interaction: A growth curve analysis. *Developmental Psychology, 30*, 581–590. doi:10.1037/0012-1649.31.2.197
- Webster-Stratton, C., & Eyberg, S. M. (1982). Child temperament: Relationship with child behaviour problems and parent-child interactions. *Journal of Clinical Child Psychology, 11*, 123–129. doi:10.1080/15374418209533075
- Webster-Stratton, C., & Hammond, M. (1988). Maternal depression and its relationship to life stress, perceptions of child behaviour problems, parenting behaviours, and child conduct problems. *Journal of Abnormal Child Psychology, 16*, 299–315.
- Wu, A. D., & Zumbo, B. D. (2008). Understanding and using mediators and moderators. *Social Indicators Research, 87*, 367. doi:10.1007/s11205-007-9143-1
- Yagmurlu, B., & Altan, O. (2010). Maternal socialization and child temperament as predictors of emotion regulation in Turkish preschoolers. *Infant and Child Development, 19*, 275–296. doi:10.1002/icd.646
- Zentner, M., & Bates, J. E. (2008). Child temperament: An integrative review of concepts, research programs, and measures. *European Journal of Developmental Science, 2*, 7–37. doi:10.3233/DEV-2008-21203