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ANALYSIS OF AUTISM INCIDENCE IN HIGH IQ SOCIETIES

**ANÁLISIS DE LA INCIDENCIA DEL AUTISMO EN
SOCIEDADES CON ALTO COEFICIENTE INTELECTUAL**

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Analysis of Autism Incidence in High IQ Societies

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ABSTRACT

This study investigates the prevalence of autistic traits among individuals with high IQ, specifically in populations whose admission to high-IQ societies requires a score in the 98th percentile or above. The investigation incorporates a meticulous bibliographic review, complemented by interviews with representatives from high-IQ societies such as Intertel, Infinity International Society (IIS), ePiq, and ISI Society. These societies report the absence of an explicit criterion for autism diagnosis during the admission process, which is based solely on supervised psychometric IQ tests. Nonetheless, these organizations acknowledge a notable incidence of IQ reports coinciding with preexisting autism diagnoses but do not believe they constitute the majority or even half of the individuals. A survey conducted with members of the “Gifted” group, represented by high-IQ individuals from various nationalities with a predominance of Europeans and Brazilians, revealed that while the majority of participants had taken IQ tests, those diagnosed with autism did not constitute the majority. This phenomenon suggests a significant barrier in the comprehensive assessment of autism in contexts where the primary focus is intelligence measurement. This study implies the need for a deeper integration of neuropsychological diagnoses into the admission processes of these societies for a more precise mapping of the intersections between high IQ and autistic traits.

Keywords: *Intelligence Quotient, Autism, High-IQ Societies, Incidence, Prevalence, Neuropsychological Diagnosis, Neuropsychological Assessment*

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Análisis de la Incidencia del Autismo en Sociedades con Alto Coeficiente Intelectual

RESUMEN

Este estudio investiga la prevalencia de rasgos autistas entre personas con un coeficiente intelectual alto, específicamente en poblaciones cuya admisión a sociedades con un coeficiente intelectual alto requiere una puntuación en el percentil 98th o superior. La investigación incorpora una meticulosa revisión bibliográfica, complementada con entrevistas a representantes de sociedades de alto coeficiente intelectual como Intertel, Infinity International Society (IIS), ePiq e ISI Society. Estas sociedades informan de la ausencia de un criterio explícito para el diagnóstico de autismo durante el proceso de admisión, que se basa únicamente en pruebas psicométricas de coeficiente intelectual supervisadas. No obstante, estas organizaciones reconocen una incidencia notable de informes de coeficiente intelectual que coinciden con diagnósticos de autismo preexistentes, pero no creen que constituyan la mayoría ni siquiera la mitad de los individuos. Una encuesta realizada entre miembros del grupo de los “superdotados”, representado por individuos con alto coeficiente intelectual de diversas nacionalidades, con predominio de europeos y brasileños, reveló que si bien la mayoría de los participantes habían realizado pruebas de coeficiente intelectual, los diagnosticados con autismo no constituían la mayoría. Este fenómeno sugiere una barrera importante en la evaluación integral del autismo en contextos donde el enfoque principal es la medición de la inteligencia. Este estudio implica la necesidad de una integración más profunda de los diagnósticos neuropsicológicos en los procesos de admisión de estas sociedades para un mapeo más preciso de las intersecciones entre el alto coeficiente intelectual y los rasgos autistas.

Palabras clave: Cociente de Inteligencia, Autismo, Sociedades con Alto CI, Incidencia, Prevalencia, Diagnóstico Neuropsicológico, Evaluación Neuropsicológica

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INTRODUCTION

The intersection between high Intelligence Quotient (IQ) and Autism Spectrum Disorder (ASD) is a common curiosity, which has propelled this scientific investigation of substantial interest and intricate complexity. The significant incidence of individuals diagnosed with ASD in populations characterized by an IQ in the upper 98th percentile prompts a thorough examination of the correlations between high cognitive abilities and autistic characteristics. This study aims to unveil whether individuals on the spectrum, particularly those who require level 1 support as per the DSM5 classification, demonstrate a prevalence of higher IQ compared to the population average, hypothesizing that such phenomena may result from neural compensatory mechanisms.

Furthermore, the research addresses the proportion of autistic individuals in high-IQ societies, exploring whether the majority of members of these societies could be classified within the autistic spectrum. The research also extends to the analysis of individuals who, despite having undergone IQ tests, have not been evaluated for ASD, raising the hypothesis of possible underdiagnosis in this highly intellectual segment. This inquiry was motivated by a preliminary observation that many active members in the social networks of these communities express traits or are diagnosed with autism, expanding hypotheses about the prevalence of autistic traits in high cognition niches.

In this context, the present analysis employs a rigorous methodological approach, aiming to elucidate these complex dynamics and contribute to a deeper understanding of the interactions between high intellectual abilities and ASD. By integrating quantitative and qualitative data, it intends to provide a holistic perspective devoid of biases, which demystifies misconceptions and reveals the nuances of this intricate relationship between autism and high IQ. This research not only aims to contribute to the academic literature but also to provide arguments for more effective inclusion policies and adapted educational practices that recognize and value cognitive diversity in high-performing intellectual societies.

DEVELOPMENT

To unravel the complex interactions between high IQ and ASD, it is crucial to explore various dimensions that contribute to the observed prevalence of autistic traits in individuals with high IQ.



This multifaceted analysis will initially address the significant proportion of individuals who, in addition to exhibiting high intellectual capacities, are diagnosed with autism. We will investigate the neuropsychological mechanisms that may facilitate the concurrent manifestation of these characteristics, considering theories suggesting specific brain compensations in individuals on the autistic spectrum.

Furthermore, the study will also investigate the segment of individuals with high IQ who, for various reasons, may not have been assessed for autism. This includes a discussion on the barriers to diagnosis and possible discrepancies in the perception of needs for support or adaptations, especially in environments that predominantly value intellectual performance.

Additionally, the phenomenon of individuals with high intellectual abilities who choose not to seek diagnostic evaluations will be examined, whether due to lack of access, associated stigma, or the perception that their abilities compensate for potential challenges in other areas. Through this detailed and objective examination, this paper aims to provide an accurate insight into the dynamics between high IQ and autism, highlighting not only the overlaps but also the distinct nuances that characterize this relationship.

Possible Causes

The significant prevalence of individuals with ASD in high-IQ societies with higher percentile requirements raises substantial questions about the underlying neuropsychological and socio-environmental interactions. A critical analysis of this phenomenon requires an understanding of multiple factors that may contribute to such association, starting with the frequency and intensity with which the families of these individuals seek a comprehensive diagnosis.

Search for Comprehensive Diagnosis

Families of individuals with ASD often seek detailed neuropsychological assessments to better understand the capabilities and needs of their loved ones. In this comprehensive process, IQ tests are frequently administered as a crucial component of diagnosis, highlighting potential exceptional cognitive abilities. The administration of these tests can not only identify autistic individuals with high IQ but also promote the search for high-IQ societies that offer an environment of interaction where demands for a deep understanding of intellectual abilities are

predominant. This practice assists in the discovery of these individuals and fosters more effective educational and supportive planning.

A critical aspect in this context is access to mental health resources that enable a detailed diagnosis. Environments where these resources are widely available and assessments are encouraged, there is a greater propensity to identify high cognitive abilities together with ASD. Thus, the prevalence of autistic individuals with high IQ in specialized societies may reflect not only an intrinsic predisposition but also a higher likelihood of diagnosis due to better accessibility and acceptance of mental health services.

These findings indicate that the association between high IQ and ASD in high-IQ societies may be, in part, a consequence of more comprehensive diagnostic practices, suggesting the need for health policies that promote inclusive and accessible neuropsychological assessments, aiming for a better understanding of individual capabilities across all cognitive and behavioral spectrums. This approach is crucial for demystifying the relationship between ASD and high IQ and ensuring that all individuals receive the necessary support to reach their full potential (Takayanagi et al., 2021).

Compensatory Brain Development in Individuals with Level 1 Autism

Individuals classified with Level 1 ASD, who require mild support, may demonstrate a remarkable phenomenon of compensatory brain development, particularly in cognitive areas involved in logical reasoning and problem-solving. These abilities are often assessed in IQ tests, suggesting that certain brain regions may develop enhanced functions to compensate for deficiencies in other areas (Yeung, Lee & Chan, 2019). This compensatory mechanism may provide individuals with Level 1 ASD superior abilities in logical and analytical tasks, which often results in high scores on IQ tests (Belmonte, M.K., & Yurgelun-Todd, D.A., 2003).

Scientific literature proposes that neuroplasticity, the brain's ability to reorganize itself by forming new neural connections, plays a crucial role in this compensatory process. Brain areas responsible for complex cognitive functions may be particularly plastic in response to cognitive challenges or specific neurological deficiencies. In individuals with Level 1 ASD, this



reorganization can result in exceptional abilities in domains that heavily rely on logical and analytical reasoning (National Institute on Aging, s.d.).

Therefore, while these compensatory mechanisms provide advantages in certain cognitive areas, they also reflect the complexity of brain development in individuals with ASD.

IQ tests have historically been valued as predictive tools for academic and professional potential; however, there are limitations when considering the complexity of human intelligence. These assessments fail to measure crucial dimensions such as emotional and social intelligence, as well as creativity, aspects that are essential for full adaptation and success in multifaceted social environments (Mayer, J.D., Salovey, P., & Caruso, D.R., 2004).

Emotional intelligence, which involves the ability to perceive, integrate, understand, and regulate emotions (Salovey, P., & Mayer, J.D., 1990), is particularly underrepresented in traditional IQ tests. Similarly, creativity, which implies the ability to transcend traditional ideas to create new forms, methods, and interpretations, is not adequately assessed by these instruments (Schumacher, L., Wheeler, J.V. and Carr, A.S., 2009). These gaps in the assessment process may result in an inadequate representation of the true capabilities of individuals with high IQ, particularly those on the autistic spectrum, who may possess distinct abilities not captured by conventional tests (Parker, J. D. A., Saklofske, D. H., Wood, L. M., & Collin, T., 2009).

The homogenization of individuals with high IQ in a single environment, based solely on their cognitive abilities, may generate mistaken impressions of uniformity, obscuring significant divergences in other areas of intelligence. This can be beneficial for the interaction of autistic individuals, by providing an environment where cognitive abilities are valued and emotional and creative differences are less emphasized. However, this can also perpetuate misunderstandings and stereotypes among peers, exacerbating perceptions of difference where, in fact, complementary competencies exist (Baron-Cohen, S., 2002).

In this way, the inadequacy of traditional IQ tests, which typically measure logical, mathematical, verbal reasoning, and working memory abilities, to encompass all facets of human intelligence, highlights the need to develop more comprehensive assessment methods. In this context, the DWRI test becomes an example of a more comprehensive



instrument. Designed to measure not only the domains traditionally assessed by IQ tests, the DWRI also includes evaluations of emotional and social intelligences. This test seeks to offer a more complete view of individual capabilities, promoting more effective inclusion and social interaction among individuals with high IQ, whether autistic or not. By incorporating assessments of emotional and social competencies, the DWRI addresses the need for an assessment model that recognizes the complexity of human intelligence (Rodrigues, 2022).

In a recent dialogue with representatives from the ISI Society, an organization notorious for its rigorous admission criteria that include not only the demonstration of a high IQ but also evidence of creative achievements, an intriguing theme emerged. This society has observed a striking discrepancy between the volume of applications and the actual approval rates. It is reported that, despite many applicants possessing a high IQ, a significant proportion lacks the necessary evidence of creativity. Such a phenomenon prompts reflections on the limitations of traditional intelligence metrics, which often fail to capture the complexity of creative thinking and emotional and social skills. The literature corroborates this observation, highlighting that superior cognitive abilities do not, in isolation, guarantee creative competencies or success in environments that require emotional intelligence (Kaufman, J.C. & Plucker, J.A., 2011; Sternberg, R.J., 2003).

Neurobiology and Genomics of Neuroplasticity

In individuals with ASD, particularly those who require mild support, there is a clear divergence in the development of certain brain regions compared to neurotypical individuals. Traditionally, brain areas most affected in autistic individuals include regions associated with social processing and communication, such as the orbitofrontal cortex and the fusiform region, essential for interpreting facial expressions and perceiving emotions (Pelphrey, K. A., & Carter, E. J., 2008). Additionally, areas involved in sensory integration, such as the posterior somatosensory cortex, often show alterations, which may contribute to the atypical sensory sensitivity observed in many autistic individuals (Marco, E. J., Hinkley, L. B., Hill, S. S., & Nagarajan, S. S., 2011).



However, other areas of the brain demonstrate notable compensatory activity that may contribute to advanced cognitive abilities, often reflected in IQ tests. This compensation predominantly occurs in the dorsolateral prefrontal cortex, a crucial region for logical reasoning, planning, and problem-solving. This area shows intensified activity and may even develop additional connections to compensate for deficiencies in social and sensory processing areas (Minschew, N. J., & Williams, D. L., 2007).

Neuroscientifically, this compensation is supported by neuroplasticity — the brain's ability to adapt its structure and function in response to challenges or injuries. In autistic individuals, a hypercapacity is observed in regions involved in analytical and detailed thinking, processes highly valued in conventional IQ tests. This includes mathematical abilities, pattern recognition, and visuospatial skills, often associated with a higher density of neuronal connections in parts of the parietal lobe (Courchesne, E., & Pierce, K., 2005).

Moreover, research identifies a significant role of neurotransmitters, such as glutamate and serotonin, in modulating neuroplasticity in these areas. Anomalies in glutamate pathways, for example, may alter neural connectivity and plasticity, enhancing cognitive function in less affected areas.

Therefore, while areas of deficiency in individuals with ASD impact social and sensory skills, compensation in regions of the prefrontal and parietal cortex allows many autistic individuals to excel in structured and logical tasks, standing out in components of IQ tests that measure abstract reasoning and problem-solving abilities.

Research on the prevalence of individuals with Level 1 ASD who also exhibit high abilities or giftedness reveals a complex interaction between ASD diagnosis and IQ measurements. Studies indicate that, in the 95–98th percentiles, the proportion of autistic individuals with high abilities is statistically equivalent to that found in the neurotypical population with high IQ (Jones, C.R.G., & Swettenham, J., 2014).

The explanation for this observation may lie in the specific neurobiology of autism, where certain cognitive characteristics, such as hyperfocus and exceptional memory for details, may enhance analytical and problem-solving abilities, characteristics often assessed in IQ tests (Happé, F., &



Frith, U., 2006). Additionally, the nature of IQ tests, which prioritize logical–mathematical tasks and visuospatial patterns, may coincide with the areas enhanced in many individuals on the autistic spectrum, facilitating high performances (Baron-Cohen, S., Ashwin, E., Ashwin, C., Tavassoli, T., & Chakrabarti, B., 2009).

However, it is crucial to consider that increased IQ does not necessarily translate into comprehensive functional improvements or a higher quality of life for individuals with autism, as they may face significant challenges in areas not measured by traditional IQ tests, such as emotional intelligence and social skills (Klin, A., Jones, W., Schultz, R., Volkmar, F., & Cohen, D., 2002). This discrepancy highlights the need for a more comprehensive assessment of capabilities, considering both cognitive abilities and interpersonal and adaptive challenges.

Lack of IQ Testing in Population with High Intellectual Potential

The absence of IQ testing among segments of the population with high intellectual potential, particularly among women, constitutes a significant gap in the recognition and representation of these individuals in high-IQ societies. Studies indicate that a variety of barriers, including limited access to tests, associated high costs, and the persistence of gender stereotypes, can substantially contribute to this underrepresentation.

These barriers not only hinder the identification and development of intellectual talents in women but also perpetuate historical imbalances in academic and professional environments, where individuals with high IQs are often valued and promoted. The literature suggests that gender stereotypes, in particular, play a crucial role in discouraging women from seeking IQ tests, emphasizing the perception that areas requiring high cognitive abilities are predominantly masculine. Additionally, the issue of economic and geographical access to IQ testing centers, especially in less developed regions, highlights the structural inequalities that limit the participation of talented individuals from diverse socioeconomic backgrounds.

Therefore, to address these discrepancies and broaden inclusion in high-IQ societies, it is imperative to implement policies that facilitate access to IQ tests that are financially accessible and culturally sensitive, as well as educational campaigns to dismantle harmful gender

stereotypes. Increasing the visibility and recognition of women with high IQs could not only enrich these societies but also promote a culture of equity and intellectual excellence.

RESULTS

The study involved 50 participants from two distinct communities: “Gifted Debate Brazil” and “Gifted Debate International”, with an equitable distribution of 22 Brazilians and 28 individuals from countries such as Germany, Norway, Denmark, USA, Canada, Singapore, Spain, France, Austria, Bulgaria, Japan, and South Korea. The “Gifted Debates” are WhatsApp groups dedicated to research and discussions, composed of members from high-IQ societies with entry requirements in the 98–99.93th percentiles.

Responses to the survey were converted into percentages to facilitate the analysis and understanding of the data:

- **I have been diagnosed with autism:** 5 participants (10%)
- **I have been diagnosed without autism:** 45 participants (90%)
- **I took the IQ test only, but I don’t know if I am autistic:** 7 participants (14%)
- **I took the IQ test only, but I don’t believe I am autistic:** 6 participants (12%)
- **I took the IQ test and assessed other conditions, except autism:** Response not provided.
- **I believe there are more autistic individuals than non-autistic individuals in high-IQ societies:** 1 participant (2%)
- **I believe there are fewer autistic individuals than non-autistic individuals in high-IQ societies:** 49 participants (98%)
- **I believe that the majority of individuals active in the social media groups of these high-IQ societies are autistic:** 20 participants (40%)
- **I believe that the minority of individuals active in the social media groups of these high-IQ societies are autistic:** 30 participants (60%)

These results offer a comprehensive insight into the perceptions and experiences of members of these high-IQ societies regarding autism and its diagnosis. There is a considerable variation in



beliefs and personal diagnoses, reflecting the complexity of interactions between high IQ and autistic spectrum characteristics. The analysis also reveals a significant awareness of the nuances of being autistic or not in elevated social contexts, as well as a divergence in perceptions about the prevalence of autism within these specialized communities.

CONCLUSIONS

This study was conducted with the purpose of clarifying misconceptions about the intersection between autism and high IQ, especially in contexts of high-IQ societies. It incorporated interviews with members and administrators of renowned high-IQ societies, such as Intertel, IIS, ePiq, and ISI Society. Additionally, a survey was conducted in the “Gifted Debate” groups. The study also relied on an extensive literature review, exploring academic publications relevant to the topic.

The results indicate that autistic individuals constitute a minority in high-IQ societies but are notably active on social media platforms. The study identified that the significant presence of autistic individuals with high IQ can be attributed to two main factors: the active search for autism diagnoses, which often include IQ tests; and the pursuit of inclusion in high-IQ societies by these individuals as part of a strategy for socialization and integration, either initiated by family members or by their own decision, aiming for therapy and self-understanding.

Another relevant finding is that many individuals potentially eligible for a diagnosis of high IQ choose not to undergo testing due to the absence of perceived cognitive needs or the cost of tests. Additionally, we highlight the need for more professionals properly trained to conduct comprehensive neuropsychological assessments, and suggest high-IQ societies to adopt more rigorous practices to encourage comprehensive assessments, such as the implementation of tests similar to the DWRI, which could provide more accurate diagnoses.

The analysis also revealed an underrepresentation of women in these societies, pointing to gender barriers in undergoing IQ testing. Additionally, the overlap between brain regions involved in the skills measured in IQ tests and areas showing neural compensation in autistic individuals was discussed, highlighting that conventional IQ tests do not encompass aspects such as emotional, social, and creative intelligence.



This research provides valuable insights into the dynamics between high IQ and autism, challenging stereotypes and encouraging more informed dialogue and inclusive practices in high-IQ societies.

Contribution Statement

Rodrigues, F. A. A. conceived, owned, and created the concept, wrote and revised the manuscript. Guided the team in data collection and revised the paper.

Kamimura, H. revised, complemented and translated the paper.

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