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Representational Ability as a Predictor of Later Expressive Vocabulary

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Fifty eight toddlers (17-34 months) with developmental delays participated in a 12 month longitudinal study to test the predictive relationship between prelinguistic representational ability and later expressive vocabulary. Two representational abilities were examined, vocabulary comprehension and level of representational play. The MacArthur Communicative Developmental Inventory/Infants (Fenson et al., 1991) was used to measure vocabulary comprehension and a play scale adapted from McCune (1995) was used to establish level of representational play. Expressive vocabulary was measured one year later in a set of structured interactions with a familiar adult using the Communication Composite of the Communication and Symbolic Behavior Scales (Wetherby & Prizant, 1993). The results indicated that level of representational play was a significant predictor of later expressive vocabulary but vocabulary comprehension was not.

The early identification of language delays and disorders is of vital importance. The negative effects of language delays and disorders on peer relationships, emotional and behavioral development (Baker & Cantwell, 1982) and later school achievement (Silva, Williams, & McGee, 1987) have been well documented. Early communication intervention has been shown to positively affect the development of young children (Warren & Kaiser, 1988). However, language delays are often not identified until children are 3 or 4 years of age or older (Wetherby & Prizant, 1992). Once children have some language, delays and disorders can more readily be identified by assessing the child's language directly. Prelinguistic children, by definition, are not yet producing speech. In order to identify prelinguistic children who are at risk for language delays and disorders, behaviors that occur during the prelinguistic period and are linked to later language must be identified. The identification of skills that predict later language development could lead to earlier identification of children with communication delays and disorders. This, in turn, may allow intervention services to be implemented earlier in development.

When one uses an instrument to identify a child as being at risk for language delay, one is assuming that the instrument measures variables that predict later language ability. When the purpose of wanting to identify children at risk for language delay is to provide intervention, one is implicitly assuming that the child is a part of a population that has need of intervention. Children with identified disabilities are such a population. Measures that do not correlate with later language ability for a specific population are not appropriate to use with those children. Therefore, it is

important to identify the predictors for children with disabilities, since those are the children who will need intervention.

Many variables are predictive of language development. Some of these variables are related to developmental delay in general (i.e., Down syndrome, neurological impairments) while other characteristics are related specifically to language development (i.e., severe hearing impairment). Three general abilities that develop in the prelinguistic period and are predictive of later language development are use of pragmatic functions, vocal development, and representational ability. (See McCathren, Warren, & Yoder, 1996 for review.)

The prelinguistic skill that is the focus of the present research is representational ability. The purpose of the study was to test the longitudinal relationship between representational ability in the prelinguistic stage of development with later expressive vocabulary for young children with developmental delay. The capacity for mental representation contributes to the development of expressive language (McCune, 1995). Mental representation is demonstrated early in development through both vocabulary comprehension and the development of representational play. In vocabulary comprehension, a set of sounds (a word) stands for an object, person, or activity. In representational play, an object or person stands for another object or person (e.g., doll for a baby, child for the daddy). Mental representation is an internal process which supports a range of symbolic activity including language comprehension, representational play and later, expressive language (Bates, 1993; McCune, 1995; Thal & Tobias, 1994). Because a similar representational process may underlie representational

play, vocabulary comprehension, and expressive language, it may be that there are predictable relationships between both representational play and vocabulary comprehension and the development of expressive language.

Vocabulary Comprehension

Level of vocabulary comprehension in the prelinguistic period has been found to predict later language production (Bates, Benigni, Bretherton, Camioni, & Volterra, 1979; Bates, Bretherton, & Snyder, 1988; Paul, Looney, & Dahm, 1991; Thal, Tobias, & Morrison, 1991). Receptive language has typically been measured by asking young children to touch objects or pictures or to demonstrate an action that has been named. Distinguishing noncompliance from not knowing is virtually impossible (Bates, 1993). One way to solve this problem is to use parent report rather than children's performances. Parent report checklists of vocabulary comprehension have been found to predict later expressive language for typically developing children (Bates et al., 1979; Bates, Bretherton, & Snyder, 1988). Bates et al. reported a positive correlation between vocabulary comprehension at nine months and both number and frequency of words produced in a laboratory setting at 13 months. Bates, Bretherton and Snyder (1988) reported a significant correlation between vocabulary comprehension at 10 months and flexible noun use at 13 months.

In a study comparing 21 late talking toddlers to typically developing toddlers who were all 18-34 months old, Paul, Looney, and Dahm (1991) reported significant differences in their receptive communication, with the late talkers understanding significantly less language. In a follow-up study using the same group of late talking children, Paul and colleagues re-evaluated the children at 12 - 18 months after the initial assessment. The results indicated that for the 15 late talking children who had expressive delays but not receptive delays at the initial assessment, nine had typical expressive skill in the follow-up testing. In comparison, the six late talking children who had both expressive and receptive delays at the pretest, only two had typical expressive language at the follow-up.

Thal, Tobias, and Morrison (1991) conducted a study of late talkers with children aged 18-29 months in the single word stage of expressive language development. All the children fell within normal limits on developmental and cognitive measures. They found that the difference between late talkers whose productive language was within normal limits one year later, and late talkers who were still delayed one year later was their parent reported language comprehension score at the beginning of the study. The children with the smallest receptive vocabularies made the least gains in production. There are presently no published reports of parent reported vocabulary comprehension as a predictor of later expressive language for children with developmental delay.

Representational Play

From a cognitive perspective there are three types of play that develop in young children (Piaget, 1962). The first, exploratory play, is the banging, shaking, mouthing, or simple manipulation of objects. The next type, combinatorial play, is demonstrated by the infant relating objects to each other (e.g., building a tower, putting a person in a car, or pounding pegs with a hammer). The final, most sophisticated type of play is symbolic or representational play. There is an established empirical base (Casby & Ruder, 1983; McCune, 1995; Mundy, Sigman, Kasari, & Yirmiya, 1988) for linking representational play skills with language development.

The empirical base for linking the development of play skills and language has been demonstrated concurrently rather than longitudinally. Both rate and level of representational play have been found to be significantly correlated with language development. For example, Mundy and associates (Mundy et al., 1988) found a significant concurrent correlation between rate of symbolic play and the Reynell Expressive Language score for children with Down syndrome. Casby and Ruder (1983) reported significant concurrent correlations between Mean Length of Utterance (MLU) and symbolic play for children with developmental delays as well as for typically developing children. A positive concurrent correlation between representational play and both communication level and the number of communication units (gestures, signs, or words) was reported for children with hearing impairments (Casby & McCormack, 1985). For typically developing children a relationship between play and the onset of first words has been established. McCune (1995) found significant concurrent correlations between the onset of pretend play and first words.

The development of play skills is also important because play with objects is often the context for early prelinguistic and vocal communication. Object play is a common context for communication interventions with young children (Yoder, Warren, & Hull, 1995). Children who do not demonstrate an interest or skill in play with objects may be harder to engage in the types of interactions that are facilitative of communication development.

Research has indicated that correlational relationships exist between representational ability and language development for children with both typical and atypical development. The relationship between language comprehension and later expressive vocabulary for children with developmental delays has not yet been demonstrated. Additionally, the studies demonstrating a relationship between representational play and language are concurrent rather than longitudinal. If the goal is earlier identification, then skills predictive of later language development need to be identified to distinguish between prelinguistic children in need of early communication intervention and those who will develop language without specific intervention. This can only be done using longitudinal research designs. The reason to study children with developmental delays is that these are

the children who will require intervention. Determining predictors for this population is important because the behaviors that may be predictive of later expressive language may be different from typically developing children. The purpose of this study was to explore the link between early representational ability, as demonstrated through play and vocabulary comprehension, and the development of expressive language one year later in young children with developmental delay. Our specific intent was to test the hypotheses that language comprehension and level of play in the prelinguistic stage of development will be positively correlated with later expressive language.

METHOD

Participants

The participants in this study were part of a longitudinal intervention study being conducted by the second and third authors (Yoder & Warren, in press). In this larger study, children were randomly assigned to one of two staff implemented prelinguistic interventions. The larger study is an experiment that compares the effects of two models of prelinguistic communication intervention. Each child in the study participated in either a 1-1 or group intervention. Both treatments involved working with the child 20 minutes a day, four days a week in a room in the child's school. Children participated in the intervention for six months. Follow-up testing was done six months after the end of intervention, or 12 months after the initial testing.

In the first treatment, the trainer worked one-to-one with a child utilizing prelinguistic milieu teaching strategies to teach clear prelinguistic communication skills (Warren, Yoder, Gazdag, Kim, & Jones, 1993). The strategies included following the child's lead, imitating and expanding vocalizations and play, and modeling and prompting the desired behaviors (i.e., conventional gestures, coordinated attention, vocalizations to the adult).

The one-to-one treatment was contrasted with a play group condition with one adult and three children. In the play group, the adult was responsive to the children's communication and behavior, followed the children's leads and commented on the children's play, but did not imitate vocalizations or actions, or specifically prompt prelinguistic communication behaviors. For more detailed information about the interventions see Yoder and Warren (in press).

Because the results of the present investigation could have been influenced by the different treatments the children experienced in the larger experiment we tested for group differences. First, we tested to see if there were group differences between the means on the three variables of interest; level of play, vocabulary comprehension, or rate of expressive vocabulary. A t-test between groups on each of the three variables indicated that there were no differences between the groups. Second, we tested whether the relationship between level of play or vocabulary comprehension and expressive language was different between

groups. Statistically speaking, we tested the significance of the interactions between group assignment and representational ability predicting later expressive vocabulary. Specifically, two multiple regressions were run; one for each predictor variable. In each regression, level of play or comprehension, and group were entered first and an interaction term between group and measure of representational ability was entered last. Rate of expressive vocabulary was entered as the outcome variable. An interaction term is a product between group values and the predictor values. In such analyses, the group variable must be "dummy coded" (i.e., 0 and 1 represent the two groups). If the relationships are different between groups, the interaction term is statistically significant. In both regression analyses the interaction term was not significant. To read more about statistical interactions, see Aiken and West (1991). There were differences among individual children in each group. However, there were no systematic differences that could be detected statistically using the collected data.

Presently, most young children with disabilities and developmental delays are receiving intervention services. One advantage of controlling at least some of the intervention experienced by these children is that we can describe that aspect of the children's experiences. This information aids accurate generalization of the results.

The participants were 58 children, 34 boys and 24 girls, 17-32 months old, who were enrolled in community based early intervention programs. The ethnic composition of the participants was 31 Caucasian, 24 African American, and three whose parents classified them as "other". The children had Bayley Mental Development Indices (MDI) (Bayley, 1969, 1993) ranging from 35 - 85 (SD=13.47). The *Bayley Scales of Infant Development* does not provide MDI below 50. Therefore, for children who scored below 50, an estimated MDI was calculated by finding the regression equation at each age for the data provided in the Bayley manual and then extending the regression line (see Naglieri, 1981 for similar application). Children with estimated MDI below 35 were not included in the study. A cut-off score of 35 was chosen to include children who were likely to develop the use of expressive language. In addition, the children had to demonstrate at least one instance of intentional communication prior to testing.

The children gave no evidence of autism or visual impairments, and had the motoric ability to rotate their torsos while engaging in object play. In addition, hearing was tested and found to be within normal limits. Of the 58 children in the study, four had Down syndrome, four were premature births with medical complications, three were "failure to thrive", one had macrocephaly, one had microcephaly, one had Duane's syndrome, one had neonatal meningitis, one had Fetal Alcohol Syndrome, and one had tuberous sclerosis. The remaining 39 had no identifiable etiology or diagnosis other than developmental delay. However, children were included in the study based on MDI and the inclusion criteria described above, not based on etiology. Including children with a range of etiologies

may be more clinically useful than focusing on one etiology, because intervention programs generally serve a range of children.

At the beginning of the study all of the children were considered to be in the prelinguistic stage of language development. Each child's expressive vocabulary was estimated using teacher report and data from the initial testing sessions described below. None of the children were observed to have more than two productive, non-imitative words in their expressive vocabularies. Seven children spoke during the initial testing. Five children used one word, and the remaining two children used two words. The children used five different words; bye-bye, no, mama, uh-oh, and baby. Because of the lack of speech at the pretest, there were no positive relationships between expressive vocabulary and either level of play or vocabulary comprehension. Pretest data are included in Table 1.

Level of Play

The children's level of play was measured in the beginning of the study in a 15 minute, one-to-one play session with a familiar staff member. The toys in this session were those typically found in preschool settings and included: a baby doll, two baby bottles, a baby spoon, doll hairbrush, rattle, blanket, teapot and two cups and saucers, four colored cylindrical sticks, a large pink car, and a toy telephone. The toys were chosen to accommodate a wide variety of play skills from simple banging and mouthing to more sophisticated symbolic play. The adult in the play session was instructed to imitate what the child was doing, comment on the play, and to avoid modeling higher levels of play. For example, if the child picked up the sticks and started banging on the table the adult would bang on the table with the other sticks and say, "We're banging on the table." Or, if the child put the bottle in the doll's mouth the adult might say, "The baby is hungry. She likes that bottle." The play sessions were videotaped for later coding. The child sat in a safety seat across from the adult or on the adult's right so both the child's and adult's faces were visible.

Coding Level of Play. The videotape of the play session was coded using McCune's (1995) representational play scale. This scale has been used to chart the interactions between developing language skills and the growing complexity in the child's representational play for children from 8 - 24 months old. Five levels of play were coded. Level 1, Presymbolic Play Schemes (other than mouthing or banging), consisted of functional use of objects (e.g. putting phone to ear, pushing a toy car). Level 2, Self-Pretend, involved coding self-related activities that were accompanied by some elaboration that the behavior was pretend (e.g. "talking" on the phone, pushing the car while making engine noises). Level 3, Other Pretend, was play that included another or pretending at another's activity (e.g. feeding the adult, "mothering" the doll). Level 4, Combinatorial Pretend, consisted of two or more play schemes, or one play scheme enacted with more than one agent (e.g. feed and then rock doll, feed adult then feed doll). Level 5, Hierarchical Play, included combinations with evidence that the child had a plan in mind, substituted one object for another with evidence of pretending, or the toy was treated as if it could act independently. (For details of the play code see Appendix.)

In typically developing toddlers significant concurrent correlations have been found between the onset of pretend play and first words (McCune, 1995). McCune (1995) also found that independent Level 4 play was significantly correlated with the onset of multiword utterances. In this study, children were assigned scores based on their highest level of emerging or mastered play skills. In order to distinguish between children who had mastered play skills at a particular level from children who had emergent skills at that level, the level of play plus ".5" indicated mastery. For example, children who had mastered self-pretend play received a "2.5", while other children who had emerging

Table 1

Pretest Data

Variable	Range	Mean	(SD)
MDI	35-85	54.33	(13.47)
Vocabulary comprehension	7-394	119.77	(97.2)
Level of play	0-5	2.61	(1.32)
Number of words	0-2	.16	(.45)

The occupational status score developed by Stevens and Cho (1985) was used to assign socioeconomic status scores to families based on occupation. The national average was 34.48 ($SD=18.01$) (Stevens & Cho, 1985). Our sample was skewed and had more low status participants than would be expected in a normal distribution. Therefore, the median of 23 (range 10-80) is a better descriptor of the central tendency than the mean. The level of education for the head of household was as follows; two parents had some graduate education, 20 parents attended college, 30 had a 10-12th grade education, and six parents had a 7-9th grade education.

PROCEDURES

Pretest measures, play session, parent reported vocabulary comprehension measure, and rate of expressive vocabulary were collected within a two week period whenever possible. Occasionally because of parent schedules, child illness or absence, or unforeseen scheduling problems (e.g. field trips) it took a little longer. However, this period was never more than a month.

self-pretend play skills received a "2". An additional category of play, Level 0, was assigned to play that consisted of the mouthing or banging of objects that were not designed to be mouthed or banged (e.g., car or hairbrush).

Vocabulary Comprehension

Vocabulary comprehension was measured at the beginning of the study using the comprehension scale of the *MacArthur Communicative Development Inventory for Infants* (CDI/I) (Fenson et al., 1991). The CDI/I is a checklist of 386 words broken into 19 categories (e.g., animal names, vehicles, food and drink, and people). Both reliability and validity are reported in the CDI/I test manual. Two measures of reliability, test-retest and internal consistency, are reported. Test-retest correlations for a sample of 500 parents ranged from 0.8 to 0.9 for all months except at 12 months, for which the correlation was 0.6. The language comprehension scale had an internal consistency correlation of 0.95. Predictive validity for the CDI/I was 0.44 ($p < .001$).

Coding the CDI/I. The parent indicated which of the words the child understood and which of the words the child both understood and said. The number of words the child understood, as reported by the parent was counted, and that number represented the child's vocabulary comprehension. The words were read to the parent if the parent had difficulty reading independently. As noted earlier, for young children, parent report checklists have been found to predict later expressive vocabulary for typically developing children (Bates et al., 1979; 1988). This relationship has not been demonstrated for children with developmental delays.

Expressive Vocabulary

Each child's expressive vocabulary was measured at the beginning of the study and one year later using a set of structured interactions with a familiar adult. The interactions are those described in the Communication Composite of the *Communication and Symbolic Behavior Scales* (CSBS) (Wetherby & Prizant, 1993). The materials included in the Communication Composite are bubbles, balloons, a wind-up toy, blocks and a box, a blanket for peek-a-boo, books, and a jar with cereal. It is important to note that we did not use the CSBS coding or scoring. We chose to use a more structured protocol than a typical language sample in order to reduce variability in the adult-child interactions. Also, the CSBS is designed to elicit communication from young children through engagement with interesting objects. As suggested in the CSBS manual, the child sat in a child safety seat at the end of the table facing the video camera. The adult interacting with the child sat either across from the child or on the child's left so both the adult's and child's faces were clearly in view. The interaction sessions were videotaped for later coding.

Coding Expressive Vocabulary. Expressive vocabulary was quantified as the average rate per minute of different

words spontaneously used in the interaction session. To calculate rate, the number of words was counted and divided by the length of time of the session. A correlation was run to see if there was a positive relationship between the length of time of the session and the rate of words. There was no significant relationship. To be counted, the word had to be included in an unabridged English dictionary (*The American Heritage Dictionary of the English Language*, 1992). Sound effects and animal sounds that are considered words (e.g., "uh-oh", "grr") by the *MacArthur Communicative Developmental Inventory/Infants* (CDI/I) (Fenson et al., 1991) were also included. Words that were identical to the adult word and words that were approximations of the adult word were included in the calculations. Word approximations were defined as vocalizations having the same number of syllables and at least one morpheme in common with the adult word. In addition there had to be nonlinguistic support for believing the child was saying a word. (e.g., The child said "baby" while pointing to the baby.) Also included were words that have an -ie or -y (e.g. doggy or horsie) and words that are commonly shortened by young children (e.g., "sketti" for spaghetti and "nana" for banana). If the child said both horse and horsie they were credited for only one word instead of two.

RELIABILITY

Reliability for all variables in the analyses were calculated for 22% of the data. Reliability samples were randomly selected. Reliability was reported using a generalizability or g-coefficient. Unlike other ways of calculating reliability, g-coefficients take into account more than one source of variability (Mitchell, 1979). G-coefficients approach 1 as the variance accounted for by the subjects is large in comparison with the variance accounted for by coders (Kasari, Freeman, Mundy, & Sigman, 1995). (See McWilliam & Ware, 1994 for discussion on the use of g-coefficients for observational data). Mitchell recommended g-coefficients in the .5-.7 range. The coefficients for expressive vocabulary and level of play are an estimate of interrater reliability. Because the vocabulary comprehension was a parent report measure there is no interrater reliability. Instead, test-retest reliability is reported. The g-coefficient for expressive vocabulary was 0.96, for level of play was 0.88, and for vocabulary comprehension was 0.99.

RESULTS

Preliminary analysis was done on the data using the steps recommended by Tabachnick and Fidell (1989). According to their procedures, the outcome variable needed to be transformed. After a ranking transformation, no statistical assumptions were violated for the proposed analyses. For the sake of clarity, means and standard deviations are reported using the original scale.

During the testing at the end of the study 51 of the 58 children used words. The range of words spoken was 0-79

with a mean of 12.9 ($SD=15.35$). Half the children used 8 words or fewer, and half the children used 8 words or more. Rate of vocabulary was calculated by dividing the number of words spoken by the time of the testing session. The average rate of expressive vocabulary was 0.66 ($SD=.8$).

Pearson's product moment correlations were calculated to estimate the strength of the relationship between the independent variables and the dependent variable. The correlation between vocabulary comprehension and rate of expressive vocabulary was not significant ($r=0.15$, $p=0.13$). The correlation between the level of play and rate of expressive vocabulary was significant ($r=0.24$, $p=0.03$).

Because MDI and mental age (MA) are often intercorrelated with communication and other behavioral skills, correlations were run to make sure that our results were not simply the byproducts of age and IQ. We ran Pearson's r correlations to determine the relationship between MDI and later expressive vocabulary and MA and later expressive vocabulary. Neither of these relationships was significant. The relationship between MDI and later expressive vocabulary was $r=0.20$, $p=0.12$. The correlation between MA and later expressive vocabulary was 0.07, with a $p=0.59$.

DISCUSSION

This was a longitudinal study to explore the link between early representational ability, demonstrated through play and vocabulary comprehension, and the development of expressive language. In this study, level of play was a significant predictor of later expressive vocabulary while vocabulary comprehension was not. Because of the use of parent report to determine each child's vocabulary comprehension it is hard to determine if comprehension did not predict because a relationship was not present, or if parents were inaccurate reporters of their child's vocabulary comprehension.

Another possible explanation for the lack of relationship between vocabulary comprehension and expressive vocabulary may be related to a possible, although untested, lack of oral-motor ability in our sample of children. Finally, there may be a curvilinear relationship between vocabulary comprehension and production. This means that the more words the child understands the more likely they will talk - up to a point. At some critical point, which has not yet been identified, a large discrepancy between the number of words understood and the number of words produced may be a warning sign that there may be a problem with expressive language.

Level of play has been shown in other studies to be concurrently correlated with expressive language (Casby & Ruder, 1983; Mundy et al., 1988). In the present study, play was longitudinally correlated with expressive vocabulary. Because this longitudinal relationship represents a new finding, it should be replicated before these results are viewed with confidence. Furthermore, these results occurred in a context of a larger intervention research study. Additional research is needed to determine if similar

results would be found with groups of children who were receiving less systematic, controlled intervention.

Further research is also needed to determine if intervening to develop representational play skills will also facilitate language development. In addition, there are no cutoff scores or norms to determine what level of play puts a children at risk and what level would indicate that development related to language is probably on target.

Identifying prelinguistic behaviors that may lead to the early identification of children at risk for expressive language development is relatively new. The results of this study may be important to help build a knowledge base of what combination of variables, both child and environmental, account for why some children acquire language earlier than others. Such knowledge may also be useful for identifying prelinguistic intervention targets, identifying who is "ready" for linguistic intervention, or for developing screening tools.

In this study, higher levels of play, which were assigned based on demonstrations of representational play, may be a predictor for at least two reasons. First, they demonstrate representational ability, which is an important and necessary skill when learning language. Second, higher levels of play may represent the child's ability to include another person (either real or the doll) in the play (i.e., other play). This willingness to engage others in play may be an expression of a broader skill and desire to communicate and share experiences. Thus, play may predict expressive vocabulary because these children are motivated to communicate to another (see Mundy & Willoughby, 1998 for discussion).

In conclusion, in this study vocabulary comprehension was not related to later expressive vocabulary for young children with developmental delays. However, level of play was positively correlated with later expressive vocabulary. If the results of this study can be replicated in other studies, then prelinguistic evaluation of level of play might be used in the future, to determine which children most need intervention to aid in the development of expressive language. This, in turn would allow intervention services to be implemented earlier in children's development.

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APPENDIX

Representational Play Code

For all coding the bias is on the lower level of play.
Sensorimotor Period

Level 0: Exploration

Child mouths or bangs toys as a means of exploring them. (Mouthing the spoon or bottle, banging the sticks, or shaking the rattle belong in this category if those schemes are used indiscriminately on other objects.)

Level 1: Presymbolic Play Schemes

The child recognizes the function of an object by use.

For example:

- touching a brush to hair
- touching a cup or spoon to lips
- rubbing a sponge on the floor
- putting the phone to ear
- pouring from the pitcher
- pushing a toy car

Level 2: Self-Pretend (Autosymbolic Schemes)

The child pretends at self-related activities such as eating, drinking, sleeping, or grooming while showing by elaboration such as sound effects, affect, and gesture an awareness of the pretend aspects of the behavior. For example:

- pushing the car while making car sounds
- eating or drinking making sounds
- "talking" on the phone belongs in this category.

If the child puts a toy in the car other than the doll, and pushes it, code as Level 1 actions unless the child waves good-bye or says good-bye to the car and toy. If that happens the driving and waving are coded as Level 2.

Symbolic Stage 1

Level 3: Other-Pretend (Decentered Symbolic Play)

The child extends pretending beyond the self by (a) pretending at others' activities or (b) having others enact pretend schemes. For example:

- feed or groom doll or adult

“mothering” the doll

Handing the phone to the adult is not included.

Level 4 Combinatorial Pretend

To be coded as combinatorial:

1. at least one of the actions must be directed toward another agent

2. at least one of the actions must be initiated and not imitated

Several schemes are related in sequence:

Level 4A-a single theme is enacted with several agents (i.e. feed mother, then doll).

Level 4B-different schemes are played in sequence (i.e. feed doll, groom doll).

Level 4C-different schemes are played in order (i.e. place doll in car, roll car).

Level 5: Hierarchical Pretend

To be coded as hierarchical there must be other initiated examples of either self pretend or other pretend.

Level 5A-a single act exhibits hierarchical structure in one of the following ways: (a) a plan is apparent before the enactment as the child verbalizes, searches for materials, or engages in other preparation; (b) one object is substituted for another with evidence that the child is aware of the multiple meanings expressed; (c) a doll (or car) is treated as if it could act independently. The child must demonstrate the action as if the object were doing it independently (i.e. placing food in the hand rather than the mouth and helping the doll eat, moving its legs as it walks along, making sounds for the doll, making the car talk).

The supporting evidence must be very clear. If there is any doubt that the child is pretending, do not code it as level 5 play.

Level 5B-an act meeting the above criteria is part of a

play sequence as described in Level 4.

Onset level-observation of a single act at that level even if the act was suggested or modeled by the adult. The suggestion from the adult must include more than a verbal prompt. (e.g. the adult holds out her hand while saying, “Can I have the baby?” or hands the child who is holding the doll the bottle saying, “Give the baby some milk.”)

Independent level-two or more different acts at that level, neither of which was modeled or suggested by the adult. An additional .5 will be added to the level of independent play credited to the child. If the child responds to a verbal prompt which is not supported by a physical prompt the play is coded as independent. If the child responds to the prompt but carries the action one step further it is coded as independent. (e.g. the child is holding the doll. The adult moves the cradle over. The child puts the baby in the bed and then rocks the cradle, or covers the baby with a blanket.)

Different-for two acts to be “different” there must be a different play scheme. The child feeds the doll, and feeds self with a fork. If the child then feeds the doll and the self with a spoon instead of the fork they would not get to be at the independent level. However, if the child then brushed the doll’s hair and then their own hair that would count as a different scheme.

In a Level 4 combination where the child imitates one action and has the other one be initiated, the combination is counted as independent if the initiated action is at the same or higher level than the imitated one.

Adapted from “A Normative Study of Representational Play at the Transition to Language” by L. McCune, 1995, *Developmental Psychology*, p. 206.