International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

Predictors of Behavior Problems in Preschool Children: The Role of Psychological Self-Regulation and Cognitive Executive Functions

Miroljub ivanović[1], Irina Ćosić[2]
[1]Serbian Academy of Innovation Sciences, Belgrade, Serbia
[2]Red Star Football Club, Belgrade, Serbia

ABSTRACT: The aim of this transversal research was to examine the influence of predictors of psychological self-regulation (temperament – effortful control, positive and negative emotionality, and cognitive executive functions) on the prediction of criterion variables of internalized and externalized behavior problems in preschool-aged children. The pertinent sample included 170 parents (53% mothers and 47% fathers) and preschool children of both sexes aged 4–6.5 years from the preschool "Radosno detinjstvo" in Valjevo. The following measurement instruments were applied: Childhood Executive Functioning Inventory, The Early Childhood Behavior Questionnaire, Child Behavior Checklist, Questionnaire on the use of digital media by preschool children, executive function tasks for children ("Day–Night"), backward digit span, and verbal fluency. The obtained alpha reliability coefficients suggest that the used instruments, with reliable internal consistency, are valid for measuring the Serbian population. The results of the hierarchical linear regression model, with a relevant proportion of variance (29.28% and 28.52%), showed that externalized and internalized behavior problems are in a statistically significant positive correlation with factors of perceived executive functions – inhibition deficit and working memory deficit. Additionally, the temperament dimension of partial effortful control manifested as a relevant determinant contributing to the explanation of variability in the construct of behavior problems in preschool-aged children. The study discusses the theoretical and practical implications of these findings.

KEY WORDS: internalizing problems, externalizing problems, backward digit span, verbal fluency.

INTRODUCTION

Digital media are a component of the contemporary world with different roles in the lives of preschool-aged children. Media have become an indispensable part of modern society and an unavoidable part of a child's daily routine. Today's children grow up together with media and begin to use them at an increasingly early age. By identifying the contributions of media content, the possibility of positive or negative effects on a child's development and functioning becomes visible. According to research (Sun, 2026), about one-fifth of children in the USA have pronounced psychological problems that require treatment.

The increasingly early and frequent use of modern digital media in early childhood represents a significant developmental and social phenomenon correlated with the functioning of psychological executive functions and behavior problems of preschool children. Therefore, understanding the relationships between the use of digital media, executive functions, and behavior problems represents a relevant research question in the field of developmental psychology of preschool age. The construct of executive psychological function of intellect, thinking, self-control, and social interaction implies adaptive behavior oriented toward goals and problem-solving, as well as coping in new situations (Syafii et al., 2026). The main components of the executive system include attention control, goal definition, and cognitive flexibility, whereby in the coordination of cognitive activities the executive system is generated by dominant attention control, but also requires working memory. The stated main components (inhibition, shifting behavior, emotional control, working memory, planning, and organization) are examined through different tasks in which the child is engaged. Since executive functions are relevant for directing cognitive activities, emotional reactions, and external behavior, authors use parental assessments of the child's behavior in everyday situations.

Behavior problems in preschool children are caused by environmental and biological factors, and are manifested in individual differences in child characteristics, e.g., temperament, attention, and quality of care (Braslauskienė & Jacynė, 2026). A significant number of behavior problems in the preschool period are manifested in the child's ability to orient attention and partially regulate emotions, especially negative ones, e.g., anger and frustration. Thus, children perceive the behaviors of people in their environment and try to imitate them. Contemporary *media* have become an integral part of human life and have successfully

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

infiltrated everyday life (Habib et al., 2026). In the mentioned study, the consequences that media have on children's lives were identified. However, due to their age-related psychophysical limitations, children were not able to critically understand the harmful influence of the media they watch. In general, digital media have a more harmful impact on the preschool population, especially if they are not exposed to them in the presence of parents or teachers.

Investigating different components of executive functioning in the child population, authors note a correlation between children's executive functions and children's behavior problems (Griffith et al., 2026). The basic generator of their connection is the neuroanatomical interaction of the functional network of differentiated brain areas that are usually affected by perinatal damage. Also, between the mentioned functional areas there exists conceptual identity in the integration of overall behavior and the higher-order regulation of the child's executive functions — cognitive functioning, external behavior, social interaction, and emotional control. For this reason, lesions of executive functions lead to difficulties in the child's behavior. In the study (Neuman et al., 2024), the most intensive statistical dependence between inhibitory control and behavioral adaptation was established, examined through parental perceptions of behavior in the preschool period. Researchers (Ansari et al., 2026) defined a significant interdependence of executive functions, inhibitory control, emotional regulation, and internalized problems and social skills, independent of the child's gender. At the same time, it was determined that children with externalized behavior disorders manifest a lower ability of inhibition, especially when motivational processes of reward and punishment are involved; that is, more aggressive and impulsive children achieve weaker results on variables of executive functioning.

Behavior disorders in preschool children include phenomena of biological, psychological, and social processes of origin that to a certain extent negatively affect their activity (Gaybullaev et al., 2025). Some children, through their own behavior, deviate from the behavior of the majority of accepted behaviors. Therefore, it is important to timely identify deviations from usual behavior, with the aim that parents and educators prevent them, especially if they are risky and may acquire characteristics of antisocial and delinquent behavior. In the assessment of children's behavior, self-report questionnaires, observation, and interviews on specific tests are commonly used. However, given that preschool children are insufficiently cooperative and aware of their own emotions and behavior, psychological evaluation, according to the mentioned authors, also implies parental assessments of the child's behavior in order to obtain a comprehensive picture of their behavior.

Taking into account the undeniable importance of the research problem, as well as the fact that identical studies on the relationships between digital media, executive psychological functions, and internalized and externalized behavior problems of preschool children have not been conducted in the Republic of Serbia, the aim of this research is to examine the relative contribution of predictor variables of psychological self-regulation (temperament – effortful control, positive and negative emotionality, and cognitive executive functions) in predicting the criteria of internalized and externalized behavior problems in preschool children. The contribution of the examined variables was considered with control of the child's socio-demographic characteristics.

Based on theoretical analyses and previous empirical findings, two *alternative hypotheses* were formulated: it is expected that the perception of effortful control and working memory deficit is in a statistically significant relationship with internalized behavior problems in children (H1); it is assumed that the perception of effortful control and inhibition deficit is in a significant linear correlation with externalized behavior problems in the preschool population (H2).

RESEARCH METHODOLOGY

Respondents and procedure

A total of 298 respondents took part in the research, consisting of parents and preschool children attending the preschool institution "Radosno detinjstvo" in Valjevo (parent subsample N = 160, child subsample *N* = 138). The subsample of 170 parents included 53% mothers and 47% fathers. The age range of participants was from 21 to 59 years (*M* = 35.23, *SD* = 5.26). There were 170 employed parents (88.23%) and 20 unemployed (11.76%). Of these, 149 were married (85.29%), while 14.71% were divorced or unmarried. One child was reported by 45.60% of parents, two children by 39.10%, while the smallest number of parents had three or more children (5.73%). Most parents had secondary education (55.87%), higher and university education had 40.13%, 4% had primary school education, and 1% had not completed primary school. A total of 49% lived in urban areas, while 39% lived in rural areas. The average salary of employed parents was 107,000 dinars. The pertinent sample included 54.27% girls and 45.73% boys of preschool age. The age range was from 4 to 6.5 years (M = 5.70, SD = 1.45). Participation in the research was

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

voluntary and anonymous, and it was conducted in accordance with the principles of the Helsinki Declaration, by decision of the Ethics Committee for Science of the Serbian Academy of Innovation Sciences in Belgrade.

Childhood Executive Functioning Inventory (CHEXI)

The CHEXI scale (*Childhood Executive Functioning Inventory*; Thorell & Nyberg, 2008) is aimed at assessing executive functions in preschool children aged 4 years and older, and is completed by parents or educators. The instrument includes a total of 24 items distributed across four subscales: planning, inhibition, regulation, and working memory. The planning subscale consists of four statements, e.g., "Has difficulty carrying out activities that require multiple steps"; the inhibition subscale includes six statements, e.g., "Becomes overly excited when something special is about to happen"; the regulation subscale contains five statements, e.g., "Rarely can be motivated to do something he/she does not want to do"; while the working memory subscale is measured with nine statements, e.g., "Has difficulty remembering long instructions." Respondents answer using a five-point Likert-type scale (from 1 = never to 5 = almost always). A higher score indicates a greater functional deficit in executive functions. However, despite the initially established four subscales, a later conducted factor analysis extracted an original two-factor structure with two significant main factors: the inhibition factor, comprising the subscales of inhibition (1) and regulation, and the working memory factor, comprising the subscales of working memory and planning (2). The Cronbach's coefficient for the working memory factor is $\alpha = 0.80$, and for the inhibition factor $\alpha = 0.76$.

The Early Childhood Behavior Questionnaire (ECBQ)

The ECBQ questionnaire (The Early Childhood Behavior Questionnaire; Putnam et al., 2006) measures children's temperament using 12 items and includes three dimensions/factors: positive and negative emotionality and effortful control. Negative affect includes the child's fear, frustration, and sadness; positive affect includes impulsivity, sociability, and positive anticipation; and effortful control refers to inhibitory control and attentional focusing. Examples of items: for negative emotionality – "When upset, how often did your child continue crying for more than 3 minutes, even with comforting?"; for positive emotionality – "When encountering a new activity, how often did your child immediately become involved?"; and for effortful control – "When you asked your child to wait for something they wanted, such as ice cream, how often did your child wait patiently?". Respondents answer on a five-point Likert-type scale ranging from 1 to 5 (1 = never, 5 = almost always). The reliability coefficient (alpha) for the effortful control subscale was $\alpha = 0.78$, for the positive emotionality subscale $\alpha = 0.74$, and for the negative emotionality subscale $\alpha = 0.66$.

Child Behavior Checklist (CBCL)

The CBCL scale (*Child Behavior Checklist*; Achenbach & Rescorla, 2000) consists of 99 items that describe specific behaviors, emotional, and social problems characteristic of the preschool period. The parent assesses the presence and manifestation of the described behavior of their child in the past six months by responding on a three-point scale (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true). In addition, the instrument includes two dimensions of children's behavioral problems — externalized and internalized. The dimension of externalized problems includes the subscales of attention problems and aggressive behavior, e.g., "Destroys things that belong to family members or other children," while the dimension of internalized problems includes the subscales of emotional reactivity, anxiety, somatic complaints, and withdrawal, e.g., "Becomes overly upset when separated from parents." The total score is obtained by summing the ratings on all items. The reliability of the overall scale ranges from 0.78 to 0.83.

Questionnaire on the use of digital media by preschool children

For the purposes of this research, several questions were formulated regarding the child's presence in different digital media. The task of the parents was to indicate the types of electronic devices available to their child (TV, computer, tablet, smartphone, DVD, video game console) and to specify which of these the child uses. They were also asked to state the average amount of time per day the child spends using different media, the (non)existence of rules regarding media use, as well as the amount of time they consider appropriate for the child to spend using different digital media. The variable of digital media use in category I was operationalized as the amount of time children spend in front of different screens, with the following values: (0 = does not spend time in front of screen at all, 1 = spends less than 0.5 hours, 2 = from 0.5 to 1 hour). In addition, the original value of the digital media use variable ("between 1 and 2 hours") represented category II, in which children spent between 1 and 2 hours in front of

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

screens, while the final category included the values ("between 2 and 3 hours" and "more than 3 hours") of the child's presence in digital media.

Executive function tasks for children

Day–Night task

The Day–Night task (Gerstadt et al., 1994) assesses inhibition abilities in children. Using a computer, children are presented with 16 items (pictures) of day and night, where they are required, in the shortest possible time, to say aloud the word with the opposite meaning of what is shown in the picture. If a picture of the sun is shown, the child must say "night," and for a picture of the moon and stars, they should say "day." The total score is obtained by summing the child's correct responses. A correct response requires the child to follow instructions and suppress the dominant response. A higher score indicates better attention selection and inhibitory control, while lower scores indicate weaker inhibitory control and less efficient selective attention.

Backward Digit Span (BDS)

The BDS assesses verbal working memory, i.e., the evaluation of the child's ability to recall numbers in reverse order. From a list of random numbers ranging from 2 to 8, marked with a (+) or (–) sign in front of the numbers, the child is required to remember all the numbers that are read to them and then repeat them in reverse order. After a practice trial, the task begins with a span of two digits, where each span includes two attempts, i.e., two different sequences with the same number of elements. If the child successfully repeats the sequence in reverse order, the number span gradually increases until the child successfully repeats both sequences of a given length. At the moment when it becomes difficult for the child to repeat the given sequence, the task is terminated. The total score indicates the longest sequence of numbers correctly repeated in reverse order.

Verbal fluency

Verbal fluency – a measure of executive function development – is tested with a task in which the preschool child, within a time limit of 2 minutes for each category, is required to name as many fruits and animals as possible. The total score is obtained by summing the named words across both categories. It is not necessary for the child to name only specific types within a category; for example, both the word "bird" and the word "seagull" are accepted as correct, even though a seagull is a type of bird. A higher number of named words indicates a greater ability for easy and rapid task performance.

RESULTS

Descriptive statistics of the examined variables

An inspection of Table 1 indicates that all children who have access to a TV also use it. After TV, slightly more than half of the children used a smartphone and tablet, about half of them used a computer, while DVD devices and video game consoles were the least used. Considering gender differences in the use of specific digital media, it is observed that children of both sexes use TV in almost equal percentages. Compared to boys, girls used tablets and smartphones to a somewhat greater extent. However, boys dominated in the use of computers, although that difference is not large, as well as in the use of DVD devices, where the disproportionality is greater, and video game consoles, which girls use minimally.

Table 1. Percentage of digital media use by preschool children by gender

Type of digital media	Boys	Girls	Total %
TV	96.12	96.80	96.92
Desktop or laptop computer	52.16	47.83	50.16
Tablet	51.06	56.14	53.28
Smartphone	52.73	60.36	50.80
DVD	29.95	19.83	21.75
Video game console	28.52	2.60	20.36

In Table 2, it is observed that the maximum percentage of children spend between 1 and 2 hours per day in front of screens. A somewhat smaller percentage spend between half an hour and 1 hour per day using media, as well as those who are exposed to

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

digital media between 2 and 3 hours per day, while the minimum percentage of children spend more than 3 hours in front of screens or do not spend any time using digital media at all.

Table 2. Average time a child spends daily with various digital media

Aritmetička sredina deteta dnevno provodi uz svakodnevne različite elektronske medije	% preschool children
Does not spend time in front of screen at all	1.12
Less than 30 min	5.60
Between 1 and 2 h	48.56
Between 2 and 3 h	35.25
More than 3 h	9.47

Table 3 shows the basic descriptive data that were processed using the IBM SPSS Statistic 25 program.

Table 3. Descriptive statistical parameters of the examined variables

Variable	*M*	*SD*	*Range*	*Sk*	*Ku*
Executive functions:	1.78	0.47	1.00-3.40	0.26	0.83
Working memory	2.42	0.70	1.00-3.96	0.55	0.31
Inhibition					
Temperament:					
Negative emotionality	2.20	0.36	1.30-2.98	0.47	0.66
Positive emotionality	3.51	0.52	2.30-4.36	0.75	0.92
Child's behavior:					
Internalized	0.15	0.18	0-0.58	0.17	0.83
Externalized	0.19	0.17	0-89	0.54	0.36
Externalized:					
Task	14.46	2.37	3-20	0.15	0.75
"Day-night"	2.40	0.89	1-5	0.65	0.98
Backward digit span					
Verbal fluency:	18.05	5.00	6-32	0-29	0.65
Animals	7.99	2.30	4-20	0.36	0.22
Fruits					

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

The analysis of measures of distribution shape in Table 1 showed that the examined variables do not deviate statistically significantly from a normal distribution. The values of skewness and kurtosis ranged within acceptable limits of ±2 (Muthén et al., 2025), which indicates a Gaussian distribution of results in the population and justifies the use of parametric statistical procedures.

Correlations between the examined variables

Before conducting the results of the hierarchical regression analysis, that is, determining the factors that significantly contribute to explaining behavior problems in preschool children, the correlations of the examined variables were analyzed (Table 4).

Table 4. Correlation of variables included in hierarchical regression analysis

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1.Age	–	0.05	0.02	0.18*	0.30**	0.01	0.21*	0.32**	0.14*	0.20*	0.03	0.10
2.Gender		–	0.10	0.05	0.11	0.03	0.02	0.20*	0.04	0.05	0.08	0.07
3.Effortful control			–	-0.32	0.20*	-0.05	-0.01	-0.03	-0.19*	-0.09	0.33**	0.30**
4.Negative emotionality				–	0.10	0.09	0.03	0.20*	0.03	0.02	0.21*	0.05
5.Positive emotionality					–	0.03	0.01	0.19*	0.02	0.05	0.10	0.04
6."Day-Night" Task						–	0.22*	0.31**	0.05	0.03	0.01	0.20*
7.Backward digit span							–	0.30	-0.19*	-0.35	-0.18*	-0.17*
8.Verbal fluency								–	0.08	-0.02	-0.05	0.03
9.Inhibition deficit									–	0.80**	0.52**	0.58**
10.Memory deficit										–	*0.29***	*0.37***
11. Internalized problems											–	
12. Externalized problems												–

Annotation. $**p \leq 0.01$.* $p \leq 0.05$.

By examining the correlation matrix, it was observed that the demographic variable age statistically significantly correlates with most other variables, but with low intensity, while the variable gender is in a significant linear relationship only with the backward digit span variable. Among the three temperament variables, the dimension of effortful control is in a negative relationship with internalized and externalized behavior problems, as well as with the dimension of negative emotionality, while it shows a positive statistical relationship with the dimension of positive emotionality. Also, objective and subjective variables of executive functions are linearly and significantly related, as are the two variables of behavior problems. In addition, the subjective measure of inhibition is in a moderately high significant positive interdependence with both internalized and externalized behavior problems. Likewise, the subjective variable of executive functions (working memory deficit) is significantly positively associated with the dimensions of internalized and externalized behavior problems. However, no statistically significant relationship was found between digital media use and internalized and externalized behavior problems.

In the conducted hierarchical regression analysis in three steps/models (Table 5), it was examined to what extent predictors of executive functions explain the variance of internalized behavior problems in children. In the first step of the model, the variables gender and age were included; in the second step, temperament dimensions — positive and negative emotionality and effortful control; and in the third step, predictor variables of executive functions — the Day–Night task, backward digit span, and the

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

verbal fluency task — as well as inhibition deficit and working memory deficit. No multicollinearity was identified in the regression (VIF ≤ 2). The obtained statistical indicators of collinearity suggest that problems of singularity and multicollinearity are not present. The corresponding tolerance indices (TOL) ranged from 0.58 to 0.86, and the variance inflation factors (VIF) ranged from 1.10 to 1.46. This indicates that the problem of multicollinearity is not present, since the estimation of the individual effect of each independent variable on the dependent variable is realistic and acceptable (Peter et al., 2023).

Table 5. Regression model for the criterion of internalizing behavior problems in children

Predictor	*B* (*SE*)	R^2	ΔR^2
Model 1:			
Gender	-0.10 (0.05)	0.00	0.00
Age	0.05 (0.03)		
Model 2:			
Gender	0.09 (0.06)		
Age	0.03 (0.02)		
Effortful control	-0.30**(0.04)	9.12	9.12
Negative emotionality	0.09 (0.01)		
Positive emotionality	0.10 (0.05)		
Model 3:			
Gender	0.02 (0.07)		
Age	0.05 (0.02)		
Effortful control	-0.27**(0.06)		
Negative emotionality	0.10 (0.03)		
Positive emotionality	0.06 (0.01)		
"Day-Night" Task	0.09 (0.02)		
Backward digit span	0.03 (0.04)		
Verbal fluency	0.07 (0.07)		
Working memory deficit	0.04 (0.05)		
Inhibition deficit	0.17* (0.02)		
	0.48**()	19.98	19.98

Legenda. β = standardni parcijalni regresioni koeficijenti (beta-ponderi); SE = standardna greška β koeficijenta; R^2 = koeficijent multiple determinacije; ΔR^2 = doprinos pojedine grupe prediktora objašnjenoj varijansi; *$p \leq 0.05$; **$p \leq 0.01$.

In the first regression model, the entered demographic variables were not statistically significant, i.e., they did not predict the criterion of internalized behavior problems in children. In the second model, the added temperament variables – effortful control, positive and negative emotionality – explained 9.12% of the variance of the criterion, with only the negative predictor, the dimension of effortful control (β = -0.30, $p \leq 0.01$), having a statistically significant effect on the criterion variable. This means that children with a lower level of the dimension of effortful control had more internalized problems. By introducing executive function variables in the third model, the percentage of explained variance significantly increased by 10.86%. The negative predictor effortful control (β = -0.27, $p \leq 0.01$) and the positive predictors working memory deficit (β = 0.17, $p \leq 0.05$) and inhibition deficit (β = 0.48, $p \leq 0.01$) indicate that children with a lower level of effortful control and a higher inhibition deficit had more internalized problems. In addition, the combination of all analyzed predictors in the regression model statistically significantly explained 19.98% of the total variability of the dependent (criterion) variable, while the remaining approximately 80% is the result of other unexamined predictors, measurement errors, and random variations. Thus, the results indicate that the dimension of effortful control and verbal fluency (inhibition deficit) have a moderate contribution in explaining internalized behavior problems in children, leading to the conclusion that the tested alternative hypothesis H1 is confirmed, indicating the complexity of the relationships between the examined constructs.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

In the first step of the model, demographic variables (gender and age) in Table 6 explained 0.1% of the total variance of the criterion of externalized behavior problems in children, which was not statistically significant. By introducing temperament dimensions in the second model, 10.05% of the variance of externalized behavior problems in children was explained.

Table 6. Regresioni model za kriterijum eksternalizovanih problema u ponašanju dece

Prediktor	*B* (*SE*)	R^2	ΔR^2
Model 1:			
Gender	-0.10 (0.03)	0.02	0.02
Age	0.05 (0.06)		
Model 2:			
Gender	0.02 (0.01)		
Age	0.09 (0.04)		
Effortful control	0.30** (0.02)		
Negative emotionality	0.05 (0.07)		
Positive emotionality	0.12 (0.03)		
		10.36	10.36
Model 3:			
Gender	0.06 (0.01)		
Age	0.10 (0.05)		
Effortful control	0.33** (0.02)		
Negative emotionality	0.05 (0.04)		
Positive emotionality	0.03 (0.06)		
"Day-Night" Task	0.11 (0.07)		
Backward digit span	0.10 (0.04)		
Verbal fluency	0.03 (0.02)		
Working memory deficit	0.19* ()		
Inhibition deficit	0.50** ()		
		28.52	*18.16*

Legend. β = standard partial regression coefficients (beta weights); SE = standard error of the β coefficient; R^2 = coefficient of multiple determination; ΔR^2 = contribution of each group of predictors to the explained variance; *$p \leq 0.05$; **$p \leq 0.01$.

The demographic variables in the first regression model were not significant for predicting the criterion of externalized behavior problems in children. The included temperament variables – effortful control, positive and negative emotionality – in the second model explained 10.36% of the variance of the criterion, with the variable effortful control manifesting (β = -0.30, $p \leq 0.01$) as a significant predictor of externalized problems in children, suggesting that children with lower scores on the dimension of effortful control had more externalized problems. After adding executive function variables in the third model, effortful control (β = -0.33, $p \leq 0.01$), working memory deficit (β = 0.19, $p \leq 0.05$), and inhibition deficit (β = 0.50, $p \leq 0.01$), the percentage of explained variance of the criterion variable significantly increased by 18.16%. This indicates that children with a lower level of effortful control, as well as those with a higher level of inhibition deficit, exhibited more externalized problems.

Overall, all predictors in the regression model statistically significantly explained 28.52% of the total variance of the criterion, while the remaining approximately 71.48% is the result of other unexamined predictors, measurement errors, and random variations. The obtained findings confirmed the tested alternative hypothesis H2, indicating the complexity of the relationships between the examined constructs and the overall set of predictor variables in the regression model, which is consistent with the complex nature of the studied psychological phenomena.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

DISCUSSION

The analysis of descriptive statistics in this study showed that all preschool children used television if it was available to them. Furthermore, more than 50% of children of both sexes used a smartphone and tablet, about one-half used a computer, while DVD devices and video game consoles were minimally used. In comparison with boys, girls used tablets and smartphones slightly more, while boys used computers to a greater extent, although with a minimal difference, as well as DVD devices where the imbalance is greater, and video game consoles, which girls used to a lesser extent. The obtained distribution of results suggests that the largest number of children spend between 1 and 2 hours daily in front of digital media, while the smallest number of children spend more than 3 hours in front of screens or do not use them at all.

The correlation of executive function variables – task performance in preschool children – in this study was assessed through parental reports. The obtained Pearson correlation coefficients identified a statistically significant negative linear relationship between working memory deficit and the backward digit span task, indicating that higher parental evaluations of working memory deficit correspond to children actually demonstrating greater difficulties in recalling numbers in reverse order. However, this relationship was not found for the inhibition variable; that is, the "Day–Night" task did not show a relevant association with children's executive functions.

Researchers (Amiri et al., 2022) consider that executive function tasks refer to procedures carried out in a relatively structured environment over a short period of time, whereas questionnaire variables explain children's behavior in the real world and are based on the perception of the child's behavior over a longer time span. In addition, simple tasks include differentiated aspects of executive functioning, whereby low or even zero correlations obtained do not always represent a limitation. Therefore, questionnaire-based assessments primarily include social and emotional components of executive functioning, while simple tasks are more strongly oriented toward the cognitive aspects of the dimension (DeCamp et al., 2025). Therefore, the applied variables of executive functioning should be analyzed as elements that interactively complement each other, providing a comprehensive structure of the psychological characteristics of functioning in preschool children.

In the conducted hierarchical regression analysis with internalized behavior problems as the criterion variable, the first step did not prove to be statistically significant. However, in the second step, by adding temperament dimensions, 10.05% of the variance of externalized behavior problems in children was explained, with the dimension of effortful control emerging as a significant predictor. By adding executive function variables in the third step, the percentage of explained variance increased by 22.3%, with inhibition deficit identified as a relevant predictor. The temperament dimension of effortful control is defined as the ability of voluntary inhibition, initiation and regulation of attention and behavior, as well as executive functions of planning, error detection, and the incorporation of information relevant for a given behavior (Rothbart et al., 2026). According to the results of studies (Byambaa et al., 2026; Rothbart et al., 2026), inhibitory control and attentional focusing are significant predictors during the adaptation of behavior and emotions in children. The obtained significance of the predictor variable inhibition for the criterion of externalized behavior problems is consistent with research (Høstmælingen et al., 2026; Griffith et al., 2026), in which a correlation between inhibition and externalized problems in preschool children was established, with the conclusion that the less developed inhibition is in children, the higher the level of their aggressive behavior. The constructs of effortful control and inhibition in cognitive psychology overlap to a certain extent, although one is predominantly understood as an aspect of the child's personality functioning that is relatively stable, while the other refers to an aspect of executive functioning integrating different forms of inhibition. Thus, both indicators imply regulation and the ability of personal direction aimed at more efficient adaptation to environmental demands and the development of appropriate social competencies.

Based on the results of this research, it can be concluded that effortful control, as a dimension of temperament, inhibition, and executive functioning, is relevant for the prevention of behavior problems in the preschool population. The obtained finding is especially important considering that some behavior problems in preschool children are statistically related to inhibition already in infancy (Mason & Goldstein, 2026). Therefore, it is necessary to timely perceive and minimize the identified deficits in order to motivate the most efficient child development.

In interpreting the obtained findings, certain methodological limitations should be taken into account, and caution is required when drawing conclusions. First, this transversal study included a relatively small sample of participants; therefore, studies on larger samples are necessary. Furthermore, parents completed the instruments at home and did not have the opportunity to request additional clarification from the researchers for items that were unclear to them. Also, most parents, when describing their child

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

to others, due to subjectivity, tended to present their child in a more favorable light, fearing they might be evaluated as poor parents; therefore, due to socially desirable responses, caution is also needed in interpreting certain data. In addition, limitations relate to the assessment of complex executive functions, specifically whether the used indicators were valid representatives of executive functions, and whether the use of other instruments might have yielded statistically significant results. Finally, during individual testing, there is a possibility that in certain situations the examiner may have been unintentionally suggestive, which could have influenced the child's performance. It should also be kept in mind that the child was exposed to an unfamiliar situation, and due to shyness or fear of performing tasks in front of an unfamiliar examiner, the efficiency of their performance may have been reduced.

CONCLUSION

Based on the conducted research, it is concluded that the use of digital media, temperament, emotional regulation, and cognitive executive functions, i.e., psychological self-regulation, have a statistically significant effect on behavioral (internalized and externalized) problems in preschool children. The demographic variable age shows a low-intensity significant correlation with most other variables, while the variable gender is in a relevant relationship only with the backward digit span variable. Among temperament variables, the dimension of effortful control is in a negative relationship with internalized and externalized behavior problems, as well as with the dimension of negative emotionality, while it shows a positive statistical relationship with the dimension of positive emotionality. Also, objective and subjective variables of executive functions are statistically related, as are the two variables of behavior problems. In addition, the subjective measure of inhibition is in a moderately high significant positive interdependence with both internalized and externalized behavior problems. Likewise, the subjective variable of executive functions (working memory deficit) is significantly positively associated with the dimensions of internalized and externalized behavior problems.

The regression results at a single time point show that externalized and internalized behavior problems are in a statistically significant positive correlation with the temperament dimension – effortful control, and both factors of executive functions (inhibition deficit and working memory deficit), suggesting that these predictors make a relevant contribution to the prediction of behavior problems. That is, in children with a lower level of effortful control and a higher inhibition deficit, there is a greater likelihood of the development of behavior problems. Overall, the obtained findings in this transversal study suggest the relevance of digital media use, psychological self-regulation, and cognitive executive functions in predicting internalized and externalized behavior problems in the preschool population, providing a basis for future research with a longitudinal design aimed at developing preventive programs for preschool children.

REFERENCES

1. Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA preschool-age forms and profiles.* Vermont: University of Vermont, Research Center for Children, Youth and Families.
2. Amiri, M., S. A. M. Fatemi, S. Jabbari, A. Nesayan, & Farmani, P. 2022. The Effectiveness of Mindful Parenting Training on Attention Deficit/Hyperactivity Disorder Symptoms in Male Students. *European Review for Medical and Pharmacological Sciences 26*(1), 138–143. https://doi.org/10.26355/eurrev_202201_27759.
3. Ansari, S. I., Martin, L. A., Guest, K. C., & Kana, R. K. (2026). *Executive Functioning as a Mediator Between Social Skills and Psychopathology: The Moderating Role of Autism Diagnosis.* Birmingham: Department of Psychology, University of Alabama, USA.
4. Braslauskienė, R., & Jacynė, R. (2026). Developing creativity in preschool children with behavioural and/or emotional difficulties: experiences of teachers. *Creativity Studies*, *19*(1), 66–79. https://doi.org/10.3846/cs.2026.22895
5. Byambaa, A., Chong, K. H., Jones, R. A., & Okely, A. D. (2026). Compositional analysis of the associations between 24-hour movement behaviours, motor skills, and executive function in Mongolian preschool children. *Journal of Sports Sciences*, *44*(2), 193–205. https://doi.org/10.1080/02640414.2025.2574192
6. DeCamp, C., Alfonso, S. V., & Lonigan, C. J. (2025). Performance-and report-based measures of executive function as predictors of childrens academic skills. *Neuropsychology, 39*(3), 214–223. https://doi.org/10.1037/neu0000992

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 05 May 2026
DOI: 10.47191/ijcsrr/V9-i5-60, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

7. Gaybullaev, O. M., Bozorov, M. J., Sadretdinova, E. A., & Ismailova, E. F. (2025). Diagnosis of Preschool Children with Autistic Spectrum Disorders: Problems and Prospects, *Proceedings, 1*, 226–235. https://doi.org/10.3897/ap.11.e0225
8. Gerstadt, C. L., Hong, Y. J., & Diamond, A. (1994). The relationship between cognition and action: Performance of children 3½ - 7 years old on Stroop-like day-night test. *Cognition, 53*, 129–153.
9. Griffith, S. F., Vaclavik, D., Hart, K. C., Casanova, S. M., Goodman, A. C., & Mac-Nivev, A. C. (2026). Leveraging a parenting intervention to support healthy media use in U.S. preschoolers with externalizing behavior: A pilot randomized trial. *Journal of Children and Media, 20*(1), 111–131. https://doi.org/10.1080/17482798.2025.2511716
10. Habib, H., Ikram, H., Abbas, L., Ali, M., Iqbal, U., & Said, M. (2026). Association between Social Media Addiction, Aggression, and Self-Centeredness among Children in Peshawar. *Policy Journal of Social Science Review*, *4*(2), 39–43. Retrieved from https://www.policyjssr.com/index.php/PJSSR/article/view/736
11. Høstmælingen, A., Bjørnebekk, G., Olseth, A. R., Ramer, N. E., Colder, C. R., & Sørlie, M.-A. (2026). Externalizing problems and reward–punishment sensitivity: Testing within-person reciprocal associations in an elementary school sample—A replication of Ramer et al. (2024). *DevelopmentalPsychology*. Advance online publication. https://doi.org/10.1037/dev0002158
12. Mason, G. M., & Goldstein, M. H. (2026). Prior social feedback creates residual differences in infant attention. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *381* (1943), 20240364. https://doi.org/10.1098/rstb.2024.0364
13. Muthén, B., Asparouhov, T., & Keijsers, L. (2025). Dynamic structural equation modeling with cycles. *Structural Equation Modeling: A Multidisciplinary Journal*, *32*, 264–286. https://doi.org/10.1080/10705511.2024.2406510
14. Neuman, K. J., Hayes, T., Comer, J. S., & Bagner, D. M. (2024). Reliability and validity of the therapy attitude inventory in caregivers receiving internet-delivered parent child interaction therapy for young children with developmental delay. *Journal of Psychopathology and Behavioral Assessment*, *46*(1), 25–34. https://doi.org/10.1007/s10862-023-10104-1
15. Peter, S. N., van Rossum, M. D., Grassberger, C., & Brian Hobbs, B. (2023). Dosimetric and Other Complex Analyses in Radiation Oncology. *International Journal of Radiation Oncology - Biology – Physics, 117*(5), 1054–1062. https://doi.org/10.1016/j.ijrobp.2023.06.015
16. Putnam, S. P., Gartstein, M. A., & Rothbar, M. K. (2006). Measurement of Fine-Grained Aspects of Toddler Temperament: The Early Childhood Behavior Questionnaire. *Infant Behavior & Development, 29*(3), 386–401. doi:10.1016/j.infbeh.2006.01.004.
17. Rothbart, By, Ahadi, M. K., Stephan A., & David E. (2026). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78*(1),122–135.
18. Sun, W. (2026). The Influence of Parenting Styles on Aggressive Behavior in Young Children. *Journal of Education, Humanities and Social Sciences*, *62*, 53–59. https://doi.org/10.54097/3a8weq45
19. Syafii, H., Azhari, H., Alaldaya, R. (2026). Comparative Study of Conventional and Montessori Learning Methods on the Cognitive Development of Preschool Children. (2026). *Journal of Early Childhood Education Perspectives*, *2*(1), 53-64. https://doi.org/10.64850/jecep.v2i1.173
20. Thorell, L. B., & Nyberg, L. (2008). The Childhood Executive Functioning Inventory (CHEXI): A New Rating Instrument for Parents and Teachers. *Developmental Neuropsychology, 33*(4), 536–552. https://doi.org/10.1080/87565640802101516

Cite this Article: ivanović, M., ĆIosić, I. (2026). Predictors of Behavior Problems in Preschool Children: The Role of Psychological Self-Regulation and Cognitive Executive Functions. International Journal of Current Science Research and Review, 9(5), pp. 2876-2886. DOI: https://doi.org/10.47191/ijcsrr/V9-i5-60