

Construction of Communication During Young Children's Play

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This paper reports a qualitative analysis of play episodes among 6-36 month-old children, videorecorded during free play activities at two daycare centers in Brazil. The analysis aimed to retrace the process of construction of meanings in this interactional field and, more specifically, the differentiation of communicative codes in the course of this process. Communicative codes range from facial expressions, gestures and other body movements to primitive verbal expressions. In each case, we point out the reconstruction of meanings occurring in the current interactional field. The roles of peer interaction and of free play in the construction of communicative conventions as part of a particular peer culture, as well as in the development of communication in early childhood, are suggested.

Keywords: Communication. Play. Child-child interaction.

Construção da comunicação durante a brincadeira em crianças pequenas. Esse artigo relata uma análise qualitativa de episódios de brincadeiras entre crianças de 6 a 36 meses, videogravados durante atividades livres, em duas creches, no Brasil. A análise objetiva traçar o processo de construção de significados nesse campo interacional e, mais especificamente, a diferenciação de códigos comunicativos no curso desse processo. Códigos comunicativos vão desde expressões faciais, gestos e outros movimentos do corpo até formas primitivas de expressões verbais. Em cada caso, indica-se a reconstrução de significados no campo interacional. Sugere-se que a interação de crianças e a brincadeira desempenham um papel na construção de convenções comunicativas, como parte de uma microcultura de pares, e no desenvolvimento da comunicação da criança na fase inicial de sua vida.

Descritores: Comunicação. Brincadeira. Interação criança-criança.

According to a currently consensual definition, human environment is basically a sociocultural environment. For each individual human being, interaction with the environment is mediated since the first moments of life by other human beings with and through whom the child reconstructs meanings about the world which characterize his/ her cultural group; builds him/ herself as an individual and as a social being, and participates in the permanent process of construction and transformation of his/ her environment.

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This approach, which has been successfully used in the analysis of individual development in child-adult interactions, is recently being applied also to the analysis of child-child interactions. Due to historical reasons in psychology and of more general conceptions and practices regarding childhood, adult partners have been considered as more competent and more motivated to the promotion of development, and thus have

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centered the attention of development researchers until the late seventies (Camaioni, 1980; Carvalho & Beraldo, 1989). The shift in this perspective that occurred in the last three decades, which have witnessed new interest on peer interactions, is part of the theoretical and empirical context in which our work was developed (Carvalho, 2004; Carvalho & Pedrosa, 2002; Carvalho & Pedrosa, 2003; Carvalho & Pedrosa, 2004).

The purpose of this paper is to illustrate the occurrence of joint construction of communication through the description and analysis of play episodes among 6-36 month-old children, and to suggest some thoughts about the implications of these data for our understanding of the nature and possible functions of this sort of social mediation. Social partners are assumed to be a privileged part of the environment, due both to their characteristics as active mediators of the relationship with the environment and to the motivational priority of social interaction in this relationship (Carvalho, 1989a; Carvalho & Beraldo, 1989; Pedrosa, 1989; Pedrosa & Carvalho, 1995).

We present a qualitative analysis of play episodes that were videorecorded weekly during free play periods at two daycare centers in Brazil, along one year in the first and for five months in the other. From this record a number of episodes were selected, aiming to illustrate different modalities and sources of transformation in the process of construction of communication. The selected episodes will be summarized in order to highlight the main points focused.

Construction of communication

Social contact requires mutual regulation of the partners' actions. It is the evidence about reciprocal effects of the presence (or absence) of social partners that defines sociability in a broad, biological sense. In the animal world, one of the prevalent mechanisms of social regulation is the ritualized gesture, built as a communicative resource along phylogeny.

Through processes such as reduction of morphological variability, enhancement of conspicuity and liberation from original motivational contexts, ritualized gestures were selected for their functional value as signs that represent the behavioral predispositions of interacting partners (Hinde, 1974).

From a comparative perspective, it can be assumed that similar mechanisms are active in human interaction, particularly in the earlier stages of life, when verbal language has a minor role. The role of eye contact and of smiles has been documented in early mother-child interactions (Lyra & Rossetti-Ferreira, 1995) and in child-child interactions (Otta, 1995; Pedrosa, 1996) and it suggests the operation of this sort of mechanism in the regulation of social contacts. A further example is the lateral bending of the head in appeasing, begging and offering contexts, observed by Montagner (1978). A possible variant of this gesture is the "leveling posture" (an adult or an older child bends the body or crouches in search of eye contact with a younger partner) observed by Carvalho (1989a) and Lordelo and Carvalho (1999) in comforting and "caretaking" contexts.

It can be assumed that at least part of the mutual regulation occurring in child-child interactions is mediated by the pre-organized emission of, and responsivity to, ritualized gestures. But the actual observation of the interactional process highlights also the continuous occurrence of reconstruction of meanings of communicative codes, including ritualized gestures, idiosyncratic gestures and linguistic segments.

Meanings of laughter

Often accompanied by playful screams and body movements, laughter is one of the most frequent and conspicuous expressive behaviors in play situations. In several contexts it appears to signalize receptivity, invitation and/or interest and pleasure in shared activities; in agonistic contexts, it can signalize affiliative motivation and result in appeasement in very young children (Carvalho, 2000). Figure 1 shows an example of this behavior with Vivi (G,



Figure 1. (A) *Appeasement*. 1. Vivi kicks Jo trying to stop him from climbing the swing; 2. Jo smiles at her; 3. He climbs the swing and the two children interact. (B) *Creating a game from accidental actions*. 1. Vivi and Alex playing “pretending to sleep”; 2. Alex and Luci pretend to sleep and are observed by Dani while she pushes the swing; 3. Dani tries to “wake them up”.

2;1) and Jo (B, 2;3) [All the photos were selected from the video database of the Laboratory of Human Social Interaction of the UFPE. The database was prepared by the first author of this paper, coordinator of the Laboratory. Children’s sex and age are indicated by the conventions G (girl), B (boy), y; m (years; months of age)].

The “laughs episode” illustrates the construction and use of laughter as a more specific communication code, which selects an aspect of the game and regulates the partners’ behavior according to this selection.

Episode 1 - “Laughs”. The children are outdoors in the playground. Two girls (Dani, 2;1 and Luci, 2;4) are standing on a two-seat swing, which is pushed back and forth by Cris (G, 1;9). Dani and Luci are laughing loudly and screaming playfully. Eli (G, 2;0) approaches the swing and starts to push it too, which makes the swing movement stronger. Cris and Eli leave, the swing movement slows

down; Dani and Luci stop laughing. After a moment, Cris comes back with Rafa (B, 2; 9) and they start to push the swing again; the movement is now stronger than before, possibly because Rafa is an older child. As the swing moves higher, Luci starts to laugh loudly, and so does Dani, who also shakes her body rhythmically. As soon as Rafa stops pushing and the swing slows down, being pushed only by Cris, the laughing stops. It bursts again as Rafa gives the swing another strong push. Rafa stops pushing once more, and the laughing stops, although Cris is still pushing. Rafa leaves for a brief moment, then comes back and starts to push. Luci immediately starts to laugh and to shout playfully. Dani looks at her, then at Rafa, and also starts to laugh, scream and shake her legs.

The interactive process in this case has specified a particular meaning for laughter: not only the expression of pleasure due to the excitement of moving, but information about a particular aspect of the game that was chosen

by the two girls - the stronger movements resulting from the pushes of a second stronger child. "Having agreed about this choice, the two girls coordinate their actions, adjust them to the swing movements and thus create the possibility of communicating this choice to the other children and of regulating their behavior accordingly" (Carvalho, Império-Hamburger & Pedrosa, 1998, p. 167). Laughter is now a new, idiosyncratic code, with a context - specific meaning for this particular group.

As children gradually master a symbolic code, the meanings of laughter can be further differentiated according to more general cultural conventions mediated by verbal language. The meaning of gestures like smiles and laughs varies according to contextual cues in everyday life. This fact is well depicted and used by good fictional writers: pleasant laughs, nervous laughs, ironic laughs or smiles and so on – and children gradually master these often subtle differences. For instance, again in agonistic contexts, laughter can be understood as scorn, irony or sarcasm and these comprehensions may serve an eliciting or an escalating function regarding aggressive actions (Carvalho, 2000). In our observations, this occurred with children over 3 years of age. This age specification is of course probably subject to individual and cultural differences; but it seems reasonable to expect some age delay in the differentiation of these meanings, since they possibly require more sophisticated cognitive and representational skills. No evidence of this sort of meaning was found in younger children, who seem to take smiling/ laughter at their face value, that is, basically as signs of pleasure and of affiliative motivation.

Thus, the fact that laughter and smiles are ritualized gestures, whose phylogenetic origin can be traced back to higher primates' facial and vocal expressions, does not mean that they are immune to social experience and to active reconstructions of meaning and function along ontogeny. To say the least, this would be incongruous with the assumption that the nature of human adaptedness is biologically sociocultural (Carvalho, 1989b, 2000).

Creating codes from accidental actions

Episode 2: "Pretending to sleep". The children are playing in the playground, where only one toy is available: a two-seat swing. Vivi (G, 2;1) and Alex (B, 2;4), and then Alex and Luci (G, 2;9) develop a "pretending to sleep" game, closing their eyes and bending their heads against the seat. Another girl (Dani, 2;7) approaches the swing, pushes it, observes the scene for a moment and says: "Me wanna playing too". She steps into the swing and says to Luci: "Wake up! Wake up!", thus making explicit the shared meaning of the other children's actions.

The "pretending to sleep" game is triggered by Alex who, after displacing Luci from the swing, sits down, leans his head on the seat and closes his eyes. He is observed by Vivi, who imitates him (some pictures of this game can be seen in Figure 1B). Alex notices the imitation, approaches the girl and touches her head bending it towards the seat; then he reproduces her actions and later touches her eyes as if to close them. Alex and Vivi repeat the bending-the-head-and-closing-the-eyes sequence five times. Luci comes back, observes them and imitates them; now Alex alternates the sequence with Luci. An apparently accidental action by Alex – bending his head backwards and closing his eyes – was thus transformed into a shared code representing a game. Dani decodes this meaning verbally, but she shows she has already recognized it when she says that she wants to take part in the game.

A similar process is illustrated by the following episode, where one of the children selects a posture of her partner (crawling on fours) and gives it a meaning expressed in a single word – "doggie" – an action which organizes a chasing game that can be developed and shared by other children. The "doggie" is seen in Figure 2A.

Episode 3: "Doggie". A group of children is running together in several directions around the room. One of the children (Alex, B, 2;10) is crawling on fours; two other children (Vani, G, 3;0, and Jo, B, 2;9) start to run around

Construction of communication



Figure 2. (A) *Creating a game from naming an action.* 1. Vani approaches Alex and calls him “Doggie”; 2. Several children “chased” by the “dog”. (B) *The “lie down game”.* 1. In the second turn of the game, Vani tickles Cris’ belly; 2. Cris points to the ground when Vani fails to take her turn in the game. (C) *Dan and Luci.* 1. Piling cubes; 2. Knocking them down. (D) *Alliance.* 1. Alex beats and pushes Si; 2. Vivi looks at Si and points to Alex before beating him again.

Alex. Vani approaches Alex, stretches her hand toward him and says: "Hey, doggie! Doggie! Doggie!" She runs away from him, laughing and shouting, Alex follows her. Other children join Vani and Jo as they pretend to be pursued by the "dog." The "dog barks" at them and pretends to bite them. They laugh and shout, and make moves away and towards him.

Transformations of linguistic segments

Linguistic segments can also be actively transformed in the interactional situation through experimentation and differentiation of new context-specific meanings. The "Lie down" episode is an interesting example. Pictures of this episode are seen in Figure 2B.

Episode 4: "Lie down!". The children are in the playground, where several toys are scattered. A game is initiated by two girls (Vani, 2;0 and Cris, 1;9). One of them lies down while the other tickles her belly and makes her laugh. On the third turn of the game, when Cris lies again, Vani says: "Lie down! Lie down!", as if confirming the partner's action. Vani fails to take her turn lying down, and Cris points the ground to her while she keeps repeating "Here, lie down!", as if asking her to replace her turn. After a short interruption, Vani is heard saying "Lie down!". A boy (Rafa, 2;9) joins the girls and falls seated near them, then lies down while the girls laugh. Cris touches Rafa's belly. Vani keeps repeating "Lie down!". From a distance, another girl (Dani, 2;2) who is watching the three partners lies down, then sits. Rafa stands on fours, Vani touches his back and says: "Lie down!". Dani (still from a distance) lies down again, sits and looks at Cris, stands on fours. Dani says "Miew, miew"; the four children stand on fours, laugh, run and crawl on the floor. Several minutes later Vani is heard repeating "Lie down!"

The several contexts in which the expression "Lie down" was used by Vani allow the identification of meanings being

differentiated: a confirmation in a first moment, a proposal for a change of turns, an invitation to play the game (directed both to Cris and to Rafa), and the global situation created by the game, which is recognized by Dani. The action of lying down, originally selected by Vani and Cris when they start the game, is verbally described by Vani when she first says: "Lie down", an expression which evidently already belonged to her verbal repertoire. From then on, the expression is articulated in different moments, in a process of experimentation, specialization and establishment, where the words are actively reconstructed and come to have a particular meaning in this particular interactional field: that of a shared game involving turns of lying, sitting and touching. With this meaning, the words acquire a communication and realization potential: by saying "lie down", the child increases the possibility of the game being repeated and shared with other children, becoming part of the group play culture (Corsaro & Molinari, 1990; Pedrosa & Eckerman, 2000).

Episode 5: "Piling cubes". Several children are playing with cubes on the floor. Dan (B, 2;8) and Luci (G, 2;5) are sitting face to face and playing together with the same set of cubes, which they pile and knock down alternately. In the course of the game, Dan refers to Luci in three different ways: "Where's the other one? No, baby, don't take this one out, no..." Later he calls her by her name: "Luci, stop shouting!". In a third moment, while trying to take a cube from inside a bigger one, he looks at Luci and says: "Mum, take this out... take it out, Mum...". Luci takes the cube from his hands and turns it upside down, as if trying to do what he asked.

In Figure 2C Luci and Dan pile cubes. These different ways of addressing the partner suggest that the child is attributing to himself and to his partner different roles according to contextual cues: in the first moment, Luci is treated like a young child who has to be guided; in the second, like a child who is misbehaving and should be scolded; in the third, like a mother who can help him. This episode illustrates further possibilities of reconstruction of language in the interactional field. It is not



Figure 3. “Recognizing” a non-verbal vocalization. 1. Guga manipulates the box and gurgles; 2. Jef bullies Maya; 3. Jef interrupts his action and orients himself to Guga.

the construction of a new meaning; instead, words and meanings already available are actively articulated in the current situation according to previous interactional experiences. Luci’s reaction as she tries to help Dan to separate the cubes indicates that this reconstruction is shared. This example also illustrates the integration of play with objects and elementary role play.

Episode 6: “Alliance”. Si (G, 1;8) tries to stop Alex (B, 2;5) from taking part in an ongoing make-believe game, by pushing him. He falls down and cries, Si beats him. He beats her also, pushes her and makes her fall down and cry. Other children watch the fight. Alex tries again to take part in the game and succeeds (one of the girls who are playing offers him a pretend glass of water). Vivi (G, 2;2), who is also playing pretending to comb Paola’s hair looks at Si, who is crying and asks: “Was it? Yeah? Yeah?”. Then she looks at Alex, approaches him and asks again, looking at Si: “Yeah?”. Si stops crying. Vivi beats Alex and goes back to her former place. Si starts to cry again. Vivi looks at Si, points to Alex and asks: “Him?”. Si nods and repeats: “Him! Him!” Vivi approaches Alex, beats him again and goes back to her place. Si stops crying. Alex looks at Vivi and continues to take part in the game.

Figure 2D shows two moments of the “Alliance” episode. In this sequence, three verbalizations – “was it”, “yeah” and “him” make

up a dialogue, constituted mainly by gestures and postures. Si seems to have understood Vivi’s intention of retaliating Alex’s aggression on her: she stops crying even before Vivi hits Alex for the first time. As Si starts crying again, Vivi seems to assume that she was expected to beat Alex once more. Vivi uses an interrogative intonation when asking: “Him?” while pointing to Alex, and Si replies using the same word with an affirmative intonation and nods. This sequence illustrates the articulation between expressive components and language in the construction of communication in the interactional field of young children.

Creating codes from pre-linguistic vocalizations

The preparedness of young children for the active engagement in communication processes is nicely illustrated by this last episode, in which a pre-linguistic vocalization is endowed with a contextual meaning by children aged less than 17 months. Figure 3 shows some photos of this sequence.

Episode 7: “Guga gurgles”. Along several weeks, Guga (B, 10 months) had been observed producing a peculiar vocalization, a gurgle, when he looked at an object, approached it and/ or manipulated it. In the last phase of the observation period, at least

one other child (Jef, 1; 5) seemed to recognize a meaning in this vocalization. Guga had been sitting and manipulating a big cardboard box while looking at Jef and at other parts of the room. Jef attacks Maya pushing her hair, Maya protests, Jef keeps fighting her. Meanwhile, Guga gives a small excited scream as he manipulates the box and starts gurgling in his characteristic way, with increasing intensity and duration. Jef turns his head in Guga's direction, seemingly oriented by the gurgles. Jef leaves Maya and walks toward Guga, who is now crawling, pushing the box and still gurgling. Jef places his hands on the box, Guga does the same and tries to push it while Jef bends his body over the box, forcing it to turn down. Guga holds the box with one hand. Jef vocalizes, laughs and pushes it away from Guga.

This sequence highlights two interesting facts about the interactional dynamics of very young children: their mutual attentiveness and the motivational power on the partners of another child's actions. Not less impressive is the suggestion that toddlers can invest meaning on social actions they observe on the basis of their repeated association with surrounding events. Guga's gurgles seem to acquire in this context a status analogous to verbal communication, in that they come to mean a particular action, situation or partner and that this meaning is apt to be shared by other children.

Peer interactions and the construction of communication

The episodes described in this paper evidence the occurrence of effective communication between very young peers. They suggest also a constructive role of free peer interactions in at least two major – and related – directions: the differentiation of communicative codes from gestures, actions, linguistic segments and pre-linguistic vocalizations; and the constitution of a “peer culture” in the here-and-now of the group, on the basis of the potential permanence of shared

codes (Carvalho et al., 1998; Pedrosa & Eckerman, 2000). Two of the episodes – “Laughs” and “Guga gurgles” – are particularly illustrative of the transformation of expressive signs into referential communication, that is, into a sign that informs the receiver about some aspect of the environment (Hauser, 1996).

Though our approach was not originally oriented by the constructivist theorization currently prevalent in developmental studies, these suggestions are compatible with this theorization and also with recent empirical evidence and interpretations from several other sources. For instance, Verba, Stambak and Sinclair (1982) studied children from 18-24 months and produced evidence of frequent interactional exchanges in which the ideas of the interacting partners were a continuous source of reciprocal inspiration. Corsaro and Molinari (1990) highlight the fact that children engage in a social network of meanings and, based on these, construct new meanings. Lokken (2000) reveals the construction of welcoming rituals made up of gestures, laughs and cries, with which children greet their partners upon their daily arrivals. In a longitudinal study with 16-32 month-old children, Eckerman (1993) and Eckerman and Didow (1996) investigated the hypothesis that non-verbal imitative actions facilitate the mastery of verbal means for coordinated actions; the results were consistent with this hypothesis.

In our view, the contribution of our analysis is that it allows a concrete apprehension of the ongoing process of construction of communication, which has two main consequences. Firstly, it concretizes the discourse about the child's active role in the construction of his/her environment, relationships and self. Secondly, it offers cues about the directions in which the analysis of the actual process of construction should be pursued, both with qualitative and with quantitative approaches that should be increasingly intertwined and viewed as complementary in their specific contributions (Carvalho, Pedrosa & Lokken, 2001; Savage-Rimbaugh & Fields, 2000). We are currently attempting quantitative analyses of this sort of data in two directions: the classic procedure of

categorization of events and measurement of their frequencies – e.g., non-verbal/ verbal communication, direction of attention, occurrence and persistence of shared meanings (Sestini & Carvalho, 2004, 2005); and an interdisciplinary approach based on the assumption that the play group can be viewed as analogous to a physical system to which mathematical models can be applied. This latter approach is based on categorization criteria and time sampling that differ from the former, and involves the application of mathematical formulae derived from statistical mechanics. The picture it produces, though, is strikingly compatible, in terms of dynamics, to the one obtained with qualitative data. We interpret this similarity as an indication that similar general phenomena are being depicted in both cases, e.g., cyclicity of ordered-disordered states of the system, shared meanings as organizing elements (attractors) in the system, and evidence of persistence of meanings (memory) in the system. Our expectation is that this line of work may not only confirm/ endorse the conceptual framework derived from qualitative analysis, but also point out new questions and directions of thought. The quantitative approach may thus be seen as contributing to or heuristically cooperating with the qualitative approach (Carvalho, Pedrosa & Sestini, 2004; Império-Hamburger, Oiwa, Carvalho & Pedrosa, 2005; Oiwa, Império-Hamburger, Carvalho & Pedrosa, 2004).

Until recently research on child development has underestimated the role of peers and of peer interaction in the early years. The reasons for this and for the overcoming of this phase are varied and have been pointed out by several authors in the last few decades (e.g. Camaioni, 1980; Corsaro, 2003, 2005; James, Jenks & Prout, 1998). Among the reasons for this insight, Camaioni refers to the influence of ethological/ comparative studies on primate behavior, especially of Harlow's data on peer-deprived *versus* mother-deprived *rhesus* monkeys. It seems to us that the ethological approach – which was one of our main starting points – can contribute also in other, perhaps broader, ways: by raising functional questions that orient the researcher's attention and selections, and by endowing him/her with what

has been called “the classical ethological look” – the look of one who knows nothing about his/ her subject and starts with description, often qualitative, in order to grasp the relevant dimensions and processes of this subject before measures can be designed and applied.

Developmental Psychology has often treated young children from an adult perspective, which looked for processes similar – or prototypical – to/of those typical of adults, and this perspective may have blinded it to infancy-typical processes. Spurred on by work in anthropology, sociology, and psychology on children's peer relations and culture it seems that Developmental Psychology is perhaps finally on its way to uncover and understand these processes and their implications (Corsaro, 2005; Goodwin, 1998; Ribeiro, Bussab & Otta, 2004; Rogoff, 2003; Tomasello, 2003). Processes which are wholly compatible, in our view, with what a functional-ethological approach would predict: that, on the basis of what is known from our evolutionary history, children would be expected to be able to interact with other children from an early age (Konner, 1976), since an interactional, sociocultural, codified environment, actively built by its members, is the natural condition of human beings from birth on (Morin, 1973). The young children we have observed endorse this premise.

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