

# Language Therapy with Children with Autism Spectrum Disorders

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## 1. Introduction

The role of language in Autism Spectrum Disorders (ASD) is a singular one because, contrary to other broad developmental disorders in which language impairments are a symptom or a consequence of other deficits, in the autism spectrum language disorders constitute one of the three diagnostic criteria. The diagnostic procedures always involve clinical observation and behavior identification. Although several hypothesis claim that this is a neurobiological disorder with a strong genetic component no biological marker for autism was identified (Gothem et al., 2007).

Pragmatic perspectives have been providing elements for the analysis of functional aspects of communication and it's relation with other aspects of development of children within the autistic spectrum for some decades (Bates, 1976 Bates, 1979; Eigsti et al., 2007; Halliday, 1978; Ingersol, 2006; Keen et al.,2007; Prizant, 1996; Rogers & Benetto, 2001; Rutter, 1983; Suttera et al., 2007; Tomasello et al., 1999; Wollner & Geller, 1982).

Several authors point out that some language and communication difficulties of children with autism will probably follow them throughout life, especially if they are not included in remediation programs (Grela & Mclaughlin, 2006; Koegel, 2000; Mandell & Salzer, 2007; Mesibov et al, 2007; Rogers et al., 2006; Ruhterford et al., 2007; Seroussi, 2002; Sigafos et al. 1994; Whalen et al.,2006;).

The question about the possibility of identification of the best therapeutic approach for children with autism has also been frequently discussed on the literature (DiLalla & Rogers, 1994; Fernandes, 2000a; 2000b; Giddan et al, 1995; Kuschner 2007; Partington & Sundberg, 1998; Toth et al. 2006; Turner et al, 2006; Wetherby et al., 2001;).

The search for alternatives of more efficient language therapy approaches for autistic children has been the focus of several important researches. Several authors suggest that it seems premature to suppose that just one therapeutic approach is more effective than the others. They state that there is not one model effective for all children. It is suggested that the intervention should be individualized, in the sense of identifying the present level of development of each child and the profile of strong and weak points of each one (Gothem, 2007; Prizant & Rubin, 1999, Solomon et al, 2007; Mesibov & Shea, 2010; Vismara & Rogers, 2010).

The best therapeutic approach to children of the autism spectrum is still undetermined and probably depends on several factors such as individual profile, family characteristics,

educational and intervention alternatives. The determination of the meaningful variables is essential to the better use of the available resources.

Most of the therapeutic intervention programs aim the development of functional speech and use a variety of techniques to achieve it: increasing motivation, use of directive reinforcements (positive or negative, depending on the proposal), variations of concrete stimulus, reinforcement of verbal communicative attempts, use of multiple examples and others. These intervention processes should address increasing spontaneity, varying communicative functions, using language socially and other aspects involved in communicative efficiency. The application of research results as the basis of therapeutic intervention proposals has resulted in studies about therapeutic processes and their outcomes, allowing improvement of evidence based practice.

This chapter will discuss the theoretical basis of language therapy within the pragmatics linguistic framework and describe different therapeutic models within the same approach as well as experiences of mother coaching and a follow-up study. Pragmatic theories are the mostly used framework to the analysis of autistic children's communication in the last decades. It is probably due to the fact that the studies evolved to the notion that the central language feature within the autism spectrum is related to the functional use of language, especially regarding its interface with social cognitive development. The pragmatics theories focus exactly on these areas of development (Bates, 1976; Hallyday, 1978) and therefore provide consistent support to the analysis as well as to the proposal of intervention programs.

The effectiveness of different therapeutic approaches suggests that any conclusion must take into account data about social and familiar contexts that play central roles in practical issues such as frequency of attendance, continuity of the intervention process and involvement with the therapeutic proposals.

It is premature and deceiving to suggest that one sole therapeutic approach is more effective than the others and that there is a method that is more effective with all children. It is suggested that the intervention program should be individualized, considering each child's actual development level and identifying personal profiles of abilities and inabilities.

The proposed therapeutic framework focus on the individual communicative profile that considers: the communication interactivity (including the number of communicative acts produced per minute and the proportion of more interpersonal communicative functions expressed); the communicative means (basically verbal, vocal and gestural communicative means, but it can be expanded to include written language or any form of sign language); initiative for interaction; discursive abilities (including conversational and joint attention strategies) and social cognitive performance. The individual profile is the base for individually designed language intervention processes they may include the formal aspects of language (such as speech articulation, vocabulary, grammatical complexity or reading comprehension skills).

With the support of research data, three alternative models will be discussed: individual therapy (based in building the communicative partnership through supportive interaction); language workshop (where two subjects allowed symmetric interaction and provided communicative challenges) and mother-child language therapy (designed to provide a more comprehensive intervention and improve communicative settings at home).

Anticipating some results, it can be stated that apparently peer communication situations provide a symmetry that is not obtained in situations with adults. This symmetry provides

affective performance demands and communicative challenges in which subjects must use their communicative abilities. Therefore, it seems to be possible to use temporary controlled changes during the therapeutic process and maintaining the progress rhythm of in the long term.

On the other hand, language therapy process can also benefit from specific orientations to caretakers about language and communication processes focused on individual profiles of abilities and inabilities of each communicative dyad. The proposal of mother-child language therapy settings aims to create the possibility of a more comprehensive intervention process, especially improving the alternatives of more productive communicative settings at home. The inclusion of mothers in the therapeutic process during a set period of time, however, demands the determination of parameters indicating when to begin this type of intervention, its duration and the procedures for a long time support.

Clinical experience suggests that each individual goes through periods of development and balance, and some may even experience periods of regression – that are absolutely unique and can almost never be anticipated. Long term therapeutic processes, as is the case with autistic children, also demand consideration about the long term results obtained from short term interferences.

## **2. Different intervention models: Research data**

The study was proposed to determine if there are more efficient intervention procedures to improve communication abilities of children with disorders of the autism spectrum and to identify possible differences in the functional communicative profile and in the social cognitive performance of 36 autistic children and adolescents receiving language therapy in three different models.

Based on the Pragmatic theories of Linguistics (Bates, 1976) and on previous research results (Cardoso & Fernandes, 2006; Fernandes, 2005), the therapeutic framework that was common to all the intervention procedures, regardless of its specific model, can be synthesized in some central points:

- Focus on the individual profile: the absence of chronological order of the developmental milestones is not altogether rare within the autism spectrum. Children that, for example, learn to read before being able to name the basic colors are fairly frequent among the ones with diagnosis within the autism spectrum. Therefore, the careful identification of individual's profile of abilities and inabilities is essential to determine a more efficient therapeutic design that will not overlook some impairment or place the focus on abilities already well developed.
- The communication interactivity must always receive careful attention. When a child doesn't speak, or does it with extreme difficulty, the attention is frequently drawn to improve the interaction. However, in the opposite situations, whether if the child has severe behavior problems or if he or she is extremely talkative (to the point of ignoring the listener), the therapeutic focus is easily directed towards other issues. Therefore, symmetric communicative situation, where all the participants share equally the communicative initiative and where most of the communication has interpersonal functions, is one of the most important aims of any intervention program.
- Verbal communication is the easiest, most common and most efficient form of human interaction and therefore it is, naturally, the foremost objective of language therapy. Several studies indicate that autistic children that can speak are frequently considered

more normal by their parents even when their performance in other areas is worse than that of non-speaking children. There are situations however, where the communication's content is more important than the form through which it is conveyed. For example, a child that verbally reproduces a sequence of train stations may communicate more personal contents through much less intelligible emissions or even gestures. The attention to all communicative means will contribute to more effective and personal exchanges.

- Natural and rich communication situations include opportunities and challenges to exercise communicative initiatives with real contextual results that will provide a natural feedback to each situation. The therapeutic setting, therefore, must be flexible and offer opportunities to problem solving while also being organized enough to avoid producing stress and anxiety. Another issue that must be considered is the flexibility of the therapist's role, avoiding situations when the adult always takes the communicative initiatives with questions, requests and comments.
- Naturalistic communicative situations and symbolic play games also favor the practice of discursive abilities such as turn taking, obtaining and maintaining attention, introducing a new topic, maintaining a topic, identifying and repairing communicative breakdowns, using linguistic markers of politeness and isotopy.

The three different models proposed to this study aim to address more directly some specific points:

- The individual therapy is mainly focused on building the communicative partnership, where a repertoire of shared information, interests and mutual knowledge favors the development of a supportive interaction. In these situations new acquired abilities can be safely exercised and used in various contexts.
- The main proposal of the mother-child language therapy situation is to provide a comprehensive intervention where successful experiences can be reenacted at home and the unsuccessful ones can be understood and avoided, improving the communicative settings offered to the child at home and in other environments.
- The language workshop proposes therapeutic sessions with two children and two adults (a therapist and an auxiliary). This situation allows more symmetric interactions with natural challenges, since the children may share interests as well as difficulties. This way the children may, for example, naturally dispute over a board game and must find ways to be understood by the other, despite his or her individual difficulty. In these situations usually the child uses more than one communicative mean to convey a single communicative function as a way to guarantee comprehension, and it may be an efficient way to exercise the use of a new alternative to communicate a certain meaning.

## 2.1 Study design and method

The participants were divided in three groups according to the received intervention model during a pre-determined time period of 20 weeks. The groups of language workshops, mother-child language therapy and individual therapy were determined according to clinical criteria. Subjects were 36 children and adolescents with mean age of 8 years and 3 months with psychiatric diagnosis included in the autism spectrum. All subjects had similar social-cognitive performance in the beginning of the study.

In group A subjects were included in language workshops. They were 10 participants with mean age of 9 years and 7 months (standard deviation 2.4). All of them were receiving

language therapy for at least 6 months, and for a maximum of 1 year, prior to the study. They were paired according to developmental level and types of interests. They were included in language workshops for a six-month period, that is, 20 therapeutic sessions and after that they returned to individual sessions for another period of 20 sessions.

In group B the situation was of mother-child language therapy. There were 9 participants with mean age of 7 years and 11 months (standard deviation 4.6). All of them were receiving language therapy for at least 6 months, and for a maximum of 1 year, prior to the study. The subjects received language therapy with their mothers for a six-month period, that is, 20 therapeutic sessions. After that, they received individual sessions for another period of 20 sessions. In this group we had the lowest mean age – but this variable wasn't controlled, since prior studies discarded chronological age as a significant element to autistic children's performance.

Subjects in group C received only individual language therapy. This group had 17 participants with mean age of 9 years and 6 months (standard deviation 3.4). All of them were receiving language therapy for at least 6 months, and for a maximum of 1 year, prior to the study. They received individual language therapy sessions for a period of twelve months, that is, 40 sessions.

All the therapy processes had the same orientations: emphasize functional and interpersonal communication.

All participants were video recorded during play interaction situations with their therapists in three moments:

- Before starting the period of the modified language therapy situations.
- After the period of modified situations (20 sessions of double, with the mother or individual language therapy sessions).
- After the following period of 20 individual sessions.

The analysis of the Functional Communicative Profile (FCP) included the identification of the communicative means used (verbal, vocal, gestural); the communication interactivity (i.e. the proportion of interpersonal communicative functions); the proportion of initiative of communication; the number of communicative acts per minute and the occupation of the communicative space.

The Social Cognitive Performance (SCP) was determined in relation to the observed Vocal and Gestural Communicative Intent; Vocal and Gestural Imitation, Tool Use, Combinatory Play and Symbolic Play (adapted from Wetherby & Prutting, 1984).

The FCP progress indicators identified were:

- increase in the proportion of communication initiative,
- increase in the proportion of use of the verbal mean,
- decrease in the proportion of use of the gestural mean,
- increase in the communication interactivity,
- increase in the communication's symmetry.

The SCP progress indicators were identified by the improvement on the performance in each one of the 7 assessed domains. Each domain has different possible scores (adapted from Wetherby & Prutting, 1984):

- gestural communicative intent: from 1 to 6
- vocal communicative intent: from 1 to 6
- gestural imitation: from 1 to 4
- vocal imitation: from 1 to 4

- tool use: from 1 to 4
- combinatory play: from 1 to 6
- symbolic play: from 1 to 6

## 2.2 Results

A general overview of the results will be presented first, followed by the comparisons between the groups and between the different time periods. The other results will be briefly presented.

Although the inclusion criteria for each group didn't consider the chronological age, there are no significant differences between the mean ages of the subjects of the different groups.

It could be observed that 2 of the subjects that attended only individual therapy (group C) didn't present any progress indicators in the Functional Communicative Profile (FCP), but this was the group where the largest number of progress indicators per subject was observed, although the difference between groups wasn't significant.

In what refer to the Social Cognitive Performance the smallest improvement was observed in the group that attended a period of language therapy with their mothers (group B). However, after the following period of individual language therapy these subjects' performance was similar to that of the subjects who attended language workshop and the children who attended only individual therapy presented the smaller overall progress index per subject.

The number of progress indicators for each subject of each group on the Functional Communicative Profile and on the Social - Cognitive Performance is presented in Table 1.

	N	1 <sup>st</sup> to 2 <sup>nd</sup> recording				2 <sup>nd</sup> to 3 <sup>rd</sup> recording				Mean of indexes per subject	
		Subjects with progress		Areas with progress		Subjects with progress		Areas with progress			
		FCP	SCP	FCP	SCP	FCP	SCP	FCP	SCP	FCP	SCP
Group A	10	10	6	23	14	9	8	13	22	3.6	3.6
Group B	9	8	3	15	6	9	9	16	31	3.4	3.1
Group C	17	15	12	34	21	15	12	31	28	3.8	2.8

Table 1. Total number of progress indexes on the Functional Communicative Profile (FCP) and on the social Cognitive Performance (SCP)

The analysis of the significance of the differences observed in the Functional Communicative Profile shows that the differences of the mean results are not significant for any of the variables referring to groups A and B. The differences between the means of all subjects on the first and second periods (i.e. after the second and the third recordings) weren't significant for either the number of subjects or the number of areas with progress. The only significant differences refer to group C, as can be verified in Table 2.

<i>Considered variables</i>	<i>(p) value</i>
1 <sup>st</sup> and 2 <sup>nd</sup> periods – number of subjects with progress	0.5
1 <sup>st</sup> and 2 <sup>nd</sup> periods – number of areas with progress	0.16
Areas with progress – groups A x B	0.36
Areas with progress – groups A x C	0.07
Areas with progress – groups B x C	0.03*
Subjects with progress – groups A x B	0.25
Subjects with progress– groups A x C	0.02*
Subjects with progress – groups B x C	0.02*

Significance level  $(p) \leq 0.05$

Table 2. Significance of the observed differences – Functional Communicative Profile

In what refer to the differences between the groups that were related to the Social Cognitive Performance, the data synthesized in Table 3 shows that the only significant differences observed were related to the groups A and C. It can be supposed the differences were consistent because they refer both to the number of subjects and to the number of areas with progress. This analysis also verified that the differences in the mean performances of all subjects in the first and second periods were not significant to neither of the considered pairs of variables.

<i>Considered variables</i>	<i>(p) value</i>
1 <sup>st</sup> and 2 <sup>nd</sup> periods – number of subjects with progress	0.07
1 <sup>st</sup> and 2 <sup>nd</sup> periods – number of areas with progress	0.13
Areas with progress – groups A x B	0.48
Areas with progress – groups A x C	0.02*
Areas with progress – groups B x C	0.31
Subjects with progress – groups A x B	0.35
Subjects with progress– groups A x C	0.06*
Subjects with progress – groups B x C	0.14

Significance level  $(p) \leq 0.05$

Table 3. Significance of the observed differences – Social Cognitive Performance

Other observed outcomes were:

- The situation that produced the best results in the number of communicative acts expressed per minute was the Language Workshop.
- Subjects of groups A and B presented similar performances in the use of communication means, demonstrated by an increase in the proportion of verbal mean use and a decrease in the use of gestures.
- The communication's interactivity increased in all groups after the first studied time interval (i.e., after the modified therapy situation). This increase was not observed after the second studied time interval.
- Most of the observable differences were not statistically significant. It is probably related to the great individual differences among children of the autism spectrum, what makes procedures that consider each subject as his own control the best alternative, but reduces the impact of group results.

- The group that presented more progress indicators was the language workshop - where the subjects received therapy in groups of two.
- The unexpected result was that there was no drop in the results obtained during the first six-month period on the following six-month period.
- Individual results indicate that a few subjects continued to show improvements afterwards.

### 2.3 Discussion

It is still premature and deceiving to suggest that one sole therapeutic approach is more effective than the others and that there is a method that is more effective with all children. The several variables that must be considered when verifying the results of therapeutic intervention with children of the autism spectrum demand a great amount of research and follow-up studies.

It was already mentioned that the intervention program were individualized, considering each child's actual development level and identifying personal profiles of abilities and inabilities. This information supported clinical decisions about the therapeutic intervention, strategies and approaches.

The subjects of this study were divided in groups according to subjective clinical criteria. The pairs were defined according to the children's similarities (development and interests) and/or to their differences (calm/agitated, speaker/non-speaker) and responding to each one's objective demands referring to week-day and hour of appointment. The inclusion criterion of similar social cognitive performance was the only objective information used to determine the intervention groups. Probably an ideal research situation would consider exclusively objective criteria to determine the inclusion of each child in different intervention groups. But that is still not enough information about what are the most useful factors to predict intervention outcomes and therefore, no objective criteria that is ethically supported to determine inclusion criteria.

Data referring to the number of communicative acts per minute show that subjects that were attending language workshops presented greater development. Apparently peer communication situations provided a communication symmetry that is not obtained in situations with adults. This symmetry, by its turn, generates affective performance demands in which subjects must use their communicative abilities to obtain better results from each interaction and more effective communication exchanges.

The subjects of the three groups presented very similar averages regarding the number of communicative acts expressed per minute in the third recording. This data demands reasoning about individual development rhythm. If the progress and stabilization periods are carefully monitored, short term changes on the intervention process may be introduced aiming to generate new demands and therefore different opportunities for development.

The results presented by subjects of group A (i.e. those attending language workshops) indicate progresses in the period of therapy, reinforcing this model as a productive alternative of language therapy with autistic children. It could be observed that, during the period of language workshop, all subjects presented progress in the Functional Communicative Profile (FCP) while the same result in the Social Cognitive Performance (SCP) was observed just in 60% of the subjects. On the following period, the number of subjects with progress in SCP was very similar to those with progress in FCP and the number of areas with progress in the SCP was much larger than in the FCP. It seems to be a

clear indication of the impact of symmetric interactive situations on the communicative and social-cognitive performance of children of the autism spectrum.

Subjects of group B (i.e. the ones whose mothers also participated in the therapy for six months) were the ones with higher indexes of progress on the Functional Communicative Profile (number of communicative acts expressed per minute and the proportion of verbal communicative mean use) and on the Social Cognitive Performance after the second six-month period. Two aspects must be considered: in this group was the one with the youngest children and it is expected that earlier intervention produces better results. On the other hand, it was hypothesized that the inclusion of the mothers in the intervention process would amplify the results of language therapy to other contexts and produce better long term results; and these results seem to confirm that hypothesis. It is possible to suggest the alternative hypothesis that, although the situations with the mothers are not the ones that offer the better opportunities to use communicative abilities, this situation apparently offers a safer environment for their practice.

On the other hand, however, just one third of the children receiving language therapy with their mothers presented progress in this first period of intervention and they were the ones with less areas of progress during this period. But interestingly, in the following period all this children presented progress in both areas, especially in the SCP. If we consider only the situations where the identification of some changes in behavior could be determined, subjects of group B were the ones who presented higher indexes of development in the areas of gesture and vocal communication intent and tool use in the second period.

One rationale that can be considered is that mothers tend to present a less challenging environment for their children but the intervention period allowed the better use of posterior situations. The use of communication opportunities that occur in daily situations evidently increases the impact of speech/language intervention in the development of each individual. Although more research results are necessary to determine exactly when and how to include mothers in language intervention programs it seems to be a useful alternative to be carefully considered, since in this study the therapy situation involving mothers was the one that produced the better results.

As mentioned before, in general, great individual differences among subjects with autistic spectrum disorders produce results where the group means values do not vary significantly. This does not disqualify the importance of the obtained results, since they confirm the need to identify individual ability and inability profiles in order to determine the most productive intervention procedures. The lack of significant differences between the results presented by subjects from the three groups keeps, on the other hand, individual therapy as a possible alternative for language therapy.

## 2.4 Conclusion

The main purpose of the present study was to verify the existence of observable differences in the functional communicative profile and in the social cognitive performance of autistic children and adolescents receiving language therapy in three different situations. The conclusions may be synthesized as follows:

- Variations were observed after a pre-determined experimental intervention period.
- Maintenance of the results were also observed after an equal period of regular speech-language therapy

- The obtained results indicate that temporary changes can be made in the therapeutic scheme for autistic children, as an alternative for obtaining better results.
- This type of intervention, however, requires specific control of the results after short periods of intervention.
- Results also reinforce the requirement for the adaptation of procedures to obtain individual profiles of abilities and inabilities as the basis to determine any intervention model.
- The inclusion of mothers in the therapeutic process during a set period of time is a proposal that requires other studies.
- These studies should aim at the search for parameters that indicate when to begin this type of intervention, its duration and the procedures for a long time support.
- Long term therapeutic processes, as is the case with autistic children, also demand consideration about the long term results obtained from short term interferences.
- The question about the possible identification of the best therapeutic approach to these children has yet to be further discussed.
- The effectiveness of different therapeutic approaches suggests that any comparison must take into account data about social and familiar contexts.

### **3. Results of systematized support-instructional groups with mothers**

In order to study alternative ways to amplify the results of the language therapy intervention and considering that the language therapy process can benefit from specific orientations about language and communication processes focused on individual profiles of abilities and inabilities of each communicative dyad, another study was conducted focusing on specific orientations to mothers.

The actions directed towards families of autistic children, conducted by speech and language pathologists, require extreme caution so they keep the focus on the area that belongs to speech and language pathology and do not involve other areas that also deal with autistic manifestations.

In what refer specifically to studies about families with children with autistic spectrum disorders, a recent study reviewed the articles published over the past five years in the three most traditional journals specifically addressed to studies about infantile autism. The study revealed interesting data: less than 5% of the 1096 papers published refer to this theme, which certainly was not expected when we consider the impact of autistic children in family dynamics or the importance of family for diagnosis, intervention and education processes. On the other hand, more than half of these articles were published in the last 18 months.

The speech and language therapeutic process can be improved by specific orientations about the development of communication and language processes strongly focused on the individual profiles of abilities and inabilities of each mother-child dyad. But there are no reports of experiments conducted in this area. Thus, we proposed an initial study involving a systematic orientation to mothers of children of the autistic spectrum who attended weekly at the service and the verification of the results by the observation of the patients' development the quality of life reported by the mothers. It was hypothesized that systematic and specific orientations, held for short periods of time and with the possibility of return, may not only contribute to the communicative environment of the autistic child but also the understanding of the capabilities and difficulties of each child by their families.

Therefore, the purposes of this study were to investigate the interference of orientations offered to mothers in the process of communication and language development of autistic children and in their communicative and social-cognitive performance. Besides, it aimed to verify the interference of these orientations on the way these mothers observe their child, according to an adaptation of the Questionnaire of the World Health Organization Quality of Life (Barbosa & Fernandes, 2009).

### 3.1 Method

Subjects were 26 mother-child dyads who met the inclusion criteria and completed the entire study period. The inclusion criteria were:

- diagnosis included in the autistic spectrum,
- mother being the main responsible for bringing the child to speech and language therapy,
- child systematically attending weekly a specialized speech and language therapy service for at least six months with no interruptions larger than one week,
- age under 11 years (so that none of the subjects was characterized as a teenager at the end of study) and
- consent form signed by the responsible adult.

The mother groups were organized according to the children's therapy schedule. The average age of mothers at the onset of the study was 38:1y and the children's average age was 8:2y. In what refer to educational level, the majority of mothers (53%) had completed high school and six of them (23%) had higher education.

The children were filmed in regular speech and language therapy, playing with various types of toys with their therapist. These recordings were used to collect data on the Functional Communicative Profile and on the Social-Cognitive Performance of each child. Mothers were interviewed individually by specialized speech-language therapists that are familiar to them but not their son's or daughter's therapists. During the interview they were asked to sign the consent form and answer the protocols on quality of life.

To avoid the need for mothers to attend to the interviews at other times at the Speech and Language Pathology Service (and therefore avoiding the interference of economic and transport issues), the orientations were offered in 30 minute periods during their children's therapy. The completion of counseling sessions in pairs or triads provides more symmetrical communication situations since there is a common theme and a shared position. Thus, mothers were grouped according to the time of their children's therapy, regardless of their children's performance.

Each group was conducted by two speech and language therapists who were postgraduate in this specific area. There were five consecutive sessions of orientation, with each group of mothers. They were shown videos of their children interacting with the therapists, already known to them. The mothers who agreed or wished could also be videotaped with their children so that this material was discussed in this small group.

The goals of these orientation sessions were:

- Session 1. Presentation of the proposal, identification of "strengths" and "weaknesses" of each child; suggestion that each mother identify pleasant and unpleasant situations in every-day activities.
- Session 2. Identification of situations of productive and unproductive interaction between children and therapists; suggestion to compare them to everyday situations; resolution of doubts.

- Session 3. Identification of key elements in successful and productive situations and suggestions of possible expansion, multiplication or transfer; resolution of doubts.
- Session 4. Identification of key elements in the communication breakdowns and proposals for alternative procedures; resolution of doubts.
- Session 5. Individual reports on the impact of the orientations; solving questions.

After these initial five consecutive sessions, five other follow-up sessions were scheduled with a three-week interval. These sessions dealt about the same subjects of the initial sessions, according to the needs of each small group. After the last follow-up session, individual interviews were conducted with each mother, to resolve remaining questions. Two weeks after the last follow-up session the children were videotaped again with their therapists and various types of toys. These recordings were used to collect data on the functional communicative profile and social-cognitive performance of each child. The results of each session were recorded by the coaches of the groups after each session in the specific protocols and served as a basis for qualitative analysis of this process.

The individual differences between autistic children justify the use of a methodology in which the child is his or her own control. Thus, the statistical analysis makes point by point comparisons, referring to the two moments to data gathering regarding the children's performance with respect to (adapted from Wetherby & Prutting, 1984):

- number of communicative acts per minute,
- use of communicative space,
- communication interactivity,
- use of communicate means,
- gestural communicative intent,
- vocal communicative intent,
- gestural imitation,
- vocal imitation,
- tool use,
- combinatory play and
- symbolic play.

The analysis of data concerning the quality of life used the Tukey test to determine the statistical significance of differences between the responses for the different areas analyzed.

### 3.2 Results

The proposition of ten sessions with 26 mothers of autistic children, or 260 meetings, required extreme care while recording data. The recorded data of these sessions included the identification of the subject and the intervention, or the moment established by the group to the theme. There was great variation in the manner of each group's functioning, some participants seemed to exert a degree of leadership and proposed themes for discussion. On the other hand, other mothers seemed to comfortably accommodate in less active positions in the groups, although these were always small (two to four participants).

The topics most frequently discussed were:

- difficulties with the child's behavior and the difficulties caused by them,
- questions about other professionals,
- reports of new achievements,
- school adjustment and doubts about it,
- reports on changes in medical management and their results,

- reports and questions on independence in relation to activities of daily living,
- observations about the process of speech therapy and
- questions involving aspects of sexuality.

About the intervention of the coordinator on each group and the dynamics established by the group, the reports revealed that the dynamics were the most common interaction on the same theme, often due to the fact that one of the group members have brought common themes. When participants brought individual questions, the coach sometimes answered directly, sometimes rephrased the question to include all (or most) of the group. In a few situations the participants said that the doubt brought by one of the members was common to the others, without the intervention of the therapist. Not all meetings ended with a conclusion and some participants showed frustration about it. Aiming to accept what appeared to be a need for closure, an interview was conducted individually extra, unplanned, to provide a moment of completion. Figure 1 summarizes the results of the number of areas with progress in the Functional Communicative Profile identified in each of the subjects in this study. It is possible to observe that among the five possible areas 65% of subjects (17) had between two and four areas with progress. Just one of the children didn't present any progress index. A separate analysis has shown that 96% of subjects presented progress in increasing the interpersonal communication.

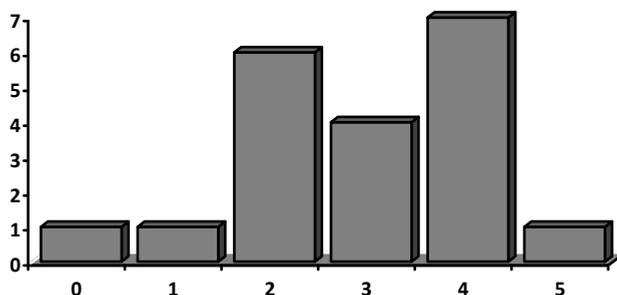


Fig. 1. Number of subjects and number of areas of progress in the Functional Communication Profile

Figure 2 presents data on the number of areas of progress when we analyzed Socio-Cognitive Performance. It is observed that among the seven areas surveyed, 61% of the participants showed progress in two to four areas. Also in this assessment one of the subjects showed no progress on any of the areas studied. However, the fact that this occurred on two different subjects, support the conclusion that 100% of them showed some progress in the areas studied. The statistical analysis of the answers to the Quality of Life Questionnaire showed statistically significant differences between subjects (mothers). This allows the assumption that the device is efficient to the characterization of each subject, which favors more individualized approaches. On the other hand, no significant differences were found between the four domains investigated by the Quality of Life questionnaire (physical, psychological, social relationships and environment). Interestingly, the highest levels of dissatisfaction are related to the environment.

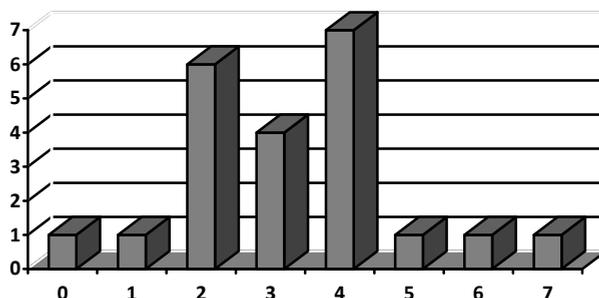


Fig. 2. Number of subjects and number of areas of progress in the Social Cognitive Performance

### 3.3 Discussion

The results concerning the qualitative analysis of the orientation sessions have important elements of consideration, and they also confirm of other previously reported results. The fact that it was possible to observe that some mothers find it easier to identify weaknesses and unpleasant than the reverse, reflects the need to focus on backward motion brought by the families spontaneously; that is, when the family only describes the problems, bring on about the skills; and when the family only describes the successes, remember about needs and difficulties.

The fact that most of the reported weaknesses refer to issues of communication and behavior and the unpleasant situations refer to times when children have behavioral disorders may be associated with issues such as noisy, unknown or confuse environments and stressful activities of daily living reinforces the suggestion of flexible, relaxed but predicable therapeutic settings. Since disruptive behaviors are frequently described as a source of stress for parents it is useful to help them determining this kind of environment around the child at home and other meaningful locations.

The importance of group situations to orientation activities for parents of autistic children also have been mentioned and confirmed by this study. Thus, it was interesting to note the mention of shared attention as one of the strengths observed in these patients by their mothers, because this is usually described as an element of difficulty for them. It may be useful, therefore, to try to identify the specific elements that facilitate the joint attention opportunities and replicate them in other scenarios.

Focus on the communication of the children allowed the identification of elements that may improve successful interaction during daily activities, such as:

- obtaining the child's attention,
- initiative of communication or any joint activity,
- latency for the response,
- use of materials and toys for the child's interest and
- identification of sources of communication breaks.

The ability to generate small changes in family routine that foster communication, responds to long-term goals for this type of intervention because it tends to generate more comprehensive, lasting and multiplied results. Regarding the results presented by patients in the analysis of

Functional Communicative Profile and on the Social Cognitive Performance, the data from this study can be compared what was obtained in other studies after longer periods of time (Cardoso & Fernandes, 2004; Fernandes 2000a; 2005; Fernandes & Ribeiro, 2002).

The results for the Quality of Life questionnaire can be compared to a recent survey of the same population, held the same service, but with other participants (Barbosa & Fernandes, 2009), that reported that the greatest difficulties reported by caregivers of autistic children also refer to environmental issues.

### 3.4 Conclusion

The first objective of this research was to study the interference of orientations offered to their mothers, on the processes of communication and language development of autistic children, in their communicative and social-cognitive performance was reached, although it requires the exercise of caution in generalizing the results.

It can be argued that all study participants showed progress on at least one of the assessment rates proposed in a general smaller period of time than in previous studies involving the same therapeutic procedures and the same evaluation criteria.

It is, however, a small difference, with a small set of data, which does not allow the complete determination of its causality. Unfortunately, practical difficulties make it hard to establish the procedures for more rigorous research, as would be required for this type of conclusion. Small studies, as presented here, are nevertheless useful because these data could be added to others, performed in other centers or with other groups, in order to provide clearer evidence of interference between the processes of therapy language and family orientation.

The second goal of the research, to determine the interference of orientation about the processes of communication and language of autistic children in the way mothers observe their child, according to criteria adapted from the Questionnaire of the World Health Organization Quality of Life was not fully reached. The answers provided by the mothers did not allow analysis related to the group. Apparently there was an unanticipated interference, possibly due to the fact that these questionnaires are being applied in the same department in which children receive the language therapy. That established a kind of "ceiling effect" in responses. The questionnaires reflect satisfied mothers, without big problems with their children (here the question of the difficulties of transport appears as an exception because there are systematic references to it). It is supposed that if the questionnaires were applied outside the environment of care, or at least by unidentified people with him could be obtained more realistic results. Anyway, even if it was not possible to determine the degree of infiltration of the advice given from the results of questionnaires on quality of life, this positive interference was evident in the qualitative analysis of intervention processes.

Thus, the hypothesis that "systematic and specific orientations, held for short periods of time and with the possibility of return may not only contribute to the communicative environment of the autistic child but also for the family to understand the capabilities and difficulties of each child " remains open. The need for major adjustments in research procedures that can measure more effectively the degree of interference should not obscure the fact that there was an undeniably positive impact of a systematic procedure of orientation, taken with the process of language therapy for children (and not replacing it), focused on issues of communication and language and that, although they have a script and running registration, permit adjustments to the needs and demands of each group.

#### 4. Other intervening factors in language therapy with autistic children

Systematic reports about therapy processes may be another way to contribute to a body of evidence that can support informed decisions about intervention proposals with ASD children.

This was the aim of this study: to describe three years of individual speech and language therapy with 3 children with ASD, with different developmental characteristics, different environmental situations and different responses to the therapeutic process. The children received speech and language therapy once a week, for 45 minutes, in a specialized service and the parents signed the approved consent form allowing the descriptions of their clinical development. The speech and language therapy started approximately 6 months prior to the first reports presented here.

##### 4.1 Case reports

Case 1 is a girl with diagnosis of autism, 6 years of age at the onset of the speech and language therapy, attending regular public preschool. She is brought to the therapy by her mother but her absence index is about 50%. The main features of development during the 3 years of intervention can be described as:

*Behaviour, socialization and interests:*

- 2007: manipulates magazines and books; brings sheets of paper to the therapy but just leafs through them. Very agitated, stays for just few minutes in each place of the room or with any toy. During the second semester she starts to show some interest in miniature household items. The teacher reports some aggression episodes.
- 2008: maintains the interest in paper items but starts to play with miniatures, performing seriating task and differed imitation; during the second semester starts to play with puzzles and is less agitated but with reduced attention span. Sometimes, in the beginning of the year, refuses to leave the room by the end of the session, throwing herself on the floor, but by the second semester is more adapted to the routine and social markers (kisses when saying goodbye). She engages in interactive exchanges during the year, accepting and demanding physical contact.
- 2009: makes systematic eye contact, maintains the short attention span and little interest in any activity. Plays with puzzles and performs symbolic games with themes related to every-day life activities. During these activities engages in joint attention activities with the therapist's initiative.

*Language and communication:*

- 2007: uses mainly the gestural means of communication in regulation and interaction activities. Exchanges communicative turns but her utterances characterize as vocalizations due to the large articulation distortions that hinder the speech intelligibility.
- 2008: continues to use mainly the gestural communicative mean but starts to use vocal and verbal means more frequently. Despite the articulation problems the vocabulary limitations become evident. Starts to show more communication intent.
- 2009: some articulation problems continue to exist and the preference order of the use of communicative means is gestural and vocal. There was a clear increase in the proportion of communication addressed toward the other and in joint play.

Figure 3 shows the evolution of the functional communicative aspects of occupation of the communicative space, communicative acts produced per minute and proportion of interpersonal communication observed in the three years of language therapy with the child of Case 1.

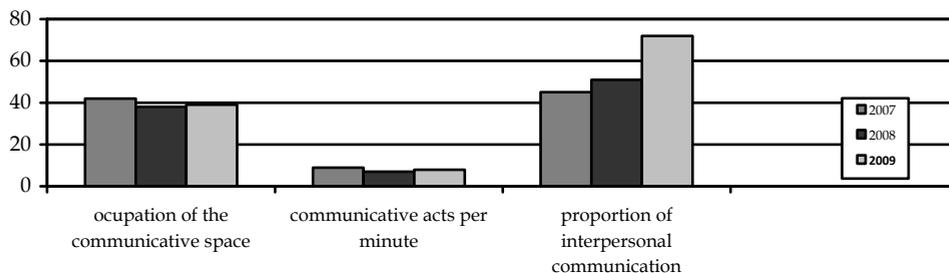


Fig. 3. Functional communicative aspects (case 1)

Case 2 is a boy with diagnostic of autism, 8 years of age at the onset of speech and language therapy, well adapted to the second year of a regular public school. He is brought to the therapy by his mother and has less than 5% of absences. His reported main features of development in the 3 years of intervention are:

*Behaviour, socialization and interests:*

- 2007: a talkative child that initiates communicative turns with unknown adults but do not holds a dialogue with several conversational turns. Performs complex symbolic plays and keeps the same activity for long periods of time in self-centered games, rarely engaging in joint attention activities. Manifestations that aren't adequate to the context, like singing and dancing in inappropriate situations, are eventually observed.
- 2008: maintains a good contact with the therapist and accepts the participation of others in several situations, is less self-centered and stays in the same activity for smaller periods of time but do not proposes other alternatives. When he is very involved with an activity, doesn't allow the therapist's participation. These situations frequently involve complex and detailed symbolic play.
- 2009: continues attentive and focused but starts to ask for the therapist's help when meets any difficulties and verbally communicates his intentions and desires. His favorite activities now include dolls and he engages in cooperative activities with the therapist, participating in long dialogues with the intermediation of dolls.

*Language and communication:*

- 2007: presents frequent delayed echolalia in situations of self-centered play. The preferred communicative mean is the verbal, which he uses in socially appropriate ways in superficial contacts, generally politeness and recognition of others markers, which are basically the sole spontaneous communication initiatives. Although he usually responds to the therapist's initiations, he generally does it with one-word phrases.
- 2008: seems to present better understanding of gestures and facial expressions but still makes very little eye contact. Continues to present some delayed echolalia that seems to

be related to communicative initiation, as requests for social routines. Presents more communicative initiatives related to his interests with short phrases or isolated words.

- 2009 – continues to present some delayed echolalia in moments of less interaction but initiates communicative turns, identifies and corrects communication failures, identify breaks and uses strategies to maintain the communication partner’s attention. He uses some gestures, mainly as support to communicative acts with protest expression function.

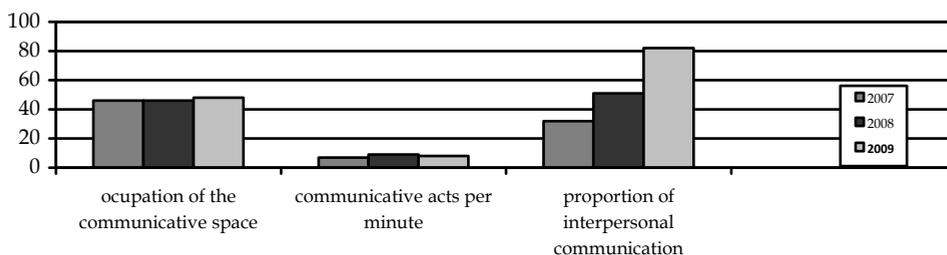


Fig. 4. Functional communicative aspects (case 2)

It is possible to observe the similarities between Figures 3 and 4, although the described children are very different from each-other.

Case 3 is a boy with diagnosis of autism, 4 years of age at the onset of the speech and language therapy, attending regular public preschool with reports of good performance and a special interest in reading. He is brought to the therapy by her mother and almost never fails to be present.

*Behavior, socialization and interests:*

- 2007: recognizes the therapist, maintains eye contact and uses it as a strategy to get the communication partner’s attention. He always refuses changes in routine or activities. Sometimes presents tantrum crises, throwing himself on the floor at the end of the therapeutic session, refusing to go home and crying very much. Engages in symbolic play and joint games. Performs logographic reading and is interested in reading but doesn’t say the names of colors, although recognizes them.
- 2008: maintains eye contact and shows better adaptation to the routine and duration of the therapy do not presenting disruptive behaviors at the end of the sessions. Engages in complex symbolic games but do not proposes new situations during the game. Reads some words.
- 2009: asks for physical contact and exchanges communicative turns, but his eye contact is less systematic and there is little attention to the therapist’s facial expression. Develops some routines as to step over the red parts of the floor. Shows a great interest in the computer but accepts proposals of other activities.

*Language and communication:*

- 2007: communicates mainly using verbal and vocal means with the support of gestures. Has some articulation imprecision but agrees in repeating or rephrasing his utterances when is asked to do so. He doesn’t present evidences of difficulties in understanding language.

- 2008: presents longer phrases and repairs communicative failures when the therapist requests but do not recognizes the failures without this support. His utterances are better articulated what contributes to the increase in the proportion of the use of the verbal communicative mean.
- 2009: shows communicative intention, produces phrases with adequate syntax and understands simple and complex orders. Initiate turns, introduces topics and engages in dialogues when interested. Uses gestures as support in a more consistent form, what contributes to the increase in the use of this mean. But he doesn't make coherent narratives.

Figure 5 Figure 3 shows the evolution of the functional communicative aspects of occupation of the communicative space, communicative acts produced per minute and proportion of interpersonal communication observed in the three years of language therapy with the child of Case 3.

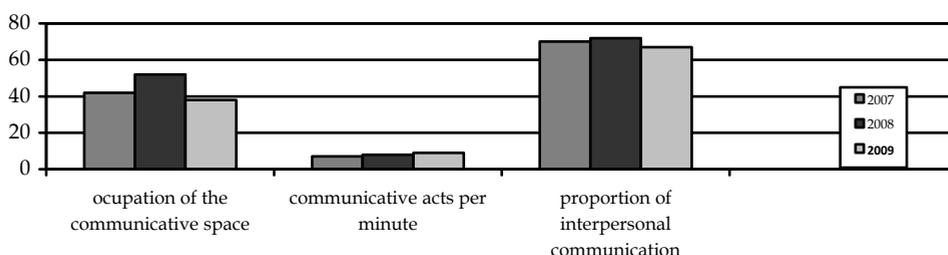


Fig. 5. Functional communicative aspects (case 3)

Table 4 shows the results observed in the different areas of the Social-Cognitive Performance of the three children during the three years. It should be remembered that to the areas of gestural and vocal communicative intent and of combinatory and symbolic play, the scores vary from 1 to 6 while in the areas of gestural and vocal imitation and tool use it varies from 1 to 4.

Tested areas	2007			2008			2009		
	C1	C2	C3	C1	C2	C3	C1	C2	C3
Gestural communicative intent	4	6	3	6	6	6	6	6	6
Vocal communicative intent	4	6	3	5	6	6	5	6	6
Tool use	3	3	3	4	4	3	4	4	4
Gestural imitation	3	4	3	4	4	4	4	4	4
Vocal imitation	4	3	-	3	4	2	3	4	4
Combinatory play	6	5	-	5	5	3	5	6	5
Symbolic Play	6	6	-	6	6	6	6	6	-

Table 4. Social-cognitive performance tested in 2007, 2008 and 2009 in the 3 children

## 4.2 Discussion

The 3 children received individual language therapy once a week during the whole period of this study. In each year there are 2 vacation periods with duration of 2 weeks in July and 3 weeks by the end of December and beginning of January.

The cases presented highlight the diversity of the phenotype of autism since we have a six-year old girl with important behavior problems, very few intelligible utterances and a very restrict range of non-functional interests. The first boy described has eight years of age, good performance in a regular school to which he is well adapted but with empathy impairments, few communicative initiatives, out of context behaviors and echolalia. The second boy presented is four-year old, presents cognitive performance above the expected for his age, has interests that are not age-appropriate and good abilities with the formal aspects of language.

Although this was not the aim of this study, the reference to the three different diagnosis included in the autism spectrum is clear (i.e., low functioning autism, high functioning autism and Asperger syndrome). This way, the intervention processes were subjected to subtle changes adjusting them to the needs and possibilities of each child along the 3 year period.

It is interesting to note that all children had important progresses in their performances. The girl started to engage in joint attention and symbolic play activities and increased the proportion of interpersonal communication. The first boy started to engage in joint play, dialogues and interpersonal exchanges; initiates communicative turns, makes adequately use of the discursive resources and uses non-verbal communication as support. The second boy is interested in computers but agrees to alternate its use with more interactive initiatives; consistently uses support of gestures, has adequate syntactic and discursive abilities although he doesn't present productive narratives.

These results demand the consideration of the intervening factors of each process. As observed before the girl was absent from almost half of the planned therapeutic sessions and even so her progress was significant. It poses the question of what would have happened if she had attended to all sessions and of what may be the managing alternatives to cases like this. It is common that the absences to the therapeutic sessions are justified by objective and real factors, especially in complex environments such as big cities. However, the consideration of the resources allocated in the frequency, even when not systematic, and by the reservation of therapeutic time for a not frequent patient demand objective data to support any decision. The observed in this case is that, even with a large proportion of absences, the therapeutic process was productive to the child.

The first boy presents a virtually opposed situation. The family and school are collaborative and interested and the possibility of offering therapy just once a week demands efforts to allow the increase of this offer. Probably due to the kind of disorder presented this child was brought to a specialized service with more than six years of age, when there are consistent reports of better results with children that receive earlier adequate intervention. On way to compensate this delay would be a more intensive intervention program, what has not been accessible to all children in our reality.

The second boy, on the other hand, raises the interest of family members as well as school personal due to his interest in reading and in the formal aspects of language that creates the impression of an above-average functioning. It has lead to the increase in the availability of activities and materials that reinforce the interests and the maintenance of systematization

activities, decreasing the ones that include empathy. This reinforces the need for more investments in actions directed towards family and school orientation.

### 4.3 Comments

The longitudinal individual analysis of the therapeutic intervention processes brings the focus to associated aspects that may be determinant of the results and that demand a consistent approach.

The analysis of individual experiences in such a way that they can be significant to an evidence-based practice depends on the systematic record of these therapeutic processes.

In what refer to the autism spectrum, considering the incidence now determined, it is essential that individual and small-group experiences are systematized in a way to provide alternatives to a much larger group of children that probably present the same needs but that haven't been diagnosed or didn't reach specialized services.

## 5. Conclusion

Recent studies point out that the occurrence of Autism Spectrum Disorders (ASD) is up to 1%. Such a high incidence places the demand if the urgent identification of efficient intervention models and of factors that may have a positive impact in these processes.

Understanding that there is not one single therapeutic proposal that will be equally successful with all autistic children doesn't mean that all the efforts to improve efficiency and economic available alternatives should not be undertaken.

The studies presented indicate that there are some points that can be considered applicable at least to a significant proportion of the autistic children and their families:

- Focus on the individual profile.
- The communication interactivity must always receive careful attention.
- Symmetric communicative situation allow useful challenging experiences.
- The attention to all communicative means will contribute to more effective and personal exchanges.
- The therapeutic setting must be flexible and offer opportunities to problem solving while also being organized enough to avoid producing stress and anxiety.
- Naturalistic communicative situations favor the practice of discursive abilities.
- The inclusion of families allows the multiplication of opportunities for exercising newly acquired abilities and identifying important focus of interest.

Issues about educational management, early access to specialized intervention and adequate follow-up, must be included as some of the aspects considered in the overall process of treating children and adolescents of the autism spectrum.

Decisions about whether the individual with autism should attend to a normal or a specialized school must also take into account the individual characteristics and needs. Both alternatives should be considered according to the individual's present performance and reassessed periodically to obtain the best possible results.

Although it is now clear that early intervention generally results in better results, recent studies have shown that even individuals that only started to get some specialized treatment during adolescence also show progress after relatively short periods of time (six month periods). It clearly indicates that these individuals should not be excluded from intervention programs.

Language therapy with autistic individuals are generally long term processes that must be periodically and systematically re-evaluated in order to guarantee constant attention to the evolution patterns of each individual and therefore the best management of specific needs and opportunities.

In any case, language therapy with children of the autism spectrum is an activity that presents daily challenges, demands constant adjustments and offers constant development opportunities for everyone involved.

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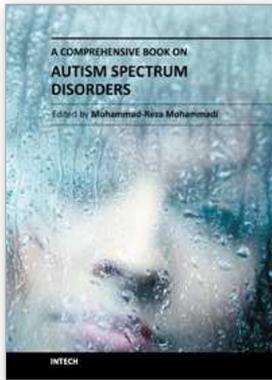
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## **A Comprehensive Book on Autism Spectrum Disorders**

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The aim of the book is to serve for clinical, practical, basic and scholarly practices. In twentyfive chapters it covers the most important topics related to Autism Spectrum Disorders in the efficient way and aims to be useful for health professionals in training or clinicians seeking an update. Different people with autism can have very different symptoms. Autism is considered to be a "spectrum" disorder, a group of disorders with similar features. Some people may experience merely mild disturbances, while the others have very serious symptoms. This book is aimed to be used as a textbook for child and adolescent psychiatry fellowship training and will serve as a reference for practicing psychologists, child and adolescent psychiatrists, general psychiatrists, pediatricians, child neurologists, nurses, social workers and family physicians. A free access to the full-text electronic version of the book via InTech reading platform at <http://www.intechweb.org> is a great bonus.

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