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INTERACTIVE STYLES AND SOCIO-COMMUNICATIVE BEHAVIORS IN THE CONTEXT OF MUSIC SESSIONS WITH A CHILD WITH AUTISM

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Abstract

One of the earliest signs of autism is a deficit in the ability to engage in triadic Shared Attention (SA) relationships. Therefore, interventions that can enhance the socio-communicative development of individuals with ASD are important. This is because exchanges and interactions between people contribute to the individual's socio-cognitive development, establishing learning processes through imitation and the improvement of cognitive skills. Therefore, the objective of this research was to investigate changes in the quantity and quality of socio-communicative and relational behaviors, during interactive scenes between adults and a child with autism, adopting music and musical instruments as mediators of social exchanges. To achieve the objective of this research, a single case study of a quantitative nature was carried out with a boy with ASD, during an intervention that was developed from the creation of a work protocol involving semi-structured sessions with musical activities, a context that enabled observation of the socio-communicative behaviors of the adult-child dyad. In addition to the intervention, the instruments PROTEA-R, SRS-2, IDADI and General History and Musical Interest Interview were used to collect data. Six 30-minute video-recorded sessions were held, which were divided into 18 episodes, 3 episodes per session. Within each episode, scenes of interaction between the adult-child dyad were observed. The results showed that (1) the adult's interactive style that appeared most was the directive style; (2) the shared attention response was the most frequent child behavior; (3) music played an important role in mediating the triadic relationship adult-music-child, favoring the emergence of socio-communicative behaviors with declarative purposes and the understanding of intentionality. It is concluded that music (through musical instruments and songs) played an important role in mediating the triadic relationship between adult-music-child, favoring the emergence of socio-communicative behaviors with declarative purposes and the understanding of intentionality.

Keywords: ASD; Interactive Styles; Musical Intervention; Shared Attention; Triad Adult-Music-Child.

Resumo

Um dos sinais mais precoces do autismo, é o déficit na habilidade de se engajar em relações triádicas de Atenção Compartilhada (AC). Assim, intervenções que possam potencializar o desenvolvimento sociocomunicativo do indivíduo com TEA são importantes. Isto porque as trocas e interações entre as pessoas contribuem para o desenvolvimento sociocognitivo do indivíduo, estabelecendo processos de aprendizagem por imitação e o aprimoramento de habilidades cognitivas. Sendo assim, o objetivo dessa pesquisa foi investigar mudanças na quantidade e na qualidade de comportamentos sociocomunicativos e relacionais, durante cenas interativas entre adultos e uma criança com autismo, adotando-se a música e instrumentos musicais como mediadores das trocas sociais. Para alcançar o objetivo dessa pesquisa, foi realizado um estudo de caso único de natureza quantitativa com um menino com TEA, durante uma intervenção que se desenvolveu a partir da criação de um protocolo de trabalho envolvendo sessões semi-estruturadas com atividades musicais, contexto que possibilitou a observação dos comportamentos sociocomunicativos da díade adulto-criança. Além da intervenção, para coleta de dados foram empregados os instrumentos PROTEA-R, SRS-2, IDADI e Entrevista de Histórico Geral e Interesses Musicais. Foram realizadas 6 sessões de 30 minutos vídeo-gravadas, que foram divididas em 18 episódios, sendo 3 episódios por sessão. Dentro de cada episódio foram observadas cenas de interação entre a díade adulto-criança. Os resultados mostraram que (1) o estilo interativo do adulto que mais apareceu foi o diretivo; (2) a resposta de atenção compartilhada foi o comportamento infantil mais frequente; (3) a música cumpriu um importante papel de mediar a relação triádica entre: adulto-música-criança, favorecendo a emergência de comportamentos sociocomunicativos com propósitos declarativos e a compreensão da intencionalidade. Conclui-se que a música (através de instrumentos musicais e canções) desempenhou um papel importante na mediação da relação triádica entre adulto-música-criança, favorecendo o surgimento de comportamentos sociocomunicativos com finalidades declarativas e a compreensão da intencionalidade.

Palavras chave: Atenção Compartilhada; Estilos Interativos; Intervenção Musical; TEA; Tríade Adulto-Música-Criança.

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a complex neural developmental condition characterized by impairments in language and communication, challenges in social interaction, and the manifestation of restricted and repetitive behaviors. One of the initial indicators of autism is a deficiency in the capability to engage in triadic Shared Attention (SA) relationships. Interventions that can enhance the socio-communicative development of individuals with ASD are important. This is attributed to the fact that interpersonal exchanges and interactions play a pivotal role in shaping an individual's socio-cognitive development, establishing learning processes through imitation, and refining cognitive skills. Various studies have substantiated that music can exert a positive influence on the enhancement of communicative and relational abilities in children with ASD. Moreover, it has been noted to contribute to psycho-motor development, and social cognitive skills, enhance concentration, and facilitate language expression.

Understanding the interactive dynamics between adults and children in the context of music-based interventions is of critical importance. This knowledge serves as a foundational element for contemplating adult behaviors that can genuinely contribute to the cultivation of relational and socio-communicative skills in children diagnosed with ASD. This serves as the main justification for the research. The objective of this study was to investigate changes in the quantity and quality of socio-communicative and relational behaviors, during interactive scenes between adults and a child with autism, adopting music and musical instruments as mediators of social exchanges.

To achieve the objective of this research, a single case study of a quantitative nature was conducted. The subject under examination was a young boy diagnosed with ASD, and the investigation transpired within the context of an intervention program. This program was meticulously developed through the formulation of a comprehensive work protocol, encompassing semi-structured sessions featuring musical activities. The chosen method facilitated a conducive environment for the systematic observation of the socio-communicative behaviors exhibited by the adult-child dyad. In addition to the intervention, the instruments PROTEA-R, SRS-2, IDADI, and General History and Musical Interest Interview were used to collect data. The investigative process entailed the recording of six sessions, each spanning 30 minutes, with a further subdivision into 18 episodes, yielding three episodes per session. Within each episode, scenes of interaction between the adult-child dyad were observed.

The empirical study is intricately structured into four distinct sections, delineated as follows: 1) theoretical framework; 2) methodology; 3) results; 4) discussion; and 5) conclusions. Finally, the bibliographic references that supported the research were presented.

THEORETICAL FRAMEWORK

Autism Spectrum Disorder (ASD) is characterized by impairments in language and communication, difficulties in social interaction, as well as the presence of restricted and repetitive behaviors, which become evident in the first years of a child's life (APA, 2022; WHO, 2019). In recent decades, there has been growing interest in ASD in the scientific, political, social, and educational spheres (MATOS *et al*., 2023; PIMENTA; SANTOS, 2023). This increase has enabled a broader understanding of autism. At the same time, significant advances were made regarding intervention techniques and methods.

One of the earliest signs of autism is the deficit in the ability to engage in triadic relationships of Shared Attention (SA), which is reflected in the way children with ASD interact with other people and the world. It is common for them to present behaviors with imperative purposes, such as using gestures to request objects and using other people instrumentally to communicate, but not intending to share their interests and intentions with others, expressing difficulties in social attention and sharing mental states (APA, 2022; WHO, 2022; FALCK-YTTER *et al*., 2023; ZANON *et al*., 2015).

SA behaviors can be visualized based on the coordination of attention between two social partners regarding a third reference of external interest, and to present it the child must first understand other people as intentional agents, equal to themselves (ZANON *et al*., 2015). According to Tomasello (2003), from 9 months of age, babies begin to present a set of triadic behaviors, which involve coordinating their interactions with objects and people or events to which they pay attention.

A prototypical example of this phase is when babies begin to flexibly and reliably look where adults are looking, engaging in relatively long sessions of social interaction, using adults as a social reference point, based on imitation learning (TOMASELLO, 2003; ZANON *et al*., 2015). Qualitative and quantitative differences in these behaviors are observed in babies after 13 – 15 months, with those with ASD showing little eye contact, lack of guidance when being called by name, and little engagement in social interactions, indicating a delay in the development of SA, being an important early indicator for ASD. (BOSA; SALLES, 2018).

Considering the impacts that autism causes on social communication (APA, 2022), interventions that can enhance the socio-communicative development of the individual with ASD are particularly important. This is because exchanges and interactions between people contribute to the individual's socio-cognitive development, establishing learning processes through imitation and the improvement of mental structures (MELLO; TEXEIRA, 2012). Consequently, studies show that music can contribute to the development of communicative and relational skills, in addition to helping with psycho-motor,

social-cognitive development, ability to concentrate, and language expression (ALVES; CASTRO, 2019; CERQUEIRA, 2020; GASSNER *et al*., 2022; KE *et al*., 2022; LOURO, 2017).

The results of the research carried out by Louro (2017), involving the musical education of individuals with ASD, pointed to improvements in performance in the calculated means of language expression and learning of musical content, in participants who underwent the intervention, compared to those who of the control group. Louro's study was based on principles of musical education developed by Dalcroze.

Louro applied a musical learning protocol associated with psychomotricity in 22 people (including children and adolescents) with mild/moderate ASD, aged between 5 and 16 years, to verify the effect of the ability to learn music on cognition and language. Furthermore, music-based interventions are classified as emerging practices, according to international parameters classified by The National Professional Development Center on Autism Spectrum Disorder (NPCD), showing promising results among the public with autism (NCAEP, 2020).

In Brazil, few studies investigated the effect of music-mediated interventions on children with ASD. Many of which are carried out using the theoretical framework of psychoanalysis (FURTADO, 2021; FURTADO *et al*., 2020; LUCERO *et al*., 2021), from a psycho-dynamic and non-developmental perspective.

Knowing the interactive styles of adults and children during interventions that use music is important to think about adult behaviors that can actually contribute to the development of relational and socio-communicative skills in children with ASD. Research carried out on adult interactive styles in Brazil has considered more the dyad, mother-child with ASD, and has not involved the context of music-based intervention. For example, Meimes (2014) sought to investigate how the interaction styles of Topic Sharing (TS), Directiveness (DI), and Intrusiveness (IN) of mothers of boys with autism and their relationship with the child's behavior (Engagement and Non-Engagement), exploring the relationship between the maternal styles and the family's psycho-social variables, and how these interaction styles can influence mother-child interaction.

Meimes (2014) used a manual to observe and code episodes of joint mother-child activities and investigate maternal styles in interaction with children with ASD. The participants were four mothers and their male children with autism, aged between 3 years and 5 months to 6 years and 9 months. The results showed that in two dyads, the most prominent category was Topic Sharing and this was associated with child engagement. In the other two dyads, the opposite occurred. In one case, the most frequently used interactive style was intrusiveness. In another, although the Topic Sharing style was shown to be the predominant maternal behavior, it was not associated with child engagement.

Romeira (2019) also investigated interactive styles, however, between the dyad evaluator and children with suspected ASD, in the context of psychological assessment during diagnostic playtime. Romeira (2019), created a behavior coding manual for the evaluators' interactive styles based on theoretical and empirical studies. 22 children (aged 24 to 74 months) participated interacting with nine evaluators. The results revealed a greater tendency for evaluators to adopt a directive interactive style, followed by a responsive one, with a lower occurrence of the intrusive style. This research highlighted the importance of investing in the training of evaluators, to facilitate the emergence of children's potential in this specific context.

In the studies above, different interactive styles of adults and children were investigated, with different communicative intentions. The adult's interactive style called Topic Sharing (TS) refers to behaviors that follow the child's interest in a triadic context, positively influencing the interaction. It is related to adult behaviors that consider the child's interests, referring to the synchrony or responsiveness of the triadic context, favoring child autonomy, along with emotional support and reciprocity in communication (MEIMES, 2014; ROMEIRA, 2019; ZANON *et al*., 2023). Directiveness (DI) consists of verbal and non-verbal behaviors of the adult to direct the child's actions, aiming to help the child solve, define and internalize relevant aspects of the environment, with commands, invitations, or suggestions for activities during the interaction (MEIMES, 2014; ROMEIRA, 2019; ZANON *et al*., 2023).

Intrusiveness (IN) is an interactive style characterized by inappropriate interference (verbal and/or non-verbal) from the adult directing the child's attention to a new event or object, interrupting some activity, being hostile or aggressive to the child's commands, without considering the child's desires and needs, which can generate behaviors and signs of irritation in the child, making engagement between the dyad difficult (MEIMES, 2014; ROMEIRA, 2019; ZANON *et al*., 2023). Finally, there is Refusal (RE), communicative behavior used by the adult to refuse the child's requests, or divert the child's attention, and can be visualized through gestures such as pushing the child's hand away, making a sign of refusal by shaking the head, turning away from the child, among others (MEIMES, 2014; ROMEIRA, 2019).

Concerning children's interactive styles, the authors also address four behaviors, with different communicative intentions. Shared Attention Initiative (SAI) behaviors, related to the child's socio-communicative ability to spontaneously direct the partner's attention to an event, sharing a focus of interest, pointing, manipulating an object, or weaving vocalizations and social comments (GODOY, 2019; MEIMES, 2014; ROMEIRA, 2019; ZANON *et al*., 2015).

On the other hand, the Shared Attention Response (SAR) refers to the child's ability to follow another person's focus of attention, head movements, and gestures to share a common interest. Within shared attention, one can have verbal and non-verbal behaviors: For verbal SAR behaviors the child uses social comments, and for non-verbal behavior, the child can take an offered object, and triangulate the gaze between the object and the adult, among others (GODOY, 2019; ROMEIRA, 2019; ZANON *et al*., 2015).

The child's interactive style of Assistance Seeking (AS) refers to behaviors with the purpose of the child, through different communicative channels (gestures, eye contact, vocalizations) seeking assistance from the adult (for example, to ask for a musical instrument to the researcher or to ask to repeat a song or activity) (GODOY, 2019; MEIMES, 2014; ROMEIRA, 2019). Protest/Retraction (P/R) behaviors are observed when the child disagrees with the adult's attempts at interaction. P/R behaviors can appear mildly (the child moves away or turns away from the adult), actively (the child moves away, or cowers in a corner), or intensely (the child moves away from the adult, shouts or agitates) (GODOY, 2019; ROMEIRA, 2019).

The literature review showed that ASD compromises socio-communicative development, while also pointing out that the quality of interactions and interactive styles of adults can influence and favor this process. This highlighted the relevance of investigating the interactive styles or behaviors of adults and children with ASD, which can contribute to interventions aimed at improving the socio-communicative skills of this population. Therefore, this study's objective was to investigate changes in the quantity and quality of socio-communicative and relational behaviors, during interactive scenes between adults and a child with ASD, adopting music and musical instruments as mediators of social exchanges. The specific objectives were to investigate: 1) the quantity and quality of child behaviors of SAI, SAR, AS, and P/R of a child with ASD during adult-child with ASD interactive scenes; 2) the quantity and quality of adults' TS, DI, IN, RE interactive styles during adult-child interactive scenes with ASD; and 3) the interaction between socio-communicative and relational behaviors of adults and children during interactive scenes, adults-children with ASD.

It is worth mentioning that music and music instruments were chosen as mediators of the interactive context, adults-children with ASD, considering that studies have shown that interventions mediated by music can enhance the development of verbal and gestural skills, communication, linguistic reorganization, theory of the mind and psycho-motor reorganization (LOURO, 2021). Thus, this study did not intend to generate evidence on the effectiveness of a music-based intervention, aiming, on the other hand, from a developmental theoretical perspective, to understand which adult interactive styles

favor the development of socio-communicative skills, important for the development of children with ASD.

METHODS

Design

This is a single case study, whose objectives focus on the description and analysis of multiple materials from an individual, including observation, file recording, interviews, and psychological tests (SHAUGHNESSY *et al.*, 2012). In this study, a boy with ASD was studied during an intervention that was developed from the creation of a work protocol involving semi-structured sessions with musical activities, a context that made it possible to observe the socio-communicative behaviors of the adult-child dyad.

Participant and applied instruments

The research participant was a three-year-old male child with a previous diagnosis of ASD, here called "L". The participant was chosen based on convenience criteria, considering his behavioral profile and service demand in the LABSPA, lab in which the research was conducted.

One of the instruments used for data collection was the Suspected Autism Spectrum Disorder Assessment System – PROTEA-R (BOSA; SALES, 2018). PROTEA-R is an interdisciplinary instrument that systematizes interviews with guardians and clinical observation of child development, through semi-structured play situations to track the presence of behaviors inherent to ASD symptoms. The instrument consists of an anamnesis interview with parents or guardians, three observation sessions of child behavior (lasting around 45 minutes each), and a feedback interview session. In this research, this instrument was used to characterize the participant's behaviors and confirm the diagnostic characteristics of ASD (BOSA; SALLES, 2018).

Social Responsiveness Scale (SRS-2) (BORGES *et al.*, 2021) was used as well. The SRS-2 is a scale that aims to measure symptoms associated with ASD, as well as classify them into mild, moderate, or severe levels. In this research, it was used to characterize the participant's behaviors and confirm the diagnostic characteristics of ASD (BORGES *et al.*, 2021).

Another instrument used was the Dimensional Child Development Assessment Inventory – IDADI (SILVA *et al.*, 2019). The IDADI is a multidimensional instrument for assessing child

development, with an emphasis on seven domains: Cognitive, Socio-emotional, Communication and Receptive Language, Communication and Expressive Language, Broad Motor Skills, Fine Motor Skills, and Adaptive Behavior. The inventory includes items that describe expected behaviors and skills for each age group and that can be answered by parents or guardians. In this research, it was used to characterize the participant's behaviors.

Also, the General Background and Musical Interests Interview (GBMII)was used (For further details and access to the full material, the authors can be consulted). This is an interview created specifically for this research, containing eight open questions formulated to obtain information about the child's musical tastes and their familiarity with music. The questions investigated were the following: 1 – Is your child enrolled in regular school? What year does he attend and what time of day? 2 – Does he/she perform specialized interventions? (Psychologist, ABA, Hippotherapy); 3 – Does your child take any ongoing medication? 4 – How do you assess your child's communicative skills? (eye contact, gestures, language, emotional contact, etc.) Could your child speak? 5 – What is your family's experience with music? 6 – Does your child have any sensory changes? (auditory, tactile, visual, olfactory, etc.). Specify; 7 – Has your child participated in musical projects? (Musical instrument classes, musicalization, singing lessons), and 8 – What games, music, drawings, etc., does your child like? This information contributed to the planning of the first sessions and the reception of "L".

Guidelines for presenting different interactive styles during joint activities, adults-children with ASD were also created. These guidelines were developed specifically for this study, based on the assumptions of developmental theoretical approaches, especially socio-pragmatic ones (TOMASELLO, 2003), which also supported the construction of the PROTEA-R evaluator conduct guidelines and studies already developed on adult interactive styles (ROMEIRA, 2019; MEIMES, 2014). The guidelines consist of practical instructions for adults, presenting possibilities of behaviors/styles that would enable, during each session with the child, the construction of diverse contexts in terms of communicative intentionality, involving freer or more directed interactions.

For example, within the directive style, the guidelines involved instructions for the adult to promote activities focused on specific objectives during the session, guiding the child's attention towards a shared objective, such as presenting a bell, showing it to the child (with the use of gestures, introduction into their visual field), handing it over (sometimes with physical support) and demonstrating how to touch it functionally (sitting in front of the child, touching, naming and encouraging their imitation, being able to use physical support). (For further details and access to the full guidelines, the authors can be consulted).

Lastly, we used the Manual for Observation and Coding of Joint Activity Episodes, Adult-Child with ASD. The manual is an adaptation of the Manual for Observation and Coding of Joint Activity Episodes, Mother-Child (MEIMES, 2014). The adaptation was carried out especially for this study, to allow the categorization of Adult Interactive Behaviors (AIB) and Child Interactive Behaviors (CIB), based on the analysis of videos of children in the context of a music-based intervention. Each behavior had 4 categories that covered different types of communicative intentionality. Furthermore, each category had 4 subcategories and presented the different qualities of manifestation of the target behaviors (1-4). For further details and access to the full description of the Adult Interactive Behaviors (AIB) and the Child Interactive Behaviors (CIB), the authors can be consulted.

As presented above, data collection about L. has involved different sources of information. The child's mother and aunt participated in the research through a semi-structured interview, answering questions about the child participating in this research. The researcher, a Psychology academic, and the child participated in the playful sessions mediated by music. The psychology student was properly trained for the task and carried out assistance and support work for the researcher, helping her with handling the instruments and dealing with the child when necessary and requested.

Data collection procedures

All sessions were previously scheduled and held at the Applied Psychology Service Laboratory (LABSPA), with the presence of the researcher and an assistant. In total, 6 meetings were held, weekly, lasting 30 minutes, in the period between August and September 2022. It is worth noting that all sessions were video-recorded for subsequent analysis and coding of the videos by independent judges duly trained for the task.

Communication tools were used to plan and develop the sessions, such as the Picture Exchange Communication System - PECS (BONDY; FROST, 2001), which uses images instead of words, in an attempt to reduce the child's anxiety and provide clear messages about the structure of sessions and requests. For example, before the researcher's first meeting with the child, a photo of the researcher and the assistant was given, as well as some musical instruments, and the main caregiver was asked to show it to "L". Likewise, during the sessions, visual resources were used to organize the routine, demonstrating to the child the materials that would be used in each session, in a sequenced manner, as well as indicating the game to be played at each moment, promoting the child's independence in the musical environment. Such strategies and techniques are recommended by researchers and theorists who work with music and ASD (ASNIS; ELIAS, 2019).

During the sessions, in the setting, all instruments were initially available to the child, on a mat with free access. Within the proposed activities, instruments that would not be used at that time were removed. In general, the activities proposed in each meeting were divided into three moments: 1) Welcome and Reception with music; 2) Playing with musical instruments and songs from the children's repertoire; and 3) Closings and Farewell Music. The materials used in each session consisted of musical instruments (guitar, ukulele, keyboard, 2 drums, rattle, half-moon, and musical bells) (Figure 1), as well as resources adapted for the child (e.g. balls and balloons with corresponding colors to the instrument: musical bells). The child's own toys and soap bubbles were used to create a more welcoming and familiar environment for the child. In all sessions, free contexts were created to create opportunities for topic sharing and moments with structured activities aiming to implement more directive and intrusive styles. For further details about the Session structure and materials used and the Guidelines for presenting different interactive styles during joint adult-child activities with ASD, the authors can be consulted.

Figure 1 - Musical instruments used during activities



Source: Self elaboration.

Data analysis procedures

The video-recorded sessions were divided into 18 episodes, 3 episodes per session. Each episode has lasted 7 minutes, divided as follows: 00:00 to 07:00 minutes, 07:01 to 14:00, and 14:01 to 21:00

minutes. Within each episode, scenes of interaction between the researcher-child dyad have been observed.

After organizing the episodes, the material was made available to two judges, previously trained for the task, who coded the episodes according to the instructions in the Manual for Observation and Coding of Episodes of Joint Adult-Child Activities. The judges carried out their analysis independently and the agreement index between the judges was calculated regarding the frequency of the behaviors found, reaching 93% of agreement, when considering the total number of interactive scenes of the adult's behaviors coded, and 87% of the total interactive scenes of the child's behaviors coded. This agreement index is considered good, according to Stemler (2004). The results of the analysis of the different instruments and data collected will be presented considering a theoretical-methodological triangulation design. Thus, the information will be crossed and complemented, to obtain a deeper and more comprehensive understanding of the phenomenon investigated.

RESULTS

Characterization of "L"'s development, clinical background, and behavior

Table 1 - Shows results regarding PROTEA-R, indicating relative risk for ASD

Summaries of scores from the PROTEA-R Suspected Autism Spectrum Disorder Assessment System

Critical itens	Quality scale	Converted score	Frequency scale
Shared Attention Initiative	D	3	X
Shared Attention Response	B	1	Middle Frequency
Imitation	B	1	Middle Frequency
Symbolic play	D	3	X
Repetitive movements of other parts of the body	A	0	X
Total		8	

Source: Self elaboration.

Table 2 presents in the following page the summaries of the IDADI results, considering the different domains of child development assessed by the instrument. It is possible to observe that the participant "L" presented a classification considered "Very Inferior" in all domains of child development, except the cognitive domain, which, however, was classified as below average. Consequently, the classifications of results presented by IDADI point to significant delays in all domains of child development, except for results related to the cognitive domain, which were interpreted as a warning of cognitive delay.

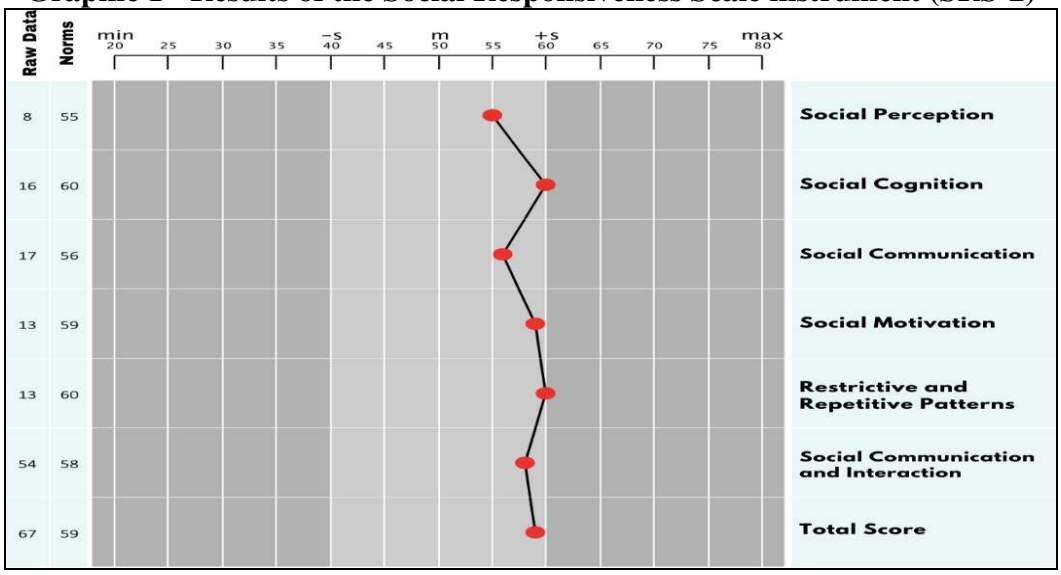
Table 2 - Results of the Dimensional Child Development Assessment Inventory (IDADI)

Domains	RS	DS	Confidence Interval		Z	SS	Classification	Meaning
			Lower	Upper				
Cognitive	42	112.3	111.3	113.3	-1.34	80	Below Average	Delay Alert
Socioemotional	28	110.4	109.6	111.2	-3.3	50	Very Inferior	Significant Delay
Communication and Receptive Language	9	105.5	104.1	106.8	-3.98	40	Very Inferior	Significant Delay
Communication and Expressive Language	32	108.3	105.1	111.4	-2.73	59	Very Inferior	Significant Delay
Wide Motor Skills	26	125	123.4	126.7	-2.64	60	Very Inferior	Significant Delay
Fine Motor Skills	8	120.3	118.9	121.7	-2.22	67	Very Inferior	Significant Delay
Adaptative Behavior	32	98.4	97.7	99.1	-2.66	60	Very Inferior	Significant Delay

Source: Self Elaboration.
Note: *RS = Raw score; *DS = Developmental score, *Z = Z-Score, *SS = Standardized score.

Graphic 1 presents the results regarding the Social Responsivity Scale – SRS-2 instrument. “L” presented a score considered within normal limits in the dimensions of Social Perception, Social Motivation, and Communication and Social Interaction. In the Social Communication dimension, he presented a score of 59 of the norm value, which can appear in children with mild autism, if they are well-adjusted and their adaptive functionality is relatively intact.

Graphic 1 - Results of the Social Responsiveness Scale instrument (SRS-2)



Source: Borges *et al*. (2021).

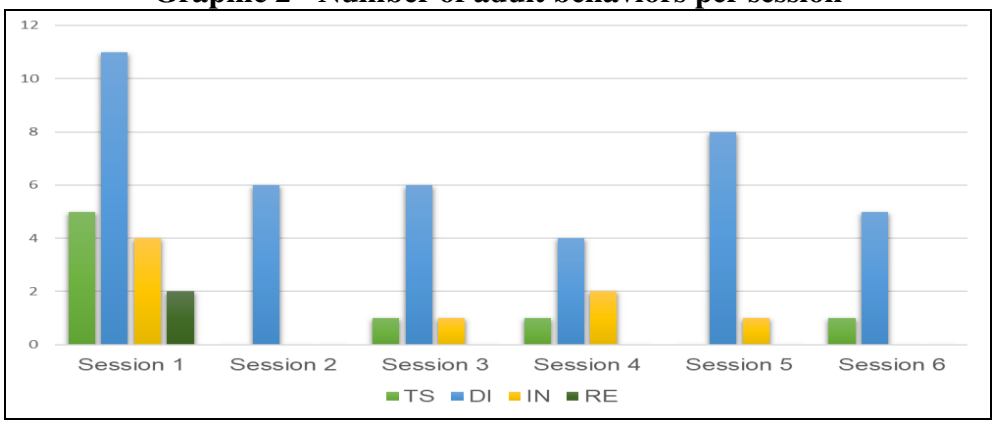
Regarding the GBMII, “L”’s mother and aunt, as well as two interviewers have participated. According to the caregivers' reports, “L” liked music and was very interested in music played in a commercial establishment close to the family’s home. Regarding the style, they stated that during the day they play country music, among others, and “L” likes it. It is worth noting that “L” had no contact with musical instrument classes, musicalization, or music therapy. Still in the report, the mother highlighted that “L” did not have sensory changes, such as hyper reaction to loud sounds, and indicated possible songs and games that her son might like, such as songs from the cartoon “Galinha Pintadinha”,

"O seu Lobato", "Fazendinha" and "Head, shoulder, knee and foot". When investigating possible reinforcers, the caregivers stated that "L" likes dinosaurs, farm animals, and also painting.

Characterization of Communicative Behaviors During Music Sessions: Video Analysis

Concerning AIB, Graphic 2 demonstrates that directness was the most expressive behavior in all sessions of the study, followed by topic sharing in sessions 1 and 6 and by Intrusiveness in sessions 3 and 4.

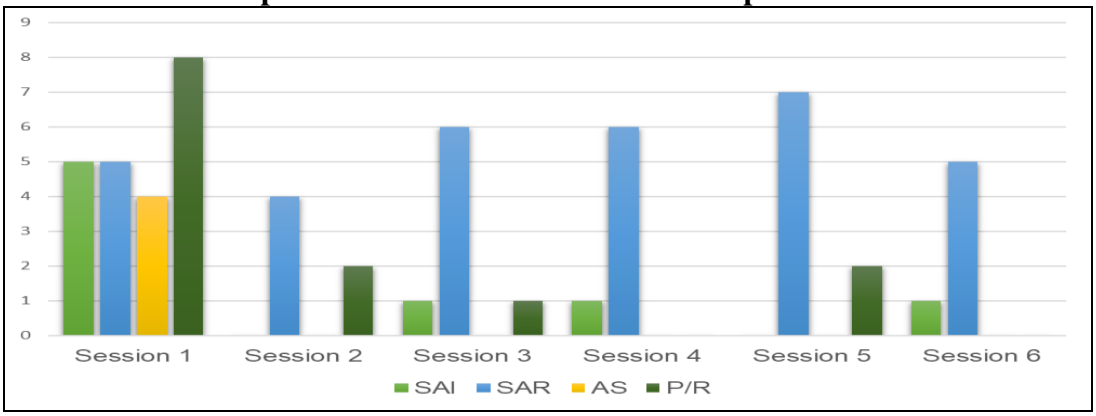
Graphic 2 - Number of adult behaviors per session



Source: Self elaboration.
Note: *TS = Topic sharing. *DI = Directivity. *IN = Intrusiveness. *RE = Refusal.

Regarding the child's behaviors, the response to shared attention was the most frequent behavior in all sessions. The protest was more expressive in session 1 and showed a reduction from session 2 onwards, as did the shared attention initiative after session 1. The seek for assistance was only observed in the first session of the study (Graphic 3).

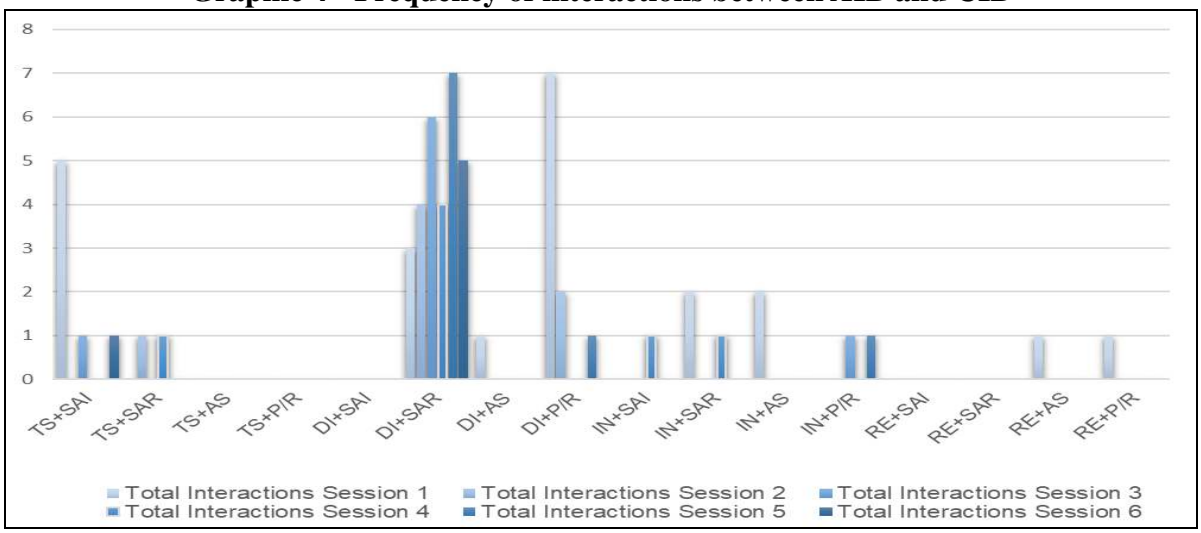
Graphic 3 - Number of child behaviors per session



Source: Self elaboration.
Note: *SAI = Shared Attention Initiative; *SAR = Shared attention response; *AS = Assistance seeking; *P/R = Protest or Retraction

Graphic 4 shows the number of times the behaviors were combined, that is, the result of the interactions between the child's and the adult's behaviors. It is possible to observe that the interaction between directiveness (AIB) and protest (CIB) was significant only in the first session. However, the interaction between directiveness and the response to shared attention was the most significant type of interaction throughout the six intervention sessions, showing a tendency for this interaction to increase over time.

Graphic 4 - Frequency of interactions between AIB and CIB



Source: Self elaboration.
Note: *TS = Topic sharing. *DI = Directiviness *IN = Intrusiveness. *RE = Refusal. *SAI = Shared Attention Initiative. *SAR = Shared attention response. *AS = Assistance seeking. *P/R = Protest or Retraction.

Table 3 presents, in the following page of this paper, data on the quality of the manifestation of adult and child behaviors, measured from 1 to 4, the number 4 represents a behavior that was manifested, while the number 1 represents the manifestation of a behavior with low quality. Numbers 2 and 3 represent behaviors with average quality. About adult behaviors (AIB), there are the modalities of Topic Sharing (TS), Directiveness (DI), Intrusiveness (IN) and Refusal (RE), while child behaviors (CIB) involve Shared Attention Initiative (SAI), Shared Attention Response (SAR), Assistance Seeking (AS), and Protest/Retraction (P/R). We can observe in the results that the quality of the behaviors expressed by the adult and the child remained of medium to high quality, with medium quality predominating, presenting only one behavior directed to the child's Shared Attention Initiative, which had low quality.

Table 3 - Results of the quality of behaviors presented by the adult and child

Quality of the adult behaviors	
TS_AIB	4
DI_AIB	3
IN_AIB	2
RE_AIB	3
Quality of the child's behaviors	
SAI_CIB	1
SAR_CIB	3
AS_CIB	3
P/R_CIB	2

Source: Self elaboration.
Note: TS = Topic sharing. *DI = Directiveness *IN = Intrusiveness. *RE = Refusal. *SAI = Shared Attention Initiative. *SAR = Shared attention response. *AS = Assistance seeking. *P/R = Protest or Retraction. *AIB = Adult Interactive Behaviors. *CIB = Child Interactive Behaviors.

Table 4 presents the values of the Spearman correlation coefficients between adult and child behaviors. The behaviors did not have a statistically significant correlation with each other, except for directiveness and protest, which showed a strong correlation. This correlation can be explained by the fact that the more activities are directed at the child, consequently, there are more possibilities for protest or retraction to occur, showing that the greater the directiveness, the greater the protest or retraction.

Table 4 - Spearman correlation coefficients between AIB and CIB

	SAI	SAR	AS	P/R
TS	.	-0,127 (0,810)	0,707 (0,116)	.
Directiveness	0,078 (0,883)	0,015 (0,978)	0,664 (0,150)	**0,940 (0,005)****
Intrusiveness	0,636 (0,175)	0,364 (0,479)	0,674 (0,142)	0,318 (0,539)
Refusal	0,707 (0,116)	-0,270 (0,605)	-	0,674 (0,142)

Source: Self elaboration.
Note: *TS = Topic sharing. *SAI = Shared Attention Initiative. *SAR = Shared attention response. *AS = Assistance Seeking. *P/R = Protest or Retraction. **p-value in parentheses.

DISCUSSION

This study aimed to investigate changes in the quantity and quality of socio-communicative and relational behaviors during a music-based intervention. To achieve this objective, a single case study was carried out, with a three-year-old male child with a previous diagnosis of ASD, in interactive contexts with an adult during musical activities. The results showed that among the interactive styles investigated, the most frequent were Directiveness (adult behavior, with quality 3), and Shared Attention Response (child behavior, with quality 3).

This finding differs from Meimes (2014), whose frequency of Topic Sharing and Intrusiveness styles were greater during the context of mother-child free play, and was close to the results of Romeira

(2019) concerning greater prevalence of the adult's directive style, during the evaluative context. Romeira (2019), observed a greater tendency for evaluators to adopt a directive style when interacting with the child. Specifically, at the time of semi-structured play, the directive style helped the child to have greater engagement in the activity proposed in the application of PROTEA-R

Similarly, in this study, the behaviors of controlling or directing the child's attention to a musical activity contributed to the child engaging in scenes of Shared Attention. This leads us to consider that the directive interactive style can enhance the emergence of socio-communicative skills in contexts of structured interventions, with interactions mediated by musical activities being a suitable context for this.

It was also noted that the Directive style presented a statistically significant and positive correlation with children's Protest/Retraction behavior. This result is mainly linked to data from the first session.

Thus, it is worth mentioning that, in the first session, in addition to the bond between the child and the adult, not yet being established, the patient had contact with an unfamiliar environment and materials, which can cause anxiety and contribute to the emergence of protest and retraction behaviors. Additionally, it is noteworthy that the manuals that present conduct guidelines for evaluators during sessions, emphasize the importance of the adult approaching gradually, initially allowing the child to explore the materials alone and trying to guarantee a safe environment as an example (BOSA; SALLES, 2018).

Therefore, the research results allow us to conclude that the directive style contributes to children's engagement during sessions mediated by music, however, it is important for adults to be cautious when presenting this style in the first session to avoid an increase in negative responses (Protest or Retraction), considering that the child with ASD needs time to become familiar with the physical space and the presence of the adult.

A tendency towards a decrease in the frequency of total behaviors with socio-communicative purposes between the adult and the child was observed during the sessions. In the first session, 22 interactions were observed in a period of 30 minutes, while in the last session, this number was reduced to 6 interactions, showing that, at the end of the study period, the child-adult dyad remained in the same interactive context for a longer time. Individuals with autism can demonstrate high abilities for the logical organization of melodies, rhythms, and harmonies, in addition to musical sequences over time (GATTINO, 2015), which was observed in this study due to the increased time spent engaging in the same activity.

Another possible reason for the decrease in interactions can be explained by the fact that music has a component called regular pulsation, which can be defined as a regular frequency of beats, marking the tempo of the music (MED, 1996). In this sense, the pulse will mark the time in which the rhythm will be executed. Thus, a series of pulsations will be repeated to mark a certain rhythm, where we can find symmetry. Therefore, this organization within music is predictable, stable, and may have the capacity to capture the attention of people with ASD, facilitating their connection with the music element (SAMPAIO *et al*., 2015).

It is important to highlight that in PROTEA-R, applied before the intervention, the child presented SAR with an average frequency, a lower quantity than those occurring during the music-based intervention. Later, participant "L" also presented SAI which, despite being of low quality, did not occur during the application of PROTEA-R.

This fact can be explained due to the evaluative context mediated by activities involving musical instruments, which may have been more attractive and challenging for participant "L". Although evaluating the effects of music on child development was not the focus of the research, it is worth noting the fact of previous studies that obtained promising results using music as a mediating tool for the development of children with ASD (LOURO, 2017).

Based on the results of previous studies and of this study, the importance of verifying and stimulating the development of Shared Attention in children with ASD is evident. In this sense, Shared Attention has been widely discussed in recent years, due to its importance for child development, serving as a possible basis for the future emergence of communicative, emotional, social, and cognitive skills (GERBASSI, 2021).

The main finding of this study was that the directive style favored the emergence of socio-communicative behaviors with declarative purposes involving the sharing of interest in musical instruments, totaling 29 triadic interactions between DI (adult) and SAR (child).

A possible explanation for this finding is due to the way the sessions were organized, so that the activities developed were semi-structured, in which the child previously received explanations of how they would develop, and how they would use the musical instrument to mediate. the interaction. In addition to the characteristics of the music itself, it has an organized and standardized form, creating a symmetry, which may have generated a feeling of comfort for the child during the activities and thus favoring the interaction between the triad adult + child + musical instruments.

CONCLUSIONS

The present study proposed a new look at interactive styles and socio-communicative behaviors in the context of music sessions with a child with autism, which is still little explored in the literature that focus on interactive styles and music. It was possible to identify that music (through musical instruments and songs) played an important role in mediating the triadic relationship between adult-music-child, favoring the emergence of socio-communicative behaviors with declarative purposes and the understanding of intentionality, which was observed from pointing and imitating gestures, visual exchanges, and sharing activities of playing percussion instruments, bells, piano, etc. together.

Along these lines, the findings obtained here highlighted the importance of the directive interactive style used by adults when interacting with children with ASD. In the present study, Directiveness proved to be positive in directing the child, favoring the emergence of the Shared Attention Response and the child remaining in the same activity for a longer period than the previous ones. However, it is noteworthy that, in the first session, this style generated protest and retraction behaviors, which may be linked to the child's lack of familiarity with the adult, physical space, and instruments.

The single-case study design seemed appropriate, but the findings cannot be extrapolated to the entire population of children with ASD, due to non-representativeness. Consequently, the lack of a control group and randomized study contributes to the impossibility of extrapolating results. Therefore, this study has limitations.

It was not possible to assess different levels of autism. The short period of experimentation also undermined the opportunities to verify the possibilities of the intervention with music-developing factors such as speech, motor skills, or even musical skills in the participating child.

Therefore, some implications of this study can be considered, to contribute to the development of more elaborate interventions, which make it possible to verify deeper insights into the use of music as a mediator between the interactive styles of adults and children with ASD, since, using music as a mediating tool, proved promising in this study.

In this sense, as a suggestion for future research, the reproduction of interventions similar to this study, with larger and more representative samples, could provide a more macro panorama of the possible effects of music as a mediating tool between adult/child interactive styles. The existence of possible positive results arising from new research, which can be extrapolated to an entire population, may enable the emergence of more effective approaches for the development of socio-communicative behaviors in children with ASD.

REFERENCES

ALVES E CASTRO, B. S. **Interfaces entre Fonoaudiologia e Musicoterapia na interação social e linguagem no Transtorno do Espectro do Autismo** (Trabalho de Conclusão de Especialização em Neurociências). Belo Horizonte: UFMG, 2019.

APA - American Psychiatric Association. **Diagnostic and statistical manual of mental disorders**. Washington: American Psychiatric Association, 2022.

ASNIS, V. P.; ELIAS, N. C. **Ensino de música para pessoas com Transtorno do Espectro Autista**. São Paulo: Editora Cortez, 2019.

BONDY, A. S.; FROST, L. A. "The picture exchange communication system". **Behavior Modification**, vol. 25, n. 5, 2001.

BORGES, L. *et al*. **SRS-2 Escala de Responsividade Social**. São Paulo: Editora Hogrefe, 2021.

BOSA, C. A.; SALLES, J. F. **Sistema PROTEA-R de avaliação da suspeita de Transtorno do Espectro Autista**. São Paulo: Editora Vetor, 2018.

CERQUEIRA, A. I. L. **À descoberta da rítmica de Dalcroze num contexto Pré-Escolar** (Dissertação de Mestrado em Educação Pré-Escolar). Viana do Castelo: IPVC, 2020.

FALCK-YTTER, T. *et al*. "Social attention: Developmental foundations and relevance for autism spectrum disorder". **Biological Psychiatry**, vol. 94, n. 1, 2023.

FURTADO, L. A. R. "Réson: Ruído, ressonância e razão significante na clínica psicanalítica". **Psicologia Clínica**, vol. 33, n. 1, 2021.

FURTADO, L. A. R. *et al*. "Sobre o que ressoa e faz eco: voz, música e lalíngua no tratamento do autismo". **Estudos e Pesquisas em Psicologia**, vol. 20 n. 2, 2020.

GASSNER, L. *et al*. "Effectiveness of music therapy for autism spectrum disorder, dementia, depression, insomnia, and schizophrenia: update of systematic reviews". **European Journal of Public Health**, vol. 32, n. 1, 2022.

GATTINO, G. S. **Musicoterapia e autismo**: teoria e prática. São Paulo: Editora Memnon, 2015.

GERBASSI, T. N. **Atenção compartilhada nas relações triádicas**: um estudo a partir da mãe e seus filhos (Dissertação de Mestrado em Psicologia). Brasília: UnB, 2021.

GODOY, M. A. B. **Análise funcional da atenção compartilhada adulto-criança pequena com deficiência visual** (Tese de Doutorado em Educação Especial). São Carlos: UFSCar, 2019.

KE, X. *et al*. "Effectiveness of music therapy in children with autism spectrum disorder: A systematic review and meta-analysis". **Frontiers in Psychiatry**, vol. 13, 2022.

LOURO, V. D. S. **Educação musical, autismo e neurociências**. Curitiba: Editora Appris, 2021.

LOURO, V. S. **A educação musical unida à psicomotricidade como ferramenta para o neurodesenvolvimento de pessoas com Transtorno do Espectro Autista** (Tese de Doutorado em Neurologia e Neurociências) São Paulo: UNIFESP, 2017.

LUCERO, A. *et al*. "A função constitutiva da voz e o poder da música no tratamento do autismo". **Psicologia em Estudo**, vol. 26, 2021.

MATOS, B. G. *et al*. "A produção sobre transtorno do espectro autista: Um estudo de caso em anais de eventos na grande Dourados (MS)". **Boletim de Conjuntura (BOCA)**, vol. 15, n. 44, 2023.

MED, B. **Teoria da música**. Brasília: Editora Musimed. 1996.

MEIMES, M. **A interação mãe-criança e autismo contribuição dos fatores psicossociais** (Dissertação de Mestrado em Psicologia). Porto Alegre: UFRGS, 2014.

MELLO, E. F. F.; TEXEIRA, A. C. "A interação social descrita por Vigotski e a sua possível ligação com a aprendizagem colaborativa através das tecnologias de rede". **Anais do IX Seminário de Pesquisa em Educação da Região Sul.** Caxias do Sul: UCS, 2012.

NCAEP – National Clearinghouse on Autism Evidence and Practice Review Team. **Evidence-based practices for children, youth, and young adults with Autism**. Chapel Hill: NCAEP, 2020. Disponível em: <www.ncaep.fpg.unc.edu>. Acesso em: 21/08/2023.

PIMENTA, H. S.; SANTOS, E. M. "A responsabilização da mulher pelo cuidado com o filho autista: Fatores históricos e discursivos". **Boletim de Conjuntura (BOCA)**, vol. 16, n. 47, 2023.

ROMEIRA, G. M. **Transtorno do espectro autista**: estilo interativo do avaliador durante a hora lúdica diagnóstica (Dissertação de Mestrado em Psicologia). Porto Alegre: UFRGS, 2019.

SAMPAIO, R. T. *et al*. "A Musicoterapia e o Transtorno do Espectro do Autismo: uma abordagem informada pelas neurociências para a prática clínica". **Per Musi**, vol. 32, 2015.

SHAUGHNESSY, J. J. *et al*. **Metodologia de pesquisa em psicologia**. Porto Alegre: Editora AMGH, 2012.

SILVA, M. A. D. *et al*. "Development of the dimensional inventory of child development assessment (IDADI)". **Psico-USF**, vol. 24, n. 1, 2019.

STEMLER, S. E. "A comparison of consensus, consistency, and measurement approaches to estimating interrater reliability". **Practical Assessment, Research, and Evaluation**, vol. 9, n. 4, 2004.

TOMASELLO, M. **Origens culturais da aquisição do conhecimento humano**. São Paulo: Editora Martins Fontes, 2003.

WHO - World Health Organization. **ICD-11 Reference Guide**. Genebra: OMS, 2019.

ZANON, R. B. *et al*. "Diferenças conceituais entre resposta e iniciativa de atenção compartilhada". **Psicologia: Teoria e Prática**, vol. 17, n. 2, 2015.

ZANON, R. B. *et al*. Adaptações e competências parentais durante o processo diagnostico do transtorno do espectro autista. *In*: PEREIRA, V. A.; RODRIGUES, O. M. P. R. (orgs.). **Parentalidade (responsável)**. Curitiba: Editora CRV, 2023.



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