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Communication and Language Skills of Autistic Spectrum Disorders in Children and Their Parents' Emotions

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ABSTRACT

Background: Autism spectrum disorder (ASD) is a developmental disability, which is a biologically based neurodevelopmental disorder that affects a child's social interaction and communication skills. Core deficits are identified in two domains: social communication/interaction and restrictive, repetitive patterns of behavior. Children and youth with ASD have service needs in behavioral, educational, health, leisure, family support, and other areas. Autism is a set of heterogeneous neurodevelopmental conditions, characterized by inability to acquire social skills, repetitive behaviors and failure of speech and nonverbal communication development.

Objective: To examine frequency, correlation and predictivity of communication and language skills of autistic spectrum disorders (ASD) children and their parents' emotions. **Methods:** The sample consisted of 80 participants who are parents of children with ASD. The study was performed using a questionnaire made out for this research. Three groups of variables were analyzed: parental emotions variables; child's communication variables, child's language variables. Statistical analysis was performed by SPSS, and included basic statistical parameters and multiple regression analysis. **Results:** The most common ways of communicate for children with ASD are: Allowing to cuddle; Recognizes familiar faces; and Makes it known when he needs help or wants an item. The most common language forms of children ASD are: Following simple instructions; Understanding connected words/phrases; Pronouncing single words; and Looking at when called by name. Parents of children with ASD expressed the greatest agreement with the following statements: "My child is more demanding than most other children"; "It seems to me that my child is very sensitive and easily upset"; "My child can't do much of what he's expected to know to do", and "I often lack energy." **Conclusion:**

Parents of children with ASD proved that their children have significant delays in communication and language. Developed communication and language skills of the child with ASD are valid predictors of parents' emotions/attitudes. Speech and language therapy work focused on developing the ASD child's communication and language skills can be expected to improve parents' emotions/attitudes.

Keywords: caretaker's attitudes, speech and language pathology.

1. BACKGROUND

Autism spectrum disorder (ASD) is a developmental disability, which is a biologically based neurodevelopmental disorder that affects a child's social interaction and communication skills (1). Core deficits are identified in two domains: social communication/interaction and restrictive, repetitive patterns of behavior. Children and youth with ASD have service needs in behavioral, educational, health, leisure, family support, and other areas (2). Autism is a set of heterogeneous neurodevelopmental conditions, characterized by inability to acquire social skills, repetitive behaviors and failure of speech and nonverbal communication development (3, 4).

ASD is a lifelong condition characterized by very mild symptoms to severe impairments in communication skills, social interactions, and unusual behaviors that interfere with independent functioning and interactions with others (5). Language of persons with ASD is almost always affected either in its formal aspects, or in its usage (6). Findings suggest that there are different linguistic and communication function profiles in the different populations compared eg ASD and specific language impairment children with specific language disorders (7). Children

with autism have skills which are a combination of intact, delayed, and atypical (8). Receptive and expressive language skills may be quite variable across the ASD spectrum, but universal impairments in pragmatic aspects of language are among the defining characteristics of the disorder (9).

The impact of having a child with ASD on other family members and on society is considerable (2). Findings indicate that parents of children with developmental disabilities face greater care giving demands (10). Children and youth with ASD often have deficits in pragmatic language that can affect social interaction with adults and peers and academic performance as more complex language becomes required for reading comprehension and analysis of information. In addition, literal interpretation of language and difficulty in understanding the intent of other people leads to behavioral challenges in some people with ASD and affects success in school, leisure activities, and employment (2). There has been increasing interest in parent-mediated interventions for children with ASD (11), as well as proof of their success. Reviews suggests that interventions conveyed by parents of children with ASD can improve communication of persons with ASD. All these facts direct focus of work of professionals involved in complex issues that ASD comes with, in to parents as well. Parents of children with developmental disabilities, particularly ASD, are at risk for high levels of distress (12).

The results supported previous findings on high levels of parental stress in parents of preschool children with developmental disabilities (13). Increased psychological distress has been demonstrated in parents of children with ASD (14). Results indicate elevated levels of depressive symptoms amongst parents of children with intellectual and developmental disabilities. Quality concerns amongst the existing literature support the need for further research, especially in low- and middle-income countries (15). Children with ASD exhibit very unusual language and communication patterns, such as stereotyped speech, and odd and ritualistic behaviors. Such behaviors may pose difficulties for mothers when they spend time with their children in public situations, especially when uninformed people may misunderstand or misinterpret the child's behaviors (12). Although family-centered services have long been discussed as essential in providing successful services to families of children with autism spectrum disorder (ASD), ideal implementation is often lacking (16)

When facts of communication and language deficits in ASD children, and level of their parent emotional and other burden, as well as parent's potential to be effectively involved in their child treatment, are recognized, basis for this research are established.

2. OBJECTIVE

The main aim of this study was to examine frequency, correlation and predictivity of communication and language skills of autistic spectrum disorders (ASD) children and their parent's emotions.

3. MATERIAL AND METHODS

The sample of subjects consisted of 80 subjects who were parents of children with diagnosis of ASD. The research

was conducted by the use of a questionnaire made for the purposes of this research. Parents were informed about the research, emphasizing that their participation was completely voluntary, and the answers were anonymous and protected from abuse. The need to give honest answers to the questions asked was also emphasized, as well as the fact that it is desirable that both parents, independently and apart from each other, complete the questionnaire in this study. After completing the questionnaires were collected, encrypted, and data were entered into the raw data matrix. After that, statistical analyses were performed.

A sample total of 38 variables was classified into three groups. Twelve *communication* variables (Makes it known when he needs help or wants an object; Tries to draw attention to himself when not looking at him; Points objects; Picks up objects, shows them with or without giving it to others; Waves for greetings; Allows to cuddle (eg to be hugged, caressed, to be held in the arms,...); Nods his head for 'YES' or 'NO'; Maintains eye contact (looks face to face); Recognizes familiar faces (family members, teachers, relatives,...); Establishes contact with peers; Demonstrates understanding of the situation in the environment (eg smiles or frowns appropriately to the situation, tries to comfort/make feel better someone if he is upset); Demonstrates different (more than three) communication intentions (eg. requires attention, information, explanation, action, protests, approves, jokes). Fourteen *language variables* (When called by name the child turns or looks at the person calling; Follows simple instructions (eg look, give, wave,...); Understand connected words/phrases (give the ball, sit there, take the juice,...); Follows three-part instructions (eg close the door, take off your jacket and sit down); There is echolalia (repetition of what he heard without understanding the meaning); There is stereotypical speech without meaning (voicing that is 'talking to oneself and for oneself'); Uses voicing and/or words to get help; Answers questions with 'YES' / 'NO'; Says single words (eg mom, dad, give, want, ...); Says connected words/phrases (eg give more, mom goes, big car,...); Uses simple sentences; Answer simple questions (eg what is your name, where are we now, what do you want); Answer complex questions; Uses conversation (speech is close/similar to that of peers without developmental disabilities). Twelve *parental emotions variables* (My child is more demanding than most other children;

The schedule of feeding, sleeping, dressing my child is much harder to establish than I expected; It seems to me that my child is very sensitive and easily upset; It seems to me that my child cries more than other children; My child can't do much of what he is expected to know to do; I feel like a bad parent; I am often sad; I often lack energy; I am not interested in socializing with people as before ; I often blame myself for the difficulties my child has; I often blame my spouse for the difficulties my child has; With the birth of my child I have more difficulties with my spouse than I expected). Statistical analysis was performed by SPSS. It involved the computation of basic statistical parameters and regression analysis. Statistical significance that was accepted, was for the value of $p < 0.05$.

Variables	Mean	Standard deviation	Minimum	Maximum	Z skewness	Z kurtosis
Makes it known when he needs help or wants an object	4.21	.882	2	5	-.662	-.813
Tries to draw attention to self when not looked at	3.40	1.001	1	5	-.261	-.207
Points to objects	3.71	1.081	1	5	-.569	-.232
Picks up objects, shows them with or without giving it to others	3.55	1.168	1	5	-.319	-.893
Waves for greetings	3.72	1.350	1	5	-.684	-.791
Allows to cuddle (eg to be hugged, caressed, to be held in the arms,...)	4.41	.852	2	5	-1.418	1.274
Nods his head for 'YES' or 'NO'	2.71	1.486	1	5	.227	-1.391
Maintains eye contact (looks face to face)	3.31	1.074	1	5	-.219	-.791
Recognizes familiar faces (family members, teachers, relatives,...)	4.35	.929	1	5	-1.635	2.383
Establishes contact with peers	2.58	1.065	1	5	.477	-.102
Demonstrates understanding of the situation in the environment (eg smiles or frowns appropriately to the situation, tries to comfort/make feel better someone if he is upset)	3.06	1.372	1	5	-.115	-1.239
Demonstrates different (more than three) communication intentions (eg. requires attention, information, explanation, action, protests, approves, jokes)	2.93	1.230	1	5	-.189	-1.043

Table 1. Descriptive data of ASD children communication skills

Variables	Mean	Standard deviation	Minimum	Maximum	Z skewness	Z kurtosis
When called by name the child turns or looks at the person calling	3.85	1.008	1	5	-.605	-.327
Follows simple instructions (eg look, give, wave,...)	4.22	.914	1	5	-1.284	1.540
Understands connected words/phrases (give the ball, sit there, take the juice,...)	4.16	.961	1	5	-1.214	1.459
Follows three-part instructions (eg close the door, take off your jacket and sit down)	3.56	1.377	1	5	-.656	-.837
There is echolalia (repetition of what he heard without understanding the meaning)	3.22	1.331	1	5	-.525	-.998
There is stereotypical speech without meaning (voicing that is 'talking to oneself and for oneself')	3.01	1.227	1	5	.060	-.959
Uses voicing and/or words to get help	3.54	1.252	1	5	-.603	-.643
Answers questions with 'YES' / 'NO'	2.56	1.320	1	5	.318	-.983
Pronouncing single words (eg mom, dad, give, want,...)	3.94	1.215	1	5	-.832	-.479
Pronouncing connected words/phrases (eg give more, mom goes, big car,...)	2.71	1.663	1	5	.303	-1.617
Uses simple sentences	2.32	1.508	1	5	.721	-1.007
Answer simple questions (eg what is your name, where are we now, what do you want)	2.72	1.559	1	5	.165	-1.490
Answers complex questions	1.89	1.114	1	5	1.073	.175
Uses conversation (speech is close/similar to that of peers without developmental disabilities)	1.72	1.242	1	5	1.884	3.659

Table 2. Descriptive data of ASD children language skills

4. RESULTS

Table 1 show the descriptive statistics communication abilities of the child. Notes that the most common way for children with ASD to communicate are: Allows to cuddle (M = 4.41 with SD of .852), Recognizes familiar faces (M = 4.35 with SD of .928), and Makes it known when he needs help or wants an object (M = 4.21 with SD of .882). The least common forms of communication are: Establishing contact with peers (M = 2.58 with SD of 1,065), and Nods for 'YES' or 'NO' (M = 2.71 with SD of 1,486).

Table 2 shows the descriptive statistics of the language abilities children with ASD. The most common language forms are: Follows simple instructions (M = 4.22 with SD of .914), Understands connected words/phrases (M = 4.16 with SD of .961), Pronouncing single words (M = 3.94 with SD of 1.215), and When called by name the child turns or looks at the person calling (M = 3.85 with SD of 1,008). The least common language forms are: Uses conversations similar to those of peers (M = 1.72 with SD of 1,242), Answers complex questions (M = 1.89 with SD of 1,114), and Uses simple

Variables	Mean	Standard deviation	Minimum	Maximum	Z skewness	Z kurtosis
My child is more demanding than most other children	2.28	1.180	1	5	.630	-.649
The schedule of feeding, sleeping, dressing my child is much harder to establish than I expected	2.96	1.335	1	5	.070	-1.272
It seems to me that my child is very sensitive and easily upset	2.40	1.132	1	5	.604	-.397
It seems to me that my child cries more than other children	3.16	1.364	1	5	-.271	-1.110
My child can't do much of what he is expected to know to do	2.56	1.168	1	5	.482	-.532
I feel like a bad parent	4.29	.930	1	5	-1.481	2.390
I am often sad	3.10	1.337	0	5	-.220	-.990
I often lack energy	2.86	1.280	1	5	.152	-1.176
I am not interested in socializing with people as before	3.44	1.281	0	5	-.876	-.069
I often blame myself for the difficulties my child has	3.80	1.297	0	5	-1.011	.267
I often blame my spouse for the difficulties my child has	4.84	3.513	1	5	8.176	71.147
With the birth of my child, I have more difficulties with my spouse than I expected	4.21	1.052	1	5	-1.512	1.864

Table 3. Descriptive data of parents' emotions and attitudes

Model	R	R ²	R _c ²	F	p
1	.719	.517	.280	2.182	.008

Table 4. Results of discriminative analysis of child's communication and language variables as predictor and parental emotion/attitude "My child is more demanding than most other children" as criterium variable

sentences (M = 2.32 with SD of 1,508).

Table 3 shows the descriptive statistics of the examined emotions and attitudes of parents. A higher number also meant a more positive emotion/attitude. Respondents found that they disagreed the most with the following statements: "I often blame my spouse for the difficulties my child has" (M = 4.84 with a standard score of 3,513), "I feel like a bad parent" (M = 4.29 with a standard deviation of .930), and "With the birth of my child I have more difficulties with my spouse than I expected" (M = 4.21 with a standard deviation of 1,052). Respondents showed the least positive emotions/attitudes in the variables describing the statements: "My child is more demanding than most other children" (M = 2.28 with a standard score of 1,180), "It seems to me that my child is very sensitive and easily upset." (M = 2.40 with standard deviation of 1,132), "My child cannot do much of what he is expected to know to do" (M = 2.56 with standard deviation of 1,168) and for the variable "I often lack energy" (M = 2.86 with a standard deviation of 1,280).

Multiple regression analysis was used to determine whether a child's communication and language skills were valid predictors of parental emotions. The emotions of the parents that proved to be the least positive were used as criterion variables. The first analysis included the least positive "My child is more demanding than most other children" as a criterion variable. Table 4 shows that the part of variance explained by the model (communication and language variables) was 51.7%. The results of ANOVA, which assess the significance of the model, showed that the model is statistically significant, F = 2.182; p = 0.008.

Table 5 shows the individual contributions of predictor variables to the explanation of the criteria. In order to

compare the individual contributions of individual predictors, the values from the Beta column were estimated. This means that standardized Beta coefficients were estimated. Based on the mentioned indicators, it can be noticed that the greatest individual contribution to explaining the results of parental attitude/emotion "My child is more demanding than most other children" is given by predictor variables: "There is stereotypical speech without meaning" (β = -0.586); "Uses simple sentences" (β = -0.562); "Maintains eye contact" (β = -0.411); "Waves for greetings" (β = -0.373); and "Recognizes familiar faces" (β = 0.343).

Further analyses included second and third least positive parental emotions. They will be presented only narratively due to respect of the recommended length of this paper.

Next in line of least positive parental emotions was: "It seems to me that my child is very sensitive and easily upset" as a criterion variable. Results show that the part of variance explained by the model (communication and language variables) was 49.3%. The results of ANOVA, which assess the significance of the model, showed that the model is statistically significant, F = 1.986; p = 0.17. The analysis of individual contributions of predictor variables to the explanation of criteria has been done through comparison of the individual contributions of individual predictors through Beta values, and standardized Beta coefficients. Predictor variables that were found to be giving the greatest individual contribution to explaining the results of a parents' attitude/emotion "It seems to me that my child is sensitive and easily upset" are: "Speaks single words" (β = 0.592); "Tries to draw attention to himself when not looked at" (β = -0.478); "Establishes contact with peers" (β = 0.434); "There is stereotypical speech without meaning" (β = -0.341).

The third analysis included the next least positive parental emotion/attitude: "My child can't do much of what they are expected to know to do" as a criterion variable. The part of variance explained by the model (communication and language variables) was 55.2%. The results of ANOVA, which assess the significance of the model, showed that the model is statistically significant, F = 2.511; p = 0.002.

Model	Standard		Beta	t	Significance
	B	error			
(Constant)	.774	1.071		.722	.473
Askes help	.204	.204	.153	1.002	.321
Draws attention to self	-.266	.183	-.225	-1.453	.152
Points to objects	.087	.208	.080	.421	.675
Picks up objects	.289	.221	.287	1.311	.195
Waves for greetings	-.326	.145	-.373	-2.240	.029*
Allows to cuddle	.042	.193	.030	.217	.829
Nods for 'YES/NO'	-.072	.129	-.090	-.556	.581
Maintains eye contact	-.452	.158	-.411	-2.867	.006*
Recognizes familiar faces	.435	.208	.343	2.092	.041*
Establishes contact with peers	.165	.166	.149	.998	.323
Understands situation	.247	.185	.287	1.335	.188
Demonstrates different comm. intentions	-.264	.204	-.275	-1.297	.200
1 When called turns or looks	.290	.202	.247	1.431	.158
Follows simple instructions	-.351	.311	-.272	-1.129	.264
Understand phrases	-.089	.309	-.072	-.288	.774
Follows three-part instructions	.135	.190	.157	.709	.482
There is echolalia	.225	.132	.254	1.706	.094
There is stereotypical speech	-.563	.150	-.586	-3.741	.000*
Uses voicing for help	.204	.161	.217	1.268	.210
'YES/NO' answers	.293	.217	.328	1.351	.182
Says single words	.409	.210	.421	1.946	.057
Says phrases	.024	.201	.034	.121	.904
Uses simple sentences	-.440	.212	-.562	-2.070	.043*
Answer simple ques.	-.312	.189	-.412	-1.648	.105
Answer complex ques.	.130	.258	.123	.504	.616
Uses conversation	.182	.190	.192	.958	.342

Table 5. Evaluation of predictors

The analysis of individual contributions of predictor variables to the explanation of criteria has been done through comparison of the individual contributions of individual predictors through Beta values, and standardized Beta coefficients. Predictor variables that were found to be giving the greatest individual contribution to explaining the results of a parent’s attitude/emotion: “My child can’t do much of what they are expected to know to do” are: “Answers simple questions” ($\beta = -0.902$); “Answers complex questions” ($\beta = 0.634$); “Follows three-part instructions” ($\beta = 0.568$); “Shows objects” ($\beta = 0.451$); “Use voicing and/or words to get help” ($\beta = 0.361$); and “There is stereotypical speech without meaning” ($\beta = -0.304$).

5. DISCUSSION

Raising a child with developmental disability can generate positive outcomes for a family, including improved family closeness, personal growth, and importantly, joy (15), but road to there is often very challenging. Descriptive indicators show that the most common ways for children with ASD to communicate are: allows to be cuddled (eg hugging, caressing, hold in arms,...), recognizing familiar people (family members, teachers, relatives,...), and to letting know when he needs help or wants an item. The least

common forms of communication are: making contact with peers and nodding their heads for ‘YES’ or ‘NO’. This means limited communication skills, that do not reach criterium referenced expectations. Findings with language development are quite similar. This study showed that the most common language forms of children with ASD are: following simple instructions, understanding phrases, pronouncing individual words, and looking at when called by name. The least common language forms are: conversation similar to those in peers without developmental disabilities, answering complex questions, and using simple sentences.

Other findings underline that most common parental concerns are speech and language development, followed by an abnormal socio-emotional response, and a medical problem or delay in developmental milestones (17). Speech-language therapy is the most commonly identified intervention provided for children with ASD (18). Although using communicative spoken phrases before age of four years is considered a good prognostic sign for language development in youth with ASD, emergence of phrase speech may occur to at least age 10 years, especially in children with preserved nonverbal skills and evidence of social engagement (19).

Fathers having experiences similar to those described in

previous studies with regard to mothers of children with ASD (5), is one of the reasons why this study encouraged both parents to take part in. Parents of children with ASD experience high rates of parental stress, even in comparison to parents of children with other developmental disorders, intellectual difficulties and physical disabilities (12). Parents experience peaks and troughs of social, emotional, and financial challenges as they go through a pre-diagnosis phase, diagnosis phase, and post-diagnosis phase. The shortage of health care providers and fragmentation of care in the health care delivery system delays early diagnosis and management of ASD (1). While exploring emotions and attitudes of parents in this study results showed that parents of children with ASD have expressed the greatest disagreement with the statements: "I often blame my spouse for the difficulties my child has", "I feel like a bad parent", and "Birth of my child gives me more difficulties with my spouse than I expected". Parents of ASD children expressed the greatest agreement with the following statements: "My child is more demanding than most other children"; "It seems to me that my child is very sensitive and easily upset"; "My child can't do much of what he's expected to do." and "I often lack energy." Furthermore, this study proved that developed communication and language skills of the child with ASD are valid predictors of parents' emotions/attitudes.

These results are in coherence with study that showed that effect of receptive skills on parent psychological distress was fully mediated by child emotional problems: lower receptive skills were associated with higher levels of emotional symptoms, which in turn predicted higher parent psychological distress (20). In order to maximize language acquisition for these children, clinicians (speech and language pathologists) need to utilize comprehensive language assessment tools and design interventions that are tailored to the child's strengths and weaknesses (8). Proper treatment would result in the higher academic and professional efficacy of the persons in autism spectrum and members of their families (21).

In Bosnia and Herzegovina, the system of providing support to children with disabilities and their parents is poorly developed, and is followed by low awareness of citizens about those vulnerable groups. The state does not take adequate, systematic actions to answer this problem. As a result, the issues of children with ASD are poorly regulated at the state level, so we have families that struggle hard, and often are left with their needs unmet. Results showed by this study could help creating and taking actions steps in proper direction, that will hopefully help tackle this problem.

6. CONCLUSION

Parents of children with ASD proved that their children have significant delays in communication and language. Developed communication and language skills of the child with ASD are valid predictors of parents' emotions/attitudes. Speech and language therapy work focused on developing the ASD child's communication and language skills such as: establishing eye contact and peer contact; usage of simple gestures; using voicing and/or words to

get help; and other, more complex skills, can be expected to improve parents' emotions/attitudes.

- **Patient Consent Form:** All participants were informed about subject of the study.
- **Author's contribution:** A.I. gave substantial contributions to the conception and design of the work, as well as in analysis, interpretation of data for the work and drafting and revising the article. N.P gave substantial contribution in acquisition, drafting and revising the article. B.R. and S.H., gave substantial contribution in acquisition, analysis and revising the final version. All coauthors agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. .
- **Conflicts of interest:** There are no conflicts of interest.
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