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## PARALINGUISTIC ASPECTS OF PRAGMATIC ABILITIES IN ADULTS WITH INTELLECTUAL DISABILITY<sup>1</sup>

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### SUMMARY

Many of the authors agree with the statement that the facial expression and prosodic acoustic characteristics together represent the paralinguistic characteristics of communication and that they provide an answer to the question „How something is said?“ Some of the functions of paralinguistic elements of communication include the ability to make a conclusion about the speaker's attitude or his emotional reactions, identifying personal characteristics of the speaker, concluding about their demographic characteristics, the ability to use paralinguistic signs as signals for the regenerative response and synchronization of conversation as well.

The aim of this paper is to isolate and analyze research which as their focus had an assessment of paralinguistic elements in adults with intellectual disability by reviewing the available literature.

By searching electronic databases, the papers in which the issue of the ability to recognize and interpret paralinguistic characteristics of persons with intellectual disabilities were collected and analyzed.

By reviewing analyzed papers, it could be seen that the issue of the ability of understanding and interpretation of paralinguistic aspects of communication is more often studied in a population of adults with intellectual disability and syndromic specifics, than in the population of persons with intellectual disability syndromes without syndromic manifestations. Presented results of the researches show that adults with Down and Williams syndrome, as well as persons with intellectual disabilities have emphasized difficulties in detecting negative emotion in tasks of facial and vocal expression.

Despite many functions of paralinguistic segments of communication, it was observed that in the population of adults with intellectual disability the most often investigated ability was the one to recognize emotional reactions with the help of facial and prosodic expression. Also, it could be concluded that, in the papers in which the ability to recognize facial and prosodic emotions was evaluated, the ability to correlate these constructs significant for pragmatic competence, such as the ability of theory of mind, social competence, ability to recognize irony and deception in testimony etc. was missing.

Key words: emotional prosody, facial expression, syndromic specifics

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## INTRODUCTION

Pragmatics includes the usage of language in formal and informal interpersonal situations (McTear & Conti-Ramsden, 1992; Ninio & Snow, 1996, all according to Abbeduto & Hesketh, 1997). Pragmatic ability is made up of several different skills that enable a person to integrate information during the conversation, as well as to monitor the mental states of interlocutors (van der Lely, 2003, according to Ivšac & Gaćina, 2007).

Accordingly, some authors point out that the pragmatic development is in close connection, both with other aspects of language development and the social and with cognitive development (Curtiss, 1988; Ninio & Snow, 1996, all according to Abbeduto & Hesketh, 1997; Moreno Manso, García-Baamonde, Alonso, & Barona, 2010).

Korta and Pery (Korta & Pery 2006, according to Benítez, 2009) state that pragmatics studies the communication of events and intentions related to a specific time and place. According to them, pragmatism includes facts about the statements, the speaker intentions, beliefs and environment in which communication takes place.

Pragmatic abilities could not be limited to only linguistic; they also include non-verbal communication skills (Bara, Bosco, & Bucciarelli, 1999).

Rot (Rot, 1982; Rot, 2004) considers that the non-verbal aspects of communication are divided into the paralinguistic and extra-linguistic system, whereby paralinguistic signs belong to various noises and sounds, cry, laughter; weeping, the speed and height of pronunciation, rhythm, intonation, and pauses between spoken words. In this classification of non-verbal communication, extra-linguistic system would consist of proxemic (use of space, territoriality and distance) and kinetic signs (facial movements and body).

In other classifications of nonverbal communication, by using the criterion of the dominant species of representative codes the authors usually talk about: kinetic, proxemic, paralinguistic and haptic communication (Argyle, 1972; Burgoon & Guerrero, 1994, all according to Stajčić, 2013).

The Italian authors (Angeleri, Bosco, Gabbatore, Bara, & Sacco, 2012) consider the paralinguistic aspects of communication through the elements that follow conversation, stating the facial expression and prosodia as their key representatives. This opinion is not alone, so are many others (Pell, 2005; De Gelder & Bertelson, 2003; De Gelder & Vroomen, 2000; Rigoulot & Pell, 2012, all according to Gil, Aguert, Le Bigot, Lacroix, & Laval, 2014) agree with this statement, indicating that facial expression and prosodic acoustic characteristics together represent paralinguistic characteristics of communication and that they provide an answer to the question „How something is said?“ while extra-linguistic features are related to the context and the question „Why something is said?“. Panić-Cerovski (2012) goes a step further in defining the paralinguistic elements of communication by dividing the visual and auditory paralinguistic components. According to this author, visual paralinguistic segments represent nonverbal movements, while the auditory elements are related to the voice modification of communicative partners (Panić-Cerovski, 2012). In these classifications, we see that in paralinguistic oeuvre the kinetic segments of nonverbal

communication (facial expression and/or body movement) are present, which indicates the inconsistency of the authors about classification and definition.

Furthermore, the difficulties of precisely defined paralinguistic segments result from the fact that certain representatives of paralinguistic assembly, such as prosody, may have multiple functions. The literature states that prosodic elements within a language can have both linguistic and paralinguistic function and that as such can determine the affective, grammatical and pragmatic component of communication (Terzić & Drljan, 2011). Polovina and Panic (2011) state that, in addition to the previously mentioned two functions, prosody can also have non-linguistic features. Also, Lieberman (1975) points out that prosodic features are interpreted differently in different languages, so that they can be viewed as linguistic constructs in one case, and in another as paralinguistic. Accordingly, the literature is rich with papers in which the intercultural paralinguistic specificities and differences had been studied (Albert & Nelson, 1994; Ardila, 2001; Feghali, 1997; Müller-Liu, 2004; Safadi & Valentine, 1990). Lieberman (1975) points to yet another obstacle in the study of paralinguistic communication segments, emphasizing that the frequent occurrence of unfair and inadequate phonetic and acoustic analysis based on which conclusions about paralinguistic communicative abilities partners could be made.

The authors point out that the functions of paralinguistic elements of communication are primarily reflected in the abilities to make a conclusion about the speaker's views on the topic of spoken content or his emotional reactions (Sacco, Angeleri, Bosco, Colle, Mate, Bara, 2008; Wilson & Wharton, 2006). Besides the possibilities to express emotions and interpersonal attitudes, some other paralinguistic features characters are emphasized: determining the characteristics of the speaker (careful, arrogant, insecure, etc.), concluding about demographic characteristics (gender, age, regional origin, etc.), then the use of paralinguistic signs as signals of regenerative response and synchronization of conversation (Rot, 2004; Traunmüller, 1988). Kasic and Ivanovic (2011) state that paralinguistic segments contribute to the variability of speech flow and that this variability itself represents an additional mean of expression, which is useful both for the speaker and interlocutor. Similar allegations have been found in other authors (Panić-Cerovski, 2012; Ward, 2004; Wilson & Wharton, 2006) who point out that paralinguistic elements of communication can contribute to the additional shading of the spoken message's meaning. In accordance with all of the above are the results of experimental research of the Adell, Bonafonte and Escudero (2005) which confirm the existence of significant correlations between paralinguistic and pragmatic aspects of communication.

On the other hand, Angeleri and associates (Angeleri et al., 2012) go a step further and define the area of assessment of paralinguistic pragmatics, suggesting that the assessment of this spheres is related to the evaluation of the ability to understand and produce paralinguistic elements in basic communication (questions, claims, appeals and commands), recognizing emotional responses and insight and understanding of paralinguistic contradiction. The significance of discrepancy between manifested paralinguistic elements and meanings of spoken messages was recognized by Morris (Moris, 2005, according to Panić-Cerovski, 2012), describing the phenomenon as

„nonverbal leakage“, that is, the phenomena when paralinguistic elements give away the speaker without his/her knowledge.

By reviewing the literature it could be seen that the ability to identify, understand and produce paralinguistic elements of communication is more often studied in a population of children with intellectual disability (Setter, Stojanovik, Van Ewijk, & Moreland, 2007; Stojanovik, 2011; Williams, Wishart, Pitcairn, & Willis, 2005; Wishart, Cebula, Willis, & Pitcairn, 2007; Yirmiya, Kasari, Sigman, & Mundy, 1989) and autism (Castelli, 2005; Grossman, Bemis, Skwerer, & Tager-Flusberg, 2010; Lindner & Rosén, 2006; McCann, Peppé, Gibbon, O'Hare, & Rutherford, 2007; Peppé, McCann, Gibbon, O'Hare, & Rutherford, 2006; Tanaka, Kashioka, & Campbell, 2011; Wang, Lee, Sigman, & Dapretto, 2006; Yirmiya et al., 1989), than in a population of adults with intellectual disability. Accordingly, the subjects of this theoretical paper are paralinguistic abilities of adults with intellectual disability.

### **THE AIM**

The aim of this paper is to isolate and analyze research which in its research as a focus had the assessment of paralinguistic elements in adults with intellectual disability by reviewing the available literature.

### **METHOD**

By searching electronic databases Google Scholar and KoBSON, as well as by using services: SAGE Publishing, Science Direct, Springer/Kluwer, Wiley Interscience and EBSCO the papers in which the issue of the ability to recognize and interpret paralinguistic characteristics of persons with intellectual disabilities was in the focus were collected and analyzed. During the searching the following keywords were used: mental retardation, intellectual disability, reading the mind, nonverbal communication, nonverbal pragmatics, paralinguistic communication, suprasegmental structure, and prosody, and emotional prosody, height of pronunciation, rhythm, intonation, facial expression and facial movements. Results of the preliminary tests were refined using additional criteria: 1) in the study one or more segments of the paralinguistic elements of communication was assessed, 2) the default prosodic features and/or facial expressiveness were considered as paralinguistic elements of communication 3) the sample included respondents with intellectual disabilities with syndromic disorders and subjects with intellectual disabilities, without associated syndromes, 4) the sample included respondents whose average age was above 17 years.

### **Research review**

In a sample of one electrophysiological study (Pinheiro, Galdo-Álvarez, Rauber, Sampaio, Niznikiewicz, & Gonçalves, 2011) twelve persons with Williams syndrome and the same number of subjects with typical development were included, the average age of 17,30 years. The aim of this study was to test the ability to recognize emotional prosody

(neutral, positive and negative) in two types of sentences, one in which the spoken content was clear and the other where a spoken message was incomprehensible. The authors have, among other things, examined to what extent the recognition of emotional prosody relies on user-friendliness semantic messages. Results of this study show that both groups had better achievement in recognizing emotions in situations where the message was clear and understandable. Also, it was shown that the participants with Williams syndrome exposed increased sensitivity to positive and negative intonation, but also made more errors in the task of recognizing negative emotions. Similar results the author cites in a paper published in 2010 (Pineiro, 2010).

Plesa-Skwerer et al., (Plesa-Skwerer, Faja, Schofield, Verbalis, & Tager-Flusberg, 2006) had conducted a study in which they used Diagnostic Analysis of Nonverbal Accuracy Scale (DANVA2; Nowicki & Duke, 1994) in patients with Williams syndrome (N = 47), patients with intellectual disability (N = 49) and those with typical development (N = 58) to assess the ability to recognize emotions (happiness, sadness, anger and fear) observing facial and vocal expressions. The groups of patients with intellectual disability and Williams syndrome were uniformed according to the level of intellectual functioning and language development, while groups of typical subjects were matched according to the age. The mean age of the patients was 18, 52 years. The results show that the respondents of typical development achieved the best results in comparison to other groups, both in the tasks of recognizing facial expressions and the tasks of identifying emotional prosody. When it comes to tasks of facial expressions, all three groups were better in recognizing happiness than negative emotions. Subjects with Williams syndrome and intellectual disabilities were better in recognizing the sadness instead of anger and fear. When it comes to vocal expression, all three groups were the best at recognizing anger, while respondents with intellectual disabilities and Williams Syndrome showed poor results in identifying fear in vocal expression. These authors found no differences in the ability of vocal and facial emotion recognition between patients with Williams syndrome and patients with intellectual disability.

In a study of similar design, the same group of authors used similarly structured sample to evaluate the ability to recognize prosodic characteristics and meanings of emotionally colored communicative messages and got slightly different results from the aforementioned (Plesa Skwerer, Schofield, Verbalis, Faja, & Tager-Flusberg, 2007). The sample of this study consisted of adults with Williams syndrome (N = 47), intellectual disability (N = 37) and those with typical development (N = 47), whose average age was over 19 years old. The assessment included presenting 18 sentences, of which nine were spoken with expressed positive emotions, and the other half with negative emotion, where there were contradictions between the spoken content and manifested emotions. All subjects had two tasks, the first in which they were supposed to ignore prosody and to pay attention to the spoken content and another with the opposite task. Results of this study indicate that the participants of typical development achieved the best results in both tasks, while other participants expressed difficulties in detecting prosody or meaning precisely because the presence of conflicting information disturbed them and made it difficult for them to focus on a particular segment of the task. Subjects with Williams syndrome had more problems in the detecting prosody, and the authors of this paper explain it by exaggerated reliance of these subjects on the spoken content

(Plesa Skwerer et al., 2007). In the second part of the research, subjects were presented sentences in which the prosodic features were consistent with the spoken content and it turned out that in this case, persons with Williams syndrome were very much successful in detecting emotional prosody and achieved better results compared to the group of subjects with intellectual disability.

When it comes to the evaluation of the ability to recognize emotions in patients with syndromic disorders, among people with Williams syndrome, persons with Down syndrome were also often examined in the literature. The study of Hippolyte, Barisnikov, Van der Linden and Detraux (2009) included 24 adults with Down syndrome, mean age 34,3 years. It was expected from the respondents to identify the target face among many other presented; to identify emotions on the shown faces; to recognize the intensity of expressed emotion on the faces (happiness, sadness, neutral expression), as well as to connect emotion with a certain context. It turned out that people with Down syndrome had the most difficulties in recognizing neutral facial expressions. Also, it was observed that these persons have a tendency to recognize emotions as positive, even when they are not. People with Down syndrome misinterpreted emotional expression more often in the tasks with isolated faces, as well as in the tasks where facial expression was embedded in the opposite context, by misunderstanding grief instead of happiness.

Another paper, in which they assessed the ability of processing facial expressions in adults with Down syndrome, was the one that Carvajal, Fernández-Alcaraz, Rueda and Sarrión (2012) published. The sample of this study included the subjects with Down syndrome (N = 23), subjects with moderate intellectual disability (N = 24) and those with mild intellectual disability (N = 26). The mean age of all participants was 29,7 years. Respondents had undergone preliminary assessment – intelligence test, visual discrimination and understanding of speech. Afterwards, the adapted extracts of The Florida Affect Battery – FAB (Bowers, Blonder, & Heilman, 1991) were applied, as well as tasks of pairing corresponding images, which were designed for this study. Persons with Down syndrome achieved worse results compared to other two groups on tasks of facial discrimination where it was expected from the respondent to recognize the same and different faces, as well as different emotions in various faces. Compared to the other two groups of subjects, the persons with Down syndrome made more errors in the task of pairing corresponding photos. However, the ability to recognize and name the emotion was similar in people with Down syndrome and patients with mild and moderate intellectual disability. One possible explanation which the authors cite as a reason for hampered processing of facial expression in these persons was their ability to pay more attention to the region around the mouth, than to the face as whole while performing these tasks.

Fernández-Alcaraz, Extremera, García-Andres and Molina (2010) evaluated the ability to recognize facial emotional expressions in adults with Down syndrome (N = 20) compared to respondents from the average population. The mean age of patients with Down syndrome was 29,65 years. As in the study Carvajal et al., (2012) while estimating The Florida Affect Battery – FAB (Bowers et al., 1991) was used, and its four subtests: The Facial discrimination task, The Facial affect discrimination task, The Facial affect naming task and The Facial affect selection task was used. The results show that all four types of tasks of persons with Down syndrome achieved worse results

compared to the ones in the control group. Also, it was observed that for these it was people easier to distinguish faces, than facial expressions, that is, while making facial affect discrimination task they make more errors than during the facial discrimination task. Also, it turned out that the tasks in which it was need to appoint an emotion were significantly more difficult for adults with Down syndrome in comparison to the tasks in which the respondent should appoint the specific face for the named emotion.

One of the rare few studies in which samples included adults with mild and moderate intellectual disability without associated syndromes was a research made by Owen, Browning and Jones (2001). The sample consisted of six persons with intellectual disability, with mean age of 30 years and the same number of subjects with typical development. During the evaluation, the following tasks were used: 1. photos with facial expression of happiness, sadness, fear, anger, surprise and disgust, 2. list of questions to which respondents gave answers about the time when the specific emotions could be manifested in the example of the subjects from photos and personal text, 3. short stories in which the respondents were expected to recognize the dominant emotion. The results show that persons with intellectual disabilities had significantly lower performances than subjects with typical development in the emotion recognition tasks with the help of photos and facial expressions, as well as in tasks with short stories. The difference between the two groups was observed only in answers which described their personal experiences and the presence of appropriate emotions in given situations. Also, it was shown that subjects with mild intellectual disability had the worst results in recognizing emotions of disgust, that is, they realized that it belongs to negative emotions, but they still had difficulties with identifying it precisely.

Another study that had as a subject of the research included the ability to distinguish emotions from facial expressions in adults with intellectual disability was a research of Woodcock and Rose (2007). These authors go a step further and one part of the research design direct to the negative emotions, for which it turned out in previously alleged researches that their identification represents a problem for adults with intellectual disabilities. In the sample of this study 30 patients with intellectual disability were included, mean age 40 years. During the evaluation the following instruments were used: Test of facial emotion recognition (Young, Perrett, Calder, Sprengelmeyer, & Ekman, 2002) and Self-report anger inventory (Benson & Ivins, 1992). The photographs of the persons with facial expression of happiness, anger, sadness, and neutral were shown to the respondents. After identifying the emotions, the respondents were expected to recognize the degree of the demonstrated anger and to connect it with personal experiences. The results show that there is no expected correlation between the failure in recognizing emotions and personal expression of anger. That is, the respondents who frequently made errors in identifying emotions, explaining some other emotional expressions as negative, were not able to achieve high score on the Self-report anger inventory (Benson & Ivins, 1992), as the authors predicted.

**INSTEAD OF CONCLUSION**

By reviewing the analyzed papers, it could be seen that the issue of the ability of understanding and interpretation paralinguistic aspects of communication is more often studied in a population of adults with intellectual disability and syndromic specifics, than in the population of persons with intellectual disability without syndromic specifics (Carvajal et al., 2012; Fernández-Alcaraz et al., 2010; Hippolyte et al., 2009; Pinheiro et al., 2011; Plesa-Skwerer et al., 2006; Plesa-Skwerer et al., 2007).

The reason for this, when it comes to persons with Williams syndrome, we may search in the well-known fact about disharmonious profile of their skills, or slightly better verbal skills, as opposed to motor and visuo-spatial abilities (Rosner, Hodapp, Fidler, Sagun, & Dykens, 2004; Semel & Rosner, 2003, according to Hargrove, Pittelko, Fillingane, Rustman, & Lund, 2013). Furthermore, the increased interest of the scientific public for the ability to identify prosodic elements in communication of persons with Williams syndrome may be explained by research findings that indicate increased sensitivity to sound stimuli in these subjects (Bellugi, Bihrlé, Doherty, Neville, & Damasio, 1989; Udwin, Yule, & Martin, 1987, all according to Bellugi, Wang, & Jernigan, 1994; Fidler, Hodapp, & Dykens, 2002), as well as the existence of a tendency towards making music and expressing musical talent (Dykens, Rosner, & Sagun, 2005, according to Brojčin & Glumbić, 2006). Also, the specificity of behavior of persons with Williams syndrome is reflected in the fact that, on the one hand, in these persons elevated levels of empathy could be noted, a glut of verbal expression with affective intonation, as well as intense sociability, and on the other hand, the problems in the recognition of others' mental states, social adaptation and pragmatic competence (Einfeld, Tonge, & Florio, 1997, according to Bellugi, Lichtenberger, Jones, Lai, & St George, 2000; Gosch & Pankau, 1997, according to Järvinen-Pasley, Bellugi, Reilly, Mills, Galaburda, Reiss, & Korenberg, 2008). In presented papers, the increased susceptibility of these individuals to voice intonation was confirmed, as well as the tendency for misinterpretation of negative emotional prosody (Pinheiro et al., 2011; Plesa-Skwerer et al., 2006). Problems with detection of emotional prosody in persons with Williams syndrome are noticeable in tasks of paralinguistic contradictions (Plesa-Skwerer et al., 2007). Despite the fact that the literature states that people with Williams syndrome have preserved the ability to recognize unfamiliar faces (Bellugi et al., 1989; Bellugi, Bihrlé, Neville, Jernigan, & Doherty, 1992; Mooney, 1957, all according to Bellugi et al., 1994) in these subjects the difficulties in recognizing and identifying negative emotions through facial expressions were recorded (Plesa-Skwerer et al., 2006).

On the other hand, when it comes to persons with Down syndrome, it is known that their style of visual processing is global, that they perceive the image as a whole and that it is associated with processing faces and emotional facial expressions (Bihrlé, Bellugi, Delis, & Marks, 1989; Porter & Coltheart, 2006, all according to Carvajal et al., 2012). The authors state that the visuo-spatial abilities of people with Down syndrome are more developed than abilities of auditory processing (Chapman & Hesketh, 2000, according to Abbeduto, Warren, & Connors, 2007). Also, in the literature, we have descriptions of these persons as social, sociable, gentle, charming (Abbeduto et al., 2007; Brojčin & Glumbić, 2006; Čulić & Čulić, 2009; Rizvanović, 2010; Martin, Klusek, Estigarribia,

& Roberts, 2009), as well as allegations that their social development develops faster than to the mental one (Rizvanović, 2010), and non-verbal language skills instead of linguistic (Rice, Warren, & Betz, 2005). However, despite the above socio-emotional characteristics, these individuals exhibit difficulties in social adaptation and selection of appropriate models of behavior in certain situations (Dykens, Shah, Sagun, Beck, & King, 2002). By reviewing these papers, we noticed that adults with Down syndrome exhibit difficulties in distinguishing facial (Carvajal et al., 2012) and facial expressions (Fernández-Alcaraz et al., 2010). Also, adults with Down syndrome had problems in identifying and processing facial emotional expressivity of sadness as well as connecting it with the contextual situation. These people tend to detect emotions contrary, that is, to name the emotion of sadness replacing it with happiness (Hippolyte et al., 2009). Also, in tasks when the subjects are expected to name an emotion, adults with Down syndrome showed some difficulties (Fernández-Alcaraz et al., 2010).

Based on the few studies on the topic of paralinguistic characteristics of persons with intellectual disability without associated syndromes manifestation and the participation of these persons in control groups of samples, it can be concluded that the respondents with intellectual disabilities also exhibit significant difficulties in the detection of negative emotion in tasks of facial and vocal expression (Plesa-Skwerer et al., 2006). Within negative emotions, sadness is the best recognized (Plesa-Skwerer et al., 2006), and expressed difficulties while recognizing fear was present (Plesa-Skwerer et al., 2006) and emotion of disgust (Owen et al., 2011). Poor achievement in emotion recognition tasks was not associated to personal expression of negative emotions (Woodcock & Rose, 2007).

By summarizing the theoretical claims, it can be concluded that for proper decoding of the messages, and thus successfully planning their own and other people's behavior prediction based on the spoken message it is necessary for, among other things, communicative partners to adequately identify paralinguistic segments of communication, to properly understand their meaning and connect it with the spoken message. Despite the many functions of paralinguistic segments of communication, such as concluding about the speaker's attitude, his emotions (Sacco et al., 2008; Wilson & Wharton, 2006), identifying traits and demographic characteristics of the communication partner, regulation of the synchronous conversations (Rot, 2004; Traunmüller, 1988) and forming the meaning of the spoken message (Panić-Cerovski, 2012; Ward, 2004; Wilson & Wharton, 2006), we see that in the population of adults with intellectual disability the most examined ability is to recognize emotional reactions with the help of facial and prosodic expression. Also, it can be concluded that in the papers in which the ability to recognize facial and prosodic emotions was in focus, the ability to correlate these constructs, which would be significant for pragmatic competence, such as theory of mind, social competence, the ability to recognize irony and deceit in statement etc. was missing.

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