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The Effects of Prompting and Stimulus Novelty on the Frequency of Play with Toys

Gloria J. Gasparotto

*Western Michigan University*

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THE EFFECTS OF PROMPTING AND
STIMULUS NOVELTY ON THE
FREQUENCY OF PLAY
WITH TOYS

by

Gloria J. Gasparotto

A Project Report
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Specialist in Education Degree

Western Michigan University
Kalamazoo, Michigan
April, 1978
THE EFFECTS OF PROMPTING AND
STIMULUS NOVELTY ON THE
FREQUENCY OF PLAY
WITH TOYS

Gloria J. Gasparotto, Ed.S.
Western Michigan University, 1978

Two experiments were conducted to investigate the effects of two antecedent control procedures on the frequency of isolate toy play. In Experiment I, subjects were verbally prompted to enter a play area. Results of a multiple-baseline design across subject groups showed that prompting increased not only the amount of time spent in the area, but also the frequency of play with toys. Experiment II utilized a "repeated probes" design, whereby a group of toys was removed from the area and then replaced after one week. Both the amount of time spent in the play area and the frequency of toy play increased over baseline by 20%. This increase was due to increased play with both "novel" and "familiar" toys, possibly indicating that presentation of the "novel" group was reinforcing, but that no discrimination was made between the groups. Several possibilities exist to explain these results.
ACKNOWLEDGEMENTS

My most sincere appreciation goes to Dr. Brian A. Iwata for his patient guidance throughout the course of this study. I would also like to thank Dr. Jack L. Michael and Dr. Galen J. Alessi for their flexibility, and for their thought-provoking comments and questions. In addition, my gratitude goes to James W. Partington and Mark L. Sundberg for their help in conducting this research.

Gloria J. Gasparotto
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### GENERAL DISCUSSION

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INTRODUCTION

Much applied behavior analysis research has focused on the task of increasing social interactions in various subject populations, including mental patients (Milby, 1973), retarded children (Redd, 1974; Mithaug & Wolfe, 1976; Strain & Timm, 1974), and, most frequently, preschool children (Allen, Hart, Buell, Harris & Wolfe, 1964; Hart, Reynolds, Baer, Brawley & Harris, 1968; Hartrup, 1965; Kirby & Toler, 1970; Patterson & Anderson, 1964; O'Connor, 1969; Pinkston, Reese, LeBlanc & Baer, 1973; Quilitch & Risley, 1973; Rogers-Warren & Baer, 1976). Definitions of social interaction in these cases have generally included close proximity to and verbal interaction with another child or adult. In addition, studies investigating the cooperative play of children (Allen, et. al., 1964; Hart, et. al., 1968; Redd, 1969; Quilitch & Risley, 1973) have described specific activities including manipulation of toy materials as part of their definitions of a cooperative interaction. Hence, it would appear that play with toys serves the function of occasioning the occurrence of early social interaction between children.

In contrast to this literature, relatively few researchers have attempted to design procedures to increase the level of isolate play activities (Twardosz & Sajwaj, 1972; Flavell, 1973; Koegel, Firestone, Kramme & Dunlop, 1974; Seekins, Stimate-Douglas & Swenson, 1976). In each of these studies, the activity chosen as the target behavior was play with toys, where subjects were either retarded or autistic children who exhibited high levels of stereotypic or hyper-
active behaviors. The Twardosz & Sajwaj (1972) and Koegel, et.al. (1974) experiments showed that the occurrence of isolate toy play increased when procedures were implemented to decrease self-stimulatory or hyperactive behaviors, while Flavell (1973) showed a decrease in self-stimulation when toy play was prompted and reinforced. Thus it appears that the two types of behavior are incompatible, and while there is a lack of good experimental evidence which indicates that currently available toys are "educational" as advertised (Quilitch, 1974), it would seem that the systematic application of methods to increase isolate play would concomitantly serve to decrease certain "autistic" behaviors in populations which exhibit them. For the mentally retarded, then, there are two important reasons for the shaping and maintenance of isolate toy play: 1) as a skill pre-requisite to social interactions, and 2) for the purpose of decreasing existant self-stimulatory and other deviant behaviors.

While prompting and reinforcement of toy play by a trainer in the Flavell (1973) study was successful on a one-to-one basis, the author reported that when this method was attempted for two subjects simultaneously it was found to be impractical, presumably because of the difficulty in providing the high levels of interaction between subject and trainer necessary to shape and maintain toy play. Seekins, et. al. (1976) developed a procedure which dealt with the above mentioned problem utilizing the concept of stimulus novelty as a reinforcer (Berlyne, 1960). With retarded children as subjects, all available toys in a residential cottage (defined as all manipulable
objects in the cottage except for doors, light switches, large equipment, etc) were divided into two groups equated for size. With one group removed for a period of three months, data were collected on the level of object manipulation with the remaining toys. The group of toys previously absent from the cottage was then re-presented while the other group was removed. While Seekins, et al. showed a 19% increase in object manipulation with the "novel" toys (those removed for three months), the experimental design did not include a return to baseline conditions or other systematic method of assessing control over the target behavior. Other studies on stimulus novelty would, however, support these findings (Berlyne, 1950, 1955, 1958; Montgomery, 1953; Menzel, 1961; Cantor & Cantor, 1964). Behaviors measured in these studies included the exploratory behavior of rats (Berlyne, 1950, 1955; Montgomery, 1953), and visual orientation toward the novel and familiar stimuli in both animal and human subjects (Menzel, 1961; Cantor & Cantor, 1964).

Procedures employed to assess the effects of novelty take one of two forms. In both the Berlyne (1950, 1958) and Cantor & Cantor (1964) studies, there was a period of pre-exposure to one stimulus and not to a second stimulus, thereby determining novelty or familiarity of one stimulus in relation to the other. Similarly, Berlyne (1955) pre-exposed one and not a second group of subjects to an object. The stimuli were then presented together, one at a time or to both groups, and the level of the response used to measure the reinforcing value of each stimulus was assessed. In all cases, the reinforcing value
was defined as the amount of time spent by the subject in responding to the pre-exposed stimulus as compared to the other stimulus. Secondly, as in the Menzel (1961) and Montgomery (1953) experiments, subjects were adapted to an object and then exposed to objects varying systematically from the "familiar" object. The reinforcing value of those objects that were most to least similar to the pre-exposed object was compared in terms of the amount of exploratory behavior directed toward each. All of the above studies reported that both lower animal and human subjects spent more time attending to the most novel stimuli, including such objects as small blocks, mazes and figure drawings.

To account for these findings, Berlyne (1960) proposes two hypotheses which, he states, are not necessarily mutually exclusive. The first, called the "habituation hypothesis" states that since all stimuli are novel to an organism at some time in its life history and so must possess the properties peculiar to novelty, the effects of currently novel stimuli may be explained by the fact that "they have not yet had a chance to lose effects that all stimuli originally possess". The second hypothesis explains the apparent reinforcing value of novelty as a result of stimulus generalization. As some components of the novel stimuli when presented will be familiar to the subject ("relative novelty"), certain responses will occur in the presence of the novel stimulus as a function of past learning in the presence of the familiar components.

Several of the previously cited studies have measured the reinforcing value of a novel stimulus during continued exposure to the
subject (Berlyne, 1950m 1955; Montgomery, 1953; Cantor & Cantor, 1964), and have generally shown that this type of exposure leads to a decrease in the rate of the response, thereby lending support to the "habituation hypothesis". In further support of these data, Kish (1966), in a review of the literature, contends that the concept of novelty may be included within the concept of stimulus satiation, whereby exposure to a sensory stimulus prior to testing for its reinforcing value leads to a weakening of those reinforcing effects, while subsequent removal of the stimulus leads to a recovery of its reinforcing value. Similarly, Kish states that although results are conflicting, there is some evidence that there is an inverse relationship between the length and extent of an organisms' deprivation of a stimulus and its reinforcing power when subsequently exposed to the organism.

The purpose of the current study is to evaluate the effectiveness of procedures designed to increase the level of isolate toy play of a group of mentally retarded children. The concept of stimulus novelty will be utilized to overcome the limitations of a prompting and reinforcement procedure with more than one subject (i.e. for situations where individual therapy is impossible), as discussed in the Flavell (1973) study.

In addition, as all subjects initially exhibited low levels of entering the play area which contained the toys, a procedure of response prompts (Risley & Reynolds, 1970; Geller & Farris, 1973; Streifel & Wetherby, 1973; Knapczyk & Livingston, 1974; Van Houten
& Sullivan, 1975; Kazdin, Silverman & Sittler, 1975) to enter that area will be provided.
EXPERIMENT I

Method

Subjects

Two female and three male students enrolled at the Kalamazoo Valley Multihandicap Center, a program for the physically and mentally impaired, served as subjects. The students ranged in age from 9 to 20 years, and were diagnosed as trainable mentally impaired, and, for two subjects, as speech impaired. All were members of a classroom in which the focus was on teaching social and pre-academic behaviors, and were also engaged in language and self-help skills training. All subjects were ambulatory and sighted. One subject was deaf, and communication took place through the use of Signed English.

Individual and small group therapy sessions were conducted each half-hour period between 9:00 a.m. and 3:00 p.m. by part-time staff and undergraduate students who worked for practicum credit through Western Michigan University.

All subjects exhibited a low frequency of both prompted and self-initiated isolate play, and it was deemed desirable to teach this behavior for three basic reasons: 1) the alternative behavior in which subjects are likely to be engaged is wandering about the room or self-stimulation, 2) at times when it happens that a child is left alone for a period of several minutes for any of various reasons, it would be more desirable that s/he engage in...
appropriate isolate play than to disrupt the other students and therapists in the classroom, and 3) a prerequisite to social play, and therefore other social interactions.

Setting

The study was conducted in the play area of a classroom at the Multihandicap Center. It measured approximately 1.2 m. x 4.8 m., and was bordered by walls on three sides with the fourth side opening into the main classroom. Along one wall were shelves on which a variety of toys were placed, and a small bookshelf stood against the opposite wall.

Response Measurements

Response definitions. Throughout Experiment I, measures were taken on the following dependent variables:

1) IN - An instance of the subjects' being in the play area was scored if s/he was viewed partially or fully on a closed circuit T.V. monitor, which was focused to take in the entire play area, or

OUT - A subject was considered out of the play area if not visible on the monitor.

2) PLAY - An instance of PLAY was recorded if the subject was observed to be actively manipulating a designated toy (i.e. such that the toy was in motion) or was visually oriented toward a toy within two feet of him/her and that toy was visible to the observer, or

NO PLAY - An instance of NO PLAY was recorded if the subject was not observed to be actively manipulating a designated toy.
3) APPROPRIATE - An instance of PLAY was marked APPROPRIATE if the subject was actively manipulating a designated toy in a non-self-stimulatory manner and in such a way that manipulation was not destructive to the toy or another object or person. Self-stimulatory behaviors were specific to each child, and were generally classified as repetitive behaviors which seemed to serve only the purpose of providing sensory stimulation to the subject, or

INAPPROPRIATE - An instance of INAPPROPRIATE play was scored if the subject was actively manipulating a designated toy in a self-stimulatory and/or destructive manner as described above.

Observation procedures. Data were collected by the primary and reliability observers for the major part of the study from within a booth adjacent to the play area. A closed-circuit T.V. monitor was placed in the booth and was connected to a camera aixed to the top of a cabinet situated directly across from the entrance to the play area, and at a distance of approximately 1.5 m. The entire play area was monitored in this manner.

A ten-second, momentary time-sampling procedure was used, whereby observers glanced at the monitor upon signal by a cassette tape recorder on which ten-second intervals had been indicated. A data sheet was marked at each interval according to the response definitions. If a target subject appeared on the screen at the beginning of a ten-second interval, the data sheet was marked in the categories of IN or OUT, and PLAY or NO PLAY. If an instance of PLAY occurred, the categories of APPROPRIATE or INAPPROPRIATE were also marked.
Data throughout the experiment were collected for 10-minute periods of 60 intervals each between two, 25-minute therapy sessions. One subject per 10-minute period was observed, although other subjects were not restricted from entering the play area at any time for purposes of this study.

Reliability

Independent observations were made for each subject at least twice in each condition of the study, and a total of 26 times throughout the experiment. A portable cardboard screen separated the primary from the reliability observer within the booth. Interobserver reliability percentages were calculated for each dependent variable by dividing the number of agreements by the number of agreements plus disagreements, and multiplying by 100. Agreement percentages were calculated for: 1) occurrences of the target responses (IN, PLAY, and APPROPRIATE), 2) non-occurrences of the above, and 3) occurrences plus nonoccurrences of the above (see Table 1).

Procedure

Baseline. Baseline data were taken on the three dimensions of play during which time the therapists were instructed to refrain from interacting with the target subjects so as to minimize the probability that prompting to enter the play area would occur. No prompting by the trainer or reinforcement for entering the area occurred at this time.
Table 1: Interobserver reliability percentages for 1) occurrences of the target responses IN, PLAY and APPROPRIATE (SI), 2) non-occurrences of the above (UI), and 3) occurrences plus non-occurrences of the above for Experiments I and II (Overall).
<table>
<thead>
<tr>
<th>Experiment I</th>
<th>SI</th>
<th>UI</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>P</td>
<td>A</td>
<td>I</td>
</tr>
<tr>
<td>Range</td>
<td>67-100%</td>
<td>84-100%</td>
<td>38-100%</td>
</tr>
<tr>
<td>Mean</td>
<td>98%</td>
<td>98%</td>
<td>94%</td>
</tr>
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<table>
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<tr>
<th>Experiment II</th>
<th>SI</th>
<th>UI</th>
<th>Overall</th>
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<tr>
<td>I</td>
<td>P</td>
<td>A</td>
<td>I</td>
</tr>
<tr>
<td>Range</td>
<td>84-100%</td>
<td>86-100%</td>
<td>69-100%</td>
</tr>
<tr>
<td>Mean</td>
<td>99%</td>
<td>95%</td>
<td>91%</td>
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</table>
Prompts. Following baseline, each subject was prompted to enter the play area by the therapist with whom the subject had worked during the immediately preceding half-hour period. For all subjects, the prompt consisted of the statement "(name), go into the play room, please". The statement was repeated once only if it seemed obvious that the subject had not heard the prompt, for example, if the noise level in the room was particularly high at the time, and the subject did not respond to the prompt whereas s/he usually did. Again, as during baseline, all therapists were instructed to refrain from interacting with the target subject, whether or not s/he was in the play area. Other children were not, however, stopped from interacting with the subjects.

Experimental design

A multiple-baseline design across subject groups (Baer, Wolf and Risley, 1968) was utilized, whereby subjects were divided into two groups of two and three students, respectively. Group 1, consisting of Subjects 1 and 2, was first exposed to the response prompting procedure after seven days of baseline data were collected; the intervention was initiated for Group 2, consisting of Subjects 3, 4 and 5 after 20 days of baseline procedures.
Results

Figures 1 and 2 illustrate the percentage of time-samples during which each subject: 1) entered the play area (I), 2) played with a toy (P), and 3) played appropriately (A) during baseline and prompting conditions in Experiment I, and Table 2 shows the mean percentage of time-samples during which I, P and A occurred across conditions for each group.

Baseline rates for I, P and A were at zero levels for Subjects 1, 2 and 4, and at variable but low levels for Subjects 3 and 5. During the prompting procedure, the amount of IN, PLAY and APPROPRIATE play increased greatly for four out of five subjects, although variability was still present. For a fifth subject, the increase in the incidence of these behaviors was negligible. For Subjects 1 and 3, percentage of occurrence of IN was fairly stable at 100%, although not until the eighth session of prompting for Subject 3. Although levels of all dependent variables increased for Subject 4 upon initiation of prompting, a decrease was subsequently seen for each until the last session, when increases in IN, PLAY and APPROPRIATE occurred.
Figure 1: Percentage of time-samples during which Subjects 1 and 2: 1) entered the play area (I), 2) played with a toy, and 3) played appropriately (A) in Experiment I.
Figure 2: Percentage of time-samples during which Subjects 3, 4 and 5: 1) entered the play area (I), 2) played with a toy (P) and 3) played appropriately (A) in Experiment I.
Table 2: Mean percentage of time-samples during which each subject: 1) entered the play area (I), 2) played with a toy (P) and 3) played appropriately (A) in Experiment I.
<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th></th>
<th>Group 2</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>P</td>
<td>A</td>
<td>I</td>
</tr>
<tr>
<td>Baseline</td>
<td>.2%</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
</tr>
<tr>
<td>Prompting</td>
<td>78%</td>
<td>55%</td>
<td>54%</td>
<td>59%</td>
</tr>
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</table>
Discussion

Results indicate that prompting to enter the play area led to an immediate increase over baseline in the amount of time spent in that area for four out of five subjects. In addition, prompting increased the amount of toy play engaged in by each subject. The appropriateness of toy play was comparable to baseline levels for Subjects 3 and 5. For Subjects 1, 2 and 4, no conclusions can be made concerning the effects of prompting on the appropriateness of toy play, as baseline levels of play were at zero. For these latter subjects, a comparison of the level of appropriate toy play to total toy play, therefore, cannot be made across baseline and prompting conditions.

For Subject 5, the percentage of appropriate toy play was comparable across baseline and prompting conditions, indicating that prompts to enter the play area were effective in increasing neither entering the area nor playing with the toys. No explanation for these data is offered, however it was observed that Subject 5, when instructed to enter the play area, spent most of the 10-minute interval of data collection running back and forth between the play area and the main classroom. These instances are illustrated in Figure 2 by those data points which show high levels of I (percentages of time-samples spent in the play area) but low levels of P (percent of appropriate play).

Experiment I, then, replicates findings that the frequency of desirable behaviors may be increased using response prompting as
an antecedent control procedure. The value of this procedure lies in its effectiveness while utilizing only a minimum of therapist time and effort. Also, in contrast to the individual reinforcement procedures employed in the Flavell (1973) study, it would seem that the manipulation made in the present study could be used effectively to increase play with several children at a time.

Experiment II will attempt to further increase the level of toy play of the same subjects as in Experiment I, utilizing an additional antecedent control procedure.
EXPERIMENT II

Method

Subjects

Subjects for Phase 1 of Experiment II were the same as for Experiment I. Due to classroom reassignments for Subjects 4 and 5, and the commencement of long-term hospitalization for Subject 1, only Subjects 3 and 4 remained throughout Phase 2.

Setting

The setting for Experiment II was the same as for Experiment I.

Response Measurements

Response definitions. Response definitions for Experiment II were the same as for Experiment I. In addition, all toys previously contained in the toy room during Experiment I were divided into three groups, which were equated for both number of toys and general category of toy, as shown in Table 3. If PLAY, as defined in Experiment I occurred during an interval, the group to which the manipulated belonged was marked.

Observation procedures. A 10-second, momentary time-sampling procedure, as described in Experiment I, was used throughout Experiment II. Data were again collected for one, 10-minute period of 60 intervals between therapy sessions for each subject, and the same closed-circuit T.V. monitor system was used throughout the first one-half of Phase 1. Due to occupation of the observation booth
Table 3: Categories within each toy group.
<table>
<thead>
<tr>
<th>Toy categories</th>
<th># of toys per category for each group</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction toys</td>
<td>2</td>
<td>Lincoln Logs</td>
</tr>
<tr>
<td>Balls and tossing toys</td>
<td>4</td>
<td>baseball</td>
</tr>
<tr>
<td>Musical toys</td>
<td>2</td>
<td>toy radios</td>
</tr>
<tr>
<td>Vehicles</td>
<td>2</td>
<td>toy dump truck</td>
</tr>
<tr>
<td>Puzzles</td>
<td>2</td>
<td>variety with pieces of similar size &amp; quantity</td>
</tr>
<tr>
<td>Stuffed toys</td>
<td>1</td>
<td>stuffed lion doll</td>
</tr>
<tr>
<td>Books</td>
<td>1 bunch of similar size</td>
<td>scrap books</td>
</tr>
</tbody>
</table>
for purposes of individual therapy, data were collected from a section of the classroom across from the play area entrance for the remainder of Phase 1 and throughout Phase 2. This section was directly adjacent to the cabinet upon which the camera previously stood, and so data collection was not significantly altered.

Reliability

Reliability observations were made in the same manner as described in Experiment I while data were collected from the booth. While observations were made from the classroom area, primary and reliability observers were situated such that data forms were not visible to each other. At least one independent observation was made for each subject in each condition of the experiment. A total of seven observations were made during Phase 1 baseline, six during Phase 1 probes, two during Phase 2 baseline and three during Phase 2 probes. Interobserver reliability percentages were calculated for each of the dependent variables as in Experiment I (see Table 1). Reliability percentages for each toy group (1, 2 and/or 3) present in the play area at the time observation were made were also calculated. Overall mean percentages ranged from 92% to 100%.

Procedure

Baseline. Baseline observations for Experiment II were begun immediately following the termination of Experiment I. Procedures were the same as the prompting condition of Experiment I with the exception that on the first day of Experiment II, toy group 1 was removed from the play area and stored outside of the classroom.
Upon removal of toy group 1, it was designated as the "novel" group on the basis of its absence from the play area while groups 2 and 3 remained present, and were designated as "familiar".

Phase 1. Following 15 days of baseline, toy group 3 was removed from the play area and group 1 was replaced, thus the total number of toys contained in the play area during baseline and probe sessions was the same. Group 1 toys were removed after two days and group 3 (the "familiar" group) was replaced. Probes were made on sessions 16 and 17, 24 and 25, and 30 and 31 during Phase 1, with alternating removal of the two "familiar" groups.

Phase 2. Following the third probe, a scanning prompt was introduced into the baseline procedures, whereby subjects were instructed to go into the play area and, once in the area, were also prompted to look at the toys. The therapist entered the area with the subject and pointed to each shelf of toys in turn, said "(name), look at the toys", waited until eye contact with each group was made by the subject, and left the area.

Experimental design

A "repeated probes" technique (Sidman, 1960) was utilized in order to accomplish systematic replication. A probe consisted of two days of presentation of toy group 1, while maintaining baseline conditions for all other sessions of the experiment.
Results

Figures 3 and 4 show the percentage of time samples during which:
1) each subject entered the play area (I), 2) played with a toy (P),
and 3) played appropriately (A). Probe data are indicated by arrows
at the top of the figure, while the remaining data points show baseline levels of behavior.

During the baseline condition of Phase 1, percentages of IN,
PLAY and APPROPRIATE maintained at levels similar to those during
the prompting condition in Experiment I. For all subjects, percentages
of APPROPRIATE closely paralleled PLAY levels, indicating that the
play that occurred was most often appropriate. For all subjects
other than Subject 4, the level of PLAY generally did not parallel
the level of IN, showing that these subjects often remained in the
play area without engaging in toy play.

During the first three "novel" toy probes, instituted during
sessions 16 and 17, 24 and 25, and 30 and 31, the mean percentage
of IN, PLAY and APPROPRIATE showed approximately a 20% increase
over the mean percentage of baseline levels of these behaviors, as
illustrated in Table 4. Table 5 shows mean percentages of play
with "novel" and "familiar" toy groups and of total percentage of
toy play. During the Phase 1 baseline, with the "novel" toy
group not present in the play area, total toy play was 38% as
compared to a total of 63% when the "novel" toy group was also
present. Thirty-four percent of this total was attributed to play

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Figure 3: Percentage of time samples during which Subjects 2 and 3: 1) entered the play area (I), 2) played with a toy (P) and 3) played appropriately (A) in Experiment II.
Figure 4: Percentage of time-samples during which Subjects 1, 4 and 5: 1) entered the play area (I), 2) played with a toy (P) and 3) played appropriately (A) in Experiment II.
Table 4: Mean percentage of time-samples during which each subject: 1) entered the play area (I), 2) played with a toy (P) and 3) played appropriately (A) in Experiment II.
<table>
<thead>
<tr>
<th></th>
<th>In</th>
<th>Play</th>
<th>Appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 - Baseline</td>
<td>73%</td>
<td>39%</td>
<td>38%</td>
</tr>
<tr>
<td>Phase 1 - &quot;Novel&quot; toy probes</td>
<td>92%</td>
<td>62%</td>
<td>58%</td>
</tr>
<tr>
<td>Phase 2 - Baseline</td>
<td>89%</td>
<td>58%</td>
<td>43%</td>
</tr>
<tr>
<td>Phase 2 - &quot;Novel&quot; toy probes</td>
<td>96%</td>
<td>67%</td>
<td>46%</td>
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</tbody>
</table>
Table 5: Mean percentage of time-samples during which PLAY occurred with "novel" and "familiar" toys, and total percentage of toy play in Experiment II.
<table>
<thead>
<tr>
<th>Phase</th>
<th>&quot;Familiar&quot; toy groups</th>
<th>&quot;Novel&quot; toy groups</th>
<th>Total % PLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 - Baseline</td>
<td>39%</td>
<td>Not present</td>
<td>39%</td>
</tr>
<tr>
<td>Phase 1 - &quot;Novel&quot; toy probes</td>
<td>29%</td>
<td>34%</td>
<td>63%</td>
</tr>
<tr>
<td>Phase 2 - Baseline</td>
<td>57%</td>
<td>Not present</td>
<td>57%</td>
</tr>
<tr>
<td>Phase 2 - &quot;Novel&quot; toy probes</td>
<td>59%</td>
<td>8%</td>
<td>67%</td>
</tr>
</tbody>
</table>
with the "novel" group as compared with 29% play with the
"familiar" group.

During Phase 2 baseline, percentage of IN and PLAY showed a
slight mean increase for both remaining subjects together (see Table 4).
For both subjects, however, and for Subject 3 especially, the ratio
of APPROPRIATE to PLAY showed a decrease, indicating a greater
level of self-stimulatory and destructive manipulation of the toys.
"Novel" toy probes, which included the scanning prompt, showed a
slight increase over baseline in percentage of IN, PLAY and APPROPRIATE.
As during baseline, the level of inappropriate play also increased
during "novel" toy group probes.
Discussion

Results of Phase 1 of Experiment II show that the amount of time spent by subjects in the play area and playing with toys increased over baseline when the "novel" toy group was introduced into the play area. This increase was due primarily to play with the "novel" group. In addition, however, frequency of play with the "familiar" group of toys also increased. These data seem to suggest the possibility that the "novel" toy group was somewhat more reinforcing to the subjects than the familiar toy group. The slight increase in play with the "familiar" toy group, however, indicates that while introduction of the "novel" group led to an increase in total toy play, a discrimination between toys in the "novel" and in the "familiar" groups was not made, i.e. that introduction of the "novel" toys led to an increased tendency to play with toys from both groups.

In an attempt to facilitate the discrimination between "novel" and "familiar" groups, Phase 2 included a prompt to subjects to look at the toys during baseline and probe conditions. As during Phase 1, data collected during Phase 2 show an increase over baseline in total toy play during "novel" toy probes. This increase, however, was approximately half that of the increase in Phase 1, and was attributed to play with "familiar" toys. The prompt to look at the toys was thus ineffective in increasing play with "novel" toys. In addition, the amount of inappropriate (self-stimulatory) play increased during Phase 2. As in the case of Subject 4 in Experiment I,
these data are inconsistent with those of the Flavell (1973), Twardosz and Sajwaj (1972) and Koegel, et. al. (1974) studies, which showed a decrease in self-stimulation as appropriate play with toys increased. Similar to Experiment I and in contrast with the three above mentioned studies, Experiment II did not attempt to shape appropriate play with toys, possibly accounting for the differing results.
GENERAL DISCUSSION

The two experiments in the present study attempted to utilize antecedent control procedures to increase the frequency of occurrence of toy play in multiply-handicapped children. Experiment I demonstrated that a response prompt to enter the play area was successful in increasing toy play also, a response that was not specifically prompted but was closely related to the prompted response. Such a method, therefore, may be employed in situations where play with toys is desired, such as day care centers, kindergarten and elementary classrooms and other classrooms and residential settings, but where low teacher:child ratios prohibit a high frequency of individual interaction as a method of generating toy play. In addition, although this manipulation was not carried out in the present experiment, it is possible that for children who frequently enter the designated area but do not engage in play with the toys, that a prompt to play would be successful in increasing the occurrence of toy play.

Results from Phase 1 of Experiment II, while showing an increase in toy play during "novel" toy probes, indicated that this was due to an increase in the frequency of play with both "novel" and "familiar" toys. In Phase 2 also, total toy play increased during "novel" toy probes, but this increase was mainly due to an increase in play with "familiar" toys. Interpretation of these results in terms of previously described studies of stimulus novelty is difficult, as in all of those studies, "novelty" was defined as the absence of a specified amount of familiarization. In the present study, all
toys were previously familiar, and "novelty" was defined in terms of the removal of that group of toys for a period of time between probes. The consistent increase in total toy play during "novel" probes would seem to indicate that these increases were a function of the re-presentation of the "novel" toy group. That play increased with "familiar" toys, also, can possibly be explained by the fact that the "novel" group was not absent for a long period of time. This group was, therefore, "familiar" to a certain degree, and a discrimination between "novel" and "familiar" groups would be more difficult to make. In addition, the toys used in this study were stimuli of a great deal more complexity than in the Berlyne (1958) and the Cantor and Cantor (1964) studies. Human subjects were used in these experiments, also, but the stimuli in both cases were graphic designs of black and white presented on slides. Thus, it would probably be easier for subjects to make a distinction between that group to which they had been pre-exposed and the group that was completely novel. It is possible that removing one toy group for a period of time longer than one week would facilitate an increase in play with that group. In addition, although a probe design was utilized in the present study, it is suggested that a multiple-baseline design across toy groups be attempted for any further applied research in this area. This design would involve rotating groups of toys such that each group is, at some time, "novel" in terms of its removal from the area for a certain period of time. A multiple-baseline implemented
in this manner would more closely resemble a procedure that would
be employed in a classroom or residential setting given that positive
results were achieved.
REFERENCES


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