

Original Article

Occupational therapy and alternative communication: collaborative intervention with communication partners of a child with cerebral palsy

Terapia ocupacional e comunicação alternativa: intervenção colaborativa com os parceiros de comunicação de uma criança com paralisia cerebral

Mariana Gurian Manzini^a, Mirela de Oliveira Figueiredo^a, Ana Carolina Gurian Manzini^a, Claudia Maria Simões Martinez^a

How to cite: Manzini, M. G., Figueiredo, M. O., Manzini, A. C. G., & Martinez, C. M. S. (2021). Occupational therapy and alternative communication: collaborative intervention with communication partners of a child with cerebral palsy. *Cadernos Brasileiros de Terapia Ocupacional.* 29, e2057. https://doi.org/10.1590/2526-8910.ctoAO2057

Abstract

Introduction: Occupational therapy can use alternative communication resources, from a systemic perspective, for the occupational engagement of children with cerebral palsy who have limitations in oral and/or written communication. Objective: To describe collaborative intervention procedures in occupational therapy using alternative communication performed by communication partners of a child with cerebral palsy. **Method:** This is applied research, of an experimental nature and with a qualitative approach. The communication partners (mother, intern of the occupational therapy course, and the teacher) of a child with cerebral palsy participated in the research. Instruments used in the Comunica_PC Program were used to identify the child's initial communication skills, characterize the participants, select the figures for the communication board, analyze the footage and analyze the interlocutors' perception of the intervention procedures. The collection and analysis were structured in phases: Phase 1: Initial knowledge of the participants, Phase 2: Theoretical Training, Phase 3: Practical Training, Phase 4: Creation of the alternative communication resource, and Phase 5: Perception of the interlocutors after the implementation of the CSA. Results: The theoretical and practical training of the communication partners was obtained, including raising their awareness through dynamics and practical training. Such intervention procedures were essential elements for the learning of the communication partners when using the CSA resources. Conclusion: The Comunica_PC Program was a

Received on Feb. 18, 2020; 1st Revision Mar. 6, 2020; 2nd Revision May 2, 2020; Accepted on May 15, 2020.



^aUniversidade Federal de São Carlos - UFSCar, São Carlos, SP, Brasil.

motivating strategy as a means of learning the interlocutors to use CSA in a child with cerebral palsy.

Keywords: Communication Aids for Disabled, Occupational Therapy, Healthcare Models, Cerebral Palsy, Teaching.

Resumo

Introdução: A terapia ocupacional pode utilizar dos recursos de comunicação alternativa, numa perspectiva sistêmica, para o engajamento ocupacional de crianças com paralisa cerebral que possuem limitações na comunicação oral e/ou escrita. Objetivo: Descrever procedimentos de intervenção colaborativa em terapia ocupacional com uso da comunicação alternativa executados por parceiros de comunicação de uma criança com paralisia cerebral. Método: Trata-se de uma pesquisa aplicada, de natureza experimental e de abordagem qualitativa. Participaram da pesquisa os parceiros de comunicação (mãe, estagiária do curso de graduação em terapia ocupacional e professora) de uma criança com paralisia cerebral. Utilizou-se instrumentos indicados no Programa Comunica_PC, para identificação das habilidades comunicativas iniciais da criança, caracterização dos participantes, seleção das figuras para a prancha de comunicação, análise das filmagens e análise da percepção dos interlocutores sobre os procedimentos de intervenção. A coleta e análise foram estruturadas em 5 fases: Fase 1: Conhecimento inicial dos participantes; Fase 2: Capacitação Teórica; Fase 3: Capacitação Prática; Fase 4: Confecção do recurso de comunicação alternativa; e Fase 5: Percepção dos interlocutores após a implementação da comunicação alternativa Resultados: Obteve-se a formação teórica e prática dos parceiros de comunicação, incluindo a sua sensibilização por meio da dinâmica e capacitação prática. Tais procedimentos se constituíram em elementos fundamentais para a aprendizagem dos parceiros de comunicação perante o uso dos recursos de comunicação alternativa. Conclusão: O Programa Comunica_PC consistiu numa estratégia motivadora como meio de aprendizagem dos interlocutores para uso da comunicação alternativa em criança com paralisia cerebral.

Palavras-chave: Auxiliares de Comunicação para Pessoas com Deficiência, Terapia Ocupacional, Modos de Intervenção, Paralisia Cerebral, Ensino.

Introduction

The intervention of occupational therapy is strengthened when it acts with the children in their different contexts of human development, promoting occupational engagement (Manzini & Martinez, 2019a; Manzini et al., 2019b). The occupational engagement of children with cerebral palsy who have serious disorders in their communication can be favored by the use of "Supplementary and/or Alternative Communication" (SAC) resources (Manzini, 2017; Manzini et al., 2017).

In this perspective, the literature strongly recommends that the intervention through alternative communication resources considers the child's significant activities; the participation of family members, and also the involvement of several adults from the social context in which the child is inserted (Batorowicz, 2014). In this sense, occupations to child development are fundamental such as leisure, play, and recreational activities (Batorowicz & Browning, 2019). Also, "[...] we need to support the child's significant participation by offering an opportunity for active involvement and autonomous communication in the context of childhood activities" (Batorowicz, 2017, p. 41).

Occupational therapists use alternative communication resources in their interventions considering the demands of users who need them and the conditions in the development contexts in which they are inserted (Manzini & Martinez, 2019a; Manzini et al., 2013).

We highlight the research by Jonsson et al. (2011), Dhas et al. (2014), Desai et al. (2014), Saturno et al. (2015), Rocha et al. (2015), Sant'Anna et al. (2016), Batorowicz & Browning (2019), Rocha & Santos (2019), Pelosi et al. (2019), Manzini & Martinez (2019b), Manzini et al. (2019a) and Sant'Anna et al. (2019). Their works have implemented alternative communication through computers, communication boards, and iPads in different contexts, such as home, school, clinics, hospital, and leisure to favor communicative inclusion, engage in daily activities, and promote autonomy and independence.

This research shows new and different perspectives for the SAC for the evidence of its benefits (Von Tetzchner et al., 2018; Pelosi, 2017; Pelosi & Nascimento, 2018; Sennott et al., 2016; Light & McNaughton, 2015). Therefore, we believe that it is important to describe the contributions coming from the occupational therapy area, deepening the debate.

Bringing evidence of the impact of training for use of SAC by users, particularly when the intervention considers the participation of interlocutors from three different development contexts simultaneously (Bronfenbrenner, 1996), the "Alternative Communication Program for children" was developed and tested for non-verbal cerebral palsy children and their families, health and education professionals" - "Comunica_PC" (Manzini, 2017).

The Comunica_PC Program was based on the idea that the interlocutor can enhance the communicative skills of the child with cerebral palsy considering: (i) the child's communicative possibilities; (ii) the potential of alternative communication resources; and (iii) the processes of stimulating communication between the adult and the child (time, help, resources, and support) (Manzini, 2017). This Program also adopts the possibility of interlocutors' learning to use SAC based on collaborative intervention through the provision of theoretical and practical support jointly between the therapist and the communication partners.

Thus, this study hypothesizes that through the Comunica_PC Program, the collaborative intervention in occupational therapy enables the training of interlocutors and strengthens the child's communicative performance.

By the creation of the Comunica_PC Program and the first experiences of its implementation, this study aims to describe collaborative intervention procedures in occupational therapy using alternative communication performed by communication partners of a child with cerebral palsy.

Method

Research characterization

This is experimental research of a qualitative approach (Fontelles et al., 2009). It aims to describe the intervention procedures of the Comunica_PC Program regarding the process of training the interlocutors of a child with cerebral palsy (Manzini, 2017; Manzini et al., 2017; Manzini et al., 2019b).

Ethical considerations

The research had a favorable opinion by the Ethics Committee under number 922,817/2014. The research participants received and signed the informed consent form with all information about the research.

Research participants and context

Three communication partners were the research participants as the interlocutors of everyday contexts (family context - mother; clinical context - occupational therapy intern in the last year of graduation; and school context - teacher) of a non-verbal child, male, 12 years old and with cerebral palsy.

We selected the participants based on the following criteria: child aged 6 to 12 years old, diagnosed with non-verbal cerebral palsy, without sensory deficits (auditory and visual), and not using SAC. We selected the interlocutors by their proximity to the child's clinical, school, and home context.

Equipment and instruments

We used a computer, a camcorder, a camera, and a field diary to transcribe the footage, stationery materials to make the graphic symbols using the Boardmaker Speaking Dynamically Pro software.

The instruments used for data collection were:

- (a) Guide for the identification of children's communication skills: this instrument aimed to describe the child's communication skills before the intervention procedure, such as the use of gestures, body and facial expressions; to list the child's main communication partners; and to check the communication of the child before the intervention, such as pain, fear, sadness, happiness, wishes, and reflect on the child's daily routine. We applied the questionnaire to the mother and the health professionals (Manzini, 2013; 2017);
- (b) **Figures Selection Protocol**: Manzini (2013) developed the protocol with the theoretical basis of the items of the Canadian Occupational Therapy Measure COPM (Law et al., 2009) and the Picture Exchange Communication System PECS (Bondy & Frost, 2001). The protocol selected at least three figures for the topics of clothing, food (food/drinks), bathing, hygiene, playing, and leisure;
- (c) Guide to analyze the participants' perception of the implementation of the SAC: this instrument aimed to describe the perception of the interlocutors about the

- importance of implementing the SAC and the skills acquired by the child after the implementation of the intervention program (Manzini, 2013; 2017);
- (d) **Protocol for the analysis of mime dynamics**: Manzini (2013) developed the protocol to analyze the activity of mime dynamics through the items: difficulties and facilities reported by the participants during the dynamics experience, information transmitted by the interlocutor, and strategies used to transmit the information (Manzini, 2017).

Data collection and analysis

Data collection was performed for 5 months according to the availability of the interlocutors. It occurred first in the school context, then in the clinical context, and, finally, at the residence (1x/week from 30 to 60 minutes).

The following is a detailed description of the phases of Comunica_PC, as well as the objectives, strategies, number of sessions, collection time, and analysis performed in each phase.

The Comunica_PC Program has a set of training strategies aimed at the communication partners of the child with CP that both (child and interlocutors) start to use the SAC during communicative interactions. To achieve this purpose, the process took place through 5 phases:

- **Phase 1: Initial knowledge of the participants** This phase aimed to describe the child's initial communication skills and the characterization of the communication partners. To achieve this objective, we applied and analyzed the protocol for identifying the child's communicative skills. The phase took place in 01 individual session of 30 minutes for each interlocutor in each context: mother (home), teacher (school), and intern (clinic);
- Phase 2: Theoretical Training The main objective of the theoretical training phase was to present the topic of Alternative Communication through a dialogue class. The secondary objective was to offer an experience addressed to the communication partners "Dynamics of mimics" so that, deprived of communication, they could communicate with the researcher. Then, "information support" about SAC was offered to the interlocutors based on theoretical training and practical experience through the dynamics of mimicry. Phase 2 was performed in 01 session of 60 minutes with each interlocutor in their respective operating environment. In this phase, the sessions were filmed, transcribed, and analyzed through the script of the dynamics of mimics;
- Phase 3: Practical Training The practical training aimed to offer support to the interlocutors to start using pictographic figures, stimulating the child's communication skills during activities. To achieve this objective, informational support on SAC was offered to the interlocutors through a practical training consisting of 15 sessions of 30 minutes with each interlocutor in their respective operating environment. This phase was analyzed through the transcription of the footage. All activities carried out were decided and scheduled through individual and weekly meetings with each of the three interlocutors, separately, to (a) use the lesson plan prepared at the beginning

of the school year; (b) address the programmed therapeutic objectives, and (c) consider the child's interest in the home environment;

Phase 4: Creation of the alternative communication resource - This phase aimed at making pictographic figures and communication boards using the Boardmaker software. To achieve this objective, instrumental support was offered in the selection of figures (selected by the interlocutors according to each context). This phase consisted of 02 sessions of 60 minutes with the adults-interlocutors in their natural contexts. The boards were analyzed through the topics of the child's routine and the sessions were analyzed through the transcription of the footage;

Phase 5: Perception of the interlocutors after the implementation of the SAC -

This phase described the perception of the interlocutors and the effects of the intervention program implementation, consisting of 01 session of 30 minutes with each interlocutor in their respective operating environment. At this phase, we applied the guide to analyzing the participants' perceptions of the implementation of the SAC.

Data collection was based on the five phases of the "Individualized Alternative Communication Program for children diagnosed with non-verbal cerebral palsy and their families, health, and education professionals" - Comunica_PC (Manzini, 2017). The data were analyzed based on the qualitative approach (Minayo, 2013) and discussed based on the references in the occupational therapy area.

Results

The results of this research include the description of the intervention procedures of the Comunica_PC Program, presented in five phases for a better presentation and understanding of each one.

Phase 1 - Knowledge of the development contexts to make sense: culture, values, and the way to communicate

To start the therapeutic process in Comunica_PC, we need to know the values, knowledge, and culture of the people and, particularly, in this case, to identify the child's initial communicative skills and how to communicate with their interlocutors in each of the contexts of daily life.

When knowing this reality, we want to consider it in the proposal of the future intervention process with the SAC and bring new elements (motivators), expanding the communication and interaction opportunities of the child-interlocutor dyads to favor the processes of learning. Thus, we seek to guarantee the right to the communication of the non-verbal child to favor their interactions, exchanges, and essential learning for their engagement in their occupations, promoting their participation in the typical activities of their life cycle.

Table 1 shows the characteristics of the context of daily life, including the results of the child's initial communicative repertoire, the identification of his communication interlocutors, and the health services used by the child.

Characteristics	Child
Children's communicative skills in the	Look, body movement, facial expression, babble, yell, cry,
three contexts studied	bite the shirt
Child's communication partners	Family members, friends, neighborhood and school people
Needs expressed by the child according to the interlocutors' evaluation	Pain, tiredness, fear, disinterest, and joy
Health services attended by the child	Occupational Therapy and Physiotherapy

Table 1. Characteristics of the context of the daily life of children with cerebral palsy.

In the initial sessions, we sought to register the child's communicative skills, describe them, and group them. We observed that the child's communicative input repertoire are:

- To use facial expression, smile, look and body movements to express interest in the activity in all environments;
- To use vocalizations and babblings to draw attention and answer the mother's questions;
- To use facial expressions of disinterest, bite the shirt, pick up objects or figures of
 communication and throw them on the floor or put them in the mouth to express
 disinterest in the activity in all environments and to attract the attention of the
 interlocutors.

From the researcher's first immersions in the contexts of daily life (home, school, and clinic), we found that the interlocutors were unaware and did not use the resources of the SAC. In these approaches, it was essential to know how communication was carried out with each dyad (interlocutor-child) to define procedures for training interlocutors to use SAC, including awareness, motivation, and learning about something new: new ways of promoting communicative skills.

Phases 2 and 3 - Theoretical-practical training: New concepts for meaningful and dialogical learning

The theoretical training was carried out individually with each interlocutor for approximately 1 hour. The results analyzed through filming revealed that there was a process of joint construction of knowledge (researcher-interlocutor), through interactions and dialogues triggered based on the displayed material.

The researcher planned and gathered a set of information of didactic material, for the understanding of the interlocutors about SAC. He planned the training sessions to motivate them and be able to promote dialogues. The material presented through visual resources dealt with communication processes, development of communicative skills, and SAC resources.

The Dynamic of Mimes aimed to challenge the interlocutors to experience the activity of communicating certain information based on the use of gestures and facial expressions but without using orality.

To express certain information (drawn, among several themes), the interlocutors used body movements when they intended to express actions and detail the scene. Facial expression was used when the objective was to announce whether the guessed message

was correct or wrong. Representative gestures were used to express the use of concrete objects and their functionality.

When reflecting on the activity performed (dynamics), the interlocutors were asked about the level of difficulty of the task. We also sought to understand whether the greatest difficulty lay in the expression or understanding of the message. The following statement represents one of the participants' answers.

Intern: I like to play Image and Action (commercialized mime game), but it's a word, right? So, it's easier. Now, speaking a sentence is very difficult, exposing a situation is very complicated because there are many things. Passing a message is difficult because sometimes I was doing a movement that was in my head and then I passed it that way, but it was difficult.

The adults-interlocutors were also asked by the researcher about their perception of the dynamics.

Mother: It's difficult, it's stressful. [...] outside it scares you that you are saying something, you are saying that, but the person is understanding another. Look, it's horrible, now imagine for those who can't speak, can't hear.

The participants showed awareness of the experience (playing) performed and the experience of "putting yourself in the place of a non-speaking child". The adults-interlocutors also knew how complicated it is to communicate a message without using oral speech. The intern's speech from the occupational therapy course can exemplify this awareness.

Intern: I was thinking that the game was played, because he is a non-verbal child, and then he has to make a gesture for the person to receive the message. But, the difference is that we coordinate our gestures in a way that we can convey what we want, but the children that we see here, our child, do not have such coordinated gestures, which is more difficult to understand.

The activity made the interlocutors reflect that the child without orality needs resources to promote communication. The (dynamic) activity was essential to sensitize the interlocutors, bringing senses and meanings of what would be used in the next training sessions.

Based on the awareness in the previous step and considering the interlocutors as the most suitable partners for the intervention, we sought to provide support actions to them during the intervention sessions to empower them to use the SAC with the child.

The interlocutors had sequential guidelines for using the SAC materials, through the following strategies and procedures: (1st) The interlocutor should show the object to the child participant; (2nd) To display the characteristics of the object used and also to present its functionality, the interlocutor should use stimuli related to the tactile, visual and auditory system; (3rd) The interlocutor should compare the pictographic figure with the object; (4th) To make the child-participant pick up the pictographic figure or show interest in the object/activity, the interlocutor should provide the object and/or activity

using verbal, physical and/or models; (5th) The interlocutor should allow time for the participant to answer and, finally, carefully observe the changes in the child's behavior.

Table 2 shows examples of the child's communicative repertoires after the intervention in different contexts.

Table 2. The child's communicative repertoire after the intervention.

CONTEXT	REPERTOIRE AFTER INTERVENTION
Communicative skills obtained at home	The atypical behaviors decreased (biting, crying).
	"No" expression shaking the head (left-right).
	He started to use the figure exchange in response to the adult's question.
	Example: "Do you want to watch Chaves (character)? The child took the picture and gave it to the mother".
	The frequency of atypical behaviors decreased (Example: biting the shirt, crying, and yelling).
Communicative	The child began to wait for his turn to participate in the group activities.
skills obtained at	The child started to exchange pictures to communicate.
school	Example: "Do you want to hear the story of the Three Little Pigs? The child took
	the figure of the piggies out of the book and gave it to the teacher to communicate
	that he would like to hear the story.
	The communication potential was explored by the intern and the child answered positively.
	The interlocutor started to understand the communicative ability through the
Communicative	SAC figures and offered greater possibilities for the child's answers through the
skills obtained in	board.
the clinical context	The child also used the figure exchange strategy to communicate with the
	intern.
	Example: "Do you want to play with slime? The child removed the slime figure
	from the board and handed it to an intern.

Therefore, the support offered by the researcher directed to each interlocutor encouraged them to offer the objects to the child, using the pictographic figures of SAC as a strategy. The results indicated that the interlocutors started to stimulate and use communication resources as an alternative, using the strategy of exchanging a pictographic figure for each object. This action enabled each dyad (child-interlocutor) to use alternative communication resources with independence and functionality.

Phase 4 - Considerations on the preparation of the boards

After the training procedures of the interlocutors, the researcher made 3 SAC boards for each context based on the elements chosen and selected by the three interlocutors. The content of the information contained in the board were those considered "significant and necessary", in the interlocutors' view, for communication with the child.

The mother created the board using content related to self-care, leisure, and productive activities of the child's family routine. The teacher prepared the school context board addressing aspects of the school context. Thus, the teacher selected figures

related to the experiences of the room, that is, the child's routine of entering the school until the moment of leaving. The occupational therapy intern built a board using the planned goals for care, developed in the clinical-outpatient routine.

In the development of alternative communication boards, we used the figures in the Boardmaker software, and also figures from the internet. The interlocutors justified that some figures on the internet were more similar to concrete objects and facilitated the child's identification.

Phase 5 - Knowing the sense and meaning - the interlocutors' perception of the Comunica_PC Program

Knowing the sense and meaning of the intervention through the Comunica_PC Program based on the perspective of the interlocutors was a strategy to bring elements to improve the Comunica_PC Program and to verify the intervention procedures.

Participants-interlocutors were asked about the relevance of the research in the context of child development. The following statements show some answers from the participants.

Mother: This research was very important because you came home to see what his life is like. With the communication figures, he can distinguish what he wants and what he does not want.

Intern: Through research and the activities carried out I was able to understand him more, realize his real capabilities and potential. Before I thought he couldn't do much, but I saw that I didn't have the resources to make him perform well.

The fact that the interlocutors observed that the SAC resource was missing for communication strengthened the child's participation and expanded their occupational repertoire.

The interlocutors positively evaluated the characteristic of the gains and communicative skills acquired by the child. The use of the SAC resource enabled the child to express his desires and preferences, qualifying his participation in activities of daily living.

Thus, the data revealed that the alternative communication program was effective in the intervention strategies adopted, enabling the acquisition of new communication skills by the child and the satisfaction of the interlocutors during all stages of the research.

Discussion

Resuming the hypothesis that guided the development of this study, we confirmed that the collaborative intervention in occupational therapy through the Comunica_PC Program was effective in the process of training the interlocutors for the child's communicative performance.

The Comunica_PC Program invests in the development of the communicative skills of the interlocutor-child dyad. It is a systemic approach insofar as it considers

aspects of the person, his characteristics, processes, time, participation in more complex activities, contexts, and environments in which he is inserted (Bronfenbrenner, 1996). It seeks to support the interlocutors of non-verbal children with Cerebral Palsy to promote the participation and engagement of the child in the occupations they develop in their different natural, social and educational contexts (home, clinic, school) also considering the aspects of the person, processes and time.

The discussion of the results shows the five phases of the Comunica_PC Program. Phase 1 of Comunica_PC presents considerations about the knowledge of the development contexts to give meaning to the culture, values, engagement of the communication activity, and the proposal of the future intervention process with the SAC. The literature defends the importance of checking not only the patient/client routine, personal demands/needs, and environmental factors, but also the facilitating and limiting aspects of engagement in occupations (Pontes & Polatajko, 2016). Engagement is a result of the interdependent and dynamic relationship between the person, the occupation, and the environment (Polatajko et al., 2007). For Martinez (2018, p. 717),

[...] from a systemic perspective, the engagement of people in significant occupations favors their development, impacts on the subsystems in which they are inserted, promoting health, contributing to their training processes, and, consequently, to a dignified life in society.

In particular, we discussed that the data showed that the communication partners who are professionals in the education and health area (professor and occupational therapy intern) were unaware of the resources of the SAC, and the procedures for using them, although the child attended a special school and clinical care in different modalities (physiotherapy and occupational therapy). Although SAC has a complex set of equipment available on the market (Pelosi & Nunes, 2009), undergraduate courses offer few subjects related to the assistive technology area in its curriculum (Cameron & Markowicz, 2009; Marins & Emmel, 2011). SAC is an interdisciplinary, multidisciplinary, and transdisciplinary area that includes professionals from different fields of knowledge such as education, health, language, art, engineering, and computer professionals (Pullin et al., 2017; Chun et al., 2015).

Phases 2 and 3 of the Comunica_PC Program contemplate aspects of the collaborative partnership and the theoretical-practical training of the interlocutors. The Program foresees a series of procedures for joining the Program after the initial moments of data collection and the beginning of the establishment of the collaborative partnership between researcher-interlocutor: provision of informative support, awareness, board construction workshops, initial sessions of use of the board by the interlocutor supported by the researcher and final evaluation sessions. Lourenço & Oliveira (2019) reported the importance of the occupational therapist working with alternative communication from a collaborative perspective in the school context.

In all phases of the Comunica_PC Program, we sought information to provide meaning and motivation in the development of the agreed actions, in a desirable dialogic relationship established between the researcher and the interlocutor. We encouraged procedures for reflecting on the actions and experiences lived during the program to develop the actions of the interlocutors as protagonists of the process (Schon, 2000).

The program was structured in such a way that all phases of the training interlocutors and intervention with the child occurred in a perspective of significant learning processes (Freire, 1967), from a constructivist point of view. We believe that the offer of information and awareness support proposed was essential for the occurrence of meaningful learning, supported by a collaborative process between occupational therapists and interlocutor, as they favored their adherence to the proposal. The research by Kennedy & Davis (2017) reports the importance of the occupational therapist to understand the subject's motivation to jointly establish significant occupational goals for their occupational engagement.

Phase 4 of the Comunica_PC Program addresses considerations about communication boards in different development contexts and phase 5 refers to the interlocutors' perception of the Program. The results showed that the interlocutors selected pictograms, images and photos considered "significant and necessary" for each social context and positively evaluated the intervention program.

We highlight the important role of interlocutors in the making of communication resources, as they have daily experience with the child, knowledge about their wishes and preferences, and also establish immediate interactions, mediating their participation in the environment. The results obtained in this research corroborate those of Sant'Anna et al. (2016) and Silva et al. (2013), who value the importance of the role of interlocutors in the implementation of alternative communication resources.

Jonsson et al. (2011) also emphasized the importance of training interlocutors to use alternative communication boards. The communication partner encourages the use of pictographic symbols, showing the child how to use them and their purposes.

As already mentioned in the research by Batorowicz et al. (2016), interventional procedures in the area of alternative communication should be directed towards significant environments and different social contexts. This environmental intervention strategy provides opportunities, support, and continuous resources for the child, youth, and/or adult with communication difficulties to participate and actively engage in the social activities of the school and the community (Batorowicz et al., 2016).

Conclusion

The Comunica_PC Program includes a set of procedures that assume the initial need to know the characteristics of people, as they occur over time, the functioning of contexts, values, and expectations, and roles of people, processes, and also the forms of communication of interlocutors towards the person/child. Based on this knowledge, in an integrated and dialogical way with the interlocutors, a set of actions was proposed to promote the child's communicative skills using the SAC.

The theoretical references used in this research, when valuing aspects of the child, the processes, and the contexts in which they are inserted, proved to be sufficient to anchor the findings and describe a contemporary intervention practice in occupational therapy with non-verbal children.

The strategies and procedures developed, applied, and tested reaffirm the importance of occupational therapy using supplementary and/or alternative communication as an intervention resource for children who are not spoken in a collaborative perspective with their interlocutors.

For new investigations, we indicate the continuity of research with the interlocutors of non-verbal children, diversifying adults, and other social environments that non-verbal children with cerebral palsy attend.

References

- Batorowicz, B. (2014). Social participation of school-aged children who use communication aids: the views of children and parents. *Augmentative and Alternative Communication*, 30(3), 237-251.
- Batorowicz, B. (2017). Contribution of technology to communication quality: Research and Practices. In: D. Deliberato, D. R. Nunes, & M. J. Gonçalves. *Trilhando juntos a comunicação alternativa* (pp. 31-46). Marília: APBEE.
- Batorowicz, B., & Browning, N. (2019). Lazer, recreação e brincadeira no contexto social das crianças e jovens usuárias de comunicação alternativa. In M. G. Manzini & C. M. S. Martinez. *Terapia ocupacional e comunicação alternativa em contextos de desenvolvimento humano* (pp. 39-56). São Carlos: EdUFSCar.
- Batorowicz, B., King, G., Mishra, L., & Missiuna, C. (2016). An integrated model of social environment and social context for pediatric rehabilitation. *Disability and Rehabilitation*, 38(12), 1204-1215.
- Bondy, A., & Frost, L. (2001). The picture exchange communication system. *Behavior Modification*, 25(5), 725-744.
- Bronfenbrenner, U. (1996). A ecologia do desenvolvimento humano: experimentos naturais e planejados. Porto Alegre: Artes Médicas.
- Cameron, D., & Markowicz, L. (2009). Augmentative and alternative communication: international perspective. *OT Now*, 11(1), 12-14.
- Chun, R. Y. S., Reily, L., & Moreira, E. C. (2015). Comunicação alternativa: ocupando territórios. São Carlos: Marquezine & Manzini/ABPEE.
- Desai, T., Chow, K., Mumford, L., Hotze, F., & Chau, T. (2014). Implementing an iPad-based alternative communication device for a student with cerebral palsy and autism in the classroom via an access technology delivery protocol. *Computers & Education*, 79, 148-158.
- Dhas, B. N., Samuel, P. S., & Manigandan, C. (2014). Use of computer access technology as an alternative to writing for a pre-school child with athetoid cerebral palsy a case report. *Occupational Therapy in Health Care*, 28(3), 318-332.
- Fontelles, M. J., Simões, M. G., Farias, S. H., & Fontelles, R. G. S. (2009). Metodologia da pesquisa científica: diretrizes para a elaboração de um protocolo de pesquisa. *Revista Paraense de Medicina*, 23(3), 1-8.
- Freire, P. (1967). Educação como prática da liberdade. Rio de Janeiro: Paz e Terra.
- Jonsson, A., Kristoffersson, L., Ferm, U., & Thunberg, G. (2011). The ComAlong communication boards: parents' use and experiences of aided language stimulation.

- Augmentative and Alternative Communication, 27(2), 103-116. http://dx.doi.org/10.3109/07434618.2011.580780.
- Kennedy, J., & Davis, J. A. (2017). Clarifying the construct of occupational engagement for occupational therapy practice. *OTJR*, *37*(2), 98-108.
- Law, M., Baptiste, S., Carswell, A., McColl, M. A., Polatajko, H., & Pollock, N. (2009). *Medida canadense de desempenho ocupacional.* Belo Horizonte: Editora UFMG.
- Light, J., & McNaughton, D. (2015). Designing AAC research and intervention to improve outcomes for individuals with complex communication needs. *Augmentative and Alternative Communication*, 31(2), 85-96.
- Lourenço, G. F., & Oliveira, B. B. (2019). Terapia ocupacional e comunicação alternativa no contexto escolar. In M. G. Manzini & C. M. S. Martinez. *Terapia ocupacional e comunicação alternativa em contextos de desenvolvimento humano* (pp. 103-119). São Carlos: EdUFSCar.
- Manzini, M. G. (2013). Efeito de um programa de comunicação alternativa para a capacitação de mães de crianças com paralisia cerebral não verbal (Dissertação de mestrado). Universidade Federal de São Carlos, São Carlos.
- Manzini, M. G. (2017). Comunicação Alternativa para crianças com paralisia cerebral não verbais: Programa de intervenção para contextos de vida diária (Tese de doutorado). Universidade Federal de São Carlos, São Carlos.
- Manzini, M. G., Assis, C. P., & Martinez, C. M. S. (2013). Contribuições da terapia ocupacional na área da comunicação suplementar e/ou alternativa: análise de periódicos da terapia ocupacional. *Cadernos de Terapia Ocupacional da UFSCar*, 21(1), 59-73.
- Manzini, M. G., Martinez, C. M. S., Lourenço, G. F., & Oliveira, B. B. (2017). Alternative communication training of interlocutors for children with cerebral palsy. *Cadernos Brasileiros de Terapia Ocupacional*, 25(3), 553-564.
- Manzini, M. G., & Martinez, C. M. S. (2019a) Terapia ocupacional e comunicação alternativa em contextos de desenvolvimento humano. São Carlos: EdUFSCar.
- Manzini, M. G., & Martinez, C. M. S. (2019b). Comunicação alternativa para uma criança com paralisia cerebral não oralizada: intervenção em terapia ocupacional conjunta nos contextos escolar, clínico e familiar. In M. G. Manzini & C. M. S. Martinez. *Terapia ocupacional e comunicação alternativa em contextos de desenvolvimento humano* (pp. 145-167). São Carlos: EdUFSCar.
- Manzini, M. G., Cruz, D. M. C., Almeida, M. A., & Martinez, C. M. S. (2019a). Programa de Comunicação Alternativa para uma Criança com Paralisia Cerebral e seus Parceiros de Comunicação: um estudo de delineamento de múltiplas sondagens. Revista Brasileira de Educação Especial, 25(4), 553-570.
- Manzini, M. G., Pelosi, M. B., & Martinez, C. M. S. (2019b). Reflexões sobre a terapia ocupacional e o uso da comunicação alternativa em contextos de vida diária. In M. G.
 Manzini & C. M. S. Martinez. Terapia ocupacional e comunicação alternativa em contextos de desenvolvimento humano (pp. 17-36). São Carlos: EdUFSCar.
- Marins, S. C. F., & Emmel, M. L. G. (2011). Formação do terapeuta ocupacional: acessibilidade e tecnologias. *Cadernos de Terapia Ocupacional da UFSCar*, 19(1), 37-52.
- Martinez, C. M. S. (2018). Construção de um percurso acadêmico singular e seus diálogos com a Terapia Ocupacional. *Cadernos Brasileiros de Terapia Ocupacional*, 26(3), 710-719.
- Minayo, M. C. S. (2013). O desafio do conhecimento: pesquisa qualitativa em saúde. São Paulo: Hucitec.
- Pelosi, M. B. (2017). A comunicação alternativa na clínica de terapia ocupacional com crianças. In D. Deliberato, D. R. P. Nunes, & M. J. Gonçalves. *Trilhando juntos a comunicação alternativa* (pp. 303-318). Marília: ABPEE.

- Pelosi, M. B., & Nascimento, J. S. (2018). Uso de recursos de comunicação alternativa para internação hospitalar: percepção de pacientes e de terapeutas ocupacionais. *Cadernos Brasileiros de Terapia Ocupacional*, 26(1), 53-61.
- Pelosi, M. B., & Nunes, L. R. O. P. (2009). Formação em serviço de profissionais da saúde na área de tecnologia assistiva: O papel do terapeuta ocupacional. *Revista Brasileira de Crescimento e Desenvolvimento Humano*, 19(3), 435-444.
- Pelosi, M. B., Coelho, P. S. O., Valle, K., & Nascimento, J. S. (2019). A comunicação alternativa no contexto hospitalar. In M. G. Manzini & C. M. S. Martinez (Orgs.), Terapia ocupacional e comunicação alternativa em contextos de desenvolvimento humano (pp. 75-102). São Carlos: EdUFSCar.
- Polatajko, H. J., Townsend, E. A., & Craik, J. (2007). Canadian Model of Occupational Performance and Engagement (CMOP-E). In E. A. Townsend, & H. J. Polatajko (Eds.), Enabling occupation II: advancing an occupational therapy vision of health, well-being, & justice through occupation (pp. 22-36). Ottawa: CAOT Publications.
- Pontes, T. B., & Polatajko, H. (2016). Habilitando ocupações: prática baseada na ocupação e centrada no cliente na Terapia Ocupacional. *Cadernos de Terapia Ocupacional da UFSCar*, 24(2), 403-412.
- Pullin, G., Treviranus, J., Patel, R., & Higginbotham, J. (2017). Designing interaction, voice, and inclusion in AAC research. *Augmentative and Alternative*, 33(3), 139-148.
- Rocha, A. N. D. C., & Santos, C. B. (2019). Comunicação suplementar e alternativa no contexto da atenção básica. In M. G. Manzini & C. M. S. Martinez (Orgs.), *Terapia Ocupacional e comunicação alternativa em contextos de desenvolvimento humano* (pp. 57-76). São Carlos: EdUFSCar.
- Rocha, A. N. D. C., Deliberato, D., & Araújo, R. C. T. (2015). Procedimentos para a prescrição dos recursos de tecnologia assistiva para alunos da educação infantil com paralisia cerebral. *Revista Educação Especial*, 28(53), 691-707.
- Sant'Anna, M. M. M., Deliberato, D., & Rocha, A. N. D. C. (2016). Percepção do usuário de comunicação suplementar e alternativa e de seus interlocutores sobre o uso dos sistemas gráficos. *Revista de Terapia Ocupacional da Universidade de São Paulo*, 27(3), 322-328.
- Sant'Anna, M. M., Varela, R. C. B., & Souza, V. L. V. (2019). Comunicação suplementar e alternativa (CSA): intervenção de terapia ocupacional no contexto clínico. In M. G. Manzini & C. M. S. Martinez (Orgs.), Terapia ocupacional e comunicação alternativa em contextos de desenvolvimento humano (pp. 121-143). São Carlos: EdUFSCar.
- Saturno, C. E., Ramirez, A. R. G., Conte, M. J., & Farhat, M. (2015). An augmentative and alternative communication tool for childrenand adolescents with cerebral palsy. *Journal Behaviour & Information Technology*, 34(6), 173-189.
- Schon, D. (2000). Educando o profissional reflexivo: um novo design para o ensino e aprendizagem. Porto Alegre: Artes Médicas Sul.
- Sennott, S. C., Light, J., & Mcnaughton, D. (2016). AAC modeling intervention research review. *Research and Practice for Persons with Severe Disabilities*, 41(2), 1-15.
- Silva, R. L. M., Silva, S. S. C., Pontes, F. A. R., Oliveira, A. I. A., & Deliberato, D. (2013). Efeitos da comunicação alternativa na interação professor-aluno com paralisia cerebral não-falante. *Revista Brasileira de Educação Especial*, 19, 25-42.
- Von Tetzchner, S., Launonen, K., Batorowicz, B., Nunes, L. R. O. P., Walter, C. C. F., Oxley, J., Massaro, M., Stadskleiv, K., Yang, C. K., & Deliberato, D. (2018). Communication aid provision and use among children and adolescents developing aided communication: an international survey. Augmentative and Alternative Communication, 34(1), 79-91.

Author's Contributions

This article is part of the results obtained in the doctoral thesis of the first author. Mariana Gurian Manzini was responsible for data collection, research development, preparation, review, and organization of the article. Ana Carolina Gurian Manzini and Mirela de Oliveira Figueiredo collaborated in the analysis and writing of the results. Mirela brought theoretical contributions to the study. Claudia Maria Simões Martinez was responsible for guiding the research, preparation, review, and organization of the text. All authors approved the final version of the text.

Funding Source

FAPESP – process nº 2014/17741-6.

Corresponding author

Mariana Gurian Manzini e-mail: mariana_gurian@yahoo.com.br

Section editor

Ana Paula Serrata Malfitano