



Development of early communication skills in the first two years of life

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ARTICLE INFO

Article history:

Received 3 August 2011

Received in revised form 3 September 2012

Accepted 6 November 2012

Keywords:

Early communication

Joint attention

Language

Vocabulary

Typical development

ABSTRACT

The first two years of life is a crucially important period for the development of communication skills. In this study joint attention and language development were monthly assessed between 8 and 24 months of age in a sample of 23 typically developing children to establish the developmental trajectory of specific joint attention skills, to investigate the developmental interrelations of these different joint attention skills with vocabulary size, and to examine whether the order of development of following and directing attention influences the development of other early communication skills such as language. All joint attention skills emerged between 8 and 15 months of age and responsive joint attention skills tend to emerge before initiative joint attention. Early joint attention skills influenced later language development, but not the other way around. Children in whom directing attention with gaze alternation developed early (in age or order) showed a relatively larger early vocabulary growth. A fine grained mapping of the normal development of early communication skills can be helpful in the early detection of abnormalities in these skills.

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1. Introduction

It is from the very beginning of life that infants show a remarkable sensitivity to social stimuli (Striano & Rochat, 1999). In the first months of life they rapidly learn that the gaze and looking behavior of others contain important information (Farroni, Csibra, Simion, & Johnson, 2002; Symons, Hains, & Muir, 1998). Making eye contact is a potent means of establishing a communicative link in humans. A milestone in early communicative development is the emergence of joint attention between an adult, an infant, and some object or event. Joint attention is defined as the capacity to engage in coordinated social interaction, which includes (1) sharing attention (e.g., through the use of alternating gaze), (2) following the attention of others (e.g., following eye gaze or a point), and (3) directing the attention of another. The description of the early communication skills (sharing, following and directing attention) is shown in Table 1. Another milestone in early communicative development is the acquisition of language (Table 1). Language is an essential skill as it influences other domains, such as social and cognitive development. However, the exact longitudinal interrelations between joint attention and language development deserve further attention.

Only a few studies have monitored the development of early communication skills, such as joint attention and language, longitudinally. This is of importance, because it enables to get a detailed view on the developmental trajectory of these skills

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Table 1

Description of early communication skills: sharing, following and directing attention and language.

Early communication skill	Description	Development
Sharing attention	A triadic interaction that involves the infant's alternation of gaze between an object and the adult with the intention to integrate attention to the object and the person in one interaction or monitoring the adult's attention	Sharing attention emerges around 9 months of age ^a
Following attention	Following the direction of the gaze or manual pointing gesture of another to an outside object	6 months: following the head movement of an adult with their eyes or turning their head in the right direction ^b Till 12 months: fixating on the first object along the scan path even if it is not the target object ^c 12–18 months: more and longer joint attention and able to follow attention to objects outside their visual field ^d Point following tends to emerge before gaze following ^e
Directing attention	Direct the attention of others by giving, showing, reaching and/or by pointing toward objects or situations with an imperative or declarative intention Imperative gestures request behavior and declarative gestures request the attention of others ^g	The first imperative and declarative gestures with and without gaze alternation emerge around 9–10 months of age and becoming more frequent between 12 and 15 months of age ^f
Language	System of communication through the use of making sounds and speaking and understanding words	First year of life: cooing and babbling First birthday: first simple words besides mum and dad 18 months: productive vocabulary of 10–20 words Second birthday: words symbolize or represent objects, actions, and thoughts and productive vocabulary expands around 100 words

^a Bakeman and Adamson (1984), Carpenter et al. (1998), Saxon, Frick, and Colombo (1997) and Trevarthen and Hubley (1978).

^b Butterworth and Cochran (1980), Butterworth and Jarrett (1991) and Morales, Mundy, and Rojas (1998).

^c Butterworth and Cochran (1980) and Butterworth and Jarrett (1991).

^d Deak et al. (2000).

^e Butterworth and Jarrett (1991), Carpenter et al. (1998) and Morissette, Ricard, and Decarie (1995).

^f Bates et al. (1975).

^g Bates et al. (1975), Carpenter et al. (1998), Liszkowski, Carpenter, Henning, Striano, and Tomasello (2004) and Tomasello (1995).

and the individual differences thereof. One such longitudinal study was conducted by [Carpenter, Nagell, and Tomasello \(1998\)](#) who investigated social cognition, joint attention, and communicative competence from 9 to 15 months of age in a group of 24 typically developing children. The focus of the study was the initial emergence of infants' social-cognitive skills and how these skills were related to one another in a developmental framework. A stable pattern of emergence was found: infants progressed from sharing, to directing, to following others' attention and behavior. However, Carpenter et al. appeared to have applied scoring criteria of proximal gestures (showing) such that it resulted in a different order of emergence whereby infants progressed from sharing, to following, to directing. Although Carpenter et al. investigated a wide range of skills, the age span was limited mainly because several early communication skills had not emerged fully at 15 months. Other longitudinal studies had methodological shortcomings, such as using only a few assessment times or including only a few early communication skills ([Morales et al., 2000](#); [Mundy et al., 2007](#); [Naber et al., 2008](#)), or measuring early communication skills at one time point or just a few skills at several ages during a certain time span in a cross-sectional set-up ([Deak, Flom, & Pick, 2000](#)). Yet it is essential to measure a complete set of early communication skills in a longitudinal fashion in order to establish the developmental order of specific early communication skills. This knowledge, together with knowledge of individual differences in typically developing children, could make it easier to detect an anomalous pattern of development, such as in children with autism spectrum disorders (ASD), who show impairments of joint attention skills and language already in infancy and toddlerhood ([Charman, 1997](#); [Chiang, Soong, Lin, & Rogers, 2008](#); [Naber et al., 2008](#); [Osterling, Dawson, & Munson, 2002](#)). Therefore, the first aim of the current study was to establish the developmental trajectory of specific joint attention skills during the first two years of life.

A second important aim was to investigate the developmental interrelations of these different joint attention skills with the size of receptive and expressive vocabulary. Joint attention is considered to provide the foundation of the shared experience that is necessary for language acquisition ([Tomasello, 1995](#)). In other words, "joint engagement interactions are based on social processes more basic than language and therefore make language acquisition possible by creating a shared referential network within which the child may experientially ground the language used by adults" ([Carpenter et al., 1998](#)). [Bruner \(1975a, 1975b, 1977, 1983\)](#) has set the argument that there is a continuity in the process by which children communicate with others prelinguistically and linguistically and that processes of joint attention are at the root of this commonality. In line with [Bruner's groundwork \(1975a, 1975b, 1977, 1983\)](#), most studies indicate that joint attention, and in particular following attention and directing attention, stimulates language acquisition and not the other way around

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