Habilidade de atenção compartilhada em sujeitos com transtornos do espectro autístico***

Joint attention ability in children with autistic spectrum disorders

Camila Gioconda de Lima e Menezes*
Jacy Perissinoto**

*Fonoaudióloga. Especialização em Desenvolvimento de Linguagem e suas Alterações pela Universidade de São Paulo. Mestre em Ciências pelo Programa de Pós-Graduação em Distúrbios da Comunicação Humana do Departamento de Fonoaudiologia da Universidade Federal de São Paulo. Endereço: Rua Botucatu, 802 - São Paulo - SP - CEP 04023-900 (cagimenezes@yahoo.com.br).

**Fonoaudióloga. Doutora do Programa de Pós-Graduação em Distúrbios da Comunicação Humana do Departamento de Fonoaudiologia da Universidade Federal de São Paulo. Pós-Doutorado - Paris (Sorbone).

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Abstract

Background: joint attention in children with autistic spectrum disorders. Aim: to evaluate joint attention ability in subjects with autistic spectrum disorders in different contexts and with different interlocutors. Method: twenty subjects with ages between four and twelve years, diagnosed with autism or asperger syndrome (DSM-IV-TR, 2002) by a multidisciplinary team, with no associated disorders, and who were enrolled in language therapy for at least six months were assessed. The Symbolic Maturity Assessment Test was used to evaluate joint attention behaviors. An adaptation that included the Semi-Structured Play situations was carried out for this research. For all of the studied situations (free play; semi-structured play with speech and language therapist and the caregiver; imitation) the following joint attention behaviors were observed: alternate, point, show (by child's initiative or in response to adult's action) and look at adult's action (response behavior). The last included the differentiation of the ways by which the adult drew the child's attention (talking; gesturing; or both). Results: the different situations changed the way these subjects shared attention. The adult's intervention proved to be effective in triggering an increase in the occurrence of joint attention behaviors, mainly in response to the adult. No differences were found between interlocutors (speech therapist and mother) in semi-structured situations, probably because both interlocutors synchronized their behaviors with the children. Conclusion: the evaluation of joint attention behaviors in play contexts was effective and the interference of a known adult was reflected in the increase of the occurrence of these behaviors in semi-structured and imitation situations.
Key Words: Autism; Asperger Syndrome; Autism Spectrum Disorders; Attention; Language.

Resumo

Tema: atenção compartilhada em sujeitos do espectro autístico. Objetivo: avaliar a habilidade de atenção compartilhada em sujeitos com transtornos do espectro autístico em diferentes contextos e com diferentes interlocutores. Método: foram avaliados vinte sujeitos com idades entre quatro e doze anos, com autismo infantil ou síndrome de asperger (DSM-IV-TR, 2002) sem outros transtornos, diagnosticados por equipe multidisciplinar, que estavam em terapia fonoaudiológica há pelo menos seis meses. Para avaliação dos comportamentos de atenção compartilhada foram utilizados os materiais e procedimentos da Avaliação da Maturidade Simbólica, além de uma adaptação feita para esta pesquisa que incluiu as situações Semi-Dirigidas com interlocutores familiares. Para as situações estudadas (brincadeira livre; semi-dirigidas com terapeuta e cuidador; imitação), foram observados os comportamentos de atenção compartilhada alternar, apontar, mostrar (por iniciativa ou resposta da criança) e olhar para a ação do adulto (sempre por resposta da criança). Este último incluiu a diferenciação do meio utilizado pelo adulto para chamar a atenção da criança (fala; gestos; ou, ambos). Resultados: as diferentes situações modificaram a forma como estes sujeitos compartilharam a atenção. A intervenção de um adulto aumentou a ocorrência dos comportamentos de atenção compartilhada principalmente em Resposta. Não foram observadas diferenças na intervenção dos diferentes interlocutores (fonoaudiólogo e mãe) nas situações semi-dirigidas, provavelmente porque ambos sincronizaram seus comportamentos com as crianças. Conclusão: a avaliação da atenção compartilhada em contexto de brincadeira foi eficaz e a intervenção do adulto refletiu no aumento destes comportamentos nas situações semi-dirigidas e de imitação.
Palavras-Chave: Autismo Infantil; Síndrome de Asperger; Transtornos do Espectro Autístico; Atenção; Linguagem.

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Introduction

The manifestations of the autistic spectrum are very heterogeneous, varying in severity, but maintaining in common alterations on social aspects, communication and behavior and interests 1, 2.

The difficulties of the autistic spectrum are related to verbal and non-verbal aspects. These difficulties have been considered important - especially the shared attention - for early identification and social and language development of autistic spectrum children 3, 4.

In typical development, shared attention appears at the end of the first year of life and involves directing the attention of a communicative partner with the intention of sharing a situation 5.

The early relationship of the child-adult dyad determines the success in their social and language development. Adults will take advantage of their tips to introduce references about the world, providing to the child the understanding of the communicative intention which will facilitate attention sharing 6.

The shared attention has been regarded as a marker for the early identification and intervention of cases of autistic spectrum, since it is the precursor to the development of language7-9. The behaviors of shared attention can be classified based on its occurrence, by the initiative of the child or in response to the action of the adult. The latter occurrence is more frequent in these cases giving the difficulties that these subjects have in the use and understanding of communicative intention 10-13.

Considering the deficits of these individuals in this skill, it is hypothesized that the deficit is influenced by situational and interactional context.

Thus, the objectives of this study were to verify the ability of shared attention in situations of Free Play, Semi-Directed and Imitation in children with autistic spectrum disorders, from the involvement with different partners.

Methods

Participants

Twenty children were evaluated -- 4 girls and 16 boys with an average age of 9.4 years, and with multidisciplinary diagnosis of Infantile Autism or Asperger Syndrome 14,15. It was considered as an inclusion criteria that all children were receiving Speech-Language Therapy for at least six months, and considered as exclusion criteria any alterations, presence of birth malformations and/or associated genetic syndromes, neurological disorders, physical disabilities, hearing or visual impairment. Only one child was not included in any educational program. The procedures began after approval by the Research Ethics Committee and after the parents had signed the Term of Free and Informed Consent (CEP / UNIFESP number 807/05).

The participants were children from the Speech-Language Pathology Laboratory of Research in Language of Global Developmental Disorders and from the Reference Center for Children and Adolescents, Department of Speech-Language Pathology and Psychiatry, UNIFESP.

Material

The Evaluation of Symbolic Maturity 16,17 , which goal is to evaluate the cognitive performance of children with developmental disorders of language through more and less representative toys. In this study, the material was used in order to verify the ability of shared attention.

The objects of Free Play are presented to children in a box: a toy phone, a big ball, dolls and animals made of fabric or plastic, some small cars, kitchen utensils, baby bottle, a blanket and a small pillow, a long necklace, blocks and serial glasses, abacus and two winding mechanical toys.

The Imitation toys were presented to the child according to actions: glass, tooth brush, spoon, doll, soap, flower, frog, airplane, hat, car, banana, crib, bathtub, napkin, blanket, towel and book.

Procedure

Originally, the Symbolic Maturity Assessment suggests situations of Free Play and Imitation 16,17. For this study, the procedure has been adapted by including an interactive filming with the Therapist/ Speech-Language Pathologist and another one with the caregiver/mother, named Semi-Directed situations, for observation of possible changes in the Shared Attention by the intervention of a different interlocutor.

The evaluation was divided into two sessions, with duration of approximately 45-minutes and interval between them of at least 15 days to reduce possible influences of the initial session on next contact with the same material.

The sessions were filmed individually, with the presence of a familiar adult (Speech-Language Pathologist and/ or mother), to avoid that

interaction with an unknown person would interfere in performance.

First Session

Situation 1 - Free Play

A box of toys was presented to the child with the instruction: "You can play with these toys the way you want to". The adult interacted only when the child initiated contact or in order to draw the attention if the child was expending a lot of time exploring a single object, without suggesting any activity.

Situation 2- Semi-Directed with Speech-Language Pathologist

The same materials from the Free Play were used, but, at this moment, the Speech-Language Pathologist could suggest games during the interaction.

Second Session

Situation 3- Semi-Directed with Caregiver (mother)

The same materials from the Free Play were used, but, at this moment, the mother was guided by the Speech-Language Pathologist to play with her child the way she wanted to, naturally.

Situation 4 -Imitation

It included two steps: Imitation of Simple Gesture Schemes and Sequence in Family Routines. The adult presented an action and spoke at the same time, for the child then imitate it.

The situations of Free Play and Semi-Directed lasted 20 minutes (analysis of the final 15 minutes), the situation of Imitation duration was variable (about 10 minutes).

The tasks started on the floor, with adult and child positioned face to face, and the box of toys/ objects between them. The order of conducting the activities was from less to more directed, to highlight the spontaneous behavior of the child and prevent that the interference of adult would influence on posterior performance.

The analysis of the ability of Shared Attention was performed for each situation (behavior adaptation proposed by Mundy et al.)18.

. to alternate: number of times that the child alternated the gaze among a mechanical or non mechanical object, one that was in their hands or out of reach, and the face of the adult;
. to point: number of times that the child pointed to an object nearby or non nearby of himself/herself or to part of the room;
. to show: number of times that the child extended the object on the face of the evaluator or drew his/ her attention to something that was in their hands;
. to look to the action of the adult': number of times that the child turned his head and eyes in any direction that the adult had pointed to, had shown or had drawn his/her attention.

When the combination of behaviors occurred, both behaviors were scored for analysis. The responses were recorded on the protocol, considering the number of times that each behavior was observed in each situation.

The behaviors 'to alternate', 'to point' and 'to show' were also classified when occurring as Initiative of the Child (IC-child spontaneously used these behaviors associated or not to the speech, aiming to share the attention) or whether they were in response to the Adult Action (RA - Adult drew the attention of the child with a purpose, using speech, gesture, or both, and this fact triggered a response by the analyzed behaviors).

The behavior 'to look to the action of the adult' was only considered as responses of the child through actions/comments of the adults. It was verified that the child answered (YES) or stopped responding (NOT) when the adult drew their attention by using the Verbal (V), Sign (G) or Verbal and Sign (V + G) mode 12,19.

A random selection of 50% of the subjects in each situation for analysis by two Speech-Language Pathologists with clinical experience in the autistic spectrum disorders and who were familiar with the material, but unknown the identification data and diagnosis of cases was conducted. No statistically significant differences were found between the two observers (Wilcoxon test), which indicated compatibility on data analysis.

Results

The obtained data were scored for each task and analyzed statistically (Wilcoxon and Friedman Tests) with significance level of 0.05.

Table 1 provides a comparison of 'to alternate', 'to point' and 'to show' behaviors in four situations.

The 'to alternate' behavior prevailed in a statistically significant manner when compared to the 'to point' and 'to show' in the four situations (p <0001 *). In IC, statistically significant differences were not found in this behavior in any situation. In RA, the 'to alternate' was significantly less frequent in Free Play, than in Semi-Directed situations with Therapist/Caregiver and Imitation, which did not differ among themselves.

As for 'to point', statistically significant difference was not found in IC on the four situations. In RA, this behavior was significantly less frequent in Imitation when compared to Semi-Directed situations with Therapist/caregiver. The Free Play did not statistically differ from other situations.

In the 'to show' situation, no statistically significant difference was found among the four situations in IC. In RA, it was significantly more frequent in the situation Semi-Directed with Therapist than in Free Play and Imitation. The Semi-Directed situation with caregiver did not statistically differentiated from other situations.

As for the behavior of 'to look at the action of the adult' (Table 2), no statistically significant difference was found in use by the adult on V or G modes in the four situations. The V + G mode was statistically significant in Imitation in relation to Semi-Directed situations Therapist/caregiver. The Free Play did not statistically differ from other situations.

TABLE 1. Comparison among the four situations for the 'to alternate', 'to point' and 'to show' behavior

Behavior	P
'to alternate' – Initiative of the child	**0,346**
'to alternate' – Response to the action of the adult	**< 0,001 ***
'to point' - Initiative of the child	**0,520**
'to point' – Response to the action of the adult	**0,006 ***
'to show' – Initiative of the child	**0,065**
'to show' – Response to the action of the adult	**0,013 ***

Subtitle: *p-value: 0,05%

TABLE 2: Comparison among the four situations for the behavior 'to look to the action of the adult'

Behavior	P
'to look to the action of the adult' – Verbal (Yes / Total)	**0,748**
'to look to the action of the adult' – Gesture (Yes / Total)	**0,652**
'to look to the action of the adult' – Verbal + Gesture (Yes / Total)	**0,005 * imitation > (semi-directed with therapist = semi-directed with caregiver)**

Subtitle: *p-value: 0,05%

Discussion

In this study, the occurrence of shared attention such on the request form (to draw the attention of other to achieve something desired), as on the declarative form (to target the attention of other to some other object or situation) was considered 10, 12-13.

Following, it will be discussed the comparison among the four proposed situations, first of the 'to alternate', 'to point' and 'to show' behaviors, and then 'to look to the action of the adult'.

At first, the adult directs his/her action according to the interests of the child, in order to promote moments of sharing of attention. As the child develops, he/she start to draw the attention of the other to start the events of shared attention by gaze, gestures and speech 5-6, 20-21.

Thus, the initially shared attention occurs more in RA than by IC. In the autistic spectrum, early deficits in these two aspects are present and the IC is even more committed 12, 30.

The behavior 'to alternate' predominated over the 'to point' and 'to show' on the four situations; it did not differentiate in IC, but in RA it was less frequent in Free Play when compared to other situations. In this task, the adult interfered as little as possible in the activity, responding primarily in response to IC.

The behavior 'to point' occurred less frequently in Imitation giving the very characteristic of the task, since the child had to play the actions from the model of the adult (rarely included in his/her spontaneous use or request).

The 'to show' behavior was more frequent in RA in the Semi-Directed situation with Therapist, when compared to Free Play (spontaneous behavior of the child) and Imitation (reproduction of actions which did not include 'to show').

This context facilitated the use of this gesture by the child and reflected the longest attention sharing.

The 'to alternate' behavior involves the exchange of gazes among the child, an object/situation and the adult. This behavior arises from 9-11 months and works as a pre-requisite for regulation with the gestures of 'to point' and 'to show' from 11 months 5,21.

Thus, the general predominance of the 'to alternate' reflected a more original share of attention due to the deficit presented to individuals in the autistic spectrum, because no changes occurred in IC in the different situations.

In contrast, most children improved the behaviors in RA in more interactive situations (Semi-Directed and Imitation). Studies showed the IC to share the attention as one of the most persistent deficits in autism 9,13,22.

In the behavior 'to look to the action of the adult', statistically significant difference was found only in response to the V + G mode in Imitation in relation to situations with Semi-Directed Therapist/Caregiver, due to the actual activity context.

Some authors verified that the combination of tips facilitated the attention sharing12-19. Bruner 6 has emphasized that the adult, when associating the direction of the gaze to speech, provides the most effective mechanism for the occurrence of shared attention, which is an essential skill for social and language development and allows children to share experiences and emotions.

In this study, mother and Speech-Language Therapist interacted with the children, who were receiving therapy for at least six months and their families were receiving periodic guidelines for the various aspects of social and language development - including shared attention. These aspects are important for the expansion of acquisitions obtained by other contexts and people 4,8,10-11,23-24.

There were no statistically significant differences found in the performance of the group in Semi-directed situations with the Speech-Language Therapist and the mother. Probably, both were influenced by the spontaneous behavior of children and sought to take advantage of situations of sharing attention to establish synchrony and to meet their expectations, within the limitations of each case. This synchrony was reported by Collis, Schaffer 25 through mother/baby interaction, and referred in studies with individuals with autistic spectrum disorder as essential to social and language development 26-27.

The use of the material and adaptation of the procedure of the Evaluation of Symbolic Maturity for evaluating the initiative and response to shared attention in individuals of the autistic spectrum has been effective and will assist in early identification, differential diagnosis and prognosis. This is because the shared attention appears early in the typical development, so it is possible to precociously observe if there is any change in the manifestations of these behaviors. Furthermore, the deficits on shared attention are described as precocious and persistent in these cases 3-4,28. Some authors observed differences in the performance of individuals of the autistic spectrum in relation to other pathologies such as mental disorder 18 and language development disorders 23, in which individuals of the autistic spectrum presented the worst performance. Finally, some studies indicated that among cases in the autistic spectrum, there are differences in the

manifestation of the behavior of shared attention, that in long-term influences on language development 10,18,24.

The play promotes pleasant moments of attention sharing and allows the spontaneous observation of the child and the effects of the intervention of the adult, through contextualized and interesting situations for the individual of the autistic spectrum 9,12,29-31.

In clinical practice, the priority would be the comparison between the situations of Free Play (more spontaneous observations) and Semi-Directed with a familiar adult (observation of the changes generated by an interlocutor prepared to meet the expectations of the child), which promotes natural moments of interaction and allows the observation of the initiatives and interests of the child with the use of standardized equipment. The Imitation test should not be considered as an isolated analysis parameter.

The findings of this study reinforce the observations of other studies, because although the shared attention is severely compromised and serve as an early marker in individuals of autistic spectrum, the shared attention is not totally absent. This ability is extremely important for diagnosis and early and specific intervention based on this specific aspect 9,13,18,26.

Conclusions

From the proposed interaction situations, it was possible to verify that the individual of the autistic spectrum presented the ability to share the attention and to modify their behavior positively from the interference of an interlocutor.

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