

Applying Cognitive Science in Decision Support for Children's Autism Socialization Programs

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ABSTRACT: The study aimed to delineate the factors underpinning the impact of socialization programming for children with autism. Instead of viewing effectiveness as a mere skill acquisition, the study approaches the issue from a broader theoretical framework: the Dual Process Theory of Decision Making (Evans & Stanovich, 2008) and the Diversity-Unity Model of Executive Function (Miyake et al., 2000). Accordingly, effectiveness is understood as an ecological value associated with the level of social integration. Data were retrieved from 624 residents from numerous provinces of Vietnam with an overall count of experts, parents, teachers, therapists, and academics. Randomized stratified sampling algorithms were implemented to confirm randomization and applicability, and thereafter the survey analysis software returned 385 usable responses for modelling. Social support resources were statistically the most significant predicting factors of successful programming ($\beta = 0.719$, $p < 0.05$), followed by DMIP ($\beta = 0.608$, $p < 0.05$). Executive function capabilities were demonstrated to moderate the extent of reliance on social support resources held ($\beta = 0.484$, $p < 0.05$), while also facilitating benefits of the family and community networks application. These findings extend theory by demonstrating that cognitive regulation and regulated decision-making factors are central to the success of long-term intervention, situating social support as a prerequisite and not an add-on, as opposed to a causative factor. For practical application, the study shows that evidence-based planning, combining executive function training with an improved support system, provides a foundation for integrated social integration. However, the study is restricted in that it relies on self-report data, has a cross-sectional design, and does not sample a large number of children with severe communication impairment. Future studies should utilize longitudinal designs and cross-cultural comparisons to achieve maximum generalizability.

KEYWORDS: Socialization Programs, Autism Spectrum Disorder, Decision-Making Based Intervention Planning, Social Support Resources, Executive Function Skills

1. INTRODUCTION

The effectiveness of socialization programs for children with autism remains controversial. Researchers often focus small to moderate improvements on stronger improvements in "social knowledge" rather than "social performance" in the real world (Gates et al., 2017). In school settings, randomized controlled trials indicate that peer-mediated approaches can promote peer engagement, but the effects vary depending on the context, component, and implementer (Kasari et al., 2012). Fidelity and maintenance of implementation are weak. Implementation support may enhance network integration and friendship nominations. This result is formed from the factors of delivery system and curriculum (Locke et al., 2019). Another limitation is that measurement is inconsistent across reports, limiting inference and fairness. Such as the discrepancy between parent/teacher and self-report, the short follow-up period, and limited sample sizes only measured high-functioning, language-proficient adolescents. Future research should prioritize ecologically valid research outcomes such as sustainable friendship networks and closely monitoring implementation and scaling up to determine benefits, in what contexts, and at what costs (Gates et al., 2017; Locke et al., 2019).

Previous studies of socialization interventions for children with autism have also shown effective, but inconsistent, results. The most immediate and obvious benefits are group social skills training in structured settings, but transferability to natural settings

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is limited (Reichow et al., 2012). Peer-centered approaches have been shown to be ecologically valid and increase peer acceptance, although their limitations include the dependence on school context and instructor expertise (Watkins et al., 2015). Research methods have been found to have significant limitations, such as reliance on parent report, short-term follow-up, and exclusion of children who are less verbal (Sandbank et al., 2020). When expanding research into the community, challenges regarding intervention fidelity need to be addressed (Breitenstein et al., 2010). This article proposes integrating cognitive science principles into intervention design and considering executive function as a moderator variable in order to move toward a more personalized, context-sensitive approach.

To deepen the theoretical foundation of this study, the research seeks to address the following questions:

1. How does decision-making-based intervention planning influence the effectiveness of socialization programs for children with autism?
2. To what extent does the availability of social support resources impact the effectiveness of these programs?
3. How do executive function skills moderate the relationship between social support resources and program effectiveness?

This study targets two practical goals. The objective is an evaluation of the planning process based on a cognitive science approach. The second objective is to examine the role of executive function and social support availability in the effectiveness of socialization programs for children with autism. Previous studies have primarily measured effectiveness in controlled or school settings; this study uses a cognitive framework to guide intervention decisions. The availability and quality of social support are often considered only as contexts for systematic analysis, although community and peer resources significantly shape long-term outcomes (Sokol & Fisher, 2016). This study places executive function in a moderating role that helps clarify why some children master social skills while others do not. Shifting the focus from effectiveness under ideal conditions to ecological validity and individualized intervention design.

2. LITERATURE REVIEW

2.1. Effectiveness of Socialization Programs for Children with Autism

Social communication, peer interaction, and adaptive functioning are benefits of socialization programs for children with autism. Many meta-analyses have shown moderate to large effects, typically for group social skills courses. In particular, the UCLA PEERS program achieved Cohen's *d* of about 0.60 to 1.20 across multiple assessment sources, reflecting significant progress in real-life interactions (Zheng et al., 2021). The implications of these benefits are to facilitate and positively change integration in educational and community contexts, support emotional health, and, in the long term, reduce social costs through stronger social competence (Wolstencroft et al., 2018). Social programs, when properly designed and implemented in the right context, become an important driving force for positive outcomes for both individuals and society.

2.2. Theoretical Framework

2.2.1. Dual-Process Theory of Decision Making

According to the dual-process theory, decision making is done by two different cognitive systems: System 1 and System 2. In the case of System 1, it is faster and more automatic making it more intuitive. It is also linked to emotional functioning and the medial prefrontal cortex. On the other hand, System 2 is slower and more deliberate and reasoning heavy, as well as involving the lateral prefrontal cortex to (Evans & Stanovich, 2008). When designing socialization programs for children with autism, practitioners must always strike a balance between experience and data: intuition helps respond quickly to the classroom context, while evidence-based reasoning helps select sustainable goals and strategies. Optimal outcomes consider data-informed strategies aligned with children's needs; however, educators facing time and resource constraints may rely on prior experiences or models to make decisions. In brain imaging, different regions of the prefrontal cortex are active when people make quick, intuitive decisions. Other regions are engaged when analytical thinking is needed to resolve conflicts, suggesting a biological basis for the existence of two parallel processing systems in the brain (Krawczyk, 2002). For people with autism, studies suggest that they tend to rely more on analytical thinking rather than intuition. This highlights the important role of System 2 and suggests that they may need additional support to process social situations quickly (Brosnan & Ashwin, 2023). The Dual Process Theory offers a cohesive cognitive rationale for choosing, modifying, and evaluating intervention strategies. It also provides justification for employing training and decision support systems aimed at developing contextually appropriate, responsive, and self-sustaining frameworks.

This framework assumes educators and therapists as decision-makers integrate both the fast, intuitive and the slow, analytical reasoning modalities during intervention planning. It also presumes that the decision quality is likely affected by certain self-cognitive biases unless there is effective engagement of System 2 reasoning and that the reasoning style biases of autistic individuals, being more deliberative and less intuitive, affect the presentation of socialization choices and must be integrated into the programmable social decision-support systems.

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2.2.2. Unity and Diversity of Executive Functions Model

Miyake et al.'s Unified and Multifaceted Model of Executive Function (EF) views executive function as a system of related but distinct components: inhibition, working memory updating, and cognitive flexibility (Miyake et al., 2000). In this study, the model is particularly important because it directly relates to the moderator variable "Executive Function Skills," which shapes the extent to which social support influences the effectiveness of socialization programs for children with autism. The three components serve different social needs. Inhibition inhibits impulsive responses when interacting with peers, thereby facilitating group integration. Working memory holds and integrates ongoing information to maintain conversation. Cognitive flexibility supports easier adaptation to changing social and communication contexts. Prior studies have demonstrated that while the domains of executive function are interrelated, each domain uniquely predicts a specific social skill, all of which are crucial for participation in social life (Miyake et al., 2000; Diamond, 2013; Friedman & Miyake, 2017). Regarding executive function in autism spectrum disorder (ASD), the findings tend to be variable; for some children, there are stronger memories of events, but there is a weaker ability to generalize the application of the skills to other situations (Kenworthy et al., 2008; Demetriou et al., 2018). Impulse control difficulties commonly seen in children with autism require the children to be given precise directions in a highly structured setting. Children who have difficulty transitioning tend to respond better to stable methods and gradual approaches to the introduction of change. Framing executive function within a multidimensional approach illustrates the richness of cognitive diversity in children with autism and aligns with cognitive science theories of decision-making. Therefore, socialization programs can be adjusted with greater flexibility, increasing effectiveness while improving the possibility of enduring positive impacts.

This model proposes that executive functioning consists of three distinct constructs: updating, inhibition, and switching, each of which can be assessed independently. These components significantly influence how children with autism process information, adapt, and benefit from social support interventions. This framework emphasizes that identifying individual children's strengths and weaknesses in executive functioning has important predictive value for tailoring interventions, accessing support resources, and program effectiveness.

2.3. Determinants of Effectiveness of Socialization Programs for Children with Autism

2.3.1. Decision-Making Based Intervention Planning

Decision-based intervention planning (DMIP) is a systematic and evidence-based framework to support the selection of appropriate intervention strategies. This approach combines cognitive science principles, empirical data, and situational analysis to indicate optimal pathways, thereby improving program effectiveness. In socialization activities for children with autism, DMIP helps the intervention process become more rational, grounded, and appropriate to each specific context.

DMIPs are relevant in areas such as autism and social and economic aspects, where evidence-based decision-making is needed to build a solid foundation for policies, allocate resources, and promote sustainable development. In health and education, values in transparency, accountability, and long-term impact are built by applying rational frameworks in structured decision-making (Gigerenzer & Gaissmaier, 2011). In resource-constrained situations, it considers conflicting priorities and proposes optimal interventions for stakeholders. In theory, decision-making has long been central to both rational choice economics and cognitive psychology as a bridge between normative efficiency and actual human behavior (Kahneman, 2011). When applied to the design of programs for children with autism, DMIP can be considered an integrative mechanism, linking insights from cognitive science with specific social needs and conditions.

DMIP can make socialization programs for children with autism more effective and enduring, provided the implementation is done properly. From a practical standpoint, planning within a specific framework facilitates the formulation of individualized interventions that are both culturally relevant and aligned with the child's and the family's specific developmental needs. This approach further enhances program continuity and scalability (Odom et al., 2010). Research also shows that adopting an evidence-based practice decision-making framework helps standardize implementation, reduce variation in implementation, and increase evidence-based orientation (Spencer et al., 2012). DMIP can be viewed as a tool to create social benefits through improving family relationships and welfare, as exemplified in DiBlasio's (1998) decision-based model of forgiveness intervention. In economics, resource allocation based on systematic decisions not only reduces waste but also improves investment efficiency, in line with the principles of cost-effectiveness analysis in social policy making (Drummond et al., 2015).

The controversy surrounding the effectiveness of DMIP in supporting children with autism persists. Several scholars posit that the structured decision-making approach within DMIP is beneficial, as the strategy is often accompanied by a reduction of ambiguity, thereby increasing the likelihood that interventions will be more suited to the needs of each child (Kazdin, 2017). Theoretically, this approach is also consistent with the view that clear and systematic planning can help to anticipate difficulties and adjust children's learning and socialization processes. However, some other researchers argue that the impact of DMIP is not always the same but also depends a lot on the actual circumstances. Differences in the presentation of children with autism, along with

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external ecological factors such as the level of family cohesion or community and organizational support, can all alter the effectiveness of the application of this framework (Durlak & DuPre, 2008; Kasari et al., 2014).

These debates reflect a broader dialogue between universalism and contextualism: whether structured decision-making frameworks always ensure superior outcomes in all cases, or whether their effects are highly dependent on their suitability to specific contexts. From a holistic perspective, it can be seen that DMIP has great potential in improving the effectiveness of autism socialization programs, but its results depend heavily on the fidelity of its implementation as well as the flexibility of its application. In other words, DMIP can only truly have a sustainable impact when it ensures both its systematicity and its adaptability. From this analysis, the following research hypothesis is proposed:

H1: Decision-making based intervention planning positively impacts the effectiveness of socialization programs for children with autism.

2.3.2. Availability of Social Support Resources

The availability of social support resources is understood as the accessibility and adequacy of both formal systems, such as therapeutic services, educational programs, and community support groups, and informal systems, including family, friends, and community connections. These resources provide not only emotional support but also practical information and tools for people with autism and their caregivers (Thoits, 2011). In the intervention context, the role of social support becomes particularly important because it determines the ability to maintain participation and the ability to generalize skills to different settings.

At the socio-economic level, social support resources are often considered a pillar in promoting equity in health and education. In places with developed social infrastructure, children with disabilities often have more opportunities to participate in integration programs, thereby gradually reducing long-term dependence and contributing to improving social productivity (Saran et al., 2023). The ability to access social support resources also helps reduce the psychological burden on caregivers, increase family resilience, and facilitate more efficient allocation of health care resources. Duh-Leong et al. (2021) argue that social support, such as through networks and social cohesion, is a core component of social capital that helps children overcome adversity and develop healthily over the long term.

When organized and operated effectively, social support resources can make a significant difference to the effectiveness of autism socialization programs. Families with a network of friends, professionals, and community services are often in a better position to reinforce their children's learned skills in daily life (Cantor, 1989). Many studies have shown that children with autism who receive active support from parents and the community tend to improve significantly in communication skills and interaction (Kasari et al., 2010). Caregivers are more likely to maintain compliance with program recommendations so that intervention effects can be maintained stably and sustainably (Sørensen et al., 2002).

Social support for children with autism has both ethical and economic value. From an ethical perspective, vulnerable groups need to be cared for in the best way possible, which is a shared responsibility of the community in the spirit of social justice (Etzioni, 1994). From an economic perspective, a long-term investment in support that facilitates children's integration and reduces the cost of dependency later is an investment in support resources (Pyatt, 1966). It is clear that from both an economic and ethical perspective, availability of social support resources is a strategic choice for sustainable development.

Although social support is recognized as beneficial, the extent of its impact remains controversial. Some studies suggest that the availability of support resources is an important predictor of children's progress in structured intervention programs, as it not only supplements but also increases the effectiveness of the intervention (Ross et al., 1995). In contrast, other studies show that the impact is often moderate or indirect, depending on the quality of the program and the level of parental involvement (Smith et al., 2012). This discrepancy reflects that the role of social resources is difficult to separate from the specific context of each program. The availability of social support resources positively impacts the effectiveness of socialization programs for children with autism. Children who grow up in environments with strong support networks tend to acquire and generalize social skills more easily, while caregivers maintain a more stable attachment to the program. The proposed hypothesis is that the richness of social support resources predicts a significant improvement in the effectiveness of socialization programs for children with autism.

H2: Availability of social support resources positively impacts the effectiveness of socialization programs for children with autism.

2.3.3. Executive Function Skills

Executive function skills are a set of higher-order cognitive processes such as working memory, inhibitory control, planning, mental flexibility, and emotional regulation. These skills help people to manage their thoughts, behaviors, and responses to complex situations (Barkley, 2012). Executive function is crucial to social and economic life, and those with better executive function tend to self-regulate, express initiative at work, and adapt capacity effectively towards achieving the same rationale, resulting in stronger academic achievement, improved labor productivity, and reduced reliance on support (Diamond, 2013; Miyake et al.,

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2000). In particular, children with autism developing strong executive function will assist in fulfilling the social need more effectively, better understand their environment, and assist in achieving more independent living skills.

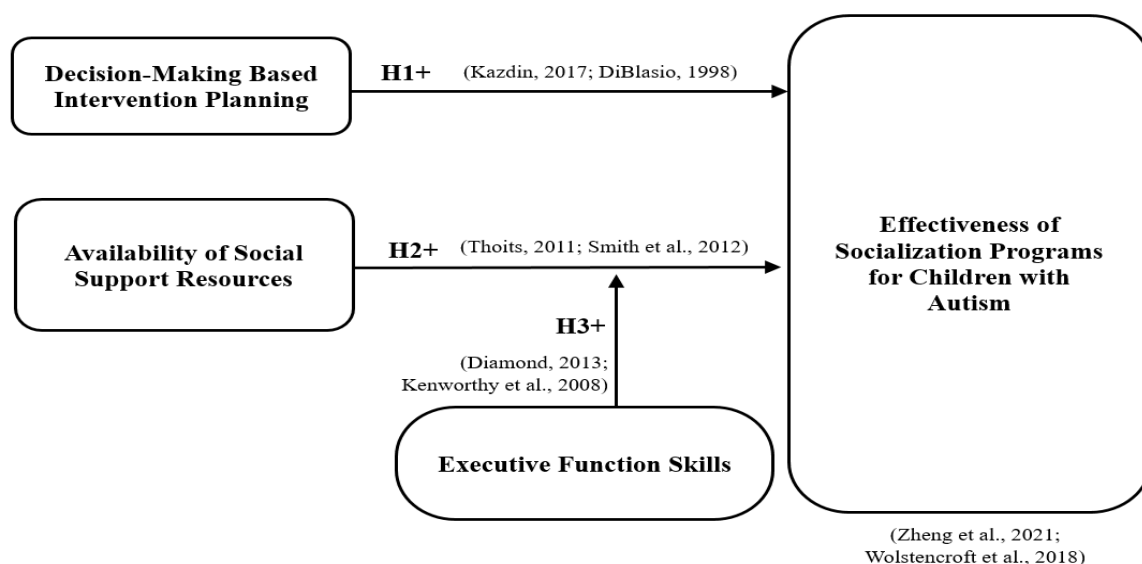
In a mediating role, executive function skills influence the translation of social support resources into positive intervention outcomes. Children with autism having a strong executive functioning profile are likely better able to utilize resources, like peer support or caregiver support, to practice and generalize social skills. Cognitive flexibility allows children to modify their behavior according to the new social context, working memory helps in remembering the order of interactions, and inhibitory control allows them to maintain the right behavior within groups. Empirical research suggests that executive function limitations are often associated with social communication difficulties in children with autism (Kenworthy et al., 2009).

Recent findings also suggest that executive function acts as a “protective shield,” minimizing the negative effects of environmental stress and supporting social development. Positive inhibitory control and effective emotion regulation mitigate the impact of anxiety on adaptive functioning, thereby reducing the likelihood of difficulties in areas such as social interaction and communication (Cardinale et al., 2019). When placed in the context of social support, children with strong executive functioning skills are more likely to be able to effectively exploit community and family support, thereby achieving long-term and widespread progress in social skills. In contrast, children with limited executive functioning may benefit less, even when support resources are abundant.

However, there is debate about the strength of this moderating role. Some scholars have suggested that executive functioning exerts a significant moderating effect, helping children to flexibly and reflectively engage with support systems, thereby increasing program effectiveness (Miller et al., 2015). This argument is consistent with the neurocognitive perspective, which sees cognitive control as central to learning and adaptation. Evidence from other populations also suggests that well-designed and specifically guided programs can reduce dependence on baseline executive skills; for example, older adults with mild cognitive impairment have been shown to benefit despite reduced executive function (Law et al., 2019). This is an approach consistent with ecological transactional theory, which emphasizes the interaction between individual capabilities and environmental adaptability.

The discussion of the regulatory role of executive function can extend beyond the realm of psychology to philosophical and socio-economic dimensions. On the philosophical level, the concept suggests that social integration requires a combination of individual cognitive development and environmental opportunities; only when these two factors work together can the integration process be comprehensive. On the economic level, human capital theory suggests that enhancing executive skills both supports individual development and improves the efficiency of using social support resources, thereby increasing the return on investment.

H3: Executive function skills moderate the effect of the availability of social support resources on the effectiveness of socialization programs for children with autism.



3. METHODOLOGY

In this research, the authors opted for a stratified probability-based sampling method for inclusion of representations of a variety of stakeholder groups in the support and intervention systems for children with autism in Vietnam. This is also consistent with general recommendations in sampling strategies about obtaining social research in Creswell & Creswell (2017).

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The questionnaire was elaborately constructed, referring to many important theoretical sources: decision-based intervention planning (Kahneman, 2011; Gigerenzer & Gaissmaier, 2011), the unity and diversity model of executive function (Miyake et al., 2000; Diamond, 2013), and the theoretical framework of social capital in support systems (Thoits, 2011; Duh-Leong et al., 2021). The survey instrument used a 5-point Likert scale to capture attitudes and perceptions related to intervention planning, access to social resources, executive skills, and program effectiveness.

Four core groups emerged from participants: parents of children with autism ages 6–18 from varying socio-economic conditions (Kasari et al., 2010); teachers and therapists who were direct agents through classroom or intervention experiences (Locke et al., 2019), the community group who were professionals, including mental health counselors, social workers, and NGO representatives, who were involved in supporting autism programming (Breitenstein et al., 2010), and lastly the researchers and postgraduate scholars who were studying, developmental psychology, special education, and cognitive science (Demetriou et al., 2018). The ratios between the groups were appropriately set up to help ensure a variety of perspectives can be reflected in the data, ranging from parents to professionals.

Data were collected in two forms. Online surveys were distributed through autism support networks, educational forums, and professional mailing lists; while face-to-face surveys were conducted at inclusive schools, family counseling centers, and autism support associations in major cities (Sokol & Fisher, 2016). A total of 624 responses were collected. After a thorough data cleaning process—removing missing or stereotyped responses—385 valid responses were ultimately selected at random (Kazdin, 2021). The dataset was balanced on gender, family structure, and worker roles, hence represented a fairly broad range of multidimensional variables that impact the gift of socialization programs.

This participant recruitment strategy was in keeping with the purpose of study: analyzing, structured decision making and social support availability and to examine the role of executive functioning skills on the ecological validity and sustainable outcomes of socialization programs for children with autism (Kenworthy et al., 2009; Cardinale et al., 2019).

4.RESULTS

4.1. Reliability analysis

Table 1: Reliability analysis of the dependent variable. Source: (The authors, 2025)

Reliability Statistics				
Cronbach's Alpha	N of Items			
.803	4			
Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SPCA1	8.757	8.551	.772	.798
SPCA2	8.080	5.003	.743	.756
SPCA3	7.170	6.659	.720	.780
SPCA4	7.932	7.908	.632	.686

In this study, SPCA1 to SPCA4 were used as representative codes for the first four questions of the effectiveness of socialization programs for children with autism scale.

The results presented in Table 1 show that all dependent variables have a minimum adjusted item-total correlation coefficient of 0.3. The overall Cronbach's Alpha value is 0.803, which is significantly higher than the conventional acceptance threshold of 0.7, and is also larger than any value that could be obtained if any variable is removed. In addition, the Cronbach's Alpha coefficient of each variable exceeds the corresponding adjusted item-total correlation coefficient, even in the case of the assumed exclusion of the variable. On that basis, all variables are retained for the next step of analysis. Consistent results are also recorded in the Cronbach's Alpha of other groups of variables, reflecting the stability of reliability.

4.2. Exploratory factor analysis (EFA)

Table 2: Rotated Component Matrix. Source: (The authors, 2025)

Rotated Component Matrix ^a			
Component with loading factors			
1	2	3	4

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SPCA1 .613	DIP1 .581	SSP1 .740	EFS1 .650
SPCA2 .619	DIP2 .683	SSP2 .752	EFS2 .759
SPCA3 .730	DIP3 .611	SSP3 .627	EFS3 .764
SPCA4 .600	DIP4 .739	SSP4 .685	EFS4 .708
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 7 iterations.			

In the scale, the survey items SSP1–SSP4, DIP1–DIP4, and EFS1–EFS4 represent four questions designed to measure two independent variables and the moderator variable, respectively.

The results in Table 2 show that the component matrix analysis after rotation successfully separated the 16 observed variables into four separate factor groups, reflecting the dependent variable, two independent variables, and the moderator variable. All variables achieved factor loadings greater than 0.5, and no variables were eliminated during the analysis process.

4.3. Multiple linear regression model

Table 3: Coefficients^a. Source: (The authors, 2025)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.312	.702		4.336	.000
1 DIP	.624	.856	.608	3.440	.000
SSP	.723	.894	.719	3.000	.000

a. Dependent variable: SPCA

In the study, **SPCA** is calculated as the average value of SPCA1–SPCA4; **DIP** is the average of DIP1–DIP4; and **SSP** is the average of SSP1–SSP4.

The results presented in Table 3 show that the Sig. values from the t-test are 0.000, which are both smaller than the significance threshold of 0.05. This proves that the independent variables have a statistically significant effect on the dependent variable, and confirms both first research hypotheses.

4.4. Moderator analysis

Table 4: Results analysis of “Executive Function Skills”. Source: (The authors, 2025)

Model : 1

Y : SPCA

X : DIP

W : EFS

Sample Size: 385

OUTCOME VARIABLE:

SPCA

Model Summary

R	R-sq	MSE	F	dl1	dl2	p
.741	.549	.655	6.916	3.000	381.000	.000

Model

	coeff	se	t	p	LLCI	ULCI
constant	7.368	.777	63.025	.000	8.011	7.998
DIP	.569	.566	4.301	.000	.756	.751
EFS	.573	.720	4.867	.000	.678	.665
Int_1	.484	.934	4.527	.000	.645	.636

In the study, EFS is defined as the mean value of EFS1–EFS4. The results in Table 4 show that the p-value of the interaction variable (Int_1) is 0.000, which is significantly smaller than the significance threshold of 0.05. This confirms the statistically significant

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interaction relationship between executive function skills and availability of social support resources in determining the effectiveness of socialization programs for children with autism. The interaction coefficient of 0.484 indicates that as children have stronger executive function skills, the positive effect of social support resources on socialization programs for children with autism is more pronounced. Therefore, hypothesis H3 is confirmed.

5. DISCUSSION

5.1. Result summary

The regression analysis reveals that the availability of social support resources exerts the most substantial effect on the effectiveness of socialization programs for children with autism, with a coefficient of 0.719. Decision-making-based intervention planning also demonstrates a meaningful influence, though to a lesser degree, reflected in its coefficient of 0.608. Moreover, executive function skills act as a moderating factor, shaping the link between social support resources and the effectiveness with a moderate effect size (0.484). This analytical approach was employed to thoroughly address the research questions and to illuminate the relationships among the principal variables.

5.2. Theoretical implication

The results of the study demonstrate that structured decision-based intervention planning (DMIP), can contribute significantly ($\beta = 0.608$) to socialization programs for children with autism. This aligns with Kahneman (2011) and Gigerenzer & Gaissmaier (2011)'s views on putting a systematic decision-making framework in place reduces uncertainty and ensures evidence-based practice. Notably, the evidence presented challenges Durlak and DuPre's (2008) argument that implementation quality is seen as a dominant factor over planning. On the contrary, the data here show that planning itself remains an important explanatory factor, even under different implementation conditions. In addition, the results also bring into direct dialogue contextualist perspectives, which have questioned the adaptability of DMIP models as universal (Kasari et al., 2014). In fact, this study confirms that, although not the strongest predictor, decision-making frameworks are still essential in shaping long-term intervention outcomes. The implication, therefore, is that a middle ground must be found by program designers as opposed to taking one of the two extremes: combining decision-making systems with flexibility for specific contexts. This combination may help resolve the perennially contested arguments on universal versus context-specific perspectives in interventions for children with autism.

The research results stated that the availability of social support resources was the strongest predictor of program effectiveness ($\beta = 0.719$). This is an argument raised by Kasari et al. (2010) and Cantor (1989) that successful change depends on stable family, peer, and community relationships. Concurrently, this evidence aligns with Saran et al.'s (2023) idea of emphasizing investment and replication of support systems, as it generates social integration and prevents long-term dependency. This evidence runs counter to partially Smith et al.'s (2012) findings that social support's effect is generally moderate or indirect depending on program quality. The current data suggest that, regardless of differences in implementation, social support emerges as an important predictor. Furthermore, the results also challenge the reductionist view that community infrastructure is increasingly less important in shaping outcomes. However, the study shows that even well-designed interventions are at risk of failure without support networks. Social support is thus repositioned not as an additional element, but as a central pillar that ensures the sustainability of the program.

The results of the analysis showed that the effectiveness of the program depended not only on the level of social support but also on the child's regulatory capacity ($\beta = 0.484$). When this capacity was developed, family and community resources became more useful, which Miller et al. (2015) and Cardinale et al. (2019) described as a "protective layer" for the intervention. However, the data obtained were not entirely consistent with Demetriou et al. (2018), who pointed out that differences in the regulatory profile of children with autism may have attenuated this mediating role. Notably, the results were contrary to Law et al. (2019), who believed that program design and instruction could override regulatory limitations; here, regulatory function still emerged as a key factor. The implication is that this skill cannot be ignored, but needs to be nurtured alongside intervention implementation, to create a real bridge between cognitive capacity and environmental support. From a human capital perspective, this reinforces the argument that regulatory capacity doubles the benefits of social investments.

5.3. Practical Implications

The analysis showed that when intervention planning was guided by systematic decision-making frameworks, program effectiveness increased significantly ($\beta = 0.608$). The implications of this finding are practical: instead of relying on intuition or treating situations on a case-by-case basis, teachers and therapists need to use tools developed from cognitive science to tailor and implement interventions in a more coherent manner. Previous studies have also shown that applying such decision-making frameworks helps reduce ambiguity and keeps the intervention process stable and consistent (Gigerenzer & Gaissmaier, 2011; Kahneman, 2011). At the institutional level, educational agencies or NGOs can incorporate these processes into policies and

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standards, thereby ensuring that measures are both evidence-based and flexible to local conditions. This approach also helps to narrow the effectiveness gap between resource-rich and resource-poor areas.

Meanwhile, the strong impact of social support resources ($\beta = 0.719$) rings another bell: without family, friends, and community networks, any intervention efforts will be difficult to sustain. Peer support groups, parent education, or inclusive community spaces—these are all linkers that help children maintain connections outside of the classroom (Kasari et al., 2010; Cantor, 1989). For policymakers, there is a clear take-home message: funding social infrastructure and social therapy services is logical and will likely alleviate social costs in the long run (Saran et al., 2023). Additionally, schools should be thought of as locations through which families access a wider network of therapists, NGOs, and seasoned caregivers.

Another highlight from the analysis is the role of cognitive moderators ($\beta = 0.484$). When children are hindered by working memory, inhibitory control, or cognitive flexibility deficits, social support networks will be less effective. Because of this, combined with socialization programs, executive skills training should be incorporated into specific tasks related to executive skills supporting planning, monitoring progress, or cognitive flexibility or inhibitory control of behaviors (Miyake et al., 2000; Diamond, 2013). At the policy level, early assessment of executive mental capacity opens the door for us to be granted an opportunity to develop individualized education plans that can assist the students of lesser capacity. This approach not only overcomes the fragmented service situation but also creates a direct bridge between social support and cognitive development. Above all, it affirms that strengthening executive function is a fundamental condition for maximizing the benefits from the resources that the community invests (Cardinale et al., 2019).

5.4. Limitations

There are several cautions with the findings in this study. Although the survey included diverse stakeholders across Vietnam, reliance on self-reported measures posed threats of social desirability and subjective bias (Sandbank et al., 2020). Cross-sectional design also excludes causal assertions because program modifications and long-term effects were not followed up (Gates et al., 2017). Severely communication-impaired children, who are a group often missing from big sample studies and will likely have lower effectiveness (Kenworthy et al., 2008), were excluded. Between-community implementation fidelity was not directly assessed, and hence it is difficult to interpret effectiveness differences even when there are stark statistical correlations (Locke et al., 2019).

5.5. Future Research Directions

Future research should utilize longitudinal and experimental designs to address the limitations of cross-sectional studies and examine the sustainability of results. Longitudinal follow-up will help identify whether decision-making models and social support resources remain predictive as children evolve into adolescence and adulthood (Reichow et al., 2012). It is important to study children with severe or minimally verbal autism, who do not communicate and have been inadequately researched (Sandbank et al., 2020). Using neurocognitive assessments in conjunction with traditional psychometric measures should clarify the relationship between the environment and executive function in people's developmental pathways (Demetriou et al., 2018). Comparison of subjects in different countries or communities with different resources may identify culturally relevant variations of models and scalable interventions (Saran et al., 2023).

5.6. CONCLUSION

Research outcomes indicate that the effectiveness of socialization programs for children with autism is not determined by one factor but by the intersection of structured decision-making, social support, and family and community networks, with executive function capacity being process-led and benefiting from family and community networks, providing a solid foundation for maintaining intervention outcomes. Evidence-based planning frameworks support programs to be more stable and effective, and children's executive function enables regulatory functions, allowing for optimal use of action resources. Therefore, developing a sustainable family-community interventional program requires a focus on cognition, social engagement, and executive development, and setting the stage for long-term whole-of-community social inclusion.

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Table 5: Survey Questionnaire

Background information

Please indicate your role in relation to autism intervention and support	Parent of a child with autism (aged 6–18)	Educator/teacher	Therapist/counselor/social worker/NGO staff	Academic researcher/postgraduate student	
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Which region best represents your place of residence or professional activity?	Northern Vietnam	Central Vietnam	Southern Vietnam	Other (please specify)	
Please specify your gender	Male	Female	Prefer not to say		
What is your highest level of education completed?	Secondary school	Undergraduate degree	Master's degree	Doctoral degree	Other (please specify)

No.	Variables	Coded Sub-variables	Content
1.	Effectiveness of Socialization Programs for Children with Autism	SPCA1	Group social skills programs (e.g., structured sessions) improve my/our child's ability to interact effectively in natural social settings (Zheng et al., 2021; Wolstencroft et al., 2018)
		SPCA2	The effectiveness of socialization programs for children with autism depends significantly on their relevance to the specific context, including the level of family engagement and community support (Kazdin, 2017; Durlak & DuPre, 2008)
		SPCA3	Support networks from family, friends, and community help children with autism maintain learned social skills and significantly improve communication abilities, thereby enhancing the effectiveness of socialization programs (Cantor, 1989; Kasari et al., 2010)
		SPCA4	With a well-developed social infrastructure and effectively implemented socialization programs, children with autism have more opportunities to integrate, reduce long-term dependence, and contribute positively to the community (Wolstencroft et al., 2018; Saran et al., 2023)
2.	Decision-Making Based Intervention Planning	DIP1	Using structured, evidence-based decision-making improves the appropriateness of intervention strategies for children with autism (Gigerenzer & Gaissmaier, 2011; Kahneman, 2011)
		DIP2	DMIP reduces ambiguity and helps interventions become more context-sensitive and personalized (Kazdin, 2017; Durlak & DuPre, 2008)
		DIP3	Intervention planning based on cognitive science frameworks increases program continuity and scalability (Odom et al., 2010; Spencer et al., 2012)
		DIP4	Decision-making frameworks ensure more efficient allocation of resources and enhance the cost-effectiveness of autism programs (Drummond et al., 2015; DiBlasio, 1998)
3.	Availability of Social Support Resources	SSP1	Access to both formal systems (e.g., therapy, education programs) and informal systems (e.g., family, community) enhances intervention outcomes (Thoits, 2011; Cantor, 1989)

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		SSP2	Children with autism in supportive communities generalize social skills more effectively across contexts (Kasari et al., 2010; Sörensen et al., 2002)
		SSP3	Availability of strong support networks significantly reduces the psychological burden on caregivers and improves program sustainability (Smith et al., 2012; Duh-Leong et al., 2021)
		SSP4	Long-term investments in social support resources reduce dependency costs and improve integration outcomes for children with autism (Saran et al., 2023; Etzioni, 1994)
4.	Executive Function Skills	EFS1	Strong inhibitory control helps children with autism regulate impulsive responses during social interactions (Miyake et al., 2000; Diamond, 2013)
		EFS2	Working memory capacity enhances the ability to maintain conversations and apply learned social skills in real contexts (Kenworthy et al., 2009; Demetriou et al., 2018)
		EFS3	Cognitive flexibility enables children with autism to adapt their behavior to different and changing social situations (Friedman & Miyake, 2017; Kenworthy et al., 2008)
		EFS4	Executive function skills moderate how effectively children can utilize social support resources to improve long-term program outcomes (Cardinale et al., 2019; Miller et al., 2015)

Survey link: <https://forms.gle/oZ6Y3nsNZaExTWQi6>



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