

# Distinctive Language Profiles of Autism in Hispanic Children

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**To cite this article:**

Nicolas Linares-Orama, Ginivianelis Solis. Distinctive Language Profiles of Autism in Hispanic Children. *Psychology and Behavioral Sciences*. Vol. 11, No. 4, 2022, pp. 132-135. doi: 10.11648/j.pbs.20221104.13

**Received:** June 24, 2022; **Accepted:** July 12, 2022; **Published:** July 26, 2022

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**Abstract:** Hispanic children with an Autism Spectrum Disorder (ASD) are under-served, partly due to the lack of scientific data on their characteristics. Their biological traits are very varied, and include cerebral, immunological, gastrointestinal and dental components. On the other hand, their behavior characteristics include cognitive, speech-language, communicative, sensory and motor disorders. Empirical decisional diagnostic information on all these dimensions is needed to improve the services they receive through personalization and team-work. This investigation aimed at obtaining knowledge about one of their most incapacitating traits that pertain to speech-language and functional pragmatic language skills that can be useful in differentiating various severity levels in this condition. The study included a detailed analysis of the functional speech-language and pragmatics skills in children who had been diagnosed with an ASD in the FILIUS Center. It included interpersonal approaches, and social regard when speaking with a Spanish-speaking clinician. We found that children with low functioning ASD showed a higher severity in person imitation, conjoined object use, non-verbal communication, oriented behavior, curiosity and social relation development than those with high functioning ASD. On the other hand, the information reflected that children with high functioning ASD were inferior in person consideration, auditory behaviors, change adaptation, imagination, social collaboration and social relations, than their typical peers.

**Keywords:** Autism, Autism Spectrum Disorder, ASD Hispanic, Language, Pragmatics

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## 1. Introduction

According to the 2010 Census, the population of Hispanics in the United States of America (USA) constitutes 16% of its entire demographics [5]. In that community, Hispanic children represent about 24.4% of all children between the ages of 0-17 [4]. Even with this growth in the Hispanic population, which makes it the highest minority group in the USA, a health disparity is observed in the increase of the group of children with ASD. When compared to non-Hispanic white children, Hispanic children with an ASD [1] are diagnosed less frequently and 12 months later [5]. Statistics from the US Center for Disease Control (Developmental Disabilities Branch) show that Hispanic children are diagnosed with ASD at a 32% lower rate when compared to non-Hispanic white children [2]. There is also a discrepancy in the frequency of therapeutic services received by Hispanic children with ASD [10]. Some reasons for this disparity in Hispanic diagnosis and treatment for ASD

include language barriers, family poverty, mother's low education, poor family access to information about ASD, and insufficient family use of specialists, among others. In addition, some Hispanic families perceive a social stigma in their children diagnosed with ASD [7]. Today this disorder is widely accepted as a heterogeneous condition with varied etiologies, sub-types, and developmental trajectories [12].

Rigorous classificatory methods for diagnosing ASD are helpful for professionals who evaluate Hispanic children to achieve individualized assessments. These methods are based on the premise that, by examining the child and interviewing relatives, using precise and circumspect criteria, a more accurate diagnosis can be concluded that allows personalizing the clinical and educational intervention. There is ample evidence that conversations can be a real challenge for individuals with ASD. This is so because they confront difficulties changing their interactive linguistic responses to different persons and environmental varied interactive situations [13]. There is evidence that many

diagnostic errors in Hispanics with ASD are the result of the absence of clear and objective criteria to define the different levels of performance and severity in this population. This situation is more difficult when the professionals who serve them do not have the socio-linguistic skills in Spanish to reach accurate assessments, considering that the communication skills of the child receive a significant weight in the diagnosis of ASD [9].

In Puerto Rico, and in the Hispanic-American world, the diagnosis of children with ASD is not usually affected by language barriers. However, it is by multiple factors, such as the poverty of families and limited knowledge about ASD in teachers and caregivers [16]. In addition, it is limited by the few minutes that professionals have to evaluate children suspected of this condition during the clinical visit. This situation has been aggravated by the recent fiscal limitations of the health systems in the Hispanic-American world, which limit the efforts that can be devoted to this group towards an accurate diagnostic process of ASD. Another limiting factor is the insufficient empirical data on the different levels of execution and severity for ASD in Hispanic children, which makes it difficult to arrive at legitimate and reliable diagnoses. In the USA, it has been found that there is only 0.1% of information available on ASD in Hispanics.

According to the current criteria for the diagnosis of ASD, three severity categories are established for the condition, which are Autism-1 (mild), Autism-2 (moderate) and Autism-3 (severe) [1]. There are many doubts when distinguishing between children with high functioning ASD and typical children because of the similarity of many of their behaviors. High functioning individuals with ASD are described as presenting, not only social communication disorders but anxious and depressive symptoms that are secondary to their condition. These emotional symptoms must be considered when evaluating their developmental status. On the other hand, there is a need to improve the description of high vs. low performance ASD. To reach this type and severity conclusion, it is indicated that the persistent deficits in communication and social interaction must be evaluated in various contexts. For each child, repetitive and restricted patterns of behavior in activities and interests should also be assessed. This process of diagnosis and assessment allows the professional to determine the level of functioning in communication, in socialization and in the use of patterns of each individual so that a personalized treatment can be established to attend to their ASD. Also, family assessments of their ASD offspring must consider their experiences with these children to obtain valid descriptions through diagnosis-based interviews [3].

Approximately 400 annual evaluations of children with suspected the ASD have been completed at the FILIUS Center (FILIUS) of the University of Puerto Rico. FILIUS clinical staff use the DSM-V criteria to diagnose this condition and its severity in these children by administering the "Child Autism Rating Scale" [14]. This diagnostic instrument has been found to be a valid, simple instrument for use in disadvantaged countries like Puerto Rico and other Latin American countries

[15]. The CARS allows assessment of 15 skills related to ASD. The 15 skills evaluated include 5 in the area of social communication disorders and 10 in the area of restrictive and repetitive patterns. This instrument allows the health professional to classify the child's behavior when compared to typical peers using a scale from 1 to 4 as follows: 1 = normal, 2 = slightly abnormal, 3 = moderately abnormal and 4 = severely abnormal. For the evaluated child, a total score is reached which is classified as follows: 15-29 points = not autism, 30-37 points = mild to moderate autism and 38-60 points = severe autism. An investigation was recently completed aimed at identifying which of those ASD behaviors that are assessed using the CARS are more robust in determining whether this condition exists in the child. These were found to be imitation, relationships with people, use of objects, and use of the body [9].

A document managed in FILIUS is the Screening of Social Skills [6] that is used in conjunction with CARS for the ASD diagnosis process. This tool measures 10 non-verbal communication skills by the child for interpersonal relationships through gestures, behaviors and signs when compared to their peers. The following scale is used: 0-2 = severe to profound, 3-4 = mild to moderate, and 5-6 = very mild to typical.

In order to reduce the insufficiency of data on ASD for Hispanics in Puerto Rico, and to obtain empirical data that allow the refine this process of communicative differential diagnosis for these individuals, we designed this scientific investigation. Our objectives were (a) to identify the measurable social communication skills that distinguish between low autism (Autism-3) vs. high functioning (Autism-1); (b) identify the measurable social communication skills that distinguish between high functioning autism (Autism-1) vs. typical development and; (c) recommend procedures for the social communication diagnosis of ASD in Hispanic children. Our interest was to reduce subjectivity in the diagnosis and assessment of ASD by identifying quantitative variables to distinguish between different levels of severity. These distinctions will allow us to plan more precise personalized interventions that respond to the strengths and challenges of individuals with ASD of various severities.

The research questions for this study were:

- (1) What are the differences in autistic traits between Hispanic children with low-functioning ASD (Autism-3) and children with high-functioning ASD (Autism-1)?
- (2) What are the differences in autistic traits between Hispanic children with high functioning ASD (Autism-1) and typical children?
- (3) What are the differences in social characteristics between Hispanic children with low-functioning ASD (Autism-3) and children with high-functioning ASD (Autism-1)?
- (4) What are the differences in social characteristics between children with high functioning ASD (Autism-1) and typical children?

## 2. Investigative Procedure

**Operational definitions:** Social characteristics: were defined as 10 social behaviors that included seeking help or “comfort” when needed, approaching spontaneously to show affection or empathy, observing the face carefully, collaborating with interest, communicating gestured questions, making friends, knowing how to behave socially, be imaginative in play and use of objects, reciprocate emotions, and browse creatively. Autistic traits: (15 behaviors) were defined, as relationships with people, imitation, emotional response, use of the body, use of objects, adaptation to change, visual response, auditory response, use and response of touch, taste and smell, fear and nervousness, verbal communication, non-verbal communication, activity level, intellectual functioning, and general behavior. **Hispanic children:** were minors between 12 and 96 months of age born and raised in Puerto Rico as demonstrated by their birth certificate and an interview with family members. **Children with low functioning ASD:** minors for whom a score of 37-60 was awarded on the CARS. **Children with high functioning ASD:** minors for whom a score of 30-36.5 was awarded on the CARS. **Typical Children:** Minors for whom a CARS score of 15-29.50 was awarded.

**Inclusion and exclusion criteria:** Participants who met the definitions established above and whose relatives authorized their participation were included; and those who did not comply with them, whose behaviors did not allow them to be

evaluated or who presented deafness, neuro-motor disorders or other developmental syndromes were excluded.

**Participants:** A random sample of 133 qualified participants was selected from a universe of 1,054 children evaluated. Of these, 82% were boys and 18% were girls; 51% were 1-4 years old and 49% were 5-8 years old.

**Method:** Each participant was evaluated by a clinical psychologist, a speech-language pathologist, and an occupational therapist as a team. Likewise, each family of the patient was interviewed. The individualized evaluation had an average duration of 3 hours, and consisted of stimulation of the child through activities, toys, everyday objects and psychosocial situations. This was followed by a discussion among these three professionals to award values for the CARS and the CDS. After this, a health record was created with the data for each participant.

**Statistical analysis:** “t” tests were administered to determine the presence of significant differences for the behaviors described, with  $p = <0.05$ .

**Results:** The analyzes carried out reflected the results that appear in the following tables for the behaviors that showed authentic significant differences.

Table 1 contains the differences found in relation to CARS between two ASD severities (the higher the score, the higher the severity). In general terms, children with high-functioning ASD demonstrated better socio-linguistic skills than low-functioning children.

**Table 1.** Differences found in relation to CARS between two ASD severities (the higher the score, the higher the severity).

Skills in CARS	Average ASD High Performance	Average ASD Low Performance	/p/
Imitation	1.25 (0.45 d. e.)	1.89 (0.49 d. e.)	0.04
Use of objects	1.75 (0.56 d. e.)	3.03 (0.62 d. e.)	0.02
Non-verbal communication	1.75 (0.59 d. e.)	2.85 (0.67 d. e.)	0.02

Table 2 shows the differences found in relation to the CARS between typical and high-functioning ASD (the higher the score, the higher the severity). Notably, typical children had more adequate skills than their peers with high-functioning ASD.

**Table 2.** Differences found in relation to CARS between Typical and high-functioning ASD (the higher the score, the higher the severity).

Skills in CARS	Average Typical	Average ASD High Performance	/p/
Relationships with people	1.44 (0.46 d. e.)	2.63 (0.57 d. e.)	0.03
Auditory responses	1.45 (0.59 d. e.)	2.63 (0.63 d. e.)	0.03
Adaptation to change	1.45 (0.57 d. e.)	3.25 (0.67 d. e.)	0.02

For the differences in CDS between children with high-functioning ASD and those with low-functioning ASD, Table 3 shows real differences, where those with high-functioning ASD had more advanced socio-linguistic skills.

**Table 3.** Differences found in relation to CDS between two ASD severities (the lower the score, the higher the severity).

Skills in CDS	Average ASD High Performance	Average ASD Low Performance	/p/
Appropriate conduct according to place and people present	6.00 (0.53 d. e.)	1.59 (0.55 d. e.)	0.03
Curiosity behavior	4.60 (0.59 d. e.)	1.45 (0.61 d. e.)	0.01
Development of friendships	3.60 (0.57 d. e.)	1.71 (0.64 d. e.)	0.04

Table 4 includes the differences found in relation to CDS between Typical and high-functioning ASD (the lower the score, the higher the severity). It is notable that even children with high functioning ASD do not behave socio-linguistically like their Typical peers.

**Table 4.** Differences found in relation to CDS between Typical and high-functioning ASD (the lower the score, the higher the severity).

Skills in CDS	Average Typical	Average ASD High Performance	/p/
Use of imaginative game	4.67 (0.42 d. e.)	2.00 (0.51 d. e.)	0.04
Collaboration with others	5.30 (0.62 d. e.)	3.00 (0.67 d. e.)	0.05
Friendship development	5.22 (0.51 d. e.)	3.60 (0.59 d. e.)	0.03

In general, terms, the data presented indicates that children with low-functioning ASD demonstrated greater severity in emulation, use of objects, non-verbal communication, and behavior according to the situation, curiosity and relationship development than children with high-functioning ASD. On the other hand, the information reflected that children with high-functioning ASD showed inferior skills in dealing with people, listening behaviors, adaptation to change, imagination, social collaboration and relationship development than their typical peers.

### 3. Interpretations

It was found that, of the eleven behaviors that differentiated among the three [3] subgroups (high TEA, low TEA, typical), six were congruent with empathy and five were related to auditory-cognitive functioning and changing environments. The distinction between children with low-functioning ASD and children with high-functioning ASD was higher for socio-empathy behaviors, where those with high-functioning ASD showed more closeness and interest in other people and carried out communication functions of exchange and expressive pragmatics. On the other hand, the most obvious differences between children with high-functioning ASD and their typical peers had to do with play and adaptation to change, where typical children demonstrated more imaginative and creative play and could tolerate change much more. These data reinforce the concept that ASD is mostly a syndrome characterized by difficulties in the development and use of psychosocial patterns. That is why any management of early identification, diagnosis and treatment for children with ASD must emphasize the skills of human interaction and dialogue for pragmatic purposes, even though gestures and signs in the childhood stages [11]. These steps must be implemented by professionals who know the culture and language of the family, using the development parameters in typical pairs of similar ages and social groups. As a basis for this socio-communicative intervention clinicians need to accept the fact that families must be involved in services [8].

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