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Artículos de investigación científica y tecnológica

# DEVELOPMENT OF PRAGMATIC AWARENESS IN CHILDREN WITH ASPERGER SYNDROME

El desarrollo de la conciencia prágmática en niños con síndrome de asperger

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**Abstract:** Pragmatic consciousness makes people aware of what forms of language are appropriate in the context of communication, this ability helps understand when speakers or other people make appropriate use of language. In this case, perspectives of children with Asperger's, their families and child therapists will be analysed in connection with Asperger children's pragmatic awareness. To do this, a Pragmatic Awareness Questionnaire (PAQ) was developed, it included up of 30 items, and was answered by eight children diagnosed with AS, seven mothers and one father and two therapists who work with the children. The proposed objective of this study is to compare the perspectives of pragmatic awareness in students with Asperger's, according to themselves, their families and therapists and based on the PAQ. On the one hand, by comparing the response mean of each pragmatic item according to each block, and on the other hand, by applying a comparative analysis of the three perspectives of the PAQ. The results showed a three-dimensional structure for the PAQ and categories were grouped in three pragmatic dimensions: expository, textual and interactive. The work herein approaches an analysis of communicative behavior (verbal and nonverbal) of children with AS.

**Keywords:** Pragmatic awareness, Asperger syndrome (AS), communicative behavior and communication context.

## INTRODUCTION

Asperger syndrome or disorder (AS) was initially described by Hans Asperger in 1944, he identified it as a very specific pattern of behavior and skills, predominant in boys, and defined it a an 'autistic psychopathy'. Based on this definition, Wing delved into this syndrome and found three areas of difficulty in AS (Wing & Gould, 1979; Martin-Borreguero, 2005; Vasquez & del Sol, 2017): social relationships disorder; communication disorder, pertaining language expression and comprehension; and finally, lack of mental flexibility, conditioning the individual to restricted behaviors and limiting activities that require certain degree of imagination.

According to the American Psychiatric Association (APA, 2000), Asperger disorder (AD) is an overall developmental disorder featuring qualitative alteration of social interaction, presence of restrictive interests

and stereotyped behaviors. Deficits in social interaction are diverse and include communication difficulties understanding and applying linguistic conversations and social interaction (Whilliams, Keonig, & Scahill, 2007).

The DSM-5 (2014) places AS within the autistic spectrum, although the DSM-IV (2002) includes AS within the pervasive developmental disorders (PDD) and considers it as an autism spectrum disorder (ASD). Diagnosis criteria are as follows:

1. Lack of social and emotional reciprocity that manifests in failure at attempted conversation, sharing interest, emotions or affection, etc.

2. Verbal and nonverbal communication deficits, scarce integration in social interaction; e.g., lack of visual contact and body language (such as gestures, facial expressions, etc.)

3. Lack of development and understanding of relationships, i.e., difficulties to adapt in different contexts, making friends, sharing imaginative play, due to the disinterest of their classmates.

4. Proneness to repetitive and restricted patterns in terms of behavior, interests and activities.

5. Obsession for concrete topics of interest with great intensity or focus.

Symptoms are present in the early development period, but there are cases in which symptoms fail to manifest since they are masked by strategies learned in adulthood. These usually entail clinically significant deterioration in social occupational areas. Due to its characteristics, this study will deal with children with AS.

Often, children who are diagnosed with AS have limitations understanding and using social behavior rules, in addition to deficits in proper social skills and lack of intuition to determine when to put these skills to practice (Bauminger, 2003). Moreover, they have difficulties understanding and expressing emotions, as well as interpreting emotions and facial expressions (Gutstein & Whitney, 2002; Shaked & Yirmiya, 2003; Lindner & Rosen, 2006).

Social deficits have repercussions in interactions with family members, classmates and other adults, and interfere in their normal academic, emotional and social development (Krasny, Williams, Provenzal & Ozonoff, 2003; Rao *et al*., 2008). Vazquez and Murillo (2007) define children with AS as follows:

- Usually, many have intelligence ranging between mid to above mid-levels.

  Their movement coordination and organization is poor, they stand out in aspects or areas that are interesting to them.

  Socially, they are odd, naïve and emotionally disconnected children.

  Although they have good grammar and use ample vocabulary, they use it in discourse with themselves (monologues) and not in conversations.

  In most children, discourse is fluent, literal and pretentious, they have knowledgeable content of specific topics.

> Unsatisfactory nonverbal communication that follows monotonous and peculiar intonation.

Simpson (2004), in a guiding article for parents with children diagnosed with AS, comments they face a series of challenges for which they lack information on a daily basis. They live through deception, frustration and an array of emotions directly or indirectly related to the disorder. One of their biggest concerns is that their children do not interact well with other children. It is common for parents to comment that their child is almost "never present in the moment", unaware of people, objects and events taking place at the moment and that his/her mind is somewhere else (actively thinking) yet not here and now.

Gresham, Sugai and Horner (2001) state that the ability to successfully interact with meaningful peers and adults is one of the most important for students' development.

A key question by most therapists working with children with AS is: what can be done to assist these children in understanding their social surroundings and successfully navigate our complex social world? Mostly, they need to steer their social and emotional learning by teaching them essential skills to develop social and emotional competences. This includes training new skills in the following areas: problem solving, conversation skills, identification of feelings and emotions, managing emotions and feelings, anger management, dealing with stress and organizational skills.

It is critical for therapists and families to teach and strengthen pragmatic skills to children with AS, which need to be put in practice in different surroundings and multiple situations to generate pragmatic awareness in their speech.

Pragmatic awareness refers to a self-reflective and critical capacity of speakers to judge of their use of the language. Which is to say, self-valuation of their linguistic and discursive dexterities and skills, and overall, of their communicative behavior when they use language in social practices. Another way of defining it, according to Reyes (2002), would be awareness of what forms of language are adequate in the context of communication, this skill helps understand if when speakers or other people make appropriate use of language or not, since an expression used in the familial context may not be suitable in written form or with people outside the family.

Some authors go further and affirm that pragmatics «has become a repository of all kinds of extra-grammatical considerations and of the effects of said factors in grammatical and lexical forms» (Horn, 1990, p.45).

Tapping into of some contributions from linguistic anthropology, Silverstein's (1993) proposals stating that metalinguistic activity originated in metapragmatics are noteworthy; this is a more general reflexive process that has to do with communicative functionality of statements and their conditions of use. In other words, metapragmatic competence refers to the knowledge by each user of relationships existing within the system and, thus, between the linguistic system and communicative context in which they are produced. Therefore, this

competence allows speakers to distinguish a linguistic message from extralinguistic context and establish connections between both.

Oral interactions activate pragmatic competence, and therefore are a key point of reference to describe and explain mastery and communicative disorders.

In one of his articles, Gallardo (2006) suggests that pragmatic component is divided in three large dimensions:

- ü Expository pragmatics, a category that derives from considering each statement as an intentional action by the speaker.

  ü Textual pragmatics, this category is linked to the grammatical nature of the message delivered by the speaker, to be valuable, the message requires cohesion and coherence.

  ü Interactive pragmatics, this pragmatic category comes from considering that each message is directed at a recipient, it focuses on the conversational turns to speak.

One of the main objectives of a speech therapist is working with children with AS with direct intervention aimed at improving communication, increase socialization and develop social skills, customarily, combining behavioral and educative strategies (Jane, Ballespi, & Domenech-Llabería, 2006; Corsi Sliminng, Guerra & Plaza, 2007).

Training in social skills implies teaching skills applying behavioral and social learning techniques: modelling, behavioral trials, feedback, role play and live rehearsals (Cooper, Griffith, & Filer, 1999; Klin & Volkmar, 2000). Some social skills programs include activities aimed at improving socioemotional comprehension, acknowledgement and expression of emotions (Attwood, 2000; Martin-Borreguero, 2004; Olivar & de la Iglesia, 2008); a clear example of an activity would be "The Theory of the Mind".

Nowadays, there is a great shortage of studies about pragmatic awareness in children with AS, this is a motivation to produce innovative work that leads to different points of view as to how the child, family and therapist become aware of pragmatic awareness of children with AS. Therefore, the objective of this study has been to compare pragmatic awareness based on the perspective of children with Asperger's, their families and therapists.

## EMPIRICAL FRAMEWORK

*General Objective*

Knowing pragmatic awareness in students diagnosed with AS, as per themselves, their families and therapists.

*Specific Objectives:*

1. Establishing pragmatic awareness in children with AS, with the family and therapists' perspective.
   Contrasting perspectives of pragmatic awareness by students with AS, their families and therapists.

*DESIGN*

This research has a quantitative methodological approach of descriptive-comparative nature, it intends to become familiar with the perception of children with AS, their families and therapists, comparing them as well. From this approach, this is a descriptive research in which the purpose is fulfilled by filling out a questionnaire.

*PARTICIPANTS*

Participants were selected (not at random) due to the low prevalence index of AS (Fombonne, 2005). The sample had a single criterion for inclusion, being a child with AS, family or therapist. No exclusion criterion was followed. Participants were selected through non-random intentional sampling. The entirety of the sample, aside from the family's support, attend Asperger's associations and are currently in speech therapy, working emphatically on the importance of socioemotional skills training.

The questionnaire was answered by eighteen people, (see Table 1), among them:

| | | ♂ | ♀ |
|---|---|---|---|
| Students | F | 7 | 1 |
| | % | 87.5 | 12.5 |
| Family | F | 1 | 7 |
| | % | 12.5 | 87.5 |
| Therapists | F | 0 | 2 |
| | % | 0 | 100 |

**Table 1.**
Distribution of Participants per Group.

| | Ages | | | | | | |
|---|---|---|---|---|---|---|---|
| | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| No. of students | 3 | 2 | 1 | 0 | 1 | 1 | 0 |

**Table 2.**
Distribution of Students with AS per Age.

*INSTRUMENTS*

The instrument applied by the study herein was an *ad hoc* questionnaire designed after a documentary review that failed to find an instrument to specifically measure pragmatic awareness in children with Asperger syndrome.

There are three versions of the instrument depending on the person answering the questionnaire: therapists, children with AS and family members of children with AS. The only difference in the versions is the way in which it was written, the three versions contain the same questions.

The questionnaire assesses four communication dimensions of sociodemographic information: age, grade, gender and kinship. It comprises thirty items which are distributed as ordinal variables using a four-point Likert scale, as follows: 1 = never, 2 = sometimes, 3 = often and 4 = always, except for the last one which allows inserting observations.

The definitive Questionnaire for Pragmatic Awareness for Children with AS (CCPNSA) is shown in Table 3.

| Final Version of the Questionnaires | | |
|---|---|---|
| Block | Dimensions | Items |
| *Actions in speech* | Type of speech, gestures, expression, glances. | 1-8 |
| *Closeness when communicating* | Closeness and physical contact to the person, way of addressing other people. | 9-12 |
| *Understanding conversations* | Understanding, connection of topics, adaptation of conversations. | 13-17 |
| *Confidence in speech* | Usage of reinforcements to solve understanding issues. | 18-21 |
| *Conversation guidelines* | Respect for turns in conversations and speed in communicative relationships. | 22-27 |
| *Construction of language* | Structure of the language and connection of conversations. | 28-30 |

**Table 3.**
Distribution of Items per Dimensions.

*VALIDITY*

After a comprehensive review process of the questionnaires came an expert validation. The experts (a speech therapist, a hearing and language teacher and a counselor) were given the questionnaires to assess the internal consistency of each item, in particular, clarity and relevance of each, as per Escobar and Cuervo (2007). The score of 1 is given for unclear/irrelevant, of 2 of it was a bit clear/relevant, of 3 if it was clear/relevant, and of 4 if it was clear/relevant. Then, the questionnaire was reviewed again considering the experts' assessment of each item with mean of or below three points of clarity or relevance.

Certainly, experts' suggestions were considered in some questions, and thus the final version of the questionnaires was produced: therapists, children with AS and family.

| Questionnaire | Cronbach's alpha | No. of items |
|---|---|---|
| Students | .874 | 30 |
| Family | .914 | 30 |
| Therapists | .877 | 30 |

**Table 4.**
Analysis of Reliability.

Based on the evaluation of Cronbach's alpha coefficients made by De Vellis (2003), as well as on the previous score (Table 4), the questionnaires attained respectable feasibility (between .80 and .90).

## PROCEDURE

This research began with a bibliographic review of articles related to pragmatic awareness in children with AS. Then, three questionnaires were designed to collect information, that process entailed several comprehensive reviews. A group of experts then proceeded to assess the questionnaire, as explained in the Instruments section.

Questionnaires were digitally applied in a speech therapist's office and in an educational center. Students and therapists' questionnaires were filled in the presence of the researcher, parents answered their questionnaire alone. Google Forms was the tool selected due to its speed and ease of use, after total completion, the tool provided a graph with the frequency and percentage of answers. The process was conducted throughout a week, in the schedule of speech therapy and pedagogic work, with children, families and therapists.

Finally, the IBM SPSS Statistics (version 19) software was used to compile and analyze data that led to the conclusions and production of this article.

### *DATA ANALYSIS*

Data analysis was conducted using the IBM SPSS Statistics (version 19) software. In order to determine the frequencies of each variable, a descriptive analysis with contingency tables was chosen, and validity was calculated with Cronbach's alpha coefficient. Lastly and given the characteristics of the sample, presence of significant differences among groups was solved using the Kruskal-Wallis non-parametric test.

## RESULTS

The following is a results analysis considering each of the objectives.

*Objective 1. 1. Establishing pragmatic awareness in children with AS, with the family and therapists' perspective.*

| | Children | Family | Therapist |
|---|---|---|---|
| | N S O A | N S O A | N S O A |
| 1. Your rhythm when speaking is adequate. | 0 2 2 3 | 0 2 4 2 | 1 4 2 0 |
| 2.You speak up and with the right intonation. | 0 3 3 2 | 0 4 2 2 | 0 6 6 1 |
| 3. You move your arms and hands when you speak. | 2 4 2 0 | 0 4 4 0 | 0 5 3 0 |
| 4. When you speak you change your foot's position. | 2 5 1 0 | 0 4 4 0 | 3 3 2 0 |
| 5. You use facial gestures in your conversations. | 3 3 1 1 | 0 4 3 1 | 4 4 0 0 |
| 6. You look at the face of the person you are speaking with. | 0 2 2 4 | 2 3 3 0 | 3 3 1 1 |
| 7. You are interested in what others do or think. | 1 2 4 1 | 1 4 3 0 | 5 1 1 1 |
| 8. You accept criticism by others. | 4 3 0 1 | 2 2 2 2 | 3 4 0 1 |

**Table 5.**
Block: action in speech

Results (see Table 5) are very similar from the three perspectives. Item 3: *You move your arms and hands when you speak,* is noticeable since some children comment that they never do it (f.2), yet families (f.4) and therapists (f.5) answer sometimes.

Data manifests children state they look at faces of people when they are talking to them, however, families and therapists indicate otherwise. Children answer that they always look at the face (f.4), while families and therapists answered sometimes or often (f.3).

Finally, both children (f.4) and families (f.4) state that they only show interest sometimes or often concerning what other people do or think, while therapists (f.5) answered it never happened.

| | Children | Family | Therapist |
|---|---|---|---|
| | N S O A | N S O A | N S O A |
| 9. When you speak, your face expresses your mood. | 1 6 0 0 | 0 1 5 2 | 4 3 1 0 |
| 10. You like getting close to people when you speak. | 2 4 0 2 | 0 6 2 0 | 0 8 0 0 |
| 11. You use physical contact while speaking. | 4 3 0 0 | 2 4 2 0 | 4 3 1 0 |
| 12. You call people by their name. | 1 1 0 6 | 1 2 3 2 | 3 3 2 0 |

**Table 6.**
Block: closeness when communicating

Data (see Table 6) suggests highlighting item 9:*When you speak, your face expresses your mood*, which shows that children (f.6) think their face conveys their mood, unlike therapists (f.4) who claimed they never do it.

As observed, children (f.6) think they always call someone by their name when they address that person, however, families and therapists differ.

| | Children | Family | Therapist |
|---|---|---|---|
| | N S O A | N S O A | N S O A |
| 13. When you speak, your friends understand the message. | 0 4 4 0 | 0 5 1 2 | 0 1 4 3 |
| 14. You laugh at jokes told by other people. | 0 3 1 2 | 0 3 5 0 | 2 3 3 0 |
| 15. You adapt to changes in topic while having a conversation. | 0 5 1 2 | 0 2 1 5 | 0 4 1 3 |
| 16. You connect the ideas in a conversation. | 0 6 1 0 | 0 5 2 1 | 1 3 3 1 |
| 17. You have a hard time understanding ironic comments. | 1 2 2 3 | 1 5 2 0 | 2 3 3 0 |

**Table 7.**
Block: understanding conversations

Data (see Table 7) illustrate that families (f.2) and therapists (f.3) consider some children's messages are understood by their friends but results from children (f.4) reveal that they feel understood only sometimes.

Referring to item 17: *You have a hard time understanding ironic comments*, it was found that only some children (f.3) confirmed that it is always difficult for them to understand other people's irony, on the contrary, families (f.5) answered it only happened sometimes.

| | Children | Family | Therapist |
|---|---|---|---|
| | N S O A | N S O A | N S O A |
| 18. When you require it, you ask others for help. | 0 4 3 1 | 1 3 4 0 | 2 3 3 0 |
| 19. You ask others when you have doubts. | 0 4 1 2 | 2 3 3 0 | 0 7 1 0 |
| 20. You connect the ideas in a conversation. | 1 4 1 2 | 1 3 4 0 | 0 7 1 0 |
| 21. You have a hard time understanding ironic comments. | 2 2 2 2 | 2 3 2 1 | 0 4 1 3 |

**Table 8.**
Block: confidence in speech

Results (see Table 8) suggest highlighting item 19: *You ask others when you have doubts*, therapists (f.7) answer that most children ask questions when they have doubts only sometimes, unlike families (f.2) which answered that children never do this.

Likewise with the next item, therapists (f.7) answer that most children communicate differently only sometimes either with their parents, friends and teachers, yet families (f.4) answered that often some children change their vocal register depending on the person they are talking to.

| | Children | Family | Therapist |
|---|---|---|---|
| | N S O A | N S O A | N S O A |
| 22. You respect your turn in conversations. | 0 0 3 5 | 2 2 2 2 | 1 7 0 0 |
| 23. It bothers you if people interrupt you when you speak. | 2 1 0 5 | 0 3 4 1 | 0 5 2 1 |
| 24. You interrupt others when they are speaking. | 1 6 1 0 | 1 4 1 2 | 1 5 2 0 |
| 25. When you are asked questions, you answer quickly. | 0 5 2 1 | 0 3 5 0 | 1 7 0 0 |
| 26. You like giving information in your conversations. | 2 2 2 2 | 0 2 2 4 | 0 4 2 2 |
| 27. You contribute new ideas when you speak. | 2 2 4 0 | 1 4 3 0 | 2 5 1 0 |

**Table 9.**
Block: conversation guidelines

Results (See Table 9) explain that children (f.5) think they always respect their turn in conversations overall, however, therapists (f.7) responded that most children only do it sometimes.

Regarding item 23: *It bothers you if people interrupt you when you speak,*it can be seen that children (f.5) answer that it bothers them when they are interrupted by someone, but families and therapists (f.0) agree that children do not seem bothered to be interrupted.

Table 10.
*Block: construction of language*

Based on the results obtained (see Table 10), it is clear that most mothers (f.6) think their children use synonyms sometimes, whereas some children (f.3) and therapists (f.2) answered they never use synonyms.

Lastly, in most cases, therapists (f.5) believe children never easily relate different ideas in a conversation, to which children (f.4) and mothers (f.3) say that it depends on the topic of the conversation, sometimes they do and sometimes they do not.

*Objective 2. 1. 1. Contrasting perspectives of pragmatic awareness by students with AS, their families and therapists.*

The Kruskal–Wallis H test was conducted in order to respond to this objective and find if there are statistically significant differences between perspectives of children with AS, their families and therapists.

The test helped verify that there is indeed a statistically significant effect only in two of the evaluated items, item 9: *When a child with AS speaks, his/her face expresses his/her mood* (H= 9705, gl.= 1, p= .002) and item 22: *Children with AS respect their turn in conversations with several people* (H= 11850, gl.= 2, p= .003).

Remaining items showed no statistically significant effect, according to the Kruskal–Wallis H test effect, this leads to affirming that perspectives of pragmatic awareness in children with AS are very similar among children themselves, families and therapists.

| | Children | Family | Therapist |
|---|---|---|---|
| | N S O A | N S O A | N S O A |
| 28. You build sentences without making many mistakes. | 1 3 2 2 | 0 4 1 3 | 2 5 1 0 |
| 29. You use different words to say the same. | 3 3 2 0 | 0 6 2 0 | 2 3 1 2 |
| 30. You easily connect different ideas. | 1 4 3 0 | 1 3 1 3 | 5 3 0 0 |

**Table 10.**
Block: construction of language

## DISCUSSION AND CONCLUSIONS

After analyzing the results of this study, it was observed that several aspects introduced in the research's theoretical framework can be confirmed.

First, children with AS, their families and therapists agree in the fact that they have verbal and nonverbal communication problems and issues relating with others, this concurs with the DSM-5 (2014). This fact is also evident in actions that facilitate verbal and nonverbal conversation, such as moving hands and feet, using facial gestures, accepting criticism of others, resorting to physical contact when speaking, expressing their mood, the three groups mention these things are done sometimes.

It seems relevant that, according to the families' perception, children with AS are often close when communicating, although children and therapists believe that this closeness takes place sometimes.

Finally, the research has observed that the perspective of families, children with AS and therapists is aligned with the features of this type of children as identified by Krasny, Williams, Provenzal and Ozonoff, (2003); Vazquez and Murillo (2007); Rao et al., (2008). These are children with good grammar and rich vocabulary, but they are aware of their limitations in nonverbal communication.

The results of this study must be considered in relation to a series of limitations listed ahead:

- - Absence of instruments to measure pragmatic awareness of a child with AS based on the points of view of children, their families and therapists.

  - Difficulty to conduct a more through validation of the designed instrument since it has only been possible to resort to experts' judgement.

  - When applying the questionnaire to the child, several interpretation issues arose, thus, children required help at all times in reading and formulating the questionnaire to avoid children answering a question without understanding it.

  - Another relevant restriction refers to sample size: eight children diagnosed with AS limits the statistic robustness and the capacity to generalize obtained results.

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