Development of inhibitory control in 5-year-olds in preschool education: influence on the quality of their engagement

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Abstract: In an approach focused on the children's overall development, inhibitory control is present in various forms (motor, emotional, verbal and cognitive inhibition) and is thought to influence this development. The quality of the children's engagement with his teacher, peers and learning also influences his overall development. The objective of this study of 28 five to six years old from preschool's classroom was to determine the reciprocal links between the quality of the children's engagement and the development of inhibitory control. Teachers coming from two different School Service Centres were recruited through a presentation of the project. The level of inhibitory control was then assessed by collecting observations in their classes through NEPSY II from whom 28 children aged five to six years old were selected. The quality of children's engagement was finally assessed with the in CLASS tool. The results suggest a link between children's level of inhibitory control development and their level of engagement. The discussion revolves around reflecting on the consideration of the quality of a five-year-old preschooler's engagement as support for the development of their inhibitory control; a distinction between boys and girls will be highlighted. These results highlight the benefic aspect of implementing inhibitory control pedagogy to support the children's level of inhibitory control and engagement.

Keywords: inhibitory control, boys, engagement, preschool

1. Introduction

From an early age, every child is exposed to both personal and academic experiences that will enable them to achieve educational success; in other words, to optimize their overall development, fostering success throughout their schooling [1]. This success is influenced by the integration of academic knowledge, all components of the learner's socialization and their qualifications [1]. As the Ministry of Education in Quebec [MEQ] [2] points out, "children develop holistically in all areas [social, emotional, physical and motor, cognitive, language] and what happens in one area influences their entire development" (p. 13). This influence is supported by a set of cognitive mechanisms that allow children to intentionally regulate their thoughts and actions toward the achievement of a specific goal [3; 4]; this presence is manifested through executive functions (EFs). In preschool education, four EFs are emphasized: inhibitory control (IC), working memory, planning and cognitive flexibility [2]. In fact, these EFs constitute a set of interdependent cognitive processes that enable children to intentionally coordinate their thoughts, actions and behaviors [5; 6].

Although the latter is essential to the child's success [7], the level of competence in IC plays a crucial role in achieving it [7]. In fact, IC encourages the child to adopt socially acceptable behaviors, such as thoughtfulness, non-impulsiveness, and making informed choices [7]. There are four forms of IC in children: motor, emotional, verbal and cognitive inhibition [8; 9; 10; 11], all of which contribute to the child's overall development [2]. Conversely, while children's experiences in preschool education contribute to their educational success [1], a low level of engagement with their teacher, peers, and learning would not positively help to their overall development [12; 13; 14]. These findings align with other research [15], emphasizing the connection between a child's dedication to preschool education and their academic success, both in the present and future. In fact, based on three dimensions (behavioral, affective, and cognitive), engagement is defined as the child's degree of active and sustained involvement in classroom activities, as well as the autonomy demonstrated during these activities (e.g., personal initiative, staying focused on the activity, perseverance, etc.) [15; 16]. Although there are three

dimensions in this concept, research indicates a consensus that the child's engagement in interactions reflects patterns of adaptation within competent exchanges with the teacher, peers, and tasks [16; 17]. Thus, during the numerous interactions with their peers and teacher, children need to demonstrate IC to develop skills and abilities that will allow them to maintain positive relationships [16]. In this sense, there appears to be a link between the development of IC and the quality of a child's engagement in preschool education at age five within relationships with peers, teachers, and activities.

2. Theoretical Framework

To illustrate the relationship between the development of a child's IC and the quality of their engagement, it is important to first define IC and each of its forms. Subsequently, a definition of the quality of a child's engagement and its components will be proposed. Finally, the potential relationships between a child's IC and the quality of their engagement will be elaborated.

2.1. Inhibitory Control

IC is an EF that "enables the child to control his or her actions or resist distractions that come from external stimuli" [2] (p. 13). It pertains to the ability to resist and control automatisms that can sometimes lead to mistakes (e.g., resisting the temptation to run down the hallway) [2; 8]. IC is actively and essentially manifested in various forms (motor, emotional, verbal, and cognitive inhibition) in preschool education [2]. A definition of each form will be presented.

2.1.1. Motor inhibition

Motor inhibition enables the adjustment of the child's gestures to carry out an action, ensuring efficiency and smooth execution [9]. It serves as the internal brakes [18], preventing immediate verbal or motor responses, terminating ongoing responses, and limiting interference [18]. For instance, this control is essential in situations where the child must inhibit the urge to move while awaiting a motor instruction, as seen in the game "Simon Says.".

2.1.2. Emotional inhibition

Emotional inhibition "contributes to the regulation of emotions when the child uses, for example, a means of expressing anger and learns to channel it into something positive (e.g., giving or receiving a hug, snuggling a stuffed animal)" [2] (p. 27). This form of inhibitory control refers to the child's ability to comprehend a situation (e.g., my friend is crying tears of joy because he won the competition) and then adapt their actions accordingly (e.g., congratulate the said friend, not comfort him) [11]. Several meta-analyses identify links between this form of IC and emotion management in children [19; 20; 21].

2.1.3. Verbal inhibition

Verbal inhibition is associated with two areas of development: oral and written language [2]. This form of inhibition pertains to language skills, encompassing the child's engagement with oral communication skills, including speaking and listening [10]. Language skills (speaking, reading, writing, and listening) can be categorized into two areas: receptive (listening and reading, receiving and understanding an oral or written message) and expressive (speaking and writing, expressing an oral or written message) [10]. Consequently, this form of inhibition comprises the two areas of language skills. The receptive portion refers to auditory inhibition (listening), while the expressive portion refers to verbal inhibition (speaking) [10]. Auditory IC is the child's ability to ignore surrounding distractions and focus on the speaker [22]. With this form of inhibitory control, the child focuses on following a speech or conversation in a noisy environment, such as during free play in the classroom, while remaining aware of other sound signals (e.g., when the child's name is called). It also involves inhibiting interference with the dialogue (e.g., friends playing nearby) to stay focused on it. Verbal IC, on the other hand, refers to the child who thinks before speaking, self-monitors and resists distractions [23].

2.1.4. Cognitive inhibition

Cognitive inhibition acts on the child's representations by blocking information, thoughts or strategies that are irrelevant to the completion of the current activity [11; 24]. As specified by the MEQ [2], this control translates into the child's ability to "adjust [gradually] to the demands of the environment (e.g., deadlines, routines, transitions) and to refrain from spontaneous gestures that are irrelevant to the situation at hand" (p. 48). This form of inhibition is necessary for the completion of daily activities and for the child's engagement in them [24].

2.2. Quality of the child's engagement

According to the work of Downer et al. [16], translated into the *Individual Classroom Assessment Scoring System* (inCLASS) [16], a child's engagement in preschool education is defined by their ability to engage in classroom interactions across three domains: 1) engagement with the teacher; 2) engagement with peers; and 3) engagement in learning.

On the other hand, the work of Sabol et al. [25] and Williford et al. [14], subdivide child engagement into four domains: 1) the child's positive engagement with the teacher; 2) the child's positive engagement in peer interactions; 3) the child's engagement in learning; and 4) negative engagement in the classroom.

The distinction between the three and four domains respectively remains in the isolation of the positive or negative aspect of the child's involvement. Thus, the need to define all the dimensions of each domain guides the next subsections.

2.2.1. Children's positive engagement to the teacher

This domain is composed of two dimensions: 1) positive engagement with the teacher and 2) communication with the teacher. The child, positively engaged with the teacher, seeks they proximity, is sensitive to his or her presence and shows signs of affection (e.g., giving the teacher a hug when entering the classroom in the morning) [16]. Moreover, this engagement also plays a role in the child's initiative in communicating with the teacher and in his ability to maintain discussions with him [16; 25]. Other researchers have demonstrated a link between children's positive engagement with their teachers and the development of quality interactions with them [26].

2.2.2. Children's positive engagement with peers

Children's positive engagement is also reflected in their engagement with their peers (the other children in their class). The following dimensions make up this domain: 1) sociability; 2) communication with peers and 3) assertiveness. When children are positively engaged in interactions with their peers, it can be observed in their closeness and desire for companionship, in their cooperation, and in their presence, which is sought out by their peers (e.g., other children want to team up with them) [16]. At the same time, this commitment is influenced by their positive exchanges with peers (e.g., sharing toys), their communication initiatives, and their ability to sustain a conversation [16]. Several studies link a child's positive engagement in peer interactions to the development of social skills, which subsequently affect future social competence [27; 28]. Furthermore, the child's capacity to initiate and sustain conversations with peers while demonstrating leadership serves as a key determinant of the quality of engagement in this domain [16; 29].

2.2.3. Children's engagement in learning

Children's engagement in learning manifests in two dimensions: 1) their involvement in activities and 2) their autonomy in learning [16]. Specifically, during activities, the child's level of engagement is gauged by their ability to maintain attention and active participation (e.g., perseverance in the given task) [16]. The child's autonomy in learning is evidenced by their personal initiative and level of independence (e.g., the child demonstrates confidence in their abilities and skills to accomplish a task) [16; 25]. In essence, engagement in learning serves as a pivotal, overarching, and foundational element for the child's current and future educational success [16; 25; 30].

2.2.4. Negative classroom engagement

The child's negative classroom engagement consists of three dimensions: 1) conflict with the teacher; 2) conflict with peers; and 3) behavioral control associated with task orientation [25]. The teacher conflict dimension measures the level of interaction characterized by tension, resistance and negativity between a teacher and a child [16]. The peer conflict dimension assesses the degree to which the child interacts with other children in their class, characterized by aggression, negative affect, negative attention-seeking and confrontation [16]. Finally, behavioral control, linked to task orientation, evaluates the child's capacity to regulate and adapt their actions and verbal contributions to meet the teacher's task requirements [16]. In this sense, Hughes et al. stipulate that children's conflictual relationships are linked to lower levels of classroom engagement [31]. Thus, the presence of conflict between a child and their teacher at the beginning of the school year appears to result in challenges in adaptation and school engagement throughout that academic year [32]. Furthermore, other research indicates that a child's negative engagement with peers is linked to a heightened risk of social exclusion and disengagement from school [33]. This suggests the potential for social isolation, thereby depriving the child of the benefits of positive peer interactions for their social development [33].

2.3. Children's engagement and the Inhibitory Control

The foregoing discussion of IC and child engagement seems to raise the question of the relationship between these two concepts. This will be discussed in this section.

2.3.1. Engagement to the teacher and the IC

Let us recall that a child's engagement with their teacher comprises two dimensions: 1) positive engagement and 2) communication. To engage positively with their teacher, the child needs to initiate contact, seek out their proximity, initiate conversations, and even sustain them. Indeed, the child's emotional and verbal inhibition supports such engagement.

More specifically, in establishing a positive relationship with their teacher, the child must exhibit emotional inhibition, as their emotions need to be regulated [2]. In fact, the more children understand and recognize their emotions, the better they can modulate them according to given situations and ultimately regulate them [34].

Finally, children's engagement with their teacher also involves verbal inhibition since maintaining conversations requires ignoring distractions and focusing on the interlocutor [22]. They also need to sustain the conversation, self-monitor, and think before speaking [23].

2.3.2. Engagement to peers and the IC

Including sociability, peer communication, and assertiveness, children's engagement with peers requires their interpersonal communication (IC) skills. For a child to engage positively with peers, they must be attuned to others (listening to their emotions), desire to engage in conversations with them, and even sustain those conversations. Otherwise, such engagement may exhibit emotional and verbal inhibition.

Similarly, to engagement with the teacher, children's engagement with their peers leads them to understand their emotions (emotional inhibition), helping them, among other things, to resolve conflicts within the classroom [34] and thus foster harmonious relationships.

Regarding assertiveness, it entails an interaction style in which the child perceives themselves as equally valuable as their peers, and their ideas and thoughts as equally valid as others' [35]. Likewise, during preschool age, children develop the ability to self-regulate their emotions, contributing to their sense of self-confidence and asserting their emotions in the classroom [36].

Verbal inhibition is a component of the child's quality of engagement with peers. Just as with engagement with their teacher, the child must demonstrate this form of inhibition to initiate and maintain conversations [23] and thus actively participate in communication with their peers.

2.3.3. Engagement in learning and the IC

A child's engagement in learning consists of two dimensions: 1) involvement and 2) autonomy. The child must demonstrate cognitive inhibition to disregard irrelevant information and utilize strategies to complete a task [8], thereby contributing to learning. Additionally, children require emotional inhibition to regulate their emotions in relation to the task and, ultimately, to execute it [34].

2.3.4. Negative classroom engagement and the IC

Under three dimensions, 1) conflict with the teacher; 2) conflict with peers and 3) behavioral control, the child's negative engagement in the classroom translates into difficulties related to emotional, verbal and motor inhibition.

In fact, by exhibiting challenges with emotional and verbal inhibition, the child fails to consider either the teacher or peers, as well as their emotions. In other words, the child isolates themselves and refuses to participate in classroom activities. The child also struggles with motor inhibition, as they act impulsively. For instance, they may not think much or at all before acting [37], leading to conflict situations. Table 1 summarizes all the connections between domains related to the child's quality of engagement and forms of inhibitory control.

The connections illustrated between forms of inhibition and the quality of children's engagement in preschool education at age 5 raise a question: is there a relationship between the development level of various forms of inhibition in children and the quality of their engagement? Specifically, the objective of this research is to examine the reciprocal links between the quality of children's engagement in preschool education at age 5 and the development of their IC.

Table 1: inCLASS tool [16] child engagement domains and forms of inhibition.

Domains according to the inCLASS tool [16]	Dimensions according to the inCLASS tool [16]	Forms of inhibitory control
Children's positive engagement to the teacher	Positive engagement Communication	Emotional Verbal
Children's positive engagement with peers	Sociability Peer communication Self-affirmation	Emotional Verbal
Children's positive engagement in learning	Engagement Autonomy	Emotional Cognitive
Negative classroom engagement	Conflict with the teacher Conflict with peers Behavioral control	Emotional Verbal Motor

3. Method

The present study is part of a quantitative design consisting of descriptive analyses [38]. In this section, the participant selection criteria, the research project, the data collection tools, and the data analysis process are presented.

3.1. Participants

This research includes 134 children (74 girls and 60 boys), aged five to six years ($M = 71.3$ months), from nine preschool classes of five years old. These classes included an average of 15 children and were located in two School Service Centres in the province of Quebec, Canada. There were no inclusion or exclusion criteria for minors.

3.2. Recruitment

The data for this research were collected during the winter and spring of the same school year (March to May). Participants were recruited through a presentation of the research project by the researcher in their School Service Centers. Consent forms were distributed in January, and the recruitment process concluded in February. Classroom observations began in March and were completed in May by two certified observers. As a first step, the children's level of IC was assessed (NEPSY II) [39], facilitating the selection of children with a low level of IC. Subsequently, the assessment of the quality of children's engagement (inCLASS) [16] was conducted solely with the previously selected children.

4. Measures

To meet our research objectives, two tools were used. The NEPSY II tool [39] to measure children's IC development and the inCLASS tool [16] to measure the quality of children's engagement.

4.1. NEPSY II tool [39]

To assess the development of a child's IC at the age of five in preschool, the "Attention and Executive Functions" domain of the NEPSY II tool [39] was utilized. This domain comprises six subtests: 1) auditory attention and related responses, 2) categorization, 3) drawing fluency, 4) clocks, 5) inhibition, and 6) statue [39]. The subtests of auditory attention and related responses, inhibition, and statue were specifically chosen as they evaluate children's IC development, selective attention, and self-control [39]. Below is a description of the utilized subtests and the types of IC measured within them.

4.1.1. Auditory attention subtest and associated responses

In the auditory attention and associated response subtest, the child is presented with a sheet of paper containing four circles of different colors (blue, yellow, black, and red). Over a period of three minutes, the child listens to a series of words and is instructed to use their finger to indicate only the red word. They must ignore the distractors (blue, yellow, and black) [40].

This subtest measures the child's selective and sustained auditory attention, which is linked to verbal

inhibition, as well as response inhibition, which is linked to motor inhibition [40].

4.1.2. Inhibition subtest

In this subtest, three conditions are present: 1) the child quickly names the shapes present on the sheet (square and round) as well as the direction of the arrows (up and down), 2) the child names the inverse shape he sees on the sheet (e.g., there is a round, the child must say square) and 3) the child names the shape correctly or inversely according to the color of the shape (e.g., when the square is black, the child must say round, but when it is white, he must say square) [40]. This subtest measures inhibition of impulsive responses, which is linked to motor inhibition [40].

4.1.3. Statue subtest

During the subtest, the child is asked to stand with eyes closed, one arm slightly raised and to remain motionless in this position for 75 seconds. Four times, the evaluator makes noises to distract the child. The child must not react [40]. This subtest measures children's inhibition of impulsive motor and verbal responses, which is linked to motor, verbal and cognitive inhibition [40].

4.2. inCLASS tool [16]

Children's level of engagement in learning is measured by the inCLASS tool [16]. This tool assesses the observable behavioral manifestations of 3- to 5-year-old children in their daily educational activities (e.g., routines, free play, etc.). The tool observes four dimensions: 1) the child's positive engagement with the teacher, 2) the child's positive engagement with peers, 3) the child's positive engagement in learning and 4) the child's negative engagement in the classroom. Each child is observed by a certified observer over four 15-minute observation cycles (ten minutes of observation and five minutes of scoring). Each dimension is rated using a seven-point Likert scale, which produces a measure at three levels: low (1 and 2), medium (3 to 5) and high (6 and 7) [16]. In order to achieve inter-rater agreement for this tool [41], two certified observers jointly perform 20% of the observation periods.

5. Data analyses

Descriptive analyses of both tools were performed using *Statistical Package for the Social Sciences* (SPSS Version 20.0; IBM Corp, 2011).

5.1. Preliminary analyses of IC levels using NEPSY II subtests [39]

To identify children showing a low level of IC in five-year-old preschool education in order to meet our research objective, we carried out analyses of the three subtests of the NEPSY II tool [39]. Each subtest is calibrated on a score of 19. The zone of fragility (low level of IC on the subtest) lies between 5 and 7 (out of a possible 19) and a percentile rank between 5 and 15. Children who fell into this zone of fragility for all three subtests were selected for this project. Of the 134 children present in this research, 28 were selected following analysis of the three subtests of the NEPSY II tool [39]. This group is composed of seven girls and 21 boys.

6. Results

6.1. Level of child engagement using the inCLASS tool [16]

To address our research objective of exploring the influence of low IC on children's level of engagement, we initially conducted a descriptive analysis of the results obtained from the 28 children with low NEPSY II scores [39] using the inCLASS tool [16]. The authors reported internal consistency levels of $\alpha = 0.79$ for engagement in interactions with the teacher, $\alpha = 0.90$ for engagement in interactions with peers, and $\alpha = 0.82$ for negative engagement [16]. In our study, the internal consistency levels were as follows: positive engagement in interactions with the teacher, $\alpha = 0.64$; positive engagement in interactions with peers, $\alpha = 0.79$; and negative engagement, $\alpha = 0.69$. Table 2 presents the results of this analysis.

The scores associated with the domains of child engagement quality range from low to medium, with values ranging from ($M = 1.28$) to ($M = 3.46$). Scores associated with two domains (child's positive engagement to the teacher and child's negative classroom engagement) are low and range from ($M = 1.28$)

to (M = 2.19). Specifically, the domain of children's positive engagement to their teacher is low (M = 2.19), as are its "Engagement" and "Communication" dimensions. The domain of children's positive engagement with peers was low (M = 2.06). The domain of the child's negative engagement in the classroom is also low, as are all its dimensions: "conflict with the teacher", "conflict with peers" and "behavioral control". The only domain in the medium-low range is the child's positive engagement in learning, with an average of (M = 3.46). We can also observe that the "engagement" dimension is medium to slightly high, with a score of (M = 4.51). However, the "autonomy" dimension remains low, with an average of (M = 2.41).

Table 2: Observed level of quality for domains and dimensions of child engagement quality (N = 28).

Variables	Average	Standard deviation
Children's positive engagement to the teacher	**2.19**	**1.29**
Positive engagement	2.30	1.31
Communication	2.07	1.27
Children's positive engagement with peers	**2.06**	**1.22**
Sociability	2.52	1.36
Communication	1.88	1.16
Affirmation	1.78	1.12
Children's positive engagement in learning	**3.46**	**1.27**
Engagement	4.51	1.41
Autonomy	2.41	1.14
Negative classroom engagement	**1.53**	**0.63**
Conflict with the teacher	1.35	0.68
Conflict with peers	1.28	0.56
Behavioral control	1.96	0.66

Overall, the results show a low level of child engagement, except in positive engagement in learning. In addition, the association of developmental domains and IC with domains and dimensions of the child's quality of engagement highlights that domains with low levels of engagement are linked to the following forms of inhibition: motor, emotional and verbal. However, this association also suggests that a child demonstrating a low level of negative engagement in class is one who exhibits self-control and therefore appears to demonstrate motor inhibition.

The results also indicate that cognitive inhibition seems to play a larger role in the quality of the child's engagement with learning. In fact, this form of inhibition allows the child to maintain focus on their activity by filtering out irrelevant information, thoughts, or strategies, thereby enabling them to stay attentive [24].

7. Discussion

The findings of the present research suggest a connection between children exhibiting a low level of IC, including boys, and their level of engagement.

7.1. Boys

The results of the present study indicate that, following the preliminary analysis of IC development, 28 children fall within the vulnerability zone, signifying they exhibit a low level of IC. Among these selected children, 21 are boys, accounting for 75%. By juxtaposing this outcome with the number of boys in the initial population (60), a noteworthy observation emerges. In other words, 35% of boys attending the five-year-old preschool education in this study demonstrate a low level of IC. These findings are consistent with other research indicating that IC development tends to be lower in boys compared to girls [42]. Another study corroborates these findings, demonstrating weaker IC development in boys compared to girls [43].

7.2. Emotional inhibition

The results of the analyses utilizing the inCLASS tool [16] illustrate a distinct correlation between forms of engagement and emotional inhibition in children, including boys. Other research on the self-regulation of children attending five-year-old preschool education also underscores statistical variances

between boys and girls concerning variables associated with the child's self-regulation abilities [44]. This particularly concerns the child's ability to regulate emotions, behaviors, and thoughts through the development of effective strategies for daily use [45], thus involving emotional inhibition.

The study underscores that the variable of emotion recognition (emotional inhibition) and the variables related to behavior management and self-control (motor and verbal inhibition) are significantly lower in boys than in girls [44]. These findings imply a connection between these forms of self-regulation and the low level of engagement exhibited by these children toward their teachers and peers [16]. Indeed, as highlighted by several authors, a child's social competence, a critical aspect of executive functions, is associated with the ability to regulate and control emotions [46]. This social competence is linked to the child's forms of engagement with the teacher and peers, requiring emotional and verbal inhibition to support social relationships [26].

7.3. Teacher Sensitivity

Furthermore, the results of this research underscore the importance of providing interventions tailored to the child's characteristics [47; 48] to support their engagement in daily classroom life. Research by Geeraerts et al. [42] attributes these differences, in part, to the sensitivity of adults (e.g., parents) towards the child. This sensitivity is believed to foster the development of emotional inhibition, which, in turn, aids in maintaining the child's attention in a given situation [49]. Indeed, this IC enables the suppression of emotional aspects in the environment that could disrupt the completion of required tasks [49]. Thus, there appears to be a clear link between the teacher's sensitivity to children with low levels of IC development, particularly boys. In this regard, teachers should pay special attention to the emotional and learning needs of children, especially boys [50]. In summary, this sensitivity seems connected to the child's level of commitment to their teacher, peers, and learning during the transition to five-year-old preschool.

8. Limits

Some limitations are evident in the results of this research. Considering the small number of participants who contributed to this study (N = 28), the relationship between the level of IC development and the quality of child engagement appears weak. Therefore, if this research were repeated with a larger sample, the connection between boys, IC level, and the quality of engagement of these children would be more definitive. Additionally, it would have been beneficial to measure the maturity level of the children selected for this study. This could have resulted in the identification of new associations between the level of IC and the quality of child commitment to preschool education at age five.

9. Conclusion

Several authors concur that children with proficient Executive Functions (EFs), including IC, will find it easier to acquire skills such as reading, writing, or arithmetic, and will also benefit from better management of everyday and school situations [51; 52; 53; 54; 55; 56; 57; 58; 59; 60]. Longitudinal research by Berlin et al. [43] also supports this notion, indicating that a high level of IC development in five-year-old children contributes to the development of other EFs (working memory, flexibility, and planning), thereby influencing their future.

Furthermore, children's higher level of IC, positive engagement with their teacher and peers, and low levels of perceived conflict with peers and teachers would contribute to higher levels of engagement during their transition to preschool education [61]. According to these researchers, these levels would also be associated with higher levels of engagement with the teacher in first grade [61]. Thus, as early as in preschool education at age five, implementing IC pedagogy to support the child's IC development and engagement would be highly beneficial. Additionally, as the results have shown, attention must be paid to the development of IC in boys because the development of this EF contributes to their positive engagement with the teacher and peers, as well as in classroom situations, thereby influencing their current and future educational success. In conclusion, a child's ability to exercise inhibition plays a crucial role in their academic success and the establishment of social relationships. Emphasis must be placed on the development of this EF in all children, but particularly in boys [37].

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