

THE INFLUENCE OF THE ACQUISITION AND USE OF GESTURES FOR COMMUNICATIVE SKILLS IN PORTUGUESE TODDLERS: A PILOT STUDY

Vplyv získavania a používania gest na komunikačné zručnosti batoliat v Portugalsku: pilotná štúdia

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Abstrakt: Aplikácia diagnostických a intervenčných metód v oblasti komunikácie a jazyka u detí v ranom veku v Portugalsku je podporená vedeckými údajmi zozbieranými z rôznych krajín. Ak však chceme porozumieť premenným, ktoré determinujú rozvoj komunikačných schopností dieťaťa, nemôžeme prehliadať silu kultúrneho vplyvu. Odborné zdroje naznačujú, že používanie gest je prediktorom vývinu jazyka a reči, hlavne v oblasti sémantiky a syntaxe. Deiktické gestá (ukazovanie) podporujú rozvoj komunikačnej intencionality odvtedy, odkedy sa u detí objavujú (vo veku dvanástich mesiacov). Ich používanie je založené na porozumení vo forme kooperácie, počas ktorej sa zameria spoločná pozornosť jedným smerom, a tak následne dochádza k vzájomnému zdieľaniu tém a informácií. Cieľom štúdie je analyzovať získavanie komunikačných gest, spôsob, akým sú využívané v komunikácii, a porovnať ich vzťah u portugalských detí so sluchovým postihnutím a bez postihnutia. Výskumný súbor v prezentovanej pilotnej štúdií tvorí 9 detí vo veku 8 – 18 mesiacov. Všetky deti navštevujú zariadenia dennej starostlivosti. V štúdií prezentujeme dáta získané počas pilotného zberu dát.

KLúčové slová: Komunikácia. Predrečové štádium. Gestika. Komunikačná funkcia. Diagnostika.

Abstract: In Portugal, the practices of assessment and intervention in the areas of communication and language in children at early ages are supported by scientific data collected across borders. The strength of cultural influence cannot be neglected when we want to understand the variables that determine the course of the acquisition of communication skills. The literature indicates that the gestures use is predictors of language development in several areas, namely in semantics and syntactic skills. Furthermore, deictic gestures (pointing) support the development of communicative intentionality since it appears that children from 12 months, and use understand the point in a cooperative form of communication based on joint attention to share topics and inform. The aim of the study is to analyses the acquisition of communicative gestures, the way they are used to convey communicative functions, and their relationships in Portuguese children with and without hearing impairment. Participants in this pilot study are 9 children aged 8 to 18 months (m) who attended a day care. Preliminary data from this pilot study will be provided.

Key words: Communication. Pre-linguistic. Gestures. Communicative functions. Assessment.

Theoretical background

Tomasello, Carpenter and Liskowski (2007) argue that the deictic gesture (point) supports the development of communicative intentionality since it appears that children, around 12 months of age, use and understand pointing in a cooperative form of communication based on joint attention to share topics and to inform.

The use of communicative gestures are predictors of language development in various aspects: there is a relationship of magnitude between the number of objects that the baby

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points and understanding of vocabulary that will have in the near future (Goldin-Meadow 2009; Hoff 2008); gives an indication of which words the child will acquire soon (Goldin-Meadow 2009; Oşçaliskan,Goldin-Meadow 2005); and later acquisition predicts syntactic powers as the construction of two words and type of block (Goldin-Meadow, Goodrich, Sauer, Iverson 2007). The illocutionary stage of development, in which there were the first communicative acts, is very rich in frequency and type of intentionality (communicative functions) that toddlers convey through vocalizations and communicative gestures (Kaderavek 2011). When the gesture is used in a complementary way a vocalization or word takes on a different significance and functions of that conveys when used as the only communication tool (Aureli et al., 2009).

Relevance of the Study:

The relevance of this study is supported by some studies that indicate the relationship between the use of communicative gestures and the development of communication skills prior to the emergence of language. Literature is consensual in reports differences in oral language development in children with hearing loss, which can be more pronounced according to variables such as the moment of occurrence, use of hearing aids, type and degree of hearing loss among others (Cole, Flexer 2010). However, on early communication development skills, some studies do not find significant differences in developmental milestones of pre-linguistic communication skills in these children (Zaidman-Zait, Dromi 2007). For children with hearing loss who are deprived of access to oral language input, they develop communication skills supported by the gesture. But in the special case of these children in which the gesture encompasses all aspects and functions of the communicative acts, are they used and acquired in the same way?

If, when gesture is used to complement oral communication, it assumes a different importance and function, then when gestures are used as the only modality of communication: a) are the differences in the type of gestures that children with and without hearing loss use in pre-linguist communication? b) what types of gestures do they use convey to convey different communicative functions?

The answer to these questions determines how the professionals intervene with children with hearing impairment. One of the goals of the National Early Intervention System in Childhood in Portugal, is "Intervene, after the detection (...) in order to prevent or reduce

the risk of delays in development "(Law 281/2009, p.7299). Without research carried out in the same population that these services are directed this goal cannot be achieved.

Methods

Research design

The aim of this quantitative (correlational and comparative) study is to analyze the acquisition of gestures, the way they are used to convey communicative functions, and their relationships in Portuguese children with and without hearing loss. To achieve this purpose it was define four instruments, three developed by the authors, namely the Assessment tool: Gestures and Communicative Functions – 8 to 18 months, the Pre-linguistic Communication Skills Inventory and the Socio-demographic Questionnaire. This pilot study was conducted to test the validity of these instruments and to enable a preliminary analysis of the data.

Characteristics of participants

Participants were nine toddlers with typical development aged between eight and eighteen month participate in the study. They were divided in three groups of age: from 8 to 9 months (before the emergence of intentionality); from 10 to 12 months (before the emergence of language); from 12 to 18 months (in the beginning of language development period). All toddlers were attending the day care center of Juncal in the district of Leiria-Portugal.

Instruments of data collection

To collect data four instruments were used: (1) Schedule of Growing Skills II (Bellman, Sundara, Aukett 1996); (2) Socio-demographic questionnaire; (3) Assessment tool: Gestures and Communicative Functions – 8 to 18 month, and; (4) the Prelinguistic Communication Skills Inventory (develop by Etelvina Lima and Anabela Santos 2012).

The *Assessment tool: Gestures and Communicative Functions – 8 to 18 month* (ATGF) consist in eight tasks to be performed by children in interaction with their parent (mother and/or father). The task were constructed to elicit six communicative intention: instrumental function used to request; regulatory function used to control the behaviour of other; personal function performed to express emotions; informative function used to inform; ritual function expressed to greeting, and; heuristic function used to ask/question something (1981).

Performing the tasks, we analyze different behaviour that can be use by the child: crying, eye gaze, word production and the use of gestures. The gestures is classified as deictic,

conventional and iconic: a) deictic gestures are used to indicate objects, people, and locations in the immediate context therefore their meanings are context-bound; b) conventional gestures whose form and meaning are culturally defined; c) iconic gestures depicted actions or attributes of concrete or abstract referents.

The *Pre-linguistic Communication Skills Inventory* is based in different routine situations of day living reported by parents (e.g. what the child do when she/he wants to eat) about the behaviours that children exhibits (e.g. cry, eye gaze, vocalization, use of gesture) when they convey communicative function.

The *Schedule of Growing Skills II*¹⁷(Rocha, Machado, Ferreira 2003) is a screening test to assess the development level of children from birth to five years. This instrument was used to assure typical development of the participants.

Procedures

The Schedule of Growing Skills II was applied at the day care with the collaboration of the child educator. The Socio-demographic questionnaire and Pre-linguistic Communication Skills Inventory were applied directly to the parents by the researcher.

All children were videotaped during the moment of interaction with their parents performing all tasks of ATGF, using three high-definition cameras placed to record the child, the parent and both of them simultaneously.

The script of activities was presented to parents during which all the task were explain and the possible gestures that could occur were exemplified.

Coding

To code the gestures we adapted McNeill's (1995) proposal considering phase, form and type of the gestures. Related to the phase we coded: the preparation (the moment that the gestures articulators cease of being in a relaxed position preceding the stroke); the stroke (the moment that movement takes place expressing the meaning with a certain direction and configuration); and the retraction (moment that the articulators return to the relaxed position).

As to the form it was coded taking in account the hand (right, left or both), the movement (direction to periphery or to the gesturer), the localization (in the quadrant of the head or body), and the configuration (based on the configurations of the Portuguese Sign Language). As previously mentioned types of gesture were classified as deictic, conventional and iconic gestures.

Results and Discussion

¹⁷Portuguese version of *Schedule of Growing Skills II* (Bellmanet al., 1996)

The tasks of the ATGF proved to be adequate to elicit communicative acts conveying the target communicative functions, since it was observed all of communicative function expressed through gestures in the last age range group. With the data from this pilot study the first communication to emerge in the range of 8-9 months are the functions that serve the function to requesting (instrumental function) and expressing emotions (personal function). These data support the findings of Halliday (1981) indicate that the instrumental function as one of the first functions to emerge. In children with 10-12 months, not only were observed the instrumental and personal function, but also two other functions emerge in this range of age, namely ritual and informative functions. Children in the range of 13-18 month expressed all communicative functions analyzed in this study.

Moreover, it was possible to observe distinctions between the types of gestures and the communicative functions used. Although there were communicative functions expressed by different types of gestures, other functions seem to be associated with a single type of gesture. Thus, data indicates that conventional gestures are associated with regulatory personal and ritual function. The frequency of gestures classified as deictic gestures were the most observed to convey the communicative functions (instrumental and interactive) in the range aged 10-12M and 12-18M. The informative and instrumental functions are not associated with a single type of gesture, as it was observed the use of different types of gestures to convey these communicative functions.

These findings highlights the importance of acknowledge the unique relations between some gestures and some communicative function when planning intervention in communication skills with toddlers.

Concerning the frequency of gestures during the interaction, results indicate a significant increase of gesture production from the range 8-9 months to the range of 10-12 months, but a smaller difference in the range from the range of 10-12 months to the range of 13-18 months. In these range of ages toddlers do not use gestures in gestures with speech (McNeill 1995). Therefore, this reduction in rate of increase of gestures can be related to the transition period for the language, in which the communicative acts supported by the word begun. This hypothesis will be tested with a group of deaf children, as we'll see whether the rate of utilization of gestures remains proportional between tracks, in the absence of speech.

As the interaction dyad was rich in different behaviors and dynamic, coding proved to be a challenge in differentiate the preparation phase of other body movements. Therefore, the pilot study showed the need to refine aspects to this analysis.

Conclusions

The pilot study contributed to analyze the relationship between the gestures and the communicative functions they convey during the communicative acts of children between 8 and 18 months old. Still, there is need to adjust some aspects of the instruments and the subsequent coding to enable analysis of data. Preliminary results in relation to acquisition/ use of gesture and communicative functions illustrate the relevance of the frequency of gestures in different age range and specific types of communicative intent that these gestures convey. Development studies in pre-linguistic communication are relevant and crucial in Portugal in order to understand the process that support language development, since these studies bring relevance to assessment and intervention in early childhood for Portuguese children with communication disorders.

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