



The development of referential communication: Improving message accuracy by coordinating private speech with peer questioning



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ABSTRACT

In this study, we examine the development of referential communicative regulation, incorporating the Vygotskian notion of private speech. From this perspective, private speech may serve a regulatory role when the child speaker is focused on what to say when speaking to others. In a longitudinal study carried out with 10 pairs of children with a mean age of 4.5, 6.5, and 8.5 years, we analyzed the relationship between the capacity of the child in the speaker role to modify messages, increasing their informative quality, the presence of private speech embedded in the messages, and the emergence of prior questions by the child in the listener role aimed at clarifying some aspect of the message. We found that the number of modified messages, the mean frequency of private speech in the messages, and the number of peer's questions all increase with age. Only in the case of the modified messages by the speaker did we find a triple interaction among age, use of private speech, and the presence of peer's questions. At 8.5 years, the presence of peer's questions and subsequent use of private speech appeared together for the majority of the modified messages. This was not the case at the ages 4.5 or 6.5. In line with Vygotsky's theses, private speech would play an important role to allow communicators to reflect on the quality of their communicative utterances, and to modify and improve them accordingly. In this process, the capacity to improve message accuracy by coordinating private speech with peer questioning clearly emerges with age.

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1. Introduction

The capacity for regulating the elements required for successful communication represents a key turning point in the mastery of communicative processes (Flavell, 1981; Lefebvre-Pinard, 1985; San Martín, Boada, & Forn, 2009). In general, this capacity is considered to allow matching the characteristics of the context to the purpose of the communicative encounter, by means of the flexible and differentiated use of diverse communicative strategies. The development of communicative regulation has been analyzed from different perspectives, in diverse contexts and tasks and with many indicators. In this study, we examine this issue within the framework of referential communication (Dickson, 1981). The investigations within this framework were originated in the work of Piaget (1923). For this author, the goal of the communicative encounter is the verbal transmission to an interlocutor of the

representations of some object, event, phenomenon, or idea that constitutes the referent of the message. Most of the prior investigations use variants of the procedure created by Glucksberg and Krauss (1967). In these tasks, the speaker should select and verbally code a given referent within a message. The message transmitted to the listener must describe the attributes that unambiguously distinguish the referent (Plumert, Pick, Marks, Kintsch, & Wegesin, 1994). The listener must compare the speaker's verbal production with each one of the elements in the set in order to identify the correspondence between the verbal expression and the objective attributes of the referent. When the speaker distinguishes in the message one of these referents unequivocally, the listener has made the correct choice.

Effective communicative regulation in referential contexts involves the detection of possible ambiguities in the information provided or received and the deployment of adequate resolution strategies. In the case of the listener, the implementation of strategies when faced with possible ambiguities in the information received, is basically done by means of formulating questions aimed at clarifying the message received (Lloyd, Peers, & Foster, 2001; McTear, 1985; Robinson & Robinson, 1981). In the case of

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the speaker, the implementation of strategies in the face of possible ambiguities in previously provided information is affected by modifying and restructuring the information, either spontaneously or when so requested by the interlocutor (Martínez, Forns, & Boada, 1997; Resches & Pérez-Pereira, 2007). These capacities are progressively developed according to the demand and the cognitive difficulty of the referential task (Boada & Forns, 2004; Plumert et al., 1994). The latter authors designed a spatial referential task in which, in order to communicate the location of some objects (referents), *spatial support relations*—on top, beneath—and *proximity relations*—near, behind, to the left—had to be identified. This task was applied to children between 3 and 4 years of age, and greater difficulty expressing proximity relations than support relations was observed. In a longitudinal study with pairs of children evaluated at ages 4, 6, and 8, and using a similar referential task, Martínez et al. (1997) found that the messages formulated by 4-year olds are usually of low informative quality. At this age, children are able to identify referents by name and some of their attributes. They are able to provide support relationships but they usually fail to indicate proximity relationships. Thus, for example, the child in the role of speaker might verbalize that “the hat is on top of the table” without indicating whether it is to the left or to the right. Despite the low quality of these messages, the listeners do not usually formulate any clarification questions. Between 6 and 8 years, the messages formulated are of better quality, as proximity relations are provided, and the listeners usually ask questions aimed at clarifying this kind of relation.

However, progress in communicative regulation is slow and children still have difficulty detecting ambiguity and implementing strategies to resolve these issues until the age of 8–11 years (Camaioni, Ercolani, & Lloyd, 1998; Lloyd, Camaioni, & Ercolani, 1995). The above-mentioned works show that, despite communicative progress, ambiguous or low-quality messages do not always generate listeners' clarification questions. Question formulation does not always lead to the speaker's ability to respond by modifying and improving the quality of the initially constructed message. This does not imply that the speaker or the listener did not capture the ambiguity of the message but that their problems may be related to the deployment of an effective resolution strategy.

Recently, a number of studies have reintroduced the Vygotskian notion of private speech for in-depth understanding of the development of regulation in communicative tasks (Boada & Forns, 2004; Feigenbaum, 2009; Frawley & Lantolf, 1985; Girbau, 2002; San Martín, Boada, & Forns, 2009; Martín, Boada, & Feigenbaum, 2011; San Martín, 2012; Varenne and Beaudichon, 1996). Private speech is considered to be verbal production that seems to be directed toward oneself, and is used to regulate the current task, and progressively allows access to planning and autonomous regulation of the activity (Diaz, 1992). Vygotsky (1934/1987) theorized that private speech is activated whenever a child encounters a problem that requires thinking, or in response to cognitive challenges. He hypothesized that private speech plays a fundamental role in the mastery of various types of cognitive tasks and in the development of conscious reflection and planning. Several decades of research support his view (Diaz & Berk, 1992; Winsler, Fernyhough, & Montero, 2009). The studies that show that private speech is involved in the regulation of referential communication are scarce, but consistent with the results of classic research on the development and cognitive function of private speech (San Martín et al., 2009). The current research provides empirical evidence of: (a) the presence of private speech in messages when the speaker is focused on what to say when speaking to others (Boada & Forns, 2004; San Martín, Boada, & Feigenbaum, 2011; San Martín, 2012; Varenne and Beaudichon, 1996), (b) a tendency to internalize private speech in messages, so that audible private speech gives way to partially concealed forms, such as murmurs (San Martín et al., 2011) and (c) a

relation between the emergence of private speech and the difficulty of the referent to be communicated (Boada & Forns, 2004; San Martín et al., 2011; Varenne and Beaudichon, 1996). We now discuss these studies in more detail.

Regarding the presence of private speech in the messages produced within a referential communicative task, it is important to point out that although the communicative task was very similar in the four studies, the way in which the messages were considered as being private speech varied across studies. Varenne and Beaudichon (1996) based the identification of private speech exclusively on the presence of self-corrections within the messages. Boada and Forns (2004) inferred private speech by the presence of certain types of fragmentations in the messages. In the case of the studies reported by San Martín et al. (2011) and San Martín (2012) a message was considered as including private speech if it contained certain types of audible verbal elements and/or silences that were not explicitly directed at another person and that indicated a self-regulatory effort to elaborate the message. Although they used different codification systems, each of the studies showed the presence of private speech within a referential communicative task.

In addition, the developmental course of this presence was very similar to that usually identified for other types of tasks; that is private speech begins to appear at the age of 4 and shows a peak around the age of 6. Boada and Forns (2004) carried out a longitudinal study that documented an increase of private speech between the ages 4.5 and the 6.5 years. Meanwhile, San Martín et al. (2011) and San Martín (2012) also reported longitudinal data showing an increase of private speech between the ages of 4.5 and 6.5, with no differences between 6.5 and 8.5. On the contrary, Varenne and Beaudichon (1996), in a cross-sectional study, did not find differences between the use of private speech between the ages of 8 and 9. Only San Martín et al. (2011) analyzed semi internalized forms of private speech (external manifestations of inner speech). They found that this type of private speech was not used at the age of 4.5, and at the same time, there was a significant increase in its use between the 4.5 and the 6.5 years. Between the ages of 6.5 and 8.5 years, there was a moderate increase.

Finally, regarding evidence of the relationship between private speech and the difficulty of the communicative task, there are some specific data from the mentioned studies that can be addressed. Boada and Forns (2004) designed a spatial communicative task where the referential objects had two different levels of difficulty (high and low). The level of difficulty was established from the amount of information needed for the identification and location of the objects. The difficult referents were those that required greater use of proximity relations (right, left) in order to locate them correctly. The results show a higher amount of private speech use in the case of communication about the difficult objects, both at 4.5 years as well as at 6.5. Data from San Martín et al. (2011) replicated these findings and extended them until the age of 8.5 when almost all messages about difficult referents contained private speech.

In these studies, it is shown that private speech embedded in discourse may serve a regulatory role in referential tasks. However, the process through which private speech may be important in allowing communicators to reflect on the quality and efficiency of their communicative utterances, and to modify and improve them accordingly, needs to be studied in more depth. As seen in the review of referential communicative studies, modifying and restructuring a message means that the speaker has been able to effectively deploy a strategy to resolve the ambiguity or low information quality of the previously formulated message. However, we have no studies addressing the role of private speech in the processes of modifying and restructuring a message, processes that are aimed at increasing its informative quality. This issue refers to another, more generic and complex problem, such as the relation

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