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Patterns of impulsivity and inhibitory control in children: A parent-reported study

Vloga impulzivnega vedenja in inhibitornega nadzora pri dobrem počutju otrok

Abstract

Impulsive behavior and inhibitory control are essential aspects of childhood development, shaping children's ability to manage their actions and emotions in social and learning environments. This paper examines these behaviors in a sample of 116 elementary school-aged children and explores the influence of gender and age on their expression. Data were collected through a parent-reported questionnaire that assessed 13 items of impulsivity and 12 items of inhibitory control. Descriptive analysis revealed that both impulsive tendencies and inhibitory control were generally stable across the sample, with most children exhibiting moderate levels of each. Minor gender differences were found in certain behaviors, such as "Rushing into activities" and "Having a hard time following directions," although these differences were not statistically significant. Similarly, age-related variations did not show statistically significant differences in either indicators of impulsivity or inhibitory control. The contribution of this study lies in providing valuable insights into behavioral patterns and highlighting the need for further research into environmental factors that may influence children's behavioral development, supporting the creation of targeted educational strategies.

Keywords: impulsivity, inhibitory control, child development, behavioral patterns.

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Povzetek

Impulzivno vedenje in inhibitorni nadzor sta bistvena vidika otrokovega razvoja, ki oblikujeta otrokovo sposobnost obvladovanja vedenj in čustev v socialnem in učnem okolju. Prispevek preučuje ta vedenja na vzorcu 116. otrok prvega vzgojno-izobraževalnega obdobja ter analizira vpliv spola in starosti na njuno izražanje. Podatki so bili zbrani s pomočjo vprašalnika za starše, ki je zajemal 13 postavk impulzivnosti in 12 postavk inhibitornega nadzora. Deskriptivna analiza je pokazala, da sta bila tako impulzivna naravnanost in inhibitorni nadzor na splošno stabilna v celotnem vzorcu, pri čemer je večina otrok kazala zmerno raven obeh. Manjše razlike med spoloma so bile ugotovljene pri določenih postavkah, kot sta »Hiter v dejavnostih« in »Težko sledi navodilom«, vendar te razlike niso bile statistično značilne. Podobno tudi glede starosti niso bile ugotovljene statistično značilne razlike v postavkah impulzivnosti in inhibitornega nadzora. Raziskava prispeva pomemben vpogled v vzorce vedenjske regulacije pri otrocih in poudarja potrebo po nadaljnjem raziskovanju okoljskih dejavnikov, ki lahko vplivajo na razvoj teh vedenj, s čimer bi lahko podprli oblikovanje ciljno usmerjenih vzgojno-izobraževalnih strategij.

Ključne besede: impulzivnost, inhibitorni nadzor, otrokov razvoj, vedenjski vzorci.

1. Introduction

Managing thoughts, emotions, and actions is a fundamental developmental task in childhood. Within this broad domain of self-regulation, researchers distinguish between emotion regulation, referring to processes that monitor and modify emotional experience, and behavioural regulation, which involves controlling actions and impulses in accordance with situational demands (Gross, 2015; Eisenberg & Spinrad, 2004). Two essential but distinct aspects of behavioural regulation are inhibitory control and impulsivity.

Inhibitory control is an executive function that enables children to suppress automatic or dominant responses in favour of more adaptive, goal-directed behaviour (Posner & Rothbart, 2000; Diamond, 2013). It supports behaviours such as pausing before acting, waiting one's turn, following instructions, and modulating motor activity. Empirical work using the stop-signal paradigm demonstrates that the ability to inhibit prepotent responses develops substantially in the early school years and shows relatively limited change after approximately Grade 2 (Schachar & Logan, 1990). Additional longitudinal work in younger children indicates that inhibitory control increases across the preschool years, with developmental gains decelerating over time, and that children differ meaningfully in these trajectories (Geeraerts et al., 2021).

Impulsivity, by contrast, reflects the tendency to act rapidly and with limited forethought, often leading to reactive or poorly modulated behaviour (Mischel et al., 1989). Experimental work further shows that individuals who score higher on impulsivity display slower and less efficient inhibition of dominant responses, underscoring that impulsivity and inhibitory control, while related, represent distinct mechanisms of behavioural regulation (Logan et al., 1997). Factor-analytic evidence further supports the view that inhibitory control forms a core component of impulsivity-related behaviour in school-aged children (Avila et al., 2004). Additional findings show that effortful control and impulsivity make unique contributions to children's adjustment, reinforcing the conceptual distinction between these components of behavioural regulation (Eisenberg et al., 2004).

Longitudinal evidence demonstrates that impulsivity in early school-age children shows moderate stability over time and is meaningfully related to later adjustment. In the study by Olson et al. (1999), children who exhibited higher impulsivity at ages 6 and 8 were consistently rated by parents and teachers as more inattentive, overactive, and impulsive during middle childhood, and these early indicators predicted externalising behaviours into adolescence. Similar longitudinal work grounded in temperament theory shows that early individual differences in inhibitory control are also relatively stable across the toddler and preschool years and make a significant contribution to children's emerging internalisation of rules and standards (Kochanska et al., 1996). Together, these findings underscore the developmental significance of both impulsivity and inhibitory control as relatively enduring behavioural tendencies with long-term implications for children's socio-emotional and behavioural adjustment.

The early school years represent a critical developmental period during which children's executive attention and behavioural regulation undergo refinement (Blair, 2003). As inhibitory control strengthens and impulsive tendencies gradually diminish, individual differences in these skills remain pronounced. Such differences have important implications for children's social relationships, classroom engagement, and learning, as difficulties in behavioural regulation are frequently associated with externalising behaviours and academic challenges (Meyer et al., 2018; Winstanley et al., 2006). Moreover, children may display varying levels of inhibition and impulsivity depending on situational demands: for example, risky, novel, or emotionally charged contexts can either exacerbate impulsive responding or elicit heightened caution and regulatory effort (Frankenhuis et al., 2016; Wilson & Daly, 2006). Everyday behavioural studies similarly indicate that children with stronger inhibitory control show more effective self-regulation in routine contexts, underscoring the broad relevance of inhibitory control for adaptive behaviour (Tan & Holub, 2011).

Gender- and age-related differences have also been documented, though findings remain mixed. Some studies report that girls demonstrate stronger inhibitory control and lower impulsivity, whereas boys may show higher levels of undercontrolled behaviour (Eisenberg & Spinrad, 2004). Improvements in regulatory abilities with age are generally expected, although the magnitude and timing of such changes vary across individuals and contexts (Alavi et al., 2019; MacDonald et al., 2013; Ikeda et al., 2014).

Given these considerations, examining patterns of impulsivity and inhibitory control in childhood—and how they vary across demographic groups—provides meaningful insight into children's emerging self-regulatory capacities. This study investigates these two constructs in a sample of elementary school--aged children using parent-reported assessments of 13 impulsivity items and 12 inhibitory control items. The aim is to describe behavioural patterns and explore potential gender- and age-related differences. By focusing specifically on these core components of behavioural regulation, the study contributes to a more differentiated understanding of early regulatory development and offers evidence relevant to educational and developmental support.

2. Methodology

The study employed a quantitative research design to examine patterns of impulsive behavior and inhibitory control in children. These two components of behavioral regulation play an important role in children's functioning in social and learning contexts, as they influence how effectively children manage actions, follow instructions, and adapt to situational demands. Understanding these patterns is therefore essential for describing children's self-regulatory capacities.

The primary aim of this research was to explore how impulsive tendencies and inhibitory control manifest in everyday behavior and to determine whether these behaviors vary according to children's gender and age. By focusing on these specific regulatory components, the study contributes to a clearer characterization of individual differences in self-regulation and offers insights that may support the development of educational approaches sensitive to children's behavioral needs.

2.1. Participants

This research examined impulsive behavior and inhibitory control in children, with data collected from their parents. The sample comprised 116 Slovenian parents, with an average age of 35.30 years (SD = 4.50). The majority of participants were female (71.60%), and 56.00% had completed vocational or secondary

education, while 30.20% held higher education degrees. Most families had two children (50.90%), with smaller proportions having one child (24.10%) or three or more children (25.00%).

The children in the sample were aged between 5.10 and 8.40 years, with an average age of 7.20 years (SD = 0.70). Boys accounted for 59.50% of the sample, while girls made up 40.50%. These age and gender demographics were central to analyzing patterns of impulsivity and inhibitory control.For the analysis of age-related differences, children were divided into two groups using a cut-off at 7 years. Children aged 7 years or younger were categorized as the younger group (n = 46), whereas children older than 7 years were categorized as the older group (n = 70).

2.2. Measures

Children's impulsivity and inhibitory control were assessed using selected items derived from the *Children's Behavior Questionnaire* (CBQ; Rothbart et al., 2001), a validated parent-report instrument designed to measure temperament-related behavioral tendencies. The original CBQ includes several subscales related to regulatory and reactive behaviors; for the purposes of this study, items most closely aligned with impulsivity and inhibitory control were selected.

The final instrument included 13 items reflecting impulsivity and 12 items reflecting inhibitory control, each rated on a 7-point Likert scale (1 = not at all; 7 = very much). Item labels were shortened for analytical clarity and are presented in Tables 1 and 2. Minor wording adaptations were made to ensure age-appropriate phrasing and clarity for parents while preserving the conceptual meaning of the original CBQ items.

Internal consistency was assessed for both item sets. Cronbach's alpha for the impulsivity items was $\alpha = 0.57$, indicating acceptable-to-moderate reliability, while the inhibitory control items showed lower internal consistency with $\alpha = 0.31$. These values are consistent with reports that shorter item groups adapted from broader temperament scales may yield reduced reliability when used independently.

Table 1

Impulsivity items and short names.

Item	Short name
"Usually rushes into an activity without thinking about it."	Rushes activity
"Sometimes interrupts others when they are speaking."	Interrupts others
"Decides what s/he wants very quickly and goes after it."	Decides quickly
"Often rushes into new situations."	Rushes situations
"Takes a long time in approaching new situations."	Slow approach
"Usually stops and thinks things over before deciding to do something."	Thinks over
"Is slow and unhurried in deciding what to do next."	Unhurried decision
"Tends to say the first thing that comes to mind, without stopping to think about it."	Speaks impulsively
"When eager to go outside, sometimes rushes out without putting on the right clothes."	Rushes outside
"Approaches slowly places where s/he might hurt her/himself."	Cautious approach
"When s/he sees a toy or game s/he wants, is eager to have it right then."	Wants immediately
"Is among the last children to try out a new activity."	Last to try
"Is 'slow to warm up' to others."	Slow socializer

Table 2

Inhibitory control items and short names.

Item	Short name
"Can lower his/her voice when asked to do so."	Controls voice
"Has a hard time following instructions."	Instruction struggle
"Prepares for trips and outings by planning things s/he will need."	Plans ahead
"Can wait before entering into new activities if s/he is asked to."	Waits to enter
"Has difficulty waiting in line for something."	Difficulty waiting
"Has trouble sitting still when s/he is told to (at movies, church, etc.)."	Restless sitting
"Is able to resist laughing or smiling when it isn't appropriate."	Resists laughing
"Is good at following instructions."	Follows instructions

Item	Short name
"Approaches places s/he has been told are dangerous slowly and cautiously."	Cautious danger
"Is not very careful and cautious in crossing streets."	Careless crossing
"Can easily stop an activity when s/he is told 'no'."	Stops easily
"Is usually able to resist temptation when told s/he is not supposed to do something."	Resists temptation

2.3. Data collection

Parents were asked to complete a questionnaire designed to assess their child's impulsivity and inhibitory control. The questionnaire comprised items categorized into two primary behavioral constructs, with each item rated on a 7-point Likert scale. Parents were instructed to rate how characteristic each behavior was for their child. To support consistent interpretation, they were asked to base their responses on their child's recent behavior (over the past two weeks) in everyday routines at home and in familiar social contexts.

2.4. Data analysis

The collected data were entered and analyzed using SPSS statistical software. Normality was examined within groups. Since the Shapiro–Wilk test indicated that all variables were non-normally distributed, non-parametric statistical methods were employed. Mann-Whitney U tests were conducted to examine differences in impulsivity and inhibitory control between boys and girls, as well as to assess how age influenced these behaviors, providing insights into potential gender- and age-based variations.

3. Results

In presenting the findings, we begin by focusing on the impulsivity and inhibitory control behaviors observed in children. Descriptive statistics illustrate the distribution of responses across these two behavioral constructs, highlighting patterns as reported by parents. We then present the results of the analysis regarding gender and age differences, exploring whether significant variations exist in these behaviors.

Table 3
Descriptive statistics for impulsivity items.

Item	Mean	SD	Min	Max	Skewness	Kurtosis
Rushes activity	3.93	1.672	1	7	-0.139	-1.048
Interrupts others	4.86	1.376	1	7	-0.766	0.288
Decides quickly	4.86	1.338	1	7	-0.763	-0.200
Rushes situations	4.34	1.516	1	7	-0.590	-0.810
Slow approach	3.29	1.577	1	7	0.599	-0.852
Thinks over	4.22	1.592	1	7	-0.256	-0.920
Unhurried decision	3.65	1.638	1	7	0.127	-1.202
Speaks impulsively	3.74	1.621	1	7	0.043	-1.226
Rushes outside	4.49	1.752	1	7	-0.390	-1.056
Cautious approach	5.04	1.665	1	7	-0.944	0.116
Wants immediately	3.72	1.624	1	7	0.309	-1.116
Last to try	2.88	1.556	1	7	0.853	-0.003
Slow socializer	2.99	1.596	1	7	0.850	-0.107

Table 3 shows notable variation in the observed behaviors. “Cautious approach” (M = 5.04, SD = 1.67) had the highest mean score, indicating that many children were reported to approach potentially dangerous situations cautiously, which reflects a more controlled and less impulsive behavior. This stands out from the other items, as it is not strictly related to impulsivity but rather suggests a tendency toward cautiousness.

Among the more impulsive behaviors, “Interrupts others” (M = 4.86, SD = 1.38) and “Decides quickly” (M = 4.86, SD = 1.34) had the highest scores, indicating frequent impulsive tendencies in these areas. “Rushes outside” (M = 4.49, SD = 1.75) and “Rushes situations” (M = 4.34, SD = 1.52) also displayed relatively high mean scores, suggesting these behaviors were commonly observed.

On the other hand, the lowest mean scores were found for “Last to try” (M = 2.88, SD = 1.56), which refers to children being among the last to try out a new activity, and “Slow socializer” (M = 2.99, SD = 1.60), which describes children who

are slow to warm up to others. These behaviors were less frequently observed in the sample. Similarly, “Slow approach” (M = 3.29, SD = 1.58), which reflects children who take a long time to approach new situations, and “Unhurried decision” (M = 3.65, SD = 1.64), describing children who are slow and unhurried in deciding what to do next, also showed lower mean scores compared to other items.

Table 4
Descriptive statistics for inhibitory control items.

Item	Mean	Standard Deviation	Min	Max	Skewness	Kurtosis
Controls voice	5.49	1.423	1.0	7.0	-1.731	3.013
Instruction struggle	2.82	1.618	1.0	7.0	1.113	0.280
Plans ahead	5.32	1.448	2.0	7.0	-0.908	0.040
Waits to enter	5.40	1.250	1.0	7.0	-1.119	1.815
Difficulty waiting	3.60	1.724	1.0	7.0	0.231	-1.168
Restless sitting	3.59	1.735	1.0	7.0	0.366	-1.170
Resists laughing	4.77	1.573	1.0	7.0	-0.615	-0.614
Follows instructions	5.36	1.254	2.0	7.0	-1.095	0.734
Cautious danger	5.12	1.505	1.0	7.0	-0.895	0.177
Careless crossing	3.31	1.639	1.0	7.0	0.380	-1.035
Stops easily	4.44	1.540	1.0	7.0	-0.394	-0.777
Resists temptation	4.90	1.254	2.0	7.0	-0.717	-0.112

Table 4 provides a detailed look at inhibitory control items based on children’s behaviors. “Controls voice” (M = 5.49, SD = 1.42), which refers to the child’s ability to lower their voice when asked, had the highest mean score, suggesting that children often demonstrate control over this aspect of their behavior. Similarly, “Waits to enter” (M = 5.40, SD = 1.25), representing the ability to wait before entering new activities when asked, and “Follows instructions” (M = 5.36, SD = 1.25), indicating how well children follow instructions, showed high levels of inhibitory control in these areas.

At the lower end, “Instruction struggle” (M = 2.82, SD = 1.62), which reflects difficulties in following instructions, had the lowest mean score, pointing to challenges in inhibitory control for some children. “Careless crossing” (M = 3.31, SD = 1.64), which describes children being less cautious when crossing streets, and “Difficulty waiting” (M = 3.60, SD = 1.72), referring to challenges with waiting in line, also had relatively low scores, suggesting frequent struggles with impulse control in these scenarios.

3.1. Gender differences in impulsivity and inhibitory control

In our study, we also aimed to explore whether there are gender and age differences in children’s impulsivity and inhibitory control behaviors.

The Shapiro-Wilk normality test indicated that none of the tested variables followed a normal distribution (all p-values < 0.05). Therefore, we applied the Mann-Whitney U test, a non-parametric alternative, to compare impulsivity and inhibitory control behaviors between boys and girls.

Table 5

Gender-based differences in impulsivity items.

Item	Gender	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z-Value	Asymp. Sig. (2-tailed)
Rushes activity	Male	69	63.02	4348.50	1309.5	-1.79	0.073
	Female	47	51.86	2437.50			
Interrupts others	Male	69	58.06	4006.00	1591.0	-0.179	0.858
	Female	47	59.15	2780.00			
Decides quickly	Male	69	57.73	3983.50	1568.5	-0.31	0.756
	Female	47	59.63	2802.50			
Rushes situations	Male	69	61.16	4220.00	1438.0	-1.069	0.285
	Female	47	54.60	2566.00			
Slow approach	Male	69	59.26	4089.00	1569.0	-0.306	0.760
	Female	47	57.38	2697.00			
Thinks over	Male	69	57.91	3996.00	1581.0	-0.232	0.817
	Female	47	59.36	2790.00			
Unhurried decision	Male	69	60.36	4165.00	1493.0	-0.736	0.461

Item	Gender	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z-Value	Asymp. Sig. (2-tailed)
	Female	47	55.77	2621.00			
Speaks impulsively	Male	69	58.73	4052.50	1605.5	-0.092	0.926
	Female	47	58.16	2733.50			
Rushes outside	Male	69	61.98	4276.50	1381.5	-1.376	0.169
	Female	47	53.39	2509.50			
Cautious approach	Male	69	57.00	3933.00	1518.0	-0.598	0.550
	Female	47	60.70	2853.00			
Wants immediately	Male	69	58.12	4010.50	1595.5	-0.149	0.881
	Female	47	59.05	2775.50			
Last to try	Male	69	60.55	4178.00	1480.0	-0.819	0.413
	Female	47	55.49	2608.00			
Slow socializer	Male	69	62.32	4300.00	1358.0	-1.529	0.126
	Female	47	52.89	2486.00			

For each impulsivity item, the Mann-Whitney U test was used to compare boys’ and girls’ behavior. As shown in Table 5 boys exhibited higher mean ranks in most impulsivity items. For example, boys had higher mean ranks for “Rushes Activity” (M_boys = 63.02, M_girls = 51.86), indicating a tendency for boys to rush activities more frequently than girls (p = 0.07). Boys also had higher mean ranks in other items, such as “Rushes Outside” (M_boys = 61.98, M_girls = 53.39) and “Unhurried Decision” (M_boys = 60.36, M_girls = 55.77), suggesting that boys might display slightly more impulsive behaviors across various items.

In contrast, girls had slightly higher mean ranks in some items, such as “Interrupts Others” (M_girls = 59.15, M_boys = 58.06) and “Cautious Approach” (M_girls = 60.70, M_boys = 57.00). However, none of these differences were statistically significant.

Table 6

Gender-based differences in inhibitory control items.

Item	Gender	N	Mean Rank	Sum of Ranks	Mann--Whitney U	Z-Value	Asymp. Sig. (2-tailed)
Controls voice	Male	69	57.80	3988.00	1573.0	-0.29	0.771
	Female	47	59.53	2798.00			
Instruction struggle	Male	69	63.12	4355.00	1303.0	-1.88	0.060
	Female	47	51.72	2431.00			
Plans ahead	Male	69	55.78	3849.00	1434.0	-1.09	0.275
	Female	47	62.49	2937.00			
Waits to enter	Male	69	58.31	4023.50	1608.5	-0.076	0.939
	Female	47	58.78	2762.50			
Difficulty waiting	Male	69	61.15	4219.50	1438.5	-1.048	0.295
	Female	47	54.61	2566.50			
Restless sitting	Male	69	60.47	4172.50	1485.5	-0.784	0.433
	Female	47	55.61	2613.50			
Resists laughing	Male	69	59.80	4126.00	1532.0	-0.517	0.605
	Female	47	56.60	2660.00			
Follows instru-ctions	Male	69	54.63	3769.50	1354.5	-1.596	0.111
	Female	47	64.18	3016.50			
Cautious danger	Male	69	58.77	4055.00	1603.0	-0.107	0.915
	Female	47	58.11	2731.00			
Careless crossing	Male	69	58.75	4053.50	1604.5	-0.098	0.922
	Female	47	58.14	2732.50			
Stops easily	Male	69	57.70	3981.00	1566.0	-0.321	0.748
	Female	47	59.68	2805.00			
Resists temptation	Male	69	56.53	3900.50	1485.5	-0.805	0.421
	Female	47	61.39	2885.50			

As for the inhibitory control items, Table 6 shows that boys generally exhibited higher mean ranks in the majority of items, specifically in 7 out of 12. For "Instruction Struggle" (M_boys = 63.12, M_girls = 51.72), the test indicated a tendency for boys to have more difficulty following instructions than girls (p = 0.06). Girls had slightly higher mean ranks for some items, such as "Follows Instructions" (M_girls = 64.18, M_boys = 54.63) and "Controls Voice" (M_girls = 59.53, M_boys = 57.80), but none of these differences were statistically significant.

Table 7

Age-based differences in impulsivity items.

Item	Age Group	N	Mean Rank	Sum of Ranks	Mann--Whitney U	Z-Value	Asymp. Sig. (2-tailed)
Rushes activity	Younger	46	58.05	2670.50	1589.500	-0.118	0.906
	Older	70	58.79	4115.50			
Interrupts others	Younger	46	60.22	2770.00	1531.000	-0.466	0.641
	Older	70	57.37	4016.00			
Decides quickly	Younger	46	58.76	2703.00	1598.000	-0.071	0.944
	Older	70	58.33	4083.00			
Rushes situations	Younger	46	52.40	2410.50	1329.500	-1.640	0.101
	Older	70	62.51	4375.50			
Slow approach	Younger	46	61.50	2829.00	1472.000	-0.806	0.420
	Older	70	56.53	3957.00			
Thinks over	Younger	46	61.14	2812.50	1488.500	-0.698	0.485
	Older	70	56.76	3973.50			
Unhurried decision	Younger	46	55.37	2547.00	1466.000	-0.828	0.408
	Older	70	60.56	4239.00			
Speaks impulsi-vely	Younger	46	57.43	2642.00	1561.000	-0.284	0.777
	Older	70	59.20	4144.00			
Rushes outside	Younger	46	54.22	2494.00	1413.000	-1.133	0.257
	Older	70	61.31	4292.00			
Cautious approach	Younger	46	57.89	2663.00	1582.000	-0.162	0.871
	Older	70	58.90	4123.00			
Wants immedia-tely	Younger	46	55.78	2566.00	1485.000	-0.721	0.471
	Older	70	60.29	4220.00			
Last to try	Younger	46	61.51	2829.50	1471.500	-0.804	0.421
	Older	70	56.52	3956.50			
Slow socializer	Younger	46	62.35	2868.00	1433.000	-1.030	0.303

The Mann-Whitney U test was used to compare impulsivity behaviors between younger and older children for each item. As shown in Table 7, older children exhibited higher mean ranks in 8 out of 13 items, including "Rushes Outside" (M_younger = 54.22, M_older = 61.31) and "Rushes Situations" (M_younger = 52.40, M_older = 62.51). In contrast, younger children had higher mean ranks in 5 items, such as "Interrupts Others" (M_younger = 60.22, M_older = 57.37) and "Thinks Over" (M_younger = 61.14, M_older = 56.76).

However, none of these differences were statistically significant (all p-values > 0.05).

Table 8
Age-based differences in inhibitory control items.

Item	Age Group	N	Mean Rank	Sum of Ranks	Mann--Whitney U	Z-Value	Asymp. Sig. (2-tailed)
Controls voice	Younger	46	59.85	2753.00	1548.000	-0.373	0.709
	Older	70	57.61	4033.00			
Instruction struggle	Younger	46	59.43	2734.00	1567.000	-0.255	0.799
	Older	70	57.89	4052.00			
Plans ahead	Younger	46	58.62	2696.50	1604.500	-0.032	0.974
	Older	70	58.42	4089.50			
Waits to enter	Younger	46	61.50	2829.00	1472.000	-0.814	0.416
	Older	70	56.53	3957.00			
Difficulty waiting	Younger	46	55.96	2574.00	1493.000	-0.672	0.501
	Older	70	60.17	4212.00			
Restless sitting	Younger	46	63.70	2930.00	1371.000	-1.383	0.167
	Older	70	55.09	3856.00			
Resists laughing	Younger	46	61.27	2818.50	1482.500	-0.739	0.460
	Older	70	56.68	3967.50			
Follows instru-ctions	Younger	46	61.66	2836.50	1464.500	-0.873	0.383
	Older	70	56.42	3949.50			
Cautious danger	Younger	46	64.84	2982.50	1318.500	-1.695	0.090
	Older	70	54.34	3803.50			
Careless crossing	Younger	46	60.72	2793.00	1508.000	-0.589	0.556
	Older	70	57.04	3993.00			
Stops easily	Younger	46	65.52	3014.00	1287.000	-1.877	0.061
	Older	70	53.89	3772.00			
Resists temptation	Younger	46	63.33	2913.00	1388.000	-1.318	0.187
	Older	70	55.33	3873.00			

A similar pattern was observed in the inhibitory control items, where there were no statistically significant differences between younger and older children across most items. However, there was a trend toward differences in "Cautious Danger" (M_younger = 64.84, M_older = 54.34, p = 0.09) and "Stops Easily" (M_younger = 65.52, M_older = 53.89, p = 0.06), where younger children exhibited slightly higher mean ranks. This suggests that younger children may be more likely to approach places they have been told are dangerous slowly and cautiously ("Cautious Danger") and may be able tostop an activity more easily when told "no" ("Stops Easily").

4. Discussion

This study aimed to examine parent-reported impulsivity and inhibitory control in children and to explore potential gender- and age-related differences. The findings indicate meaningful variability across individual behaviours, although no statistically significant differences emerged between groups.

Descriptive patterns in impulsivity showed that "Cautious Approach" received the highest scores, suggesting that many children regulate their behaviour effectively in situations perceived as risky or demanding. This supports the view that impulsive tendencies may be flexibly modulated based on contextual cues (Frankenhuis et al., 2016; Wilson & Daly, 2006; Winstanley et al., 2006). Conversely, items such as "Interrupts Others" and "Decides Quickly" received higher scores, indicating that rapid responding in social or decision-making contexts is more common. Boys showed slightly higher impulsivity across several items, but these differences did not reach statistical significance, consistent with research showing that gender differences in impulsivity during childhood are often small or inconsistent (Alavi et al., 2019).

Variability was also observed in inhibitory control behaviours. "Controls Voice" received the highest mean score, reflecting children's ability to manage their behaviour in structured social contexts. Although girls tended to score somewhat higher than boys, the differences were again not statistically significant, aligning with previous findings of modest gender effects (MacDonald et al., 2013). Age-related comparisons revealed small, non-significant tendencies, with no clear developmental pattern detectable within this sample. These null findings are consistent with prior research showing that developmental and gender-related differences in self-regulation are often subtle, context-dependent, and inconsistent across studies (Eisenberg & Spinrad, 2004; Ikeda et al., 2014).

Although this study provides valuable insights, several limitations should be acknowledged. First, the reliance on parent-reported data may introduce bias, as parents may perceive or interpret children's behaviours through the lens of their own expectations, cultural norms, and psychological frameworks. Broader psychosocial factors—such as stigma or attachment-related tendencies—may further influence these interpretations. As Seršen (2023) notes, individuals with preoccupied attachment patterns may experience heightened emotional reactivity and greater concern about evaluation, which can shape how they

perceive and report psychological or behavioural difficulties. Such processes may contribute to the underreporting or misinterpretation of children's impulsive behaviours.

Second, the sample size, while adequate for preliminary comparisons, may have been insufficient to detect subtle gender- or age-related differences. Future studies with larger and more diverse samples are needed to examine developmental patterns more comprehensively. Moreover, important contextual variables—including family dynamics, socioeconomic conditions, and educational environments—were not examined in the present study but may meaningfully influence children's impulsivity and inhibitory control. In addition, the relatively low internal consistency of the inhibitory control item set (Cronbach's α), as reported in the Measures section, reflects both the heterogeneity of the construct and the use of a shortened set of adapted CBQ items. This methodological limitation should be considered when interpreting the results.

Despite these limitations, the findings contribute to work on children's behavioural regulation. They demonstrate that while impulsivity and inhibitory control vary meaningfully across individuals, these differences may not systematically align with gender or narrow age bands. Understanding these individual differences remains important, as regulatory capacities shape children's interactions, participation in structured settings, and behavioural adjustment across daily contexts.

5. Conclusion

This study examined impulsivity and inhibitory control behaviors in children as reported by their parents, with a focus on potential gender and age differences. While descriptive statistics revealed variations in both impulsivity and inhibitory control behaviors, no statistically significant differences were observed based on gender or age. Boys were found to display slightly higher impulsivity in several items, while younger children exhibited a tendency toward higher inhibitory control in certain behaviors, but these tendencies did not reach statistical significance.

The findings contribute to the growing body of literature on self-regulation in children, suggesting that while impulsivity and inhibitory control behaviors vary across individuals, broad gender- and age-based distinctions may be less pronounced than previously thought. These results underscore the importance of considering the complexity and nuance of self-regulation development in early childhood.

Given the limitations of parent-reported data and sample size, future research is needed to explore these behaviors further, with larger and more diverse samples. Additionally, investigating other factors such as family environment, socioeconomic status, and educational context could provide deeper insights into the development of impulsivity and inhibitory control in children.

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