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Developmental Progression in Play Behavior of Children between Nine and Thirty Months: II: Spontaneous Play and Language Development

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Introduction

Different views have been expressed about the relationship between language acquisition and cognitive development. Traditionally, people tended to see intelligence as a factor in language development: the emergence of the first words announced the onset of thinking. This view is reflected in the work of Vygotsky (1962), which states that the emergence of language permits symbolic activity. Psycholinguists such as Chomsky (1965) and Lenneberg (1967) regarded language acquisition as an autonomous process. According to their theory, language develops in a genetically programmed manner, largely independent of the development of other cognitive capacities.

Piaget (1963, 1967) opposed the traditional as well as the psycholinguistic approach: he regarded language and symbolic activity as manifestations of the same semiotic function. Language development was not seen as an autonomous process of auditory processing and speech acquisition. Instead, it was in constant interdependence with cognitive development.

In recent years Piaget's view has been shared by an increasing number of re-

searchers (Sinclair 1969, 1971; Lezine 1973; Bates *et al.* 1975, Moerk 1975). Several studies have suggested a close relationship between the onset of 'make-believe' or symbolic play, reflecting symbolic activity, and the emergence of language (Hulme and Lunzer 1966, Lovell *et al.* 1968, Sinclair 1971, Rosenblatt 1977). However, systematically obtained data about the relationship between play and language development are still lacking.

It was the purpose of this study to investigate the relationship between the developmental progression of play behaviour and language development in children between the ages of nine and 30 months. The children's play was observed in a structured play situation (Largo and Howard 1979). The amount and variety of vocalizations, words and sentences displayed during the play session were the measures of expressive language. The assessment of receptive language consisted of the children's responses to verbal requests to identify objects and to engage in functional and representational play, as well as to display comprehension of prepositions by manipulating objects.

Material and Method

Sixteen children in each of eight age-groups between nine and 30 months were tested as described in Part I of this study (Largo and Howard 1979).

Language Assessment

(a) Expressive language:

The child's speech was transcribed from the videotape and analysed by means of the following coding system.

— *vocalization*: continuous string of syllables, not meaningful to the examiner. If one utterance was interrupted by one or more pauses of at least the duration of one syllable, two or more vocalizations were counted (*e.g.* the utterance /bah/bah/pause/bah/booh/booh/pause/booh/ consisted of three vocalizations). This procedure seemed to better reflect the developmental changes of non-word utterances than utterances themselves or syllables.

— *word*: verbal expression meaningful to the observer. Speech intelligible to the mother but not to the observer was scored under vocalization.

— *sentence*: creative spontaneous combination of two or more words, *e.g.* 'brush baby'. Rote expressions such as 'go nite-nite' were excluded.

— *echolalia*: repetition of a sentence, or part of it, which had been addressed to the child.

The total number of vocalizations and words, the number of different vocalizations and words, and the total number of sentences uttered during the play session were calculated. Inter-observer reliability was 0.95 and 0.84 for the total number of words and of vocalizations, 0.91 and 0.78 for the number of different words and of different vocalizations, and 0.97 for sentences. The presence or absence of echolalia was also noted, and the child's vocabulary used at home—as reported by the mother—was recorded.

(b) Receptive language:

In order to assess verbal comprehension, four sets of verbal requests were addressed to the child. Three sets consisted of six verbal requests concerning identification of objects, functional play (appropriate use of objects on the child's own body, *e.g.* child brushes his hair) and representational play (appropriate use of objects on the doll, *e.g.* child brushes the doll's hair) (Table I). The fourth set related to the comprehension of spatial prepositions (Table II).

The verbal requests were made following the child's spontaneous play and repeated not more than once. For example, after the child had finished his play with spoon, plate and cup he was asked to feed himself (functional play), to feed the doll (representational play) and to give the cup and spoon to the examiner (identification of objects). The child's response occurring within approximately the first minute after the verbal request was noted.

Results

Expressive Language

(a) Development of expressive language:

During the 25-minute play session, the vocalizations consisted of babbling sounds at the end of the first year, jargon during the second year, and speech often intelligible to the mother but not to the observer during the first half of the third year.

Vocalizations were recorded in all children between nine and 21 months (Table III), but in only half of them beyond 24 months. Both the total number of vocalizations and the number of different vocalizations increased threefold between nine and 21 months, and decreased thereafter.

The vocalizations were highly repetitive at all ages, in particular during the second year of life. Some children repeated the same vocalization up to 30 times. This finding is reflected in a high ratio between the total number of vocalizations and the

TABLE I
Verbal requests

<i>Identification of objects:</i>	
Give me – the doll	
the spoon	
the cup	
the bottle	
the brush	
the bed	
<i>Functional play:</i>	
Show me how you –	feed yourself
	with a spoon
	drink from a cup
	feed yourself
	with a bottle
	wipe your face
	brush your hair
	call Daddy
<i>Representational play:</i>	
Show me how you –	feed the doll
	with the spoon
	give the doll a
	drink from the cup
	give the doll the
	bottle
	wipe the doll's face
	brush the doll's hair
	let the doll talk on
	the phone

TABLE II
Verbal requests: comprehension of prepositions

Put the spoons into the cups
Pour some milk into the cups
Put the plates on the table
Put the pans on the stove
Put the doggie under the table
Put the doggie under the chair
Put the doggie behind the stove
Put the doggie behind the chair
Put the doggie in front of the stove
Put the doggie in front of the chair

number of different vocalizations.

There was a large individual variation in the total number of vocalizations, as well as in the number of different vocalizations. There were children who displayed as much as 10 times more vocalizations than the least vocal children. 20 different vocalizations were recorded for some children, compared with only one or two vocalizations for others.

None of the nine-month-old children used words during the play session, even though six of them were reported by their mothers to use one or two words at home. At 15 months half of the children used words and at 21 months all of them did so, except one. The child without words at 21 months was reported to use about 20 words at home. Between nine and 18 months the number of different words used by the children both during the play session and at home increased slowly: beyond 18 months their vocabulary expanded at a faster rate.

The children used not only vocalizations but also words in a highly repetitive manner: some children repeated the same word 40 times during the play session.

Individual variation in the total number of words and the number of different words used was even greater than that for vocalizations. Some children used words at 12 months, while others did not talk before 24 months. The total number of words ranged from 0 to 167 in the 24-month-old group. Sentences were absent before 21 months, but were noted in four children at 21 months and in all children by 30 months.

The number of different words, rather than the total number of words, correlated positively with those used by the child at home, as reported by the mother ($p < 0.02$). Thus the number of different words recorded during the play session seemed to be a valid measure of expressive language.

Between 21 and 30 months an increasing number of children showed echolalia. The children frequently repeated what was said by the examiner, either the whole sentence or part of it.

(b) Relationship between expressive language and play behavior:

No correlations were found between the total number of words or vocaliz-

TABLE III
Expressive language between nine and 30 months of age

Expressive language	Age (months)										
	9	12	15	18	21	24	27	30			
Total number of vocalizations	Mean Range No. 13.3 7-72 16	Mean Range No. 21.4 10-45 16	Mean Range No. 37.1 2-130 16	Mean Range No. 36.2 9-125 16	Mean Range No. 39.8 3-61 16	Mean Range No. 22.3 3-56 16	Mean Range No. 8.9 0-25 9	Mean Range No. 3.4 0-8 8			
Number of different vocalizations	3.0 2-6 16	4.6 3-5 16	7.3 1-20 16	8.8 4-21 16	8.3 5-21 16	5.0 2-8 16	2.5 0-6 9	2.1 0-5 8			
Total number of words	0.3 0-2 3	4.8 0-28 8	11.4 0-81 12	14.4 0-72 15	44.0 0-167 15	61.5 4-126 16	64.0 35-126 16				
Number of different words	0.3 0-2 3	1.1 0-11 8	4.5 0-25 12	8.1 0-48 15	20.6 0-69 15	37.1 6-84 16	39.4 21-75 16				
Number of sentences				0.8 0-4 4	3.0 0-19 11	11.5 1-29 16	14.6 3-31 16				
Number of words at home	0.8 6 3.3	15 12-1 16	24.8 5-50: 11	>100: 5	>100: 6	>100: 10	>100: 16				
Echolalia					2	5	11	13			

TABLE IV
Responsiveness to verbal requests* concerning identification of objects, functional and representational play

Responses to verbal requests for:	Age (months)										
	9	12	15	18	21	24	27	30			
Identification of objects	Mean Range No. 2.2 0-3 10	Mean Range No. 2.6 1-3 16	Mean Range No. 2.8 0-4 15	Mean Range No. 3.9 2-5 16	Mean Range No. 4.3 3-5 16	Mean Range No. 4.8 3-6 16	Mean Range No. 5.1 3-6 16	Mean Range No. 5.0 4-6 16			
Functional play	0.6 0-2 7	1.5 0-4 13	3.2 1-5 16	3.7 1-5 16	4.6 2-6 16	4.3 3-5 16	4.2 2-5 16	3.9 1-5 16			
Representational play	0.2 0-3 1	0.8 0-3 6	1.2 0-4 8	3.2 0-5 14	4.7 3-5 16	4.7 3-5 16	4.9 2-6 16	4.8 3-6 16			

* Six verbal requests in each section. † Number of children responding to at least one request.

ations, the number of different words or vocalizations, and the types of play behavior displayed at different ages. In particular, there was no relationship between these speech measures and functional, representational and symbolic play.

The presence or absence of words did not correlate with the presence or absence of functional or representational play: 14 children who demonstrated representational play between 12 and 24 months did not use words. There was also no correlation between the presence or absence of representational play and the presence or absence of words at home.

Finally, no correlation was found between the number of sentences used during play and the types of play behavior, in particular sequential play, between 21 and 30 months.

Receptive Language

(a) Response to verbal requests concerning identification of objects, functional and representational play:

At the end of the first year the children clearly showed verbal comprehension in identification of objects (Table IV). More than half the children at nine months and all children at 12 months identified between one and three objects (such as spoon, brush and doll) upon verbal request. They selectively looked at the object the examiner had asked for, touched it and frequently gave it to the examiner. By the age of 24 months most children identified five out of six objects.

Five children at nine months and 13 children at 12 months responded to one or more of the six verbal requests concerning functional play, such as 'Can you feed yourself with a spoon?'. Between 12 and 18 months the children enjoyed responding to these verbal requests, but beyond 18 months they seemed to become increasingly less interested in functional

play and therefore less responsive to verbal request.

At nine months one exceptional girl displayed spontaneous representational play and responded to verbal requests concerning representational play. She fed the doll with a spoon, gave the bottle to the doll and brushed the doll's hair upon verbal request. However, most children did not respond consistently to verbal requests for representational play before the age 15 months. After 18 months all children responded to at least three of the six verbal requests concerning representational play.

(b) Relationship between spontaneous play behavior and response to verbal requests:

Responsiveness to verbal requests concerning identification of objects did not correlate with any exploratory play behaviour observed at nine and 12 months (Largo and Howard 1979). In particular, children with extensive visual exploration and little mouthing and banging did not identify more objects upon verbal request than children with little or no visual exploration and more mouthing and banging.

It was further observed that knowing an object by name did not necessarily mean that the child was also able to use the object appropriately. A child might have identified the spoon and brush, but be unable to feed himself with the spoon or brush his hair.

At nine, 12 and 15 months, positive correlations were found between the amount of spontaneous functional play displayed during the play session and the responsiveness to verbal requests for functional play (Fig. 1). Children without spontaneous functional play were most likely not to respond to verbal requests. For children with spontaneous functional play, the number of types of play behavior

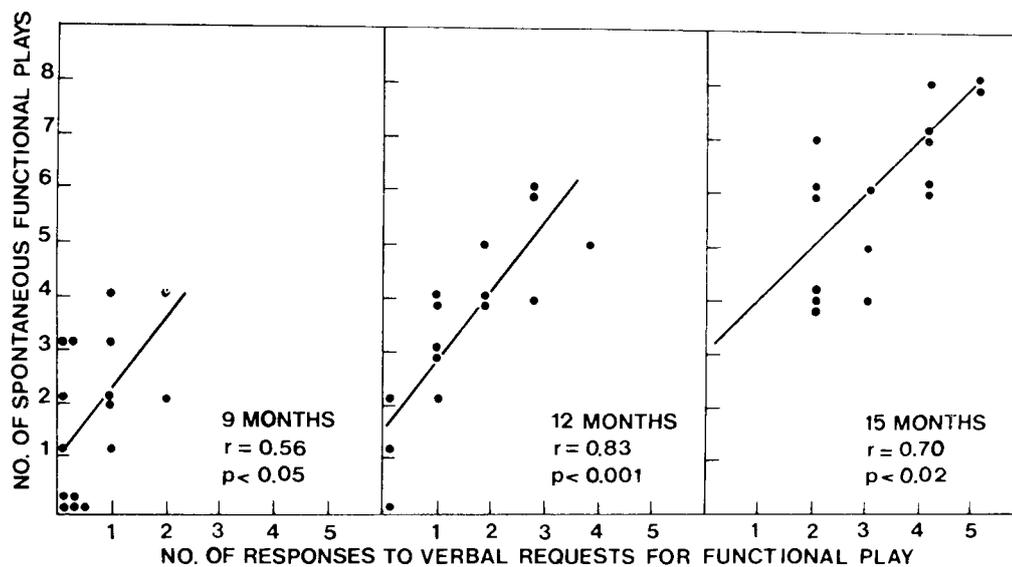


Fig. 1. Relationship between spontaneous play and responsiveness to verbal requests concerning functional play.

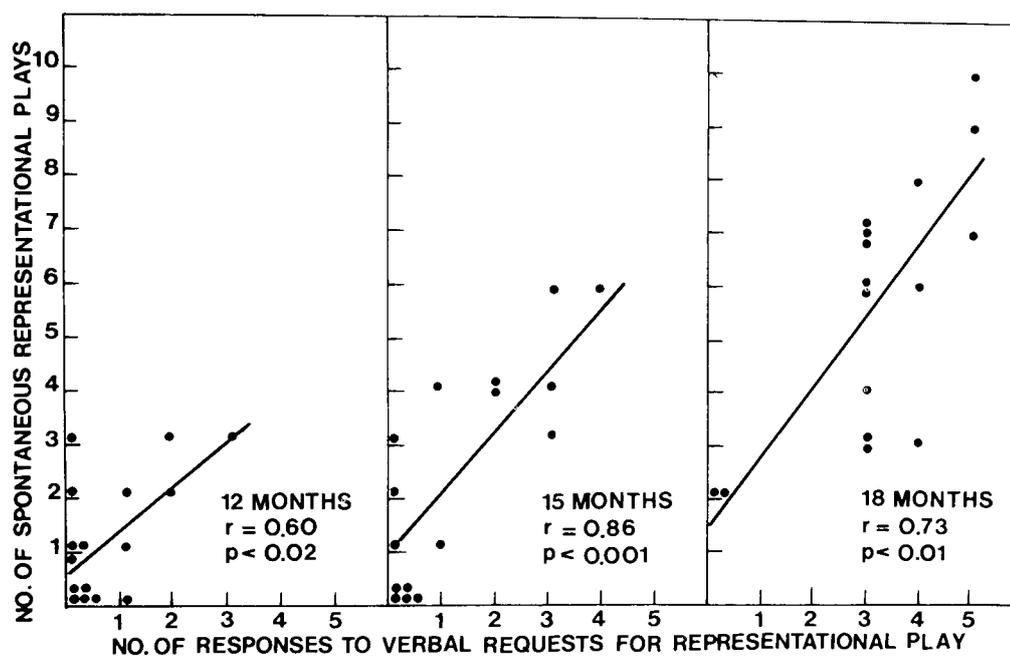


Fig. 2. Relationship between spontaneous play and responsiveness to verbal requests concerning representational play.

and the number of responses to verbal requests were positively correlated. This correlation did not occur beyond 15 months because spontaneous functional play was progressively replaced by representational play.

There were also positive correlations between the amount of representational play displayed during the play session and the children's responsiveness to verbal requests (Fig. 2). The most interesting finding was that children displaying only functional play did not respond to verbal requests for representational play: although they fed themselves with a spoon, they were unable to feed the doll upon verbal request.

(c) Relationship between play behavior with spatial characteristics and comprehension of spatial prepositions:

The emergence of comprehension of spatial prepositions coincided with that of play behavior with spatial characteristics. This suggests a possible relationship between comprehension and cognitive development of spatial concept.

At 15 months nine children responded to one or both verbal requests using the preposition 'into' and at 21 months all children did so (Table V). This finding is of interest because the peak age of container play was 15 months. This play behavior can be seen as a reflection of cognitive processes dealing with the spa-

tial relations between content and containers.

More than half the children at 18 months, and all children at 24 months, responded appropriately to verbal requests using the preposition 'on'.

Understanding of the preposition 'under' did not develop until 27 to 30 months. Comprehension of 'behind' and 'in front of' occurred in only half the children at 30 months.

The development of spatial concepts underlying verbal comprehension of these prepositions was reflected in spatial characteristics of the child's play between 15 and 24 months. At 15 months the children were unable to relate table, chairs and dishes to each other appropriately, but between 18 and 24 months they developed an understanding of the spatial relationship between these objects. At 24 months they arranged the chairs around the table, placed the dolls on the chairs, put the plates on the table, the cups on the plates and the spoons in the cups. Stacking of objects reflecting the growing awareness of the vertical dimension (Gesell and Amatruda 1947) was also observed during the same age-period.

Sex Differences

As far as expressive language was concerned, girls used significantly more words at 21 months ($p < 0.01$) and more sentences at 24 months ($p < 0.05$). No sex

TABLE V
Incidence* of responses to verbal requests concerning prepositions

Prepositions	Age (months)							
	9	12	15	18	21	24	27	30
	Mean No. †	Mean No.						
Into			0.5 9	1.0 12	1.9 16	2.0 16	1.9 16	1.9 16
On			0.1 2	0.7 11	1.5 15	1.7 16	2.0 16	1.9 16
Under						0.2 3	0.8 6	1.5 14
Behind							0.3 4	0.9 8
In front of								0.6 7

*Mean incidence of responses to two verbal requests. †Number of children responding to at least one verbal request.

differences were found in respect to receptive language and the relationships between the language measures and play behaviors.

Discussion

The findings of this study support the view that there is a close relationship between language acquisition and play behavior. However, this relationship turned out to be more complex than has been reported previously.

First, neither the amount nor the variety of expressive language was correlated with the child's play. In particular, no significant relationship was found between the child's speech and the presence or absence of functional or representational play. This may have been due to the use of a structured play situation, in which the child was less likely to display his full speech repertoire than he would in a free play situation. However, the variety of speech displayed during the play session was positively correlated with that at home, so the recorded speech seemed to be a reliable reflection of the child's expressive language. Also, a more detailed analysis might have been required to ascertain a relationship between speech and play. We are inclined to believe that environmental (Nelson 1973) and probably also genetic factors (Illingworth 1972) lead to such a variability in speech acquisition that a relationship between expressive language and play is difficult to establish. The large variability in onset, amount and variety of speech found in this study is consistent with previous reports (Morley 1957, Illingworth 1972).

Receptive language clearly preceded expressive language, as has been reported by others (Fraser *et al.* 1963, Lovell and Dixon 1967), and was related to the child's play. If there was no functional and representational play during the play ses-

sion the children were not likely to respond to verbal requests for either of these types of play behavior. If functional but not representational play was displayed the children responded only to verbal requests for functional play. Similarly, if representational play was observed the children responded only to requests concerning this behavior.

These results indicated that, in middle-class children, verbal comprehension is at least as well developed as play behavior. In fact comprehension may be even more advanced than play behavior: a child without functional play might understand the verbal request, 'Can you brush your hair?', but because of motor immaturity be unable to respond.

No correlation was found between identification of objects and any type of play behavior, particularly visual exploration, functional or representational play. Further, the ability to identify objects did not necessarily enable the child to use objects appropriately. For example a child might have identified spoon and brush but be unable to feed himself or to brush his hair.

Although the methods used in this study were not designed to establish a relationship between play behavior with spatial characteristics and verbal comprehension of spatial prepositions, they shed some light on the development of spatial concepts and subsequent understanding of prepositions.

We believe this study has practical significance, in that a combined assessment of expressive and receptive language and play behavior might be particularly helpful in assessing young children with delayed or absent speech (Table VI).

Delayed or absent speech is found in at least 10 per cent of all children between 18 and 30 months of age (Morley 1957, Illingworth 1972), and is a major concern for parents and professionals. The great

TABLE VI
Disorders in language development and play behavior

	<i>Normal development</i>	<i>'Late Talkers'; expressive aphasia (?)</i>	<i>Aphasia; deafness</i>	<i>Autism; mental retardation</i>
Expressive language	+	-	-	-
Receptive language	+	+	-	-
Play	+	+	+	-

+ = Age appropriate; - = Delayed or absent

majority of these children are 'late talkers' *i.e.* they have normal language development with late onset of expressive language. The demonstration of age-appropriate receptive language and play would indicate that these children will eventually develop speech. Only very few of them might turn out to have expressive aphasia.

Delay or absence of expressive and receptive language is found in deaf children and aphasic children (Eisenson 1972). Provided these children have normal mental capacity, their play should be age-appropriate or only mildly delayed.

Lack of expressive and receptive language, as well as of age-appropriate play, has been reported in autistic children (Rimland 1964, Cunningham 1966, Weiner *et al.* 1969, Ritvo 1976). It seems of particular interest to us that some of these children lack symbolic play, yet they do very well on concrete tasks such as completion of puzzles. Delayed or absent

language and play is also found in mentally retarded children.

All these language disorders are not well-defined entities, so it is highly questionable whether isolated expressive or receptive aphasia truly exists in childhood (Karlin 1954, Eisenson 1972). We think that the assessment of expressive and receptive language, and of play, will help to characterize better these language disorders and will further reveal how much overlap there is between aphasia, autism and mental retardation.

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SUMMARY

The relationship between play behavior displayed in a structured play situation and language development was studied cross-sectionally in 85 children at eight age-levels between nine and 30 months.

There were no correlations between types of play behavior, in particular functional play (appropriate use of objects on the child's own body), representational play (appropriate use of objects on a doll or another person), or symbolic play (substitution of present objects for absent ones) and speech measures such as total number of words and of vocalizations, number of different words and different vocalizations, and number of sentences.

Identification of objects upon verbal request was not related to any type of play behavior, but comprehension of verbal requests for functional or representational play was positively correlated with the display of functional or representational play. The children did not respond to verbal requests for functional or representational play unless these types of play behavior were part of their spontaneous play repertoire.

Understanding of prepositions seemed to be related to spatial concepts expressed in play behavior, such as container play or arranging chairs around a table and setting the table.

RÉSUMÉ

Evolution développementale des comportements de jeu chez les enfants de neuf à 30 mois. II: Jeu spontané et développement du langage

La relation entre le comportement de jeu manifesté dans une situation structurée de jeu et le développement du langage a été étudiée transversalement et longitudinalement par groupe d'âge chez 85 enfants à huit niveaux d'âge entre neuf et 30 mois.

Il n'est pas apparu de corrélation entre les types de comportement de jeu, en particulier les jeux fonctionnels (emploi approprié d'objets sur le propre corps de l'enfant), jeux de représentation (emploi approprié d'objets sur une poupée ou une autre personne) ou jeux symboliques (remplacement d'objets absents par des objets présents) et les mesures de langage telles que le nombre total de mots et de vocalises, le nombre de mots et de vocalises différents, et le nombre de phrases. L'identification d'objets sur demande verbale n'était reliée à aucun type de comportement de jeu mais la compréhension des demandes verbales pour les jeux fonctionnels ou de représentation était reliée positivement avec l'expression de jeu fonctionnel ou de représentation. Les enfants ne répondaient aux demandes verbales de jeu fonctionnel ou de représentation que si ces types de comportement de jeu faisaient partie de leur répertoire de jeux spontanés.

La compréhension des prépositions semblait reliée aux concepts spatiaux exprimés dans les comportements de jeu, tel que les jeux-gigogne ou les arrangements de chaises autour de la table avec mise du couvert.

ZUSAMMENFASSUNG

Entwicklungsfortschritte beim Spielverhalten von Kindern im Alter zwischen neun und 30 Monaten. II: Spontane Spiel- und Sprachentwicklung

Die Beziehung zwischen dem Spielverhalten in einer vorgegebenen Spielsituation und der Sprachentwicklung wurde in einer Querschnittsstudie an 85 Kindern im Alter zwischen neun und 30 Monaten untersucht, die in acht Altersstufen eingeteilt waren.

Es fand sich keine Korrelation zwischen den verschiedenen Arten des Spielverhaltens, dem funktionellen Spiel (richtiger Gebrauch von Gegenständen an seinem eigenen Körper), oder darstellenden Spiel (richtiger Gebrauch von Gegenständen an einer Puppe oder einer anderen Person), oder symbolischen Spiel (Einsetzen vorhandener Gegenstände für nicht vorhandene), und Sprachparametern, wie die Gesamtzahl der Wörter und der Laute, die Zahl der verschiedenen Wörter und verschiedenen Laute und die Zahl der Sätze.

Das Erkennen von Gegenständen, nach denen gefragt wurde, stand zu keiner Art des Spielverhaltens in Beziehung, jedoch korrelierte das Verstehen einer verbalen Auf-

forderung zum funktionellen oder darstellenden Spiel deutlich mit der Ausübung des funktionellen oder darstellenden Spiels. Die Kinder reagierten nicht auf die verbale Aufforderung, funktionell oder darstellend zu spielen, außer diese Arten des Spielverhaltens waren Teil ihres spontanen Spielrepertoires.

Das Verstehen von Präpositionen schien zu dem räumlichen Vorstellungsvermögen in Beziehung zu stehen, das sich im Spielverhalten ausdrückte, wie beim Container Spiel, oder Stühle um den Tisch stellen oder Tisch decken.

RESUMEN

Progresión del desarrollo en los comportamientos del juego en niños de 9 a 30 meses de edad. II: Juego espontáneo y desarrollo del lenguaje

La relación entre el comportamiento mostrado en una situación estructurada de juego y el desarrollo del lenguaje fue estudiada horizontalmente en 85 niños en siete niveles de edad entre nueve y 30 meses.

No hubo correlaciones entre los tipos de comportamiento de juego, en particular el juego funcional (uso apropiado de objetos sobre el propio cuerpo del niño), juego representativo (uso apropiado de objetos sobre una muñeca u otra persona), o juego simbólico (substitución de objetos presentes por ausencias) y los indicios del lenguaje tales como el inicio total de palabras y de vocalizaciones, número de palabras diferentes y diferentes vocalizaciones y número de frases.

La identificación de objetos ante demanda verbal no estaba en relación con ningún tipo de comportamiento de juego, pero la comprensión de peticiones verbales para juegos funcionales o representativos estaba en correlación positiva con la exhibición de juego funcional o representativo. Los niños no respondieron a las peticiones verbales en juegos funcionales o representativos excepto en el caso de que estos tipos de comportamiento de juego fuesen parte de un repertorio espontáneo de juego.

La comprensión de preposiciones parecía estar en relación con conceptos espaciales expresados en el comportamiento de juego, tales como el juego de contenedores o disposición de sillas alrededor de una mesa y arreglo de la mesa.

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