

## Brief Reports

### Peer Play Scale as an Index of Complexity of Peer Interaction

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A rating scale for interactive peer play was developed and validated on two independent samples of young children varying in age and peer experience. Frequency scores from each sample met the Guttman scale criteria for unidimensionality and cumulativeness. Children with more experience with peers had higher frequencies of higher level play.

Parten's (1932) classic description of social participation by children has been challenged in the last decade by research which demonstrates that infants participate in peer interaction (c.f. Eckerman & Whatley, 1977; Rubenstein & Howes, 1976). Furthermore, in Smith's (1978) longitudinal study the majority of preschoolers did not progress from solitary, through parallel, to group play. In this study, a rating scale for interactive peer play was developed and validated on two independent samples of children varying in age and in peer experience. The scale represents a developmental sequence from noninteractive parallel play with no social interaction, through contingent social interaction to reciprocal and complementary interaction.

In Level 1 play, parallel play, two children are engaged in similar activities but do not engage in eye contact or in social behavior. In Level 2 play, parallel with mutual regard, the children are engaged in the same or similar activity and have eye contact. To be coded as Level 3 play, simple social play, each child has to direct a social behavior (vocalize, offer an object, smile, positive touch, take toy, or aggress while look-

ing at the other) to the other child. Level 4 play involves reciprocal and complementary action and mutual gaze or awareness of the other. Level 5 play, reciprocal social play, involves both contingent social behaviors and complementary actions.

The scale represents a continuum toward more mature development (Mueller & Lucas, 1975; Werner, 1948). Two conceptual notions are built into the scale—increasing complexity in the use of an object or activity and increasing complexity of social exchanges. Levels 1, 2, and 3 are similar in object use (parallel) but represent increasingly mature forms of social exchanges (from lack of awareness to mutual recognition and finally interaction). Levels 4 and 5 are similar in advanced object use (reciprocal and complementarity) and dissimilar in social exchanges. Across the five scale points, peer interaction moves from simple, undifferentiated responding to responses that are differentiated but not yet integrated to organized and integrated sets of responses in both the social and inanimate domains. In other words, at the low end of the scale the children look at each other but do not interact through other modalities (undifferentiated responding); at the intermediate points the children engage in social exchanges without complementary use of objects or complementary use of objects without social exchanges (differentiated but not integrated); and at the high end the children engage in social exchanges together with complementary activity (organized and integrated responding).

Interobserver reliability (agreements/agreements + disagreements) ranged from .87 to .93,  $Mdn = .89$ .

Sample 1 consisted of 24 toddlers enrolled in 24 community-based day-care centers and fam-

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ily day-care homes. The mean age was 19.5 months (range = 18–22 months). The mean time in daily peer contact was 8 months (range = 4–17 months). Each toddler was observed for 2 hours of free play in the day-care setting. Peer play was time sampled every 15 sec.

Frequency scores for each level of peer play were subjected to a Guttman scale analysis. Using the median as a division point, the resulting scale had a coefficient of reproducibility of .90 and a coefficient of scalability of .68.

*t* tests were used to compare the frequency of play at each level for children with more (7 or more months) and less (1–6 months) peer experience. Significant differences favoring children with more peer experience were found for Level 4,  $t(37) = 1.72$ ,  $p < .05$ , and Level 5,  $t(38) = 2.17$ ,  $p < .03$ . Children with less peer experience had more Level 1 play,  $t(38) = 2.55$ ,  $p < .01$ . There were no significant relationships with age of child.

A second sample of children was observed to extend the age range of the scale. These were 28 children enrolled in four community-based day-care centers. The mean age was 30 months (range = 18–43 months). The mean time in daily peer contact was 9.1 months (range = 1–28 months). The procedure remained the same.

The Guttman scale resulting from this sample had a coefficient of reproducibility of .91 and a coefficient of scalability of .69.

Significant differences favoring children with more (7 or more months) peer experience were found for Level 3,  $t(26) = 3.45$ ,  $p < .002$ , Level 4,  $t(26) = 2.46$ ,  $p < .02$ , and Level 5,  $t(26) = 2.29$ ,  $p < .03$ . There were no significant relationships with age of child.

The Guttman scale analyses indicate that the peer play scale does represent a unidimensional and cumulative index of complexity of peer play. This scale can provide a reliable and valid means of quantifying peer play at different levels of complexity while retaining the advantages of on-the-spot recording in the natural environment.

The results of this study support Mueller's (1978) finding of increases in the frequency of integrated sets of socially directed behavior over time in a longitudinal study of toddler peer behavior. Unlike Partens (1932) index of social participation, this scale is sensitive to length of experience with peers rather than to age of child.

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