

Research Article

Social Communication Traits in Typical Hispanic Infants and Toddlers for Use in Autism Screening

Nicolás Linares-Orama^{*}, Hillary Fossas, Valeria Torres

The FILIUS Center, School of Health Professions, Medical Sciences Campus, University of Puerto Rico, San Juan, Puerto Rico

Abstract

The Centers for Disease Control and Prevention recommend that the first Autism Spectrum Disorder (ASD) screening of development and behavior for all children can be completed as early as 9 months of age. To address this recommendation this study was aimed at describing the gestural and oral receptive and expressive social communicative behavior of typical Puerto Rican Hispanic children, using skills in the Early Social-Communication Scales (ESCS). Twenty Puerto Rican infants and toddlers, 10-14 months of age, were studied. Each participant was examined and observed (using video-audio recordings), by a trained speech-language pathology graduate student and a speech-language pathologist of the FILIUS Center. One clinician elicited while the other observed each child's responses to the ESCS items. At the end, the recorded sessions were analyzed and discussed by the two observers to assign values to observed abilities on a scale of from 1 to 5 for each skill (1= does not execute; 5=very frequent execution). The strongest indicators of typical social communication in these Hispanic infants and toddlers demonstrate that, at that very early age, infants and toddlers are driven to interact with a stranger when accompanied by their mothers as a confirmation of their empathic dispositions. These strong indicators of social communication in typical Hispanic infants and toddlers can be observed by health professionals to identify difficulties in interaction skills as signs to refer children at-risk of autism.

Keywords

Autism, Autism Spectrum Disorder, ASD Hispanic, Puerto Rican, Language, Typical Infants, Typical Toddlers, Autism Screening

1. Introduction

The Autism Spectrum Disorder (ASD) is a neurodevelopmental syndrome characterized by deficits in social communication and the presence of restricted interests and repetitive behavior [4]. These symptoms are seen during the early stages of child development. According to data, reported, 1 of 44 children in the United States are described to have an ASD; and boys have a four times higher ASD prevalence than girls.

ASD affects more than 5 million Americans, with an estimated prevalence of approximately 1.7% in children [5].

From the first days of a child's life, non-verbal and verbal behaviors represent the primary means of perceiving and exploring the surrounding world and giving it a meaning in order to guide actions [1]. Early communicative disabilities can disrupt the development of the ability to learn from the

^{*}Corresponding author: nicolas.linares@upr.edu (Nicolás Linares-Orama)

Received: 13 February 2024; **Accepted:** 5 March 2024; **Published:** 20 March 2024



Copyright: © The Author(s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

environment and carry out the tasks of every-day life; for this reason, difficulties in these skills can be the first signs of atypical neurodevelopment [14]. It has been found that, even high functioning Hispanic children with ASD, are less able to consider other persons, demonstrate adequate auditory behaviors, adapt to changes and engage in social-collaborative relations than their typical peers [8]. Most autistic individuals show improved communication and social functioning as they age, but not all do. In Hispanic babies this development is hindered by their poverty which is frequent in their families [4].

The Centers for Disease Control and Prevention recommend that the first ASD screening of development and behavior for all children can be completed as early as 9 months of age [2]. Pediatricians can then identify children who could benefit from early ASD intervention. It is crucial to identify signs of communication delays linked to autism in order to assess and intervene appropriately with these infants [3]. Earlier diagnosis of ASD could lead to earlier and more effective treatment [7].

Recent randomized controlled trials have added evidence that, for many children aged less than 3 years of age, early intervention can improve outcomes, including reduction of core ASD deficits, cognition, language, and symptom severity; these are potential benefits of and earlier diagnosis facilitated by opportune screening [15].

In this FILIUS Center investigation researchers aimed to identify and describe the non-verbal and verbal receptive and expressive social communicative behavior in Hispanic typical infants and toddlers. These data can serve as indications for health professionals to early refer children at risk of autism. The Early Social-Communication Scales (ESCS) [10] was used to assess the non-verbal and verbal communication skills in typical 10-14 month-old Hispanic children in Puerto Rico. This instrument has been found to guide clinicians in providing a comprehensive assessment of very early pragmatic behaviors in young children [11]. The investigators sought to address the very late diagnosis of autism in Puerto Rico, which is 7 years of age [8].

The research questions for this study were:

Are there differences in social communication skills between typical Puerto Rican 10-12 month-old infants and 13-14 month-old toddlers?

What are the most salient social communication characteristics of typical 10-14 month-old Puerto Rican infants and toddlers?

2. Investigative Procedure

Definitions:

Hispanic children: these were minors born and raised in

Puerto Rico, as demonstrated by their birth certificate and an interview with the family member.

Typical children: these were minors who demonstrated typical behaviors in an interview with a family member and a communication screening.

Participants: this was a purposive sample of twenty 10-14-month-old children; of these, 60% were male and 40% female; 65% 10-12 months and 35% 13-14 months of age.

Process:

From each child, who was accompanied by the mother, the clinician elicited the ESCS skills through play, following a script. The individualized recorded evaluations lasted an average of 20 minutes, stimulating the child through activities, games, toys, and everyday objects. Each participant was observed by one trained speech language pathologist graduate student and a speech language pathologist at the FILIUS Center.

Social communication skills elicited:

The following social skills were selected from the ESCS:

- 1) When prompted, the child can play without prior demonstration;
- 2) the child follows instructions without gestural reference;
- 3) the child looks at objects that are pointed to;
- 4) the child points to something wanted;
- 5) after showing the child how an object is used, the child uses an object in the same way;
- 6) when the adult asks for a toy, the child offers it even if doesn't let it go;
- 7) when a hand is extended to ask the child for a toy, the child gives it;
- 8) when playing with the child, throws or rolls the toy to get it back to the examiner;
- 9) the child tries to get the adult's attention or tries to show something;
- 10) the child indicates "hello" or "goodbye" with gestures or words;
- 11) the child protests with a "no" gesture or rejects an object; and
- 12) the child focuses on the speaker and responds with expressions or sounds.

Each video-audio recorded session was observed and discussed by the two clinicians to assign a value for every elicited skill, on a scale from 1 to 5, as follows: 1=Does not execute; 2= Almost never executes; 3=Occasional execution; 4=Frequent execution; 5=Very frequent execution).

Statistical analysis: The investigators applied descriptive and differential "t"-test" ($P=0.05$) statistical analyses to determine the means and error probabilities of each elicited behavior for the two groups of children in the social communication items.

3. Results

The data were analyzed for differences between both groups for each of the twelve selected ESCS behaviors. Results are presented in [Table 1](#).

Table 1. Differences in social communication skills between 10-12 and 13-14 month-old typical Puerto Rican infants and toddlers.

ESCS Item	Mean 10-12 Month-old	Mean 13-14 Month-Old	"t" Value	Difference Error Probability	Interpretation
When prompted, the child can play without prior demonstration	3.53	4.35	2.10	0.01	13-14 month-old exceed
The child follows instructions without gestural reference	2.69	4.00	2.10	0.00	13-14 month-old exceed
The child looks at objects that are pointed to	3.53	4.35	2.11	0.09	No difference
The child points to something wanted	3.19	4.92	2.17	0.00	13-14 month-old exceed
After showing the child how an object is used, the child uses an object in the same way	2.65	4.35	2.10	0.00	13-14 month-old exceed
When the adult asks for a toy, the child offers it even if doesn't let it go	3.50	4.35	2.10	0.01	13-14 month-old exceed
When a hand is extended to ask the child for a toy, the child gives it	3.07	4.50	2.10	0.01	13-14 month-old exceed
When playing with the child, throws or rolls the toy to get it back to the examiner	3.11	4.92	2.16	0.00	13-14 month-old exceed
The child tries to get the adult's attention or tries to show something	3.07	4.42	2.16	0.08	No difference
The child indicates "hello" or "goodbye" with gestures or words	1.30	1.35	2.20	0.72	No difference
The child protests with a "no" gesture or rejects an object	2.57	2.85	2.20	0.72	No difference
The child focuses on the speaker and responds with expressions or sounds	4.07	5.00	2.17	0.00	13-14 month-old exceed

After analyzing the numerical data, it was found that the 20 Puerto Rican infants and toddlers demonstrated behaviors that corroborate their social disposition towards other persons. Overall, 10-12 month-old infants could throw or roll a toy in playing with the adult, could try to get the adult's attention or show a toy to the adult, and could wave hello and good-bye.

On the other hand, 13-14 month-old toddlers could protest actions or reject objects from the adult, point to a wanted object, imitate the use of an object, follow simple instructions without manual clues, and focus on the adult speaker. [Table 2](#) shows the mean values of the most common skills of all the 20 participants.

Table 2. Most salient social communication skills in 10-14 month-old typical Puerto Rican infants and toddlers.

Elicited Behavior	Mean Score
The child focuses on the speaker and responds with expressions or vocal sounds	4.23 (frequent to very frequent)
The child points to something wanted	3.75 (occasional to frequent)
When playing with the adult, the child throws or rolls the toy to get it back from the adult	3.71 (occasional to frequent)

Elicited Behavior	Mean Score
When prompted, the child can play without prior demonstration	3.68 (occasional to frequent)
The child looks at objects that are pointed to	3.68 (occasional to frequent)
When the adult asks for a toy, the child offers it even if doesn't let it go	3.66 (occasional to frequent)
When a hand is extended to ask the child for a toy, the child gives it	3.51 (occasional to frequent)
The child tries to get the adult's attention or tries to show something	3.48 (occasional to frequent)

4. Interpretations

This investigation demonstrates that, out of 12 items selected from the ESCS instrument, 8 are strong indicators of social communication behaviors in typical Hispanic children 10-14 months of age. These behaviors reveal their very early empathic skills and consideration of the intentions in adults interacting with them [13]. When implementing ESCS procedure, we recommend using and video-recording the se-

quence and objects for elicitation on Table 3; all objects must be visible but unreachable to the child to stimulate requesting or pointing at playthings. While the examination is performed the child should be on the mother's lap, facing the clinician at the opposite side on a table. After the process the clinician can analyze the behaviors elicited utilizing the ESCS.

It is recommended that a Hispanic child, 10 to 14 months of age, be referred to an ASD evaluation if NOT exhibiting at least 6 of these 8 behaviors.

Table 3. Sequence of recommended elicitation activities.

Elicited Interactive Behavior	What the Clinician Does	Materials Used
Looking at clinician's face	Talk to the child about a toy and look at the child insistently	Toy car that moves
Requesting a toy from the clinician	Push the toy car, give the child the toy car and then request it	Toy car that moves
Listening to the clinician	Hide the toy car and sing a song to the child	Toy car that move; a culturally-familiar song
Requesting from the clinician	Point to out-of-reach toys and ask if the child wants some	Toys visible to the child but out-of-reach
Looking at details of materials and solving a problem presented by the clinician	Give the child a container with lid that has toys inside but the child cannot open	Closed container with small toys inside
Sharing a toy with the clinician	Open the container and ask the child to give one of the small toys inside	Closed container with small toys inside
Negating a behavior to the clinician	Ask the child to give you the container	Closed container with small toys inside
Imitation of a clinician behavior	Brush you hair and give the brush to the child	Baby hair brush
Looking at object pointed by the clinician	Point at a drawing on the wall behind the child	A drawing hanging on the wall behind the child and mother

These strong indicators can be used by pediatricians, speech-language pathologists, and psychologists as a reference to examine and refer children at risk of autism [12]. The advantage of this procedure is that it requires less than 20 minutes; and it can be used to identify the presence of each of the skills in the child for a diagnosis of ASD towards a prompt

personalized treatment [9].

5. Conclusions

This investigation addressed the lack of social communi-

cation data on typical Hispanic children that can be used to identify those at risk for an ASD.

Clinical services for an ASD diagnosis still rely on controlled observations of child behaviors and so this study gave us additional information towards a more valid clinical decision. These results indicate that there are observable social communication behaviors in these children, such as requesting, observing face gestures, and responding to requests. Additional investigations are needed to determine how these behaviors are present in older children from different Hispanic backgrounds.

Abbreviations

ASD: Autism Spectrum Disorder

ESCS: Early Social-Communication Scales

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Blackwell, C., Wakschlag, L., Krogh-Jespersen, S., Buss, K., Luby, J., Bevans, K., Lai, J., Forrest, C., and Cella, D. (2020). Pragmatic health assessment in early childhood. *J Pediatr Psychol*, April 1; 45(3): 311-318.
- [2] Centers for Disease Control and Prevention (2022). Screening and diagnosis of autism spectrum disorder. www.cdc.gov
- [3] Choueiri, R., Garrison, W. and Tokatli, V. (2023). Early identification of autism spectrum disorder. *Indian J Pediatr*. Apr; 90(4) 377-386.
- [4] Fountain, C., Winter, A., Cheslack-Postava, K. and Bearman, P. (2023). *Pediatrics*, Sep 1; 152(3).
- [5] Hodges, H., Fealko, C. and Soares, N. (2020). Autism spectrum disorder. *Transl Pediatr*, Feb; 9 (Suppl 1).
- [6] Hyman, S., Levy, S. and Myers, S. (2020). *Pediatrics*, Jan; 145(1).
- [7] Kodak, T. and Bergmann, S. (2020). Autism spectrum disorder. *Pediatr Clin North Am*, Jun; 67(3): 525-535.
- [8] Linares-Orama, N. and Solis, G. (2022). Distinctive language profiles of autism in Hispanic children. *Psychology and Behavioral Sciences*, 11(4), 132-135.
- [9] Morris, R., Greenblatt, A. and Saini, M. (2019). Healthcare providers' experiences. *Autism Dev Disord*, Jun; 49(6), 2374-2388.
- [10] Mundy, P., Delgado, C., Block, J., Venezia, M., Hogan, A., and Seibert, J. (2013). A manual for the Early Social Communication Scales. MIND Institute-University of California at Davis.
- [11] Mundy, P. and Delgado, C. (2013). Early Social Communication Scales. *Psychology*.
- [12] Pace, A., Luo, R., Hirsh-Pasek, K. and Golinkoff, R. (2017). Identifying pathways between socioeconomic status and language development. *Annual review of Linguistics*, 3, 285-308.
- [13] Rautakoski, P., Ursin, P., Kaljonen, A., Nylund, A. and Pihlaja, P. (2021). Communication skills predict social-emotional competencies. *Commun Disord*, Sep-Oct; 93: 106-138.
- [14] Vogindroukas, I., Stankova, M., Evripidis-Nikolaos, C. and Proedrou, A. (2022). Language and speech characteristics in autism. *Neuropsychiatr Dis Treat*, Oct 14; 18: 2367-2377.
- [15] Zwaigenbaum, L., Bauman, M., Stone, W., Yirmiya, N., Estes, A., Hansen, R., McPartland, J., Natowicz, M., Choueiri, R., Fein, D., Kasari, C., Pierce, K., Buie, T., Carter, A., Davis, P., Granpeesheh, D., Mailloux, Z., Newschaffer, C., Robins, D., Smith-Roley, S., Wagner, S. and Wetherby, A. (2015). Early identification of autism spectrum disorder. *Pediatrics*, Oct; 136, 10-40.