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REVIEWING LEARNING BARRIERS, SOCIAL
DEVELOPMENT, AND FUTURE DIRECTIONS**Nik Nurul Afiqah Wan Zainodin^{1*}, Mohd Syazwan Zainal²¹ Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia
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DOI: 10.35631/IJEPC.1061016**This work is licensed under** [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)**Abstract:**

High-functioning Autism (HFA), often used to describe individuals on the autism spectrum with average or above-average intellectual ability, presents unique challenges during adolescence—a developmental stage marked by heightened academic, social, and emotional demands. This conceptual paper examines the learning experiences of adolescents with HFA by exploring the intersection of cognitive, social, and environmental factors that shape their educational and personal trajectories. Although global literature has identified effective strategies to support this group, much of the evidence stems from Western contexts, leaving a significant gap in culturally relevant studies within Southeast Asia, particularly Malaysia. The underdiagnosis of HFA in Malaysia, coupled with insufficiently tailored educational supports, contributes to persistent barriers in school engagement, academic performance, and long-term developmental outcomes. This paper synthesizes current evidence on the challenges faced by adolescents with HFA—such as executive functioning difficulties, social communication barriers, and limited access to emotional and behavioral supports—while also highlighting intervention models including peer-mediated instruction, structured social skills training, and family-centered practices. Furthermore, it addresses systemic and cultural factors, including policy gaps and limited professional awareness, that hinder inclusive practices in Malaysian schools. Drawing on both regional insights and global perspectives, the paper proposes future directions for Malaysia, emphasizing the development of culturally adapted intervention frameworks, improved diagnostic protocols, stronger parental collaboration, and innovative service delivery methods such as tele-therapy. By underscoring the importance of localized, collaborative, and contextually sensitive approaches, this paper aims

to inform educators, policymakers, and practitioners in advancing inclusive education and promoting the holistic well-being of adolescents with HFA.

Keywords:

High-functioning Autism, Adolescent, Challenges, Future Directions

Introduction

High-functioning Autism (HFA), refers to individuals on the autism spectrum who exhibit average to above-average intellectual ability and relatively intact language development. While these characteristics might suggest minimal impairment, the reality is far more complex. Adolescents with HFA face distinctive challenges that extend well beyond academic competence, with difficulties becoming especially evident in areas such as social communication, pragmatic language use, and adaptive functioning (Huang & Wheeler, 2006; Koelkebeck et al., 2014). These are not peripheral issues; rather, they directly affect how adolescents navigate the increasing expectations of independence, peer relationships, and academic responsibility that define this developmental stage. Adolescence is a critical turning point in human development. It is marked by heightened demands for autonomy, the consolidation of identity, and the expansion of social networks. For adolescents with HFA, these developmental milestones often intersect with the core difficulties of autism, magnifying their struggles and limiting opportunities for full participation in school, family, and community life. What may appear as subtle impairments in earlier childhood become more visible and consequential in adolescence, as social and academic contexts demand greater flexibility and adaptability.

Globally, the recognition of these unique challenges has driven research into cognitive, emotional, and social functioning in HFA. Studies consistently reveal deficits in interpreting facial expressions, understanding others' perspectives, and managing executive functions that regulate behavior in dynamic environments (Baghdadli et al., 2010; Domes et al., 2008). Neuroimaging evidence supports these behavioral observations, showing differences in brain regions responsible for social cognition and emotional regulation (Domes et al., 2008; Van Elst, 2019). These findings reinforce the understanding that HFA is not merely a behavioral label but a neurodevelopmental condition with distinct biological underpinnings. Despite such advances, challenges remain in the accurate diagnosis of HFA. Adolescents may conceal or compensate for their difficulties, leading to misinterpretation of symptoms as personality traits or mood disorders. In adults, compensatory behaviors often obscure autistic traits further, resulting in underdiagnosis or misdiagnosis, particularly in psychiatric contexts where overlaps with anxiety, depression, or ADHD are common (Cicogni et al., 2008; Van Elst, Biscaldi, & Riedel, 2016). Proper identification is essential for tailoring interventions that prevent cascading psychosocial difficulties and enable timely support.

In Malaysia and much of Southeast Asia, research on HFA remains limited. While evidence-based interventions are well-documented in Western contexts, local studies on adolescents' learning experiences, developmental needs, and culturally adapted interventions are scarce. Systemic gaps in policy, a shortage of trained professionals, and cultural stigma surrounding autism contribute to late identification and inadequate support. This creates a pressing need to contextualize global evidence within the Malaysian environment, addressing not only the challenges of adolescents with HFA but also the societal structures that shape their

opportunities for development. This review aims to synthesize current knowledge on the challenges faced by adolescents with HFA, with particular emphasis on social, emotional, academic, and transitional domains. It further explores the role of family and school environments, while highlighting the paucity of localized research in Malaysia. By situating these discussions within both global and cultural contexts, the paper underscores the urgency of developing targeted, inclusive, and culturally relevant interventions.

Overview of Challenges for Adolescents with High-Functioning Autism

Adolescents with HFA encounter a constellation of interconnected challenges that extend across social, emotional, academic, familial, and transitional domains. These challenges are deeply intertwined and cannot be understood in isolation, as difficulties in one area often exacerbate vulnerabilities in another.

Table 1: Challenges for Adolescents with High-Functioning Autism

Domain	Key Challenges	Evidence from Literature
Social Functioning	Difficulties in initiating/sustaining conversations; misinterpretation of nonverbal cues; peer rejection and bullying	Linked to deficits in theory of mind and executive functioning (Baghdadli et al., 2010; Domes et al., 2008; Van Elst, 2019); higher risk of exclusion (Cottenceau et al., 2012; Papadopoulos et al., 2023)
Emotional Well-Being	High prevalence of anxiety and depression; heightened self-awareness intensifying distress	Adolescents with HFA show increased psychiatric comorbidity (Defilippis, 2018; Hurtig et al., 2009; Connolly & Pierson, 2012)
Academic & Cognitive	Uneven cognitive profiles; executive function deficits (working memory, planning, flexibility); underachievement despite high IQ	Lower verbal IQ linked to social difficulties (Kozunova et al., 2023); executive deficits hinder academic performance (Lai et al., 2017; Roselló et al., 2022); behavioral issues complicate learning (Cambric & Agazzi, 2019)
Family Environment	Parental stress; inconsistent support; emotional climate influences adolescent outcomes	Family coping styles strongly affect adjustment (Roselló et al., 2022)
Transition to Adulthood	Struggles with independence, time management, social integration in higher education and employment	Difficulties in unstructured environments (Van Hees et al., 2015); vocational barriers (Vogeley et al., 2013)
Cultural Context (Malaysia)	Underdiagnosis, lack of tailored interventions, stigma, shortage of trained professionals	Limited Southeast Asian research; systemic gaps in schools (Roselló et al., 2022; regional reports)

Social communication deficits are among the most consistently reported difficulties in this group. Adolescents with HFA frequently struggle to initiate and sustain conversations, interpret nonverbal signals, and navigate the complexities of peer dynamics (Cottenceau et al., 2012; Dale et al., 2022; Papadopoulos et al., 2023). These impairments, rooted in weaknesses in theory of mind and executive functioning, limit their ability to interpret others' perspectives

and adjust behavior flexibly in dynamic social contexts (Baghdadli et al., 2010). Neuroimaging studies support these findings, showing structural and functional differences in brain regions related to social cognition (Domes et al., 2008; Van Elst, 2019). The consequences of such difficulties extend beyond daily interactions, often resulting in peer rejection, exclusion, and bullying, which in turn reinforce social withdrawal and erode self-esteem.

These social challenges are closely connected to emotional well-being. Adolescents with HFA are particularly vulnerable to co-occurring psychiatric conditions such as anxiety and depression (Defilippis, 2018; Hurtig et al., 2009). Unlike younger children, many adolescents with average or above-average intellectual functioning possess a heightened awareness of their social limitations, which can intensify distress when aspirations for belonging remain unmet (Connolly & Pierson, 2012). This awareness creates cycles of psychological strain that, if not addressed, place individuals at risk of enduring mental health complications. Evidence suggests that targeted interventions, including cognitive-behavioral therapy (CBT) and Acceptance and Commitment Therapy (ACT), can reduce stress, enhance emotional regulation, and promote resilience (Pahnke et al., 2014).

Academically, adolescents with HFA often demonstrate uneven performance despite having intellectual capacity within or above the typical range. Deficits in executive functioning—such as working memory, cognitive flexibility, and planning—impair time management, organization, and adaptation to changing routines, which are essential for success in secondary education (Lai et al., 2017; Roselló et al., 2022). In addition, impulsivity, distractibility, and difficulties with self-regulation often complicate classroom adjustment (Cambric & Agazzi, 2019). Some studies also highlight that lower verbal IQ in certain adolescents with HFA correlates with more severe social challenges (Kozunova et al., 2023). Importantly, motivation in this group is shaped less by intellectual ability and more by contextual support, structured environments, and personal interests, challenging conventional assumptions in education that equate higher intelligence with fewer learning barriers (Kozunova et al., 2023).

The role of the family is equally critical in shaping adolescent outcomes. Parental stress, coping strategies, and household dynamics significantly influence adaptive functioning and social development (Roselló et al., 2022). High stress levels can undermine supportive practices, while positive coping mechanisms foster resilience and adjustment. Family-centered interventions that equip parents with stress management skills, effective communication strategies, and practical support mechanisms are therefore essential. When family efforts are combined with school-based initiatives—such as social skills training, peer-mediated learning, and inclusive classroom practices—adolescents benefit from a consistent and supportive environment that promotes both academic and social development (Stichter et al., 2010; Zanuttini & Little, 2022).

As adolescents transition into adulthood, the challenges of HFA often intensify. In higher education, difficulties with social integration, time management, and self-regulation can hinder adjustment to less structured environments (Van Hees, Moyson, & Roeyers, 2015). Without adequate institutional support, these difficulties may result in academic withdrawal or limited success. Similarly, entry into employment introduces barriers related to workplace social demands and organizational expectations. Supported work programs and structured transition planning have been shown to improve vocational outcomes and promote social inclusion

(Vogeley et al., 2013), emphasizing the lifelong significance of interventions initiated during adolescence.

Finally, cultural and systemic factors shape the lived experiences of adolescents with HFA, particularly in non-Western contexts. In Malaysia, limited research, systemic gaps, and cultural stigma contribute to late identification and insufficient support for this population. Schools often lack specialized frameworks and trained professionals to address their unique needs, while families face barriers in accessing services. Societal stigma further limits acceptance and opportunities for inclusion. Addressing these issues requires culturally sensitive approaches, including the development of localized diagnostic tools, school-based interventions that reflect community norms, and innovative models such as tele-therapy to expand access. Strengthening parental involvement and fostering public awareness are also critical for reducing stigma and creating inclusive educational environments.

Taken together, the literature highlights that adolescents with HFA face a complex interplay of social, emotional, academic, and cultural challenges that extend across family and institutional settings. Effective support requires an integrated approach that simultaneously addresses cognitive deficits, emotional well-being, and systemic barriers, while also being responsive to cultural context. Such a holistic perspective underscores the urgency of developing interventions that move beyond Western frameworks and are adapted to the realities of local systems such as those in Malaysia.

Learning Challenges and Interventions for Adolescents with High-Functioning Autism

Adolescents with HFA encounter a complex array of challenges that affect their learning, social experiences, and overall quality of life. Unlike younger children, adolescents are expected to navigate more sophisticated academic tasks, form deeper social connections, and prepare for future independence. For those with HFA, these developmental demands are complicated by persistent difficulties in social communication, cognitive functioning, and adaptive skills. As such, adolescence is a pivotal stage where the absence of timely and targeted interventions can widen developmental gaps, leading to long-term difficulties in adulthood.

Table 2: Learning Challenges and Interventions for Adolescents with High-Functioning Autism

Aspect	Challenges	Interventions
Social Communication	Difficulties in peer interaction, risk of isolation and depression (Kelly et al., 2018; Laurent & Rubin, 2004; Zanuttini & Little, 2022)	Peer mentoring, group-based social skills training, PMII (Herbrecht & Poustka, 2007; Choque Olsson et al., 2016; Zanuttini & Little, 2022)
Cognitive Functions	Executive dysfunction and working memory issues, often worsened by sleep problems (Calhoun et al., 2020; Boujarwah et al., 2010; Castellanos et al., 2020)	Sleep intervention, executive function training, computer-assisted tools (Boujarwah et al., 2010; Castellanos et al., 2020)
Quality of Life	Low satisfaction in friendships and leisure activities; stronger relationships with adults (Cottenceau et al., 2012)	Strength-based curriculum, flexible and supportive school environments (Wu et al., 2019)

Social Training	Skills	Limited acquisition of social norms without direct instruction (Choque Olsson et al., 2016; Fritsch et al., 2009; Riedl et al., 2009)	Role-playing, structured practice, AI-assisted social scenario training (Fritsch et al., 2009; Riedl et al., 2009)
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Table 2 outlines four critical domains where adolescents with HFA experience difficulties—social communication, cognitive functions, quality of life, and social skill development—along with evidence-based interventions that can mitigate these challenges. Together, these insights provide a framework for understanding the barriers adolescents face and the supports that can foster both academic and personal growth. Social Communication is a central area of difficulty for adolescents with HFA. They often struggle with interpreting social cues, maintaining reciprocal conversations, and sustaining friendships. These challenges heighten the risk of social isolation, which in turn increases vulnerability to depression and anxiety (Kelly et al., 2018; Laurent & Rubin, 2004). Effective interventions include peer mentoring programs and group-based social skills training, which allow adolescents to practice communication in structured yet natural contexts. Peer-mediated instructional interventions (PMII) have been particularly successful in promoting inclusion by training typically developing peers to support social interaction (Herbrecht & Poustka, 2007; Zanuttini & Little, 2022). Such approaches not only strengthen the social skills of students with HFA but also promote empathy and awareness among peers.

Cognitive functions represent another domain of concern. Adolescents with HFA frequently display executive dysfunction, such as difficulties with working memory, planning, and cognitive flexibility (Calhoun et al., 2020). Sleep problems, which are prevalent in this population, further exacerbate these cognitive challenges (Boujarwah et al., 2010; Castellanos et al., 2020). To address these deficits, interventions such as executive function training and sleep-focused programs have shown promise. Computer-assisted learning tools also provide adaptive strategies to support organization, task completion, and problem-solving, making academic tasks more manageable. These interventions highlight the importance of targeting underlying cognitive processes rather than focusing solely on behavioral outcomes.

Quality of life issues are equally significant. Adolescents with HFA often report lower satisfaction in friendships and leisure activities, reflecting the difficulties they face in achieving meaningful peer relationships (Cottenceau et al., 2012). Interestingly, they tend to form stronger connections with adults than with same-age peers, which may provide support but also underscores the gap in peer integration. Schools can address this by implementing strength-based curricula that recognize individual talents and create opportunities for adolescents to engage in activities aligned with their interests. Flexible and supportive educational environments, which accommodate differences in pace and style of learning, are also essential in fostering a sense of belonging and improving quality of life (Wu et al., 2019).

Social skills training is another area where targeted support is necessary. Adolescents with HFA often fail to acquire implicit social norms through observation alone, making direct instruction essential (Choque Olsson et al., 2016). Structured practices such as role-playing and rehearsal in safe environments allow adolescents to experiment with social behaviors and receive feedback. Emerging technologies further expand these opportunities. AI-assisted social scenario training, for example, provides realistic simulations where adolescents can practice responses without the social risks present in real-life interactions (Fritsch et al., 2009; Riedl et

al., 2009). By combining traditional methods with innovative technological tools, social skills training can be adapted to individual needs and modern educational contexts.

Taken together, these four domains illustrate the multifaceted nature of challenges faced by adolescents with HFA. The interventions highlighted in the table emphasize the importance of early, consistent, and context-sensitive approaches. Social communication deficits require strategies that build inclusion and peer support, while cognitive challenges call for targeted training and accommodations that address executive functioning and sleep. Enhancing quality of life demands environments that value strengths and foster meaningful participation, while social skills development benefits from both traditional role-play methods and technology-driven innovations. Ultimately, the transition through adolescence for individuals with HFA is not only about academic achievement but also about developing the resilience, skills, and relationships necessary for adult life. Evidence-based interventions, when applied systematically across these domains, can help bridge the gap between potential and performance, empowering adolescents with HFA to thrive in both academic and social contexts.

Learning Experiences of Adolescents with High-Functioning Autism in Asia: A Narrative Review

The learning experiences of adolescents with HFA in Asia are shaped by a dynamic interplay of educational environments, cultural values, and family systems. Unlike in Western contexts, where intervention frameworks are well established, many Asian countries are still developing contextually relevant approaches that account for cultural expectations, resource availability, and social norms. Adolescence itself is a critical stage, marked by increasing demands for autonomy, peer interaction, and academic achievement, making it imperative to examine how supports are structured in Asian settings.

In Singapore, school engagement among adolescents with HFA has been found to depend strongly on environmental supports. Research highlights that students actively construct their learning experiences, with supportive classroom structures and teacher involvement acting as key facilitators (Poon et al., 2014). Yet, participation barriers persist, particularly in communication and community-based contexts, where adolescents often face greater challenges than in general activity engagement (Poon, 2011). This underscores the importance of tailoring interventions not only to academic tasks but also to broader participation in school and community life.

Culturally adapted programs have shown significant promise in improving social outcomes. In Hong Kong, the implementation of the Program for the Education and Enrichment of Relational Skills (PEERS®) demonstrated substantial effectiveness in enhancing the social functioning of adolescents with autism (Shum et al., 2019). The program's success highlights the value of adapting intervention models to fit cultural norms, including how friendships are formed, maintained, and expressed within the local context. Similarly, in Thailand, recent research emphasizes that adolescents, caregivers, and professionals view social skills training as most effective when it reflects cultural expectations, incorporates parental participation, and aligns with local communication styles (Tawankanjanachot et al., 2024). These findings affirm the necessity of culturally grounded interventions that resonate with adolescents' lived experiences.

Emotional and social challenges further complicate learning experiences in Asia. Research in Taiwan has revealed that adolescents with autism often report lower friendship quality, reduced levels of school participation, and higher rates of anxiety and loneliness compared to their neurotypical peers (Chang et al., 2019). These difficulties affect not only social development but also academic performance, as emotional well-being and classroom engagement are deeply interlinked. Additional studies from Taiwan also indicate that adolescents can articulate preferred activities but face both personal and environmental barriers to participation, including lack of accessible resources and limited social support (Wang & Berg, 2014). Addressing these barriers requires context-specific solutions that integrate emotional support with structured learning opportunities.

Parental involvement emerges as a cornerstone of effective support across Asian contexts. In many countries, families play a central role in caregiving and decision-making, which directly influences intervention outcomes. A systematic review in South Asia found that parent-mediated interventions not only improved adolescents' communication and social skills but also strengthened parental knowledge and reduced caregiver stress (Koly et al., 2021). These findings suggest that empowering parents through training and active engagement is crucial for sustainable intervention practices. Moreover, parental involvement ensures that therapeutic strategies extend beyond clinical or school settings into everyday life, thereby reinforcing consistency and long-term gains.

Taken together, the evidence across Asia points to the need for multi-faceted, culturally sensitive approaches in supporting high-functioning adolescents with autism. Effective strategies should prioritize three interrelated dimensions: the development of supportive and flexible educational environments, the adaptation of intervention programs to reflect local cultural values and norms, and the active involvement of families in intervention planning and delivery. Addressing these elements holistically can significantly enhance not only educational outcomes but also the emotional well-being and social inclusion of adolescents on the autism spectrum. As Asian societies continue to expand their educational and therapeutic resources, integrating these culturally grounded approaches will be vital in ensuring equitable opportunities for adolescents with HFA.

Culturally Responsive Interventions and Future Directions for Adolescents with High-Functioning Autism Across the Globe

Adolescents with HFA face unique educational and developmental challenges that require tailored interventions. In the ASEAN region, there is increasing recognition of the importance of culturally sensitive approaches to supporting these adolescents. While international guidelines and intervention strategies have expanded over recent decades, a persistent gap remains in the availability of empirically supported and culturally grounded programs suited to Asian societies (Tsatsanis et al., 2004). This gap is especially evident in the area of social skills interventions (SSIs), which are widely documented as effective in improving communication abilities, social functioning, and reducing mental health difficulties among adolescents with HFA. However, many of these interventions originate in Western contexts, raising critical questions about their relevance and effectiveness in societies where cultural norms and expectations differ significantly (Tawankanjanachot et al., 2023).

Encouragingly, some localized adaptations have demonstrated promising outcomes. For example, the Program for the Education and Enrichment of Relational Skills (PEERS®), when implemented in Hong Kong, led to notable improvements in social functioning, illustrating that Western-developed interventions can yield positive results when carefully adapted to cultural settings (Shum et al., 2019). In Thailand, research has further emphasized that successful implementation of SSIs must go beyond direct skill instruction to incorporate cultural norms, community values, and the active participation of parents. These elements not only enhance the relevance of the intervention but also promote greater sustainability, as families and communities become key partners in reinforcing learned skills (Tawankanjanachot et al., 2024).

Beyond SSIs, several evidence-based strategies—such as structured teaching, direct instruction, peer-mediated interventions, video modeling, and discrete trial training—have consistently demonstrated effectiveness in supporting adolescents with autism in acquiring communication and social interaction skills. These approaches, though widely tested in Western countries, offer strong potential for adaptation within ASEAN education systems, where school structures and family engagement patterns may differ (Huang & Wheeler, 2007). By embedding cultural relevance into these teaching methods, educators can bridge the gap between established evidence and local realities.

Looking forward, the development of culturally responsive interventions should remain a key research and policy priority. This involves more than simple translation or replication of Western programs; it requires thoughtful adaptation that reflects local cultural expectations, religious values, and social practices. Importantly, parental and caregiver involvement must be central to both the design and implementation of interventions. Studies have shown that when families are engaged as co-implementers, adolescents demonstrate greater skill retention and generalization in real-world settings (Tawankanjanachot et al., 2023, 2024). Active family participation also empowers caregivers with the knowledge and tools needed to support their children consistently at home and in the community.

Regional collaboration also holds great promise for advancing autism intervention in ASEAN. Cross-country partnerships among educators, clinicians, and policymakers can facilitate knowledge exchange, capacity building, and the development of best practices that are sensitive to the diverse cultural landscapes of Southeast Asia (Hill & Sukbunpant, 2013). Such collaborative networks can help overcome limitations faced by individual countries, particularly in areas where resources, training opportunities, and professional expertise are scarce. Another promising direction is the integration of technology to extend service reach. Tele-therapy, including video-based interventions, has been found effective in countries such as Australia, where it provides timely and cost-efficient support to families in remote or underserved areas. Adapting similar models in ASEAN could help close significant service gaps, especially in rural communities where specialized autism services are limited (Johnsson et al., 2019). These innovations offer opportunities to improve accessibility, reduce costs, and ensure continuity of care.

Vocational preparation also represents an important frontier. Adolescents with HFA often have diverse career aspirations, ranging from fields like science to law enforcement. The Multidisciplinary Support for Autism (MSA) model provides an example of how collaboration between educators, therapists, and families can guide these adolescents in exploring and

preparing for future occupations (Mushambi et al., 2024). Despite its promise, such models often face systemic obstacles, including shortages of trained professionals, societal stigma, and inadequate policy frameworks to ensure fair working conditions for practitioners (Tawankanjanachot et al., 2023). Without addressing these systemic challenges, vocational interventions risk remaining fragmented and unsustainable. Families across the region continue to call for services that are inclusive, culturally appropriate, and family-centered. Caregivers emphasize the need for frameworks that not only address the developmental needs of adolescents but also provide parents with resources, knowledge, and psychological support to sustain long-term engagement (Malhi et al., 2022). Empowering families in this way not only benefits adolescents but also helps reduce caregiver stress and builds stronger support networks.

In conclusion, supporting adolescents with HFA in ASEAN and beyond requires a comprehensive and culturally responsive strategy. This includes adapting social and educational interventions to reflect cultural norms, involving parents as active collaborators, exploring innovative delivery systems like tele-therapy, and promoting regional cooperation. At the same time, greater attention must be given to vocational readiness and systemic reforms that support both adolescents and professionals. Through these integrated approaches, societies can move toward creating inclusive, sustainable, and empowering support systems that meet the complex needs of adolescents on the autism spectrum.

Future Direction

Adolescent with HFA in ASEAN countries, particularly Singapore and Malaysia, encounter a distinct set of challenges that impact their academic engagement, social development, and emotional well-being. Research across these contexts highlights both the resilience of autistic adolescents and the systemic gaps that continue to limit their potential. In Singapore, secondary school students with high-functioning autism are not passive recipients of education; rather, they actively participate in shaping their learning experiences. The degree to which they thrive, however, is strongly dependent on the environmental support provided by schools and communities. When adequate structures are in place, these adolescents demonstrate meaningful engagement and progress. Yet, they face notable difficulties in community and communication settings, where navigating peer interactions and broader social expectations becomes more complex than at home (Poon, 2011; Poon et al., 2014). These findings point to the importance of targeted interventions designed to strengthen social participation beyond the classroom.

In contrast, Malaysian research has illuminated the challenges faced by older students at the university level. Individuals with either diagnosed or suspected autism spectrum report lower self-efficacy, elevated stress levels, and reduced quality of life compared to their neurotypical peers. These patterns suggest that universities often lack the inclusive and supportive environments necessary to help autistic students thrive (Low et al., 2024). The situation is further complicated by delays in diagnosis: on average, there is a 17-month gap between parents' initial concerns and a formal confirmation of autism (Jayanath & Ozonoff, 2020). For some, diagnosis never occurs. Estimates suggest that around 2.5% of Malaysian university students suspect they are on the spectrum without ever receiving official recognition (Low et al., 2024). This underdiagnosis highlights systemic weaknesses in screening and assessment practices.

Inconsistent diagnostic procedures present another layer of difficulty. While some individuals face prolonged delays, others may experience overdiagnosis or misdiagnosis due to varying standards and practices among professionals (Newman & Glovinsky, 2019). Such inconsistencies affect not only access to interventions but also the appropriateness of support services. For adolescents with high-functioning autism, these gaps can mean missed opportunities for early intervention—interventions that are critical for improving long-term academic and social outcomes.

Table 3: Current Gaps in Research on High-Functioning Autism in the ASEAN Context

Area	Current Gap	Future Direction
Diagnosis	Delays, underdiagnosis, inconsistent assessment	Develop standardized, culturally sensitive, multidisciplinary tools
Intervention	Heavy reliance on Western models	Adapt interventions to ASEAN cultural values and contexts
Service Delivery	Limited access in rural/underserved areas	Implement tele-therapy and hybrid models
Family Involvement	Often overlooked or under-supported	Active parental engagement, family-centered frameworks
Policy/Systems	Shortage of trained professionals, stigma, limited support	Regional collaboration, policy reform, professional development

To move forward, schools and local authorities in ASEAN countries must adopt a collaborative and inclusive approach. Building partnerships among families, educators, and autistic students themselves is central to creating environments that promote both learning and well-being (Gray et al., 2023). Strengthening diagnostic frameworks is equally important. Standardized, culturally sensitive, and multidisciplinary assessment tools are urgently needed to ensure that adolescents are identified accurately and receive tailored support plans (Newman & Glovinsky, 2019). Beyond assessment, intervention models from Western contexts offer valuable insights but require careful cultural adaptation. Strategies such as structured teaching, peer-mediated instruction, and direct social communication training have demonstrated effectiveness in improving social and communication abilities (Huang & Wheeler, 2007). When adapted to align with cultural expectations and family practices in Southeast Asia, these methods can serve as a foundation for sustainable intervention frameworks.

Ultimately, research underscores the need for systematic reforms to better support high-functioning adolescents with autism in ASEAN. Closing diagnostic gaps, embedding culturally responsive practices, and promoting inclusive education are not isolated goals but interdependent strategies that collectively shape positive developmental trajectories. By addressing these areas simultaneously, policymakers, educators, and practitioners can contribute to building equitable systems where adolescents with autism are empowered to succeed academically, socially, and emotionally.

Conclusion

Supporting adolescents with HFA in ASEAN requires a culturally responsive, holistic, and collaborative approach. Future interventions must move beyond importing Western models and instead adapt evidence-based strategies to reflect Southeast Asian cultural norms, communication styles, and community values. Incorporating parents and caregivers into program design and implementation is particularly vital, as they play a central role in shaping

the adolescent's developmental outcomes. Expanding access to services remains an urgent priority. Innovative approaches such as tele-therapy offer practical solutions to overcome geographical and resource barriers, particularly in rural or underserved communities. When combined with established techniques like peer-mediated instruction, structured teaching, and video modeling, these tools can be effectively tailored to local school contexts and teacher capacities. Equally important is preparing adolescents with HFA for meaningful vocational pathways. Many have diverse aspirations but face systemic challenges, including stigma, limited training opportunities, and insufficient policy support. Strengthening collaboration among educators, therapists, and career counselors can help translate aspirations into achievable outcomes while promoting social inclusion and independence. In conclusion, the future of support for adolescents with HFA in ASEAN lies in building inclusive ecosystems that integrate culturally adapted interventions, accessible service delivery, and strong family involvement. Regional collaboration and policy reform will be key in sustaining these initiatives. By prioritizing these strategies, ASEAN countries can better ensure that adolescents with HFA achieve not only academic and social success but also long-term well-being and independence.

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