Examining the Reliability and Validity of the Play History

(Play dysfunction, development, occupational behavior, research)

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Few occupational therapy tools exist that evaluate play totally and systematically. The purpose of this study was to examine the Play History Interview and establish its value as a scientific clinical tool. The parents of 15 disabled and 15 nondisabled children between the ages of 1 and 7 1/2 years were interviewed about their children's play behaviors using the Play History Interview. Children were rated on an ordinal scale according to the criteria outlined on the Play History Chart and Taxonomy for Diagnosis. Interrater and test-retest reliabilities were determined by two independent raters. The scores from the Play History and Minnesota Child Development Inventory were correlated to examine concurrent validity of the Play History. Content validity was studied via a literature review. Significant results suggest that the Play History is a reliable and valid interview in occupational therapy for assessing children's play behavior.

Theoretical Base for Studying Play

In this study the knowledge of occupation as an organizing theoretical base was used. Occupational behavior is defined in a broad sense as the developmental continuum of play and work (1-3). Humans have an innate need to interact successfully with the environment (4). Occupational behavior is a developmental concept that emphasizes learning play and work skills.

A model of occupation is represented in three hierarchical subsystems: volition, habituation, and performance (1). The volition subsystem is the highest level and consists of motivation structures that urge the organism to act (values, goals, interests). The habituation subsystem, the next level within the model, includes the arrangement of behaviors into patterns (habits). The performance subsystem occupies the lowest level. It consists of the capacities needed for action—rules and skills. The interaction of the three subsystems constitutes the basic dynamics of the system. All of these component parts intermesh as the system functions over time. The child who adequately learns the skills of occupational behavior through play can build these into habits and roles. If these skills are not established from past experiences, then they must be learned so that they may serve as the foundation for the development of roles, habits, interests, and values. Thus, a child's ability to play, to explore the environment, and to exercise motor skills is the foundation for the later demands of the work world (1, 5-9).

The literature supports the premise that play progresses synonymously with development. Furthermore, the developmental nature of play is cited by various authors via the study of children's playthings, social interaction, and interaction with the environment. Piaget (10, 11) earmarked three developmental stages of play that coincide with the cognitive stages of development: practice play, symbolic make-believe play, and rule games. Gesell (12) defines developmental schedules in the areas of motor, adaptive, language, and personal social behaviors for children aged 15 months to 6 years. Gesell recognized forms of play in all of these categories as occurring at various stages of development. In her development of a play scale, Knox (13) found that play behavior of the mentally retarded child reflected developmental level. Goodson and Greenfield (14)
found that, as children gain mastery of language, play increases in complexity. Parten (15) defined six categories of play behavior that appear to predominate at certain stages of development: unoccupied behavior, onlooker behavior, solitary play, parallel play, associative play, and cooperative play. Florey (16) designed a classification scheme to select and order the content of play as it occurs at different ages. Reilly (9) defined three stages of behavior in which play is integrated throughout the child’s development: 1. Exploration is play behavior that occurs early in childhood; 2. Competency is characterized by a drive to deal with the environment (within this stage, new tasks are learned and mastered through practice); 3. Achievement, the final stage, is linked to expectancies, to winning or losing. Achievement is attained by a person “who has played his way gradually and safely toward the skillful mastery of his world.” (9, p 148)

**Play and the Disabled Child**

Although play is often assumed to occur as a natural process in childhood, there are factors that are necessary in order for play to occur at all. There is always the risk that the child will not experience the quality of play best suited for his or her stage of maturity (12). For example, hospitalization may interfere with the natural play environment (17-19) and thus interrupt the vital process of skills and habits development and exploration needed to fulfill the role of worker (6, 20).

It has been hypothesized that the play patterns of a mentally retarded child are viewed as deficient when compared with those of a nonretarded child. Results of one study (21) indicated that nonretarded children exhibited greater and faster movements and spent longer periods of time in play than children with Down’s Syndrome. Horne and Philleeo (22) found that nonretarded children chose to play with materials that were highly constructive, and spent a significantly greater percent of time in original constructive activity than mentally retarded children did. Research also suggests that the physically disabled child may be unable to function successfully in play because of sensorimotor impairment, poor coordination, or a lack of appropriate models for play (5, 23-26). A study by Gralewicz (25) demonstrated that the nondisabled child had significantly more companions, played with more adult relatives, had significantly more total play, and spent significantly more time playing with others and watching television with others than the multiply-disabled child had. Similarly, the autistic child reveals a deficit in play capacity from birth. Toys are ignored or pulled apart in a meaningless manner; repetition and randomization prevents conditions for successful play experiences (5, 27). Because the above evidence suggests that a disabled child may lack both abilities and opportunities for successful play experiences, it is most important that inadequate play habits be detected and treated.

**The Play History Interview**

The Play History Interview was based on the premise that play follows a sequential developmental plan and that a historical account of play behavior helps one to understand a child’s present play. The advantage of using a historical approach is that, since development proceeds in an orderly manner, there is predictability from one step to the next (28). The Play History is a semistructured qualitative questionnaire aimed at identifying play experiences, interactions, environments, and opportunities.

The Play History Interview was chosen for the study for three major reasons. First, it is one of the few play evaluation tools that focuses on the child’s past as well as on present play behaviors. Second, the information obtained from the Play History Interview yields a total play description of a child that gives occupational therapists valuable information for detecting children with play dysfunctions and for planning and evaluating their treatment. Third, research on the Play History Interview can give clinicians a better understanding of the instrument, thereby making it more useful.

Takata (28) identifies five major play epochs within the Play History. The child moves from the sensorimotor epoch, which involves independent gross motor play, to the symbolic and simple constructive epoch, in which social play with peers and symbolization become more apparent. The next two epochs, the dramatic and complex constructive epoch and the game epoch, reveal greater complexity and organization within play. The recreation epoch, which was not examined in this study, emphasizes team participation and organized sports and interest groups. The dominant features of each play epoch become integrated into the subsequent epoch as the child grows older.

Takata has also identified four essential elements found in each epoch necessary for the genesis of adaptive and healthy behavior:

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Table 1

Play History Ordinal Scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Play behavior not yet evident.</td>
</tr>
<tr>
<td>1</td>
<td>Inadequate play: progressive therapy indicated (evidence of developmental delay in play).</td>
</tr>
<tr>
<td>2</td>
<td>Borderline: definite need for play intervention and enrichment (developmentally appropriate play is present but is slightly delayed or lacking in major areas).</td>
</tr>
<tr>
<td>3</td>
<td>Adequate play experiences, opportunity, and action but lacking in some minor areas.</td>
</tr>
<tr>
<td>4</td>
<td>Excellent play experiences, opportunity, and action.</td>
</tr>
</tbody>
</table>

Materials: “With what does the child play?”
Action: “How does the child play?”
People: “How does the child play with others?”
Setting: “Where and when does the child play?”

Purpose and Hypotheses

The purpose of this study was to determine the reliability and validity of the Play History Interview developed by Takata (29) and revised by Rogers and Takata (30). To determine interrater and test-retest reliability, the following hypotheses were proposed:

1. The Play History scores as rated by two independent interviewers will yield a significant correlation coefficient of .80 or above.

2. The Play History scores obtained on two separate occasions will yield a significant correlation coefficient of .80 or above.

The questions on the Play History were derived from the categories of Materials, Action, People, and Setting. In the literature review above, authors used different aspects of children’s play to study play behavior. These aspects include the use of toys (materials), the types of play (action), the social interaction occurring (people), and the different environments in which play occurs (setting) (6, 10-27). Since the literature supports the grouping of play behavior into these four categories, the Play History is assumed to have at least partial content validity. As stated previously, the literature supports the premise that play progresses concurrently with development. Takata’s Play History was formulated upon this theoretical base.

The comparison of the Minnesota Child Development Inventory (MCDI) and the Play History serves as the basis for studying the concurrent validity of the Play History. The MCDI is a standardized instrument consisting of 320 statements that describe the behaviors of children in their daily adaptations to the natural environment in which they function. The statements describe behaviors in the first 6½ years of life. The statements were selected on the basis of (a) representation of developmental skills, (b) observability by mothers in real life situations, (c) descriptive clarity, and (d) age discrimination ability. The items are grouped into seven subscales: Gross Motor, Fine Motor, Expressive Language, Comprehension-Conceptual, Situation Comprehension, Self-Help, and Personal-Social. A General Development Scale is derived from the most age-discriminating items from the other scales and thus provides an overall index of development. In order to investigate the validity of the Play History as an interview guide for obtaining information about the developmental nature of a child’s play, the following hypotheses were tested: 1. The Play History scores and the MCDI scores will be positively and significantly correlated. 2. The epochs of the Play History will be positively correlated with age for the population. 3. There will be a significant difference in the play scores of handicapped versus nonhandicapped children.

Methodology

This study involved several phases. Before data were collected, an ordinal scale was developed to quantify information obtained from the Play History Interview (see Table 1) and a protocol for using the instrument was established. To determine the adequacy of the ordinal scale and to practice using the Play History Interview, five parents of nondisabled children were interviewed and their children were rated. Then, a pilot study was conducted in which the two researchers listened to five Play History tapes obtained from a previous study of the Play History (30) and scored them independently to determine preliminary interrater reliability of items. Following the pilot study, the Play History Interview format was revised to allow more space for recording responses and to make it easier to clarify the information.

Subjects. Thirty parents with children between the ages of 12 months and 85 months were inter-
Table 3
Interrater Reliability for Play History Category Scores

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Group</th>
<th>r*</th>
<th>Non-Handicapped</th>
<th>r*</th>
<th>Handicapped</th>
<th>r*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>30</td>
<td>.747†</td>
<td>15</td>
<td>.711‡</td>
<td>15</td>
<td>.755‡</td>
</tr>
<tr>
<td>Action</td>
<td>30</td>
<td>.845†</td>
<td>15</td>
<td>.846†</td>
<td>15</td>
<td>.730‡</td>
</tr>
<tr>
<td>People</td>
<td>30</td>
<td>.583§</td>
<td>15</td>
<td>.545§</td>
<td>15</td>
<td>.586§</td>
</tr>
<tr>
<td>Setting</td>
<td>30</td>
<td>.610†</td>
<td>15</td>
<td>.614†</td>
<td>15</td>
<td>.404§</td>
</tr>
</tbody>
</table>

* Kendall tau correlations.
† Significant at the .0001 level.
‡ Significant at the .001 level.
§ Significant at the .01 level.

viewed in the study. A nonrandom purposive sample was taken from the population of parents having children between the ages of 1 and 7½ years. A criterion stated that both parents must have at least a high school education. Fifteen of the children had disabilities. The following disabilities were included in the sample: cerebral palsy, spina bifida, Down's Syndrome, congenital hip displacement, and a lung condition. One child had experienced open heart surgery. Fifteen of the children were male and 15 were female. Subjects were enrolled in either a day care center, special school, or rehabilitation center in the Richmond area.

Data Collection. The 30 participants were randomly split into two groups. Researcher “A” interviewed Group 1 and audiotaped the interview, while researcher “B” interviewed and audiotaped Group 2. Researchers “A” and “B” then switched tapes and listened to each other’s interviews. Answers to questions were written down during the interview or during the replay of the tape. The answers were charted and scored no later than 1 day following the interview. Each researcher scored 30 interviews and the scores were compared to determine interrater reliability. Ten parents were chosen at random and re-interviewed within 3 weeks of the initial interview to determine test-retest reliability. Results from these ratings yielded Play History category scores and an overall play score. Each of these scores was analyzed by determining its correlation with the first interview scores.

For the purposes of concurrent validity, an MCDI was sent to each participant before the interview. The parent was instructed to complete the questionnaire before the Play History Interview. The researcher obtained the completed inventory at the time of the interview. The MCDI was scored by researcher “A” according to an objective standardized procedure and correlated with researcher “A’s” Play History scores. Bivariate correlational analysis and analysis of covariance were used to investigate the relationships between the Play History and MCDI.

Results and Discussion
Interrater Reliability. Results obtained from this research support the first hypothesis that Play History scores given by two independent raters would yield a significant correlation coefficient of .80 or above. Table 2 presents the correlations between two raters for the overall play scores on the Play History.

The correlation coefficient was .908 for the overall play scores of the entire sample. In comparing the correlations, it is seen that the interrater correlation for the non-handicapped population is higher than for the handicapped population, suggesting that rating criteria are more easily applied to nondisabled children. All the correlations were significant at the .0001 level.

The category scores (Materials, Action, People, Setting) for the entire sample yielded statistically significant (p < .0001) correlation coefficients ranging from .583 to .845.

When comparing the correlations in Table 3, it can be seen that the correlation coefficients for the action and setting categories were much higher for the nondisabled population than for the disabled population. This suggests that it is easier to rate children when they are developing age appropriately than to rate children with developmental delays. Thus, the ordinal scale used in the study is more subjective for children that fall in the borderline to nonacceptable range. The results computed for interrater reliability show that correlations between the two raters increase from category scores to overall play scores. These results suggest that some minimal differences between raters in scoring children in the categories.
will not affect the interrater agreement on the overall play score. Thus, the final scores obtained from the Play History yield significant interrater correlation coefficients. This implies that two trained raters could objectively assess the play behavior of a child at essentially the same developmental levels. Therefore, the scores obtained from the Play History should be reliable when given by one trained rater.

**Test-Retest Reliability.** Results obtained from this research reject the second hypothesis that Play History scores obtained on two separate occasions will yield a significant correlation coefficient of .80 or above. The test-retest reliability was determined by comparing 3-week retest scores of both nonhandicapped and handicapped children to initial scores given by the same rater (Table 4).

These correlations ranged from .410 to .775. Although these correlation coefficients did not reach the desired level for clinical practice, all the correlations were statistically significant except for the materials category. A possible explanation for the low correlation coefficient found in the materials category may be because of the parents' difficulty in remembering all of the materials mentioned in the initial interview. Also, because of the bad weather conditions during the month of January when the interviews were conducted, parents were able to spend more time at home playing with their children in the interim between interviews, thus becoming more aware of their children's play behavior. Parents may have also increased their sensitivity to play as a result of the first interview. The test-retest results obtained from this study suggest the difficulty in measuring play without observing the child over a period of time, which the researchers were not able to do. Therefore, to increase reliability in the future, it is recommended that parents be presented with a list of items to observe about their children before the initial interview.

**Validity.** Hypothesis 1 stated that Play History scores and the MCDI scores will be positively and significantly correlated. Table 5 shows the Spearman Rank Order correlations between the subscales of the Play History and the MCDI. It is apparent from Table 5 that all correlations except three are above the .70 level. The high correlations between the MCDI, which measures general development, and the Play History, which qualitatively measures play development, suggest the interrelationship between play and childhood growth. The scores from the MCDI and Play History were also correlated separately for the disabled and the nondisabled populations. The overall validity coefficient for the nondisabled population was .966 (P < .0001), and for the disabled population was .704 (P < .01). The validity coefficients for the nondisabled population were higher in all categories than were the coefficients for the disabled population.

Table 4
Test-Retest Reliability for Play History Category Scores and Overall Play Score with the Same Rater

<table>
<thead>
<tr>
<th>Scores</th>
<th>ρ</th>
<th>Same Rater</th>
<th>r*</th>
<th>r†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials Category</td>
<td>10</td>
<td>.410</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Action Category</td>
<td>10</td>
<td>.707‡</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>People Category</td>
<td>10</td>
<td>.601§</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Setting Category</td>
<td>10</td>
<td>.775$</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Overall Play Score</td>
<td>10</td>
<td>-</td>
<td>.774‡</td>
<td></td>
</tr>
</tbody>
</table>

*Kendall tau correlations.
† Pearson product moment correlation coefficient.
§ Significant at the .01 level.
$ Significant at the .05 level.

Table 5
Correlations between MCDI Scores and Play History Scores (N=30)

<table>
<thead>
<tr>
<th>Minnesota Child Development Inventory Subscales</th>
<th>General Development</th>
<th>Gross Motor</th>
<th>Fine Motor</th>
<th>Expressive Language</th>
<th>Comprehension/Conceptual</th>
<th>Situation/Comprehension</th>
<th>Self-Help</th>
<th>Personal/Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Play History Scores</td>
<td>.892*</td>
<td>.773*</td>
<td>.891*</td>
<td>.804*</td>
<td>.864*</td>
<td>.864*</td>
<td>.908*</td>
<td>.868*</td>
</tr>
<tr>
<td>Materials</td>
<td>.815*</td>
<td>.668*</td>
<td>.849*</td>
<td>.719*</td>
<td>.824*</td>
<td>.820*</td>
<td>.862*</td>
<td>.813*</td>
</tr>
<tr>
<td>Action</td>
<td>.851*</td>
<td>.841*</td>
<td>.787*</td>
<td>.764*</td>
<td>.768*</td>
<td>.758*</td>
<td>.808*</td>
<td>.745*</td>
</tr>
<tr>
<td>People</td>
<td>.888*</td>
<td>.715*</td>
<td>.859*</td>
<td>.839*</td>
<td>.836*</td>
<td>.820*</td>
<td>.841*</td>
<td>.795*</td>
</tr>
<tr>
<td>Setting</td>
<td>.720*</td>
<td>.571†</td>
<td>.733*</td>
<td>.649*</td>
<td>.727*</td>
<td>.722*</td>
<td>.759*</td>
<td>.752*</td>
</tr>
</tbody>
</table>

*Significant at the .001 level.
† Significant at the .005 level.

The Play History was designed for use with a disabled or a delayed group rather than a nondisabled group. Therefore, the lower validity coefficients...
may indicate that the Play History yields a different type of information for the disabled population that the MCDI may not yield.

Hypothesis 2 stated that the epochs of the Play History will be positively correlated with age. Correlations were calculated for the handicapped and nonhandicapped populations separately, as well as for the entire subject sample. Table 6 shows the Spearman Rank Order correlations between the epoch scores of the Play History and age. The findings support Hypothesis 2 that states that as age increases play development also increases.

The lower correlation for the handicapped population supports the theory that the play habits of the handicapped children are less mature than those of their nonhandicapped counterparts. The Play History scores did not increase as fast with age for the handicapped population as they did for the nonhandicapped.

The handicapped subjects used in the study were already receiving some type of therapy regularly. This may have inflated their Play History scores and, although the correlation with age was lower for the handicapped, it might have been even lower for a population not receiving therapy.

Hypothesis 3 stated that there would be a significant difference between the play scores of the handicapped and nonhandicapped populations. The analysis of covariance \((F = 47.76, p < .001)\) between the two populations, with age as the covariant, indicates that there is a significant difference between the scores. The mean age of the handicapped population was 3 months less than the mean for the nonhandicapped. In comparison, the mean scores on the MCDI General Development Scale are 25 months for the handicapped and 45 months for the nonhandicapped. According to the MCDI, the children were 20 months apart developmentally. Furthermore, the mean score on the Play History for the handicapped population was 22 points compared to 32 points for the nonhandicapped. Although the two groups were only three months apart chronologically, their scores were significantly different on the Play History. A difference of 10 points in Play History mean scores places the two populations almost an epoch apart in play development. Therefore, Hypothesis 3 was supported.

**Analysis of Qualitative Data**

In addition to the quantitative information obtained, this study also yielded valuable qualitative information. Some generalizations noted about the disabled population used in this study were as follows. The disabled children spent a considerable amount of time in passive activities such as watching television or watching other children play. This can be classified as onlooker behavior. Since most of the children possessed poor fine motor skills, they preferred gross motor activities. Activities that they least enjoyed or avoided were those that involved balance such as swinging or activities that were used in therapy sessions such as puzzles. This has important ramifications for pediatric occupational therapists because it suggests that activities need to be presented in a more playful manner. Many of the disabled children avoided stuffed animals when they were younger. Materials that produced noise such as a radio or busybox were favorites.

The qualitative and quantitative data cited were used in compiling a Play History Interviewer's guide. This guide contains helpful probing questions along with hints about the kind of information gained from each Play History question. The guide may be a useful tool for therapists in scoring the Play History Interview.

**Recommendations**

Completion of the study and data analysis permitted the following recommendations concerning future investigations of the Play History:

1. Repeat the study and use a larger subject sample over a wider geographic area, and over a longer period of time.
2. Select the subject sample as randomly as possible.
3. Use the Play History in conjunction with play observations to check the parents' reports and to help elaborate on information through direct observation.
4. Use an older subject population, preferably children between the ages of 7 and 12 years.
5. Criteria used for scoring the Play History need to be further specified to decrease subjectivity in scoring.
6. Although the Play History

### Table 6: Correlations between Play History Scores and Age

<table>
<thead>
<tr>
<th>Population</th>
<th>N</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>30</td>
<td>.848*</td>
</tr>
<tr>
<td>Nonhandicapped</td>
<td>15</td>
<td>.938*</td>
</tr>
<tr>
<td>Handicapped</td>
<td>15</td>
<td>.794†</td>
</tr>
</tbody>
</table>

*Significant at the .0001 level.
†Significant at the .001 level.
The Play History was constructed for the purposes of this research, which was useful in studying validity, the qualitative information received from the interview should be used as the basis for scoring and for treatment planning.

7. Specific case studies, using interview information, can be used as learning tools.

Clinical Recommendations. Before a clinician uses the Play History as an evaluation assessment, the following are recommended:
1. Have skills in interviewing techniques.
2. Be familiar with the theoretical bases for the assessment, as well as with the process of childhood play development as it occurs in each play epoch.
3. Do not rely on quantitative data obtained from the Play History without considering qualitative information, which may be the best description of the child's play status.

Conclusions
The statistical results of this study suggest that the Play History is a reliable and valid parent interview for measuring the play behavior of preschool children in occupational therapy. The theory that play progresses synchronously with development, on which the Play History is based, was supported. Play was also discussed as being vital to the development of the rules, skills, roles, and values of society; play is the primary mechanism of childhood. This study used occupational behavior as a theoretical base. Since play is viewed as a major occupation of childhood, it serves as a major medium for assessment and therapeutic intervention.

Acknowledgment
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Note: A copy of the revised Play History and the Interviewer's Guide may be obtained from the authors upon written request.

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23. Frampton ME, Kerney E, Schattner R: Forgotten Children, Mass: Porter Sargent Publisher, 1969