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AUTHOR Singer, Jerome L.; Singer, Dorothy G.
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ABSTRACT

The present study was designed to explore the possibility that exposure to the "Misterogers' Neighborhood" program might increase the likelihood of spontaneous imaginative play in preschool children who watched the program over a period of two weeks. The specific focus of this investigation was to determine whether a well-produced professional program would be more effective in enhancing imaginative play than instruction from a live adult. The study involved four varied conditions: (1) a non TV-viewing control group observed in spontaneous play on two occasions separated in time by a period comparable to that taken up by the experimental conditions; (2) a group who watched the Misterogers' show daily over a two-week period; (3) a group who watched the same show daily in the company of an adult who interacted with the children about content of the performance; and (4) a group who saw no television at school but received a comparable daily time period of fantasy game-playing and practice in imagery with an adult teacher. An analysis of the matrix of intercorrelations between the independent and dependent variables of the study seems to suggest that children in the 3- to 4-year-old age group remain most susceptible to influence by a concerned adult in their presence who can engage them directly and provide them with immediate feedback for their own responses. It is therefore likely that at the very least, television's prosocial or optimal cognitive benefits may have to depend on some mediation by an adult.

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Enhancing Imaginative Play in Preschoolers:

Television and Live Adult Effects¹

Jerome L. Singer

Dorothy G. Singer

and

Yale University

University of Bridgeport

There is increasing reason to believe that the imaginative or make-believe play of children is not only important in their enjoyment of ongoing play situations but may also serve an important role in subsequent development of important cognitive and affective skills. While various aspects of fantasy play seem to emerge quite naturally in children as a part of normal growth within the first three years of age (Piaget, 1962; Singer, 1973) there is also evidence that pretend and socio-dramatic games can be enhanced in scope and frequency in children below school age by means of particular kinds of parent-child interaction (Singer, 1961; Freyberg, 1973; Fein, Branch, & Diamond, 1973; Fein, 1974) as well as by specific training procedures (Smilansky, 1968; Freyberg, 1973; Marshall, & Hahn, 1967; Saltz, & Johnson, 1973). The study to be described here represents part of an extended research program (Singer, 1973) designed to explore the various parameters of imaginative play in children and their relationship to the later development of daydreaming and various cognitive skills or personality characteristics. The specific focus of this investigation was on role of adult intervention represented either by an actual teacher working with three and four year old children or by variations involving a live adult in combination with a television program which placed considerable emphasis on make-believe.

The effects of television-viewing in enhancing aggressive trends in children predisposed to such behavior has been extensively documented (Murray,

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Rubinstein, & Comstock, 1972). There has also been evidence that children will modify behavior in a prosocial direction following exposure to particular television content (Stein, Friedrich, & Vondracek, 1972; Friedrich, & Stein, 1973). The level of anger aroused by an earlier frustration has also been shown to be moderated when children were exposed to particularly benign or even occasionally aggressive televised fantasy materials (Biblow, 1973). The present study was designed to explore the possibility that exposure to the Misterogers' Neighborhood program might increase the likelihood of spontaneous imaginative play in preschool children who watched the program over a period of two weeks.

The study had a number of specific purposes. At the theoretical level it was of interest to ascertain whether a well-produced professional program with its advantages of skillful presentation and continuing story line and character identification would be more effective in enhancing imaginative play than instruction from a live adult. If one considers most of the theories about early learning experiences of children, however, there is reason to believe that the child acquires new responses often by direct attempts at imitation of parental movements and verbalizations. In keeping with Piagetian notions of the limits of cognitive capacities in the preschool period children should be more likely to respond to an adult before them who is providing active stimulation.

The vividness and excitement of interaction with the "live" adult who also can respond individually to each child or modify the format in response to the group's motor and affective ebb and flow provides a distinct advantage to direct training procedures for enhancing subsequent spontaneous make-believe play. Even the well-produced television show is less likely to hold the attention of three or four year olds enough to yield some of the effect on

subsequent play. The availability of an adult who serves to bridge the gap between the television performance and the children's limited attentional capacity may lead to a greater impact of the vicarious modeling experience of the medium. The present study involved in effect four conditions: 1) a non TV-viewing control group observed in spontaneous play on two occasions separated in time by a period comparable to that taken up by the experimental conditions; 2) a group who watched the Misterogers' show daily over a two week period; 3) a group who watched the same show daily in the company of an adult who interacted with the children about content of the performance; and 4) a group which saw no television at school but received a comparable daily time period of fantasy game-playing and practice in imagery with an adult teacher. The general hypothesis was that a comparison of pre-experimental spontaneous play with play observed in the weeks after the intervention would reveal a significant linear increase in self-generated make-believe play by the children with the control group showing least change, the television-only group perhaps some small increment, the television-adult combination the next greatest, and the live-model group the greatest increase, in fantasy play. In effect this hypothesis emphasizes the continuing key role of the teacher or parent in imaginative play training but suggests that the interaction by parent or teacher and the television set there can be a demonstrable influence of the professional medium performance upon subsequent spontaneous play behavior of the children.

A second issue of importance in the study was an examination of the possibility that imaginative play is part of a cluster of characteristics which might be enhanced by the viewing of a thoughtful program such as Misterogers' or by direct play training. Previous research (Freyberg, 1973; Singer, & Singer, 1973) has suggested that children engaged in imaginative play also manifest positive emotionality and enjoyment and often seem to be able to concentrate better

over longer periods of time. It was therefore also hypothesized that the same linear increments in measures of concentration or positive emotionality would be evident in the four conditions described above.

Still a fourth variable of special concern has been the likelihood of overt aggressive behavior on the part of the child in the course of spontaneous play. There has been some reason to believe from a fairly extensive review of research literature (Singer, 1973; Biblow, 1973) that children given to a greater variety and complexity of imaginative play or fantasy predisposition are less likely to show overt attacking behavior especially if unprovoked (Goldberg, 1973). Because the imaginative play training procedures in the repertory of the live model and the make-believe situations presented in the Misterogers' Neighborhood program are essentially benign, pro-social or only minimally aggressive it was hypothesized that a linear decrease in spontaneous aggressive play would be evident through the four conditions of the experiment.

To amplify some of the findings with particular concern for the affective components since these are a special focus of the Misterogers' Neighborhood program the dependent measures in the study also included a series of scales measuring a variety of specific moods or affects. While the major score, Positive Affect, was rated globally, the observers and raters also directly scored specific emotions such as Elation, Liveliness, Anger, Sadness, Fatigue, Contempt, Shame, and Fearfulness. Another purpose of this study was to examine the role of the specific emotions in the course of imaginative play and to look for clusterings of moods in a way hitherto attempted in only a few studies with children (Biblow, 1973; Singer, & Singer, 1973).

A further objective of the study was to examine the possible influence on spontaneous play of certain predisposing variables. Naturally the general intellectual level of the child and age were examined. Previous research (Singer,

It has been suggested that even by the preschool years there are indications that the child has developed individual styles or predispositions to make-believe play. Quite recent research by Fein (1974) has pointed out that sex differences in pretend play can already be demonstrated before eighteen months of age. Our own research program has suggested that a combination of an interview and a projective method (variants of the Rorschach inkblots) can be used to estimate the likelihood that a child will engage in spontaneous make-believe play. The present study attempted to carry this further and also to determine whether the initial predisposition of the child might make a difference in the responsiveness to the various experimental conditions of direct television watching, watching with an intermediary adult or exposure simply to the adult training in make-believe. Earlier studies with older children (Freyberg, 1973; Pulaski, 1973; Gottlieb, 1973) all indicated that predisposition to make-believe play did indeed lead to differential responses to various play or modeling situations.

The study to be described here bears comparison with the recent work of Stein, Friedrich, and Vondracek (1972) and Friedrich and Stein (1973). The focus in the present investigation is primarily on manifestations of imaginative play, positive emotion, concentration and aggression growing directly out of ongoing spontaneous play carried on by the child and observed unobtrusively rather than through formal interview and examination of the child following the experimental conditions. Race and social class of subjects in our study and that of Stein and Friedrich were as far as can be ascertained roughly comparable with the possibility that subjects in the present study came from a slightly lower socio-economic level.

In summary, then, this research proposed to examine the relative role played by specific television viewing, television viewing with an adult intermediary, or direct training by an adult on the spontaneous imaginative play

by children in a daycare center. The other dependent variables of concern included indications of positive emotionality during play, ability to concentrate and carry through an extended sequence of connected activities, and the likelihood of direct physical assault on other children. Specific emotional responses were also studied prior to and subsequent to the experimental conditions.

Method

General Procedure

The basic procedure of the study called for establishment of four groups of fifteen children apiece relatively equated by age, IQ, sex and imaginative play predisposition. A Control group was observed by raters at the beginning and at the end of a six-week period. This group followed normal nursery school routine which included some interaction with adults and some organized play around artistic activities or formal game-playing. There was a small amount of make-believe play generated by the teachers but this component was also present in all other groups who received essentially the same type of daycare experience from staff teachers who were all unfamiliar with the objectives of the research.

The first experimental condition simply consisted of fifteen children who watched the Misterogers' Neighborhood program for half an hour daily over a two week period. Actually eleven programs were viewed by each child. The second experimental group viewed the same programs but with an adult present during the viewing. She served to interpret some of the material that was going on, encouraged the children to notice details of the programs and to participate actively in imitation of some of the content. The third experimental condition included no television at all but exposure to an adult trainer for half an hour daily. The adult presented the children with a series of exercises in imagery and generated a number of make-believe and fantasy games in which the children were encouraged to participate during the period of time.

prior to initiation of the experimental phase of the study all subjects were interviewed and tested individually for intelligence and imaginativeness of play. During the two weeks before the experimental conditions began pairs of raters previously trained to consensual agreement on a series of dependent variables systematically observed each child on two occasions prior to the inception of the experimental procedures. At the conclusion of the experimental phase of the research each child was again observed by a pair of observers on two separate occasions in the course of spontaneous play. The independent variables therefore included measures of Intelligence, and Predisposition to Imaginative Play (based upon both interview and a variant of the Rorschach ink-blot method) while the dependent variables included ratings of each child on Imaginativeness of Play, Positive Affect, Concentration, Aggression, and a series of affective states.

Subjects

The four groups were made up of fifteen children each who were enrolled in a daycare center in a small industrial city. There were slightly more boys than girls in each of the groups. The average age of subjects was 4-3 years with a range from three to four and a half years. There were no significant age differences for subjects between the four groups. Subjects were all white and came from generally lower middle-class socioeconomic backgrounds. In many instances both parents were employed and parents depended considerably upon the daycare center in this community as an essential service. The general cultural background of the children might be termed American-ethnic with major representation of subcultural groups in the sample of Polish, Ukrainian, Italian and Irish backgrounds. The average IQ of the subjects was 105 with no significant differences emerging between the four groups. Very few of the children had ever seen the Misterogers' program at all because the educational television

channel on which it was shown projected a weak signal in the area in which they resided.

Several weeks prior to actual inception of the study a team of eight observers were introduced into the school so that they could practice observational skills and also to permit the children gradually to become familiar with the fact that there might be persons besides the teacher around the large rooms of the center. Day-to-day routine for the control group was basically no different from that established for the three experimental groups with the exception of the omission of the daily half hour of television or fantasy play instruction. Cognitive skill training in reading readiness was employed by teachers for this group.

Training of Observer-Raters

Following trial procedures on children not included in the study the observers proceeded to carry out individual interviews of all subjects in the research prior to institution of experimental procedures. Of critical importance was the training of the observers in collection of samples of ten minutes of spontaneous play on two separate occasions by the children. The observers worked in pairs writing down all overt behavior and verbalizations carried out by the child during the sampling period. This permitted comparison of protocols to iron out gross discrepancies during the training phase of the study. Following establishment of a high level of agreement between pairs of raters in various combinations, teams were set up for direct observation in the pre-experimental phase of the study. All raters were unfamiliar with the hypotheses of the experiment or with the specific experimental conditions in which a given child had participated.

It was especially important for the study that raters would concentrate primarily on observable behavior and avoid inclinations toward interpretation.

of the implications for psychodynamics of childrens' play. The focus of the study as can be seen was upon the structural characteristics of the play and the overt manifestations of various emotions or play characteristics. By mixing raters and by having observation carried out by different teams pre- and post- on a given child numerous efforts were made to avoid any "halo" effects or any clearcut biases. Detailed discussion of the methodology of observation and rating is available in Singer (1973).

Independent Variables

Previous research on make-believe of children has suggested that at least within the normal intelligence range there is little correlation between IQ and ratings of spontaneous imaginative play (Singer, 1973). In the present study no initial differences between the subjects in the four conditions emerged in intelligence as measured by the Peabody Picture Vocabulary Scale.

Imaginative Play Predisposition

Previous research has suggested that it may be possible to estimate the likelihood that a child will engage in spontaneous make-believe play by carrying out an interview with the child about his own favorite games, the degree to which these involve pretend elements, the occurrence of "pictures in his hand," or the frequency of imaginary playmates (Singer, 1973). The measure is improved in general if it is supplemented by a projective test indicator, more specifically the occurrence of movement responses presented to ambiguous Rorschach type inkblots. With younger children our experience has indicated that the Barron Movement Threshold Inkblot scale is particularly useful since it calls for only one response per card, and generally presents a fairly reasonable threshold effect with an increasing likelihood of the child reporting seeing a human in motion as the cards move from one through twenty-eight. In the present study each of these variables, the score for the imaginative play interview and

the threshold for first perception of movement on the inkblot, were scored separately but then combined by means of z-score averaging to yield a measure which will be called Imaginative Play Predisposition. A child with a high score on that measure would be one who generally reported make-believe games to a greater degree than others in the interview and who also gave a response to the inkblots indicating human movement relatively early in the series. In effect then by using two rather different types of measures, the child's self report of imaginative play activities and the child's imaginativeness in response to an ambiguous form some effort was made to provide a score that might suggest the likelihood of spontaneous socio-dramatic or pretend play activities by such young children.

Dependent Variables

Imaginativeness of Play. The major dependent variable of the study was the spontaneous occurrence of make-believe play in the child. This measure essentially was based on indications in the course of solitary or group play by the child under observation that he or she was introducing elements of time, space or character not immediately given in the perceptual environment. A detailed discussion of the principles underlying this method is presented elsewhere (Singer, 1973). The measure is based on a five-point scale with 1 representing a minimum of imaginativeness of play and 5 representing a high degree of such play observed during the course of a ten-minute observational sample. The critical question to be answered in deciding on a rating involves whether or not the child uses an object or toy in a way different from its actual appearance, e.g. calling a toy giraffe a "spaceman" or indicating by the use of sound effects, actual verbalization, or motor activities some kind of story line removed from the direct motor manipulation of the object or physical stimuli in the room itself (see Fein, 1974). The relative frequency of such occurrences

within the ten-minute sample and the combination of frequency with elaboration of detail are employed in assigning a high score on this dimension. While children of this age group are not likely to show any extended make-believe play there are ample evidences that it does occur frequently enough to be scorable. Previous research has suggested sufficient variability in the measure even in three and four year old children to make for the likelihood of significant manipulation effects (Singer, & Singer, 1973).

Positive Affect. This measure also employed in previous research (Singer, 1973) represented an extension of the notion that an important element in play behavior should be an indication of positive emotions such as joy, elation and liveliness. Here emphasis was placed on the occurrence of smiling and laughing and other gross bodily indications of happiness in the child. It is intriguing indeed that much clinical research and observation of play during therapeutic sessions have focused on indications of anxiety or hostility and have not emphasized the great enjoyment that may go along with make-believe play. Our concern was to capture observable evidence of "happiness" as shown by laughing, smiling or by lively interest as manifestations of positive affect (Tomkins, 1962; Izard, 1971).

Concentration. This measure involved an evaluation of the degree to which within a ten-minute observational sample the child managed to maintain fairly consistent organized sequences of play around a specific theme or to persist in movement toward the goal in relation to a specific activity. It is important to stress the fact that Concentration did not necessarily involve focusing on an imaginary game. Thus a child who chose simply to put one block on top of another for the major part of the ten minute sequence without interrupting this would receive a maximum score for concentration but not necessarily for imaginativeness of play unless there were indications from verbalization that the

construction involved a house and that there was some story-line associated with the game. An earlier study, (Singer, & Singer, 1973) had yielded evidence that children higher in imaginative play predisposition did indeed show significantly greater tendency toward developing organized sequences of play in the time-samples studied and therefore did indeed yield greater concentration scores. One of the longer-range hypotheses of this research has been that imaginative play because its very nature calls for relatively organized sequences of thought may play a role in developing a greater capacity for perseverance or freedom from distractibility on the part of the child and may also play a role in establishing a psychological orientation more effective ultimately for the school situation (Singer, 1973; Smilansky, 1968).

Overt Aggression. This dimension was introduced as an attempt to evaluate direct physical attacks on other children or destruction of others' toys or games or the property of the school. It was important to stress the fact that this is indeed an overt behavioral measure and is quite distinct from aggressive content within the format of a game. Thus, a child who manipulates plastic toys and makes sounds of shooting or uses words like "pow" or "zap" would not be scored for overt aggression. This would simply be viewed as aggression within the framework of an imaginative game. The score for aggression would be used only to the extent that the child actually directly interfered with another's game, fought to take away a block, delivered a blow to another child, or attacked another child in a way that bordered closely on physical violence.

In the earlier study (Singer, & Singer, 1973) there were indications that particularly for boys who showed a greater variability and frequency in aggression compared with girls who showed relatively little at all there was indeed a significant difference between those high and low in imaginative predisposition with respect to evidence of overt aggression. Boys high in imaginative

predisposition showed half as much overt aggressive behavior during free play than did boys low in imaginative predisposition. Somewhat similar results were obtained for example by Biblow (1973) in a study with older children.

Specific Affect or Mood Ratings. The research by Biblow (1973) had indicated some rather intriguing and subtle differential effects of experimental conditions upon specific moods. The present study also incorporated a list of fairly specific emotional states to be rated for each child during the ten-minute behavioral samples observed. The following affective states were rated: Angry, Fearful, Lively, Elated, Sad, Ashamed, Contemptuous, Fatigued. Emphasis was placed particularly on gross overt signs of these moods rather than attempts to interpret the moods on the basis of presumed psychodynamic meanings of play content. Therefore Anger, Shame or Fatigue for example would be rated on the basis of direct verbal expressions of anger or angry facial expressions. Fatigue was particularly in evidence in sluggish motor activity and a tendency to stretch out or try to sleep for periods of time. Sadness was evident most clearly in crying or whimpering. In general the effort was made to train the raters to identify the emotional states in keeping with the point of view on the facial and physical manifestations of affect as defined by Tomkins (1962, 1963) or by Izard (1971).

Intervention Procedures

The following is a brief description of each of the experimental conditions:

Television-Viewing, Group E₁. This group of fifteen children was seated on the floor in front of a television monitor every morning and viewed a one half hour complete program of Misterogers' Neighborhood. The program involved a standard group of characters who are readily identified in each program and who generally over a sequence of three to five episodes carry through a story line that is integrated to make a point of psychological and emotional

significance. All children in both TV groups saw the identical tapes. Altogether there were eleven programs seen over a two-week period by all children in the group. The significance of pretending as a normal human experience is a major theme of the programming developed by Fred Rogers and the song "Pretending" occurs from time to time in the shows. The point was here not necessarily to generate direct imitation by the children of sequences in Misterogers' stories but rather to provide what Bandura (1972) would term a disinhibitory or eliciting function of modeling. The emphasis is on reducing the children's restrictions on generating their own fantasy or on providing them with adult encouragement that might allow them to try out their own self-generated fantasy sequences. It was not expected that the make-believe play of the children would necessarily reflect in any great detail the specifics of the program although some attention was paid to ascertain whether this did occur at all.

Practical considerations in the running of a large daycare center such as this one precluded the opportunity for the children to observe the television set in small groups. It was therefore necessary to group the children around the set in the total sample of fifteen. It should be stressed that this type of viewing situation is quite a different one from that ordinarily provided in the usual home-viewing situation for a program like Misterogers. This procedure may also have presented special difficulties because Misterogers' style is one of simulated direct communication with an individual child. Since it was important to avoid any gross disruption of normal daycare center routine the present situation was found to be the most practical approach to carry through this specific investigation within the ten-week time limit available.

Television-Viewing with Adult Intermediary, Group E₂. The major difference from Group 1 was that there was an adult present who specifically involved herself with the ongoing program and who called the children's attention to

specific points made by Misterogers, to specific events taking place, encouraged them occasionally to imitate particular sequences occurring (such as Misterogers moving his arms to imitate a snake). Some particular events were also interpreted for the children and some participation was encouraged. The adult's role was as a translator and intermediary but the focus of the material was primarily upon the viewing and in a sense the leadership in the programming remained with Misterogers as represented on television.

Adult Make-Believe Training, Group E₃. The third experimental condition involved no viewing of television whatsoever during the ten-week period in the nursery school. These children instead were taken to a room where an adult grouped them around her and then began a series of exercises first of all in imagery and then gradually expanded this to a series of make-believe games. Each half-hour session involved a previously prepared sequence of exercises and games for children with a certain open-ended quality to permit the children to begin to expand on the play activities on their own as these developed. The children were grouped in a circle and then encouraged to participate individually as well as in a group in particular play-action sequences. Many of these sequences were developed in a curriculum particularly for this program although the general direction of the material derived from Freyberg (1973) and from the imagery exercises of deMille (1972). The general range of content was chosen for a relationship to the Misterogers' material not in terms of specific content since the children were unfamiliar with the program but in terms of certain basic concepts such as flying and airplanes, animal imitations and so on.

Again a particular problem faced in the execution of this research was the fact that the children had to be dealt with in a group of fifteen. As a matter of fact it should be noted that initial groups actually included more children under each condition but illness or vacations eventually pared the

groups down to only fifteen apiece. This put some strain on the adult model in the sense that maintaining the attention of fifteen children ages three and four proved to be somewhat difficult. Nevertheless, it was possible by demonstration of considerable enthusiasm on the model's part to carry through most of the training over the eleven specific sessions that matched the television viewing days for the other experimental subjects. A small number of props were employed in the make-believe play. These were generally of a relatively unspecific nature and consisted of playthings such as pipe cleaners which could be made into little human figures, a variety of hats, playdough, large ribbons or scarves which could be employed a number of ways in the course of make-believe games and some paper masks that also had a number of purposes. In general the approach was one emphasizing the importance of more generalized playthings (Pulaski, 1973; Fein, Branch, & Diamond, 1973) which have been shown to be more effective in producing a variety of play themes in children.

Control Group: Group C. This group viewed no television and received no make-believe play training. Blind ratings were made prior to and following the normal nursery school routine with the addition of some cognitive skill training that was part of the school's curriculum. This routine generally consisted of free play at the very beginning of the morning when children arrived, followed by some modestly organized play sequences in which teachers grouped children into drawing, painting or craftlike work or blockbuilding followed then generally by a light snack and rest period and then by somewhat more free play with occasional interventions of the teacher. Occasional somewhat spontaneous make-believe games generated by individual teachers in a more or less random fashion occurred for all four groups. On the whole there was very little variation in the general sequence for the groups.

Parent Interviews and Qualitative Observations

Interviews were conducted periodically with parents of the children concerning the family life style and TV viewing habits. Unobtrusively questions about spontaneous play styles of the children were included in these interviews. Mothers also filled out a questionnaire based on research by Carlson and Levy (1968) which was designed to explore self-worth orientation of the parent along dimensions of Personal and Social direction. This measure was included to provide some clues as to whether mothers' orientation would bear some relation to the spontaneous play behavior of their children.

While a long-term follow-up of play training effects was planned a legal crisis erupted at the close of the experiment necessitating a change in the school's location. While consultation with the school was maintained as a service the collection of systematic data on a longer term basis was precluded by the new setting.

Results

Reliability of Ratings

The first question to be settled in a study so dependent upon observation of spontaneous reactivity in children is whether pairs of observers will agree not only in their accounts of what is happening but in their ratings of the behavior along the specified dimensions employed in the study. In attempting to assess the level of agreement amongst our independent raters use was made of a newly-developed statistic, C (Cicchetti, 1972), which takes into account the frequency with which two observations are in complete agreement, partial agreement, and complete disagreement and also evaluates the level of observed agreement statistically in relation to an expected level of agreement possible for this range of ratings. The advantage of this statistic is that it assesses the closeness of agreement whereas a statistic such as τ or r merely evaluates

the agreement in rankings of subjects. It can also be used for evaluating a great many levels of pairings of different raters.

The results for the study presented here should suffice to point out that the reliabilities were on the whole quite satisfactory for most of the dependent variables. For example in the pairs of ratings for Imaginativeness of Play the raters agreed completely in their ratings for forty-three of the children and were never more than two points apart on the remaining sixteen. This result yields a C of .93 which is significant at $p < .001$ compared with the possible levels of disagreement for this matrix. Similarly in ratings of Positive Affect the C is .89 again, $p < .001$; for Concentration C is .88, $p < .001$. For Aggression C is .93, $p < .001$. The ratings for the various mood states were somewhat more mixed partially because of the fact that the variability in a number of the moods was not very great and in many cases there was simply no evidence at all of occurrence of specific mood states. Examples however would be that for Angry there is a C of .94, significant at $p < .001$, for Liveliness C was .86, $p < .001$, for Elation C was .88, $p < .001$. Generally speaking the results for the major independent variables support the conclusion that the ratings are highly reliable and do not present any problems. It is important to note that these raters were highly trained in the early weeks prior to the inception of the experimental procedures and evaluations of the statistical agreement were made during observations of children not included in the study in order to ensure the eventual high agreement that did emerge. All scores used in data analysis represented means for two observers on two separate play samples.

Major Dependent Variables

Imaginativeness of Play. Despite the random initial assignment of children to experimental conditions there were some differences that emerged in the groups. For example the children in the Control group seemed on the whole to be somewhat

more predisposed to Imaginativeness of Play as estimated both by interview and Barron Inkblots combined. This expectation was borne out by their initially higher score in fantasy play in the first two weeks of the observations. What is particularly noteworthy, however, is that if we examine the results by means of change in scores we find that without any special intervention the control group shows a rather striking decline in spontaneous make-believe play based solely on the passage of time and the following of the usual nursery school routine. By comparison all three experimental groups show a modest increase in Imaginativeness of Play in the two weeks following termination of the experimental procedures. Examination of Figure 1 which presents the change from the first two weeks of observations to the observations made following the two weeks of experimental treatment indicates a clear linear increase in imaginativeness of play from the control group through the television-watching group, the group with the adult intermediary and finally the non-viewing adult model group. This change in Imaginativeness of Play for the four groups yields an F of 5.25,

Insert Figure 1 about here

$p < .003$. The data also indicates a significant F for linearity of 13.4, significant at $p < .001$. It is important to note that the ordering of the variables in terms of magnitude of increase in imaginativeness of play is in the hypothesized direction.

It should be noted that in general the trends of the data correspond to the qualitative reports obtained from parents and also from the examination of individual children's protocols. It seems clear that the general atmosphere following the experimental manipulations and in particular the opportunities either to see the Misterogers' program with the adult present or the specific live modeling situation were characterized by many evidences of more pretend and

make-believe elements in play in the children. It should be kept in mind that the exigencies of the study limited observations of the most formal kind to two brief periods within two weeks after the termination of the experiment. Parental reports also indicated considerable increase in imaginative play for the group experiencing the live modeling particularly although the parents did not know the particular grouping into which their children fell and indeed many of them assumed that their children had been watching television regularly since they knew that the overall project was somehow related to television-viewing experiences.

The straightforward television-viewing situation proved to be less productive of imaginativeness of play than might have been hoped for particularly if one envisions a long range possible utilization of programs like the Misterogers' show to enhance make-believe play in the nursery and daycare centers. An examination of the behavior of the children as rated by observers during the actual viewing of the program in their group of fifteen without the adult intermediary suggests that this was a far from optimal viewing situation. Children with an average of four years simply could not sit still throughout the half hour but wandered about somewhat, tended to interfere with each other's viewing or to initiate interactions that often distracted the overall group for a few moments at a time from the ongoing program. If anything the situation had some of the elements of a frustrating one for many of the children. This was in marked contrast with the reaction of the children when the adult model was present during the television-viewing where there were indications of much better concentration on the basis of the ratings and much more interaction and involvement with the program and fewer wanderings away from the ongoing performance. Even so the viewing by fifteen children seemed unsatisfactory and required considerable effort on the part of the adult to make sure that there was reasonable interested

involvement. A similar point can also be made for the use of fifteen children in the group during the imaginative play training where the fact that there was a little bit greater physical movement as part of the overall training perhaps may have alleviated some of the restlessness of the children but at the same time presented difficulties in the adult's being certain that all the children were grasping the particular elements of an imagination exercise or participating fully in a particular make-believe game initiated by the model.

Positive Affect

This rating was based on indications in general of happiness and positive emotional response from children in the course of their spontaneous play. In this case the mean Positive Affect score for all four groups were extremely close and no difference emerged in the pre-experimental testing period. Following the introduction of the experimental procedures the results indicated a slight decrease in Positive Affect for the Control subjects and modest but consistent increases in positive emotionality for the three Experimental groups again in the same order noted for the Imaginativeness of Play dimension. While the groups end up not far apart in terms of change in affect with the F score for Affect change itself only 1.61, $p < .20$, the linearity of the change yields an F of 4.56, $p < .04$. In other words again the Control group changed slightly towards a lower score in emotionality while the Television-viewing group increased modestly, the Television-group with adults present somewhat more and the rather sizable increase was manifested in positive emotionality by the children who were exposed to the live adult. Indeed that final group stands out quite strikingly in showing more than twice as much of an increase in positive emotionality as all the other groups. This increase in enjoyment, laughing and smiling was clearly in evidence during the actual training situation with the live model since these sessions were active and involving for the children

by comparison with the somewhat more passive television viewing situations. Nevertheless the fact remains that the positive emotionality did persist into the spontaneous play of the children observed a considerable time after the termination of the formal training and in situations far removed from the presence of the adult model.

It is of course not possible to ascertain to what extent the increase in imaginativeness of play yields in itself the likelihood of greater positive emotionality on the part of the children or whether the two factors operate somewhat independently as a function of the opportunity for live model training. However it must be stressed that the model's intent was primarily focused around the training of imagery and fantasy games and was not specifically designed to produce laughter or jollity in the children. A result like this needs serious attention because it indicates that special opportunities provided the child either by an adult intermediary viewing television or by an adult focusing on imaginative games and play can lead to a subsequent increase in the level of apparent happiness on the part of the children in the course of their own spontaneous play. If such procedures have no other effect than to help children enjoy their ongoing play more one would certainly be satisfied indeed.

Concentration

The third major variable under scrutiny was the degree to which the children showed a persisting organized play sequences during the brief observation period. Here the initial groups did not differ at all significantly in the relative Concentration they showed prior to experimental involvement. Following experimental manipulation there was basically no change in the control and television-viewing groups. The live model group did show a considerable increase relative to the others in Concentration during play but the overall F for the post score or for the change in degree of Concentration is not significant. Nevertheless it is

important to recognize that there was again a sizeable increase in the degree of Concentration manifested by the children who received the live model training, five times the very slight changes shown by the other groups.

Again it must be remembered that the training received was not specifically in concentration on an extended sequence in itself. If anything as a matter of fact because each child was encouraged to try out some of the imagery exercises and games employed there was a good deal of effort of shifting of the focus around the group by the adult so that there was a great deal going on during the thirty minutes of daily training. Nevertheless it is worth noting that this group did show longer sequences of play relatively which may be in part a function of the fact that the imaginativeness of their games required some longer unrolling of a story line. This is particularly interesting because of the fact that children at this age do not on the whole show great capacities for extended concentration.

Aggression

A major concern of the present study was with the possibility that the opportunity for engaging in imaginative play on the part of the children might affect the likelihood of their manifesting overt acts of aggression directed at other children or at property. This was based on the assumption that provided with a greater repertory of behaviors by exposure to the television programming or to the training in socio-dramatic play might reduce the likelihood that their available responses in a variety of situations would be limited to well-learned acts of aggression. The initial groups that were formed here did not help in an evaluation of this issue because the Control group (C) showed a considerably lower initial level of aggressive play than did the Experimental groups, in particular groups 2 and 3 which included the adult. While the F for the pre-experimental observations is only 1.67 and attains a significance of $p = .20$

there is a particularly large difference between the two groups mentioned and the Control group. It should be kept in mind that the Control group showed a higher Imaginative Play Predisposition score and this score in other research with nursery school children was shown to be associated with significantly less likelihood of spontaneous aggression, at least in the case of male subjects (Singer, 1973).

If we look at the effect of the experimental manipulation again the results indicate no real change in the Control group which increases only very slightly in Aggression during spontaneous play. There is however a particularly sizable increase in spontaneous aggression shown by the group exposed initially to television alone and also a modest but nonsignificant increase for the group receiving the play training without television. The overall F for change in Overt Aggression for the four groups is clearly not significant and perhaps the only change worth noting is the sizable increment in aggression shown for the group that watched television alone. This trend towards greater aggression for the group is of course unhappily contrary to our expectation but is explicable if seems in terms of the viewing conditions of the subjects. As indicated fifteen children generally sat in front of the set for the half hour and this situation with the frequent distractions created by occasional children who got up and walked off to the side or started to play another game led this situation to be rather more of a frustrating one than had been hoped for. It certainly argues against any such use of television with large groups unsupported by an interacting adult.

Specific Moods

If one looks at the overall patterning what seems to have happened at least in the case of the control group has been a tendency for the play of the children which started out initially characterized by a good deal of imagination and

a fair amount of a variety of positive emotions as well as other emotional reactions to change in the direction of relatively more flattened quality. In the case of the children exposed to the three experimental conditions there is an increase on the whole in the positive emotional areas and a greater variability in the manifestation of the more negative affects. Of the four groups it was also apparent that the group that watched television alone became considerably more restless. This group not only showed a much greater increase in the general aggressiveness of play but also increase in a great range of motor activity showing more Liveliness, more Anger, Less Elation and less Fatigue than the other groups. It seems clear that despite our best intentions the group television-viewing situation must have had elements in it of a situation of restraint and mild frustration and again this argues strongly for smaller television-viewing groups.

Correlational Analyses

The matrix of intercorrelations between the independent and dependent variables of the study warrants careful scrutiny particularly in elaborating further on some of the major implications of the research and also in pointing up some useful normative possibilities for studies of ongoing play behavior and the relationship to certain predispositional variables.

Age

An examination of the correlation matrix for the present investigation indicates that while age for this sample correlates $+ .33$ with IQ there are very few correlations between chronological age and any of the ongoing play variables or the ratings of the different emotions obtained during this period.

Intelligence

For verbal intelligence as measured by the Peabody scales we find a correlation of $.33$ with age and a significant correlation with the self-report of imaginative play in the interview ($r = .28$).

Imaginative Play Predisposition

This score was based on averaging of the z scores for this sample obtained on the Barron inkblots and the Interview about play behavior with the children. Therefore it represents a combination of two measures presumably of imaginative tendency which are themselves not correlated although each shows individually a similar pattern of relationships across the matrix. This Imaginative Play Predisposition score correlates +.28 with age as might be anticipated. Of particular importance is the fact that it correlates +.30 with the spontaneous Imaginativeness of Play observed prior to the experimental manipulations for the subjects. This finding is roughly comparable to that obtained in the various experiments described in Singer (1973). In other words, those children who show a combination of imaginativeness in their self-reports of play and tendency to see movement on Rorschach inkblots are also likely to be those who show a good deal of spontaneous make-believe in their natural play situations. This correlation disappears following the experimental manipulations, however. Imaginative Play Predisposition correlates positively but nonsignificantly with Positive Affect prior to experimental manipulation and +.31 with Concentration. These relationships disappear also after the experimental manipulation. Although previous research has suggested a negative relationship between the Imaginative Play Predisposition and overt aggressive behavior, at least for male subjects, the overall group does not show any relationship at all in this matrix. Imaginative Play Predisposition does indeed show a trend towards association with a variety of positive emotions expressed in the course of ongoing play.

Imaginativeness of Play

A particular point of interest in this study was the effect of the different kinds of play on the spontaneous moods of the children. It was expected that imaginative play would be associated with particular ongoing affective states.

Thus if we look at Imaginativeness of Play in the pre-experimental situation we find first of all that it is modestly correlated as might be expected with scores of Imaginative Play following the experimental manipulation (.24) and this of course justifies the use of difference scores in evaluating the effects of the experimental manipulation. It is of interest that even children as young as this show at least some tendency to persist over several weeks time in the general style of their play. The correlation between Imaginativeness of Play and Positive Emotionality in the pre-experimental phase is particularly noteworthy ($r = +.68$, $p < .001$). Clearly the imaginative play of the children is associated with a good deal of smiling, laughing and generally happy behavior. This correlation drops drastically following the experimental manipulation. If we look at the relationship between the scores on Imagination and Affect following the experimental procedures our correlation is $+.42$, $p < .01$. There is therefore still considerable consistency in the association between make-believe play and positive emotionality after the experimental manipulation. Imaginativeness of Play also correlates significantly with ratings of Concentration ($r = .47$, $p < .001$). It is also associated significantly with ratings of Liveliness ($r = .46$, $p < .001$). A similar result occurs for ratings of Elation ($r = .40$, $p < .01$). There is a negative relationship between ratings of the subjects on Fatigue and the measure of Imaginative Play prior to the experimental situation ($r = -.32$, $p < .05$). The expected inverse relationship between Imaginativeness of Play and Aggression failed to emerge. The children who played imaginatively and showed somewhat more Aggression prior to the experimental manipulations showed a trend toward less aggression subsequent to the experimental manipulations but these associations are not statistically significant.

If we look at the imaginativeness of play shown following the experiment our results are on the whole less striking. Clearly the experimental manipulation

has changed this patterning of the play behavior to some extent. While it is true that the correlations of ongoing imaginative play following the experiment persist with Positive Emotion and Concentration as well as Liveliness and Elation, little else is in evidence.

In summary, the correlational data suggests on the whole that while age and intelligence for this sample do not show any extensive influence on the pattern of emotions and style of play of the children the Predisposition to Imaginativeness certainly does seem to be relevant to the way children express themselves in spontaneous games. In addition there seem to be distinct clusters of affective states with greater indications of lively movement and positive emotionality associated with make-believe play and fairly extended sequences of concentration while moods such as sadness, fatigue, and anger are more likely to be associated with indications either of poor concentration, aggression and the absence of fantasy elements in play.

Sex Differences

Previous research in this series has not brought out indications of extensive differences between boys and girls in the structural aspects of play. There are of course considerable differences that have emerged in the content of games of make-believe between the sexes (Singer, 1973). Recently the research of Fein (1974) has made this point even more clearly for children as young as eighteen months of age. It was of particular interest to examine sex differences for this group since in general the socio-cultural backgrounds of the children employed were from relatively traditional backgrounds (although in most cases mothers were employed at least part time). A quick look at the actual ongoing play of the children made it clear that sex differences in content were especially sharp with girls much more likely to play either nurturant games involving feeding or care or domestic duties or to carry on entertainment-like

activities such as pretending to be popular singers. Boys were much more likely to be involved in adventure games with much reference to Batman and Kung Fu (a clear television influence).

It was of course important to ascertain whether the sexes differed markedly in any of the change variables since this might necessitate separate analyses by sex of the data. The only independent variable in which girls showed any significant pattern of change different from the boys was in the rating of fatigue. Initially the girls in the pretesting seemed to be more characterized by sleepiness or sluggishness in their behavior. Following the experimental manipulations the girls showed considerably more liveliness and less fatigue. This difference does not appear to be simply a function of the passage of time since the change was less conspicuous for the control subjects but may represent to some extent the increased involvement with the female model who served as the intermediary on the television or who provided the make-believe play training. This is not a sufficient explanation since all of the teachers in the nursery school at that time were also females. Nonetheless the failure of the girls to differ in the direction of change from the boys on most of the major variables makes it clear that it was not necessary to address specifically an analysis to sex differences as a function of the specific experimental manipulations.

When the pattern of intercorrelations of the variables treated separately for boys and girls were examined they seemed to be relatively comparable. Perhaps the major difference as far as the predispositional variables is concerned occurs in the fact that for this group the anticipated inverse association between the Imaginative Play Predisposition and Aggression emerges for the females in the sample but not for the males. This may account for the fact that the overall correlation is not significant in the matrix. Apparently in this particular sample of girls the tendency to show imaginative tendencies both in

Interview and on the Barron inkblots does prove to be associated with a lower inclination to be overtly aggressive. This result should be compared with an earlier one (Singer, & Singer, 1973) where aggression and Imaginative Play Pre-disposition were inversely correlated only for the boys.

Mothers' Self-Worth Ratings

Thirty-four of the mothers returned forms on which they had rated themselves on a list of thirty adjectives from "Ambitious" through "Wise" which had been shown by Carlson and Levy (1968) to be divisible into characteristics relating to Personal (e.g. Imaginative, Versatile, Fairminded) or to Social (e.g. Considerate, Cooperative, Persuasive) Self-Worth. The distribution of scores was divided at the median for three variables: Personal Self-Worth, Social Self-Worth, and Personal Minus Social Self-Worth. The scores for their children on Imaginativeness of Play (Pre) were then arrayed and analyzed for differences. Significant z scores at $p < .02$ emerged for each variable. The children of mothers higher in Personal Self-Worth played more imaginatively in spontaneous situations; those of mothers high in Social Self-Worth played significantly less imaginatively; and those of mothers with the highest differences favoring Personal over Social Self-Worth played significantly more imaginatively. This data is intriguing in suggesting that the mothers' attitudes play a subtle but powerful role in influencing the likelihood of make-believe play in their children. These results are generally in keeping with some scanty but comparable data reported by Freyberg (1973). It should be noted that the mothers' scores on the questionnaires were not known to the authors or observers until completion of the study.

Discussion

In general the main outcome of this investigation seems to suggest that children in the three to four age group remain most susceptible to influence

by an adult in their presence who can engage them directly and provide them with immediate feedback for their own responses. In this sense television may have only a limited impact on this age group. It is likely that at the very least its prosocial or particularly optimal cognitive benefits may have to depend upon at least some mediation by a concerned adult in the situation. Our hope that a well-established program such as Misterogers' Neighborhood might serve by itself to become the basis for stimulating increased imaginative play in children in daycare centers seems to be subject to careful qualification. For one thing it is obvious that children of this age group cannot concentrate effectively on the program if viewing it in numbers as large as fifteen. We believe it is much more likely that groups of five or six might be more workable but this of course requires empirical testing. In addition it seems especially important that an adult be present in the viewing situation at least initially to help children bridge the gap between the intentions of the professional performer on television and the capacities of the children to assimilate this material into their ongoing play behavior.

The more immediate impact of the live model is especially encouraging and it substantiates in general the findings from other studies cited in the introduction. It suggests also the possibility that a fairly organized curriculum might become available and could be taught to nursery school teachers and daycare center workers so that they could provide the children more systematically with inputs that would stimulate socio-dramatic play and lead to a generally livelier and happier atmosphere during the free play periods which are provided in daycare settings. One possibility that might be given considerable thought would be the further exploration of training of teachers in association with programs such as Misterogers so that they can introduce not only their own direct training in imagery but help the children engage the kind of material presented on a pro-

program like the Misterogers' Neighborhood which, because of its polish and continuity can serve over a span of a year or two of viewing to have a decided impact upon the child. It should be kept in mind that so far our own studies and those of Stein and Friedrich (1972) have been limited to very short periods of regular viewing. Indeed Stein and Friedrich presented only brief excerpts from the Misterogers shows with a particular focus upon certain types of cooperative and prosocial behaviors. Our own use of the program was perhaps somewhat more natural in terms of the overall programming but still was limited to only eleven shows over two calendar weeks. It is obvious that research needs to be carried out on the much longer term effects of such programming in conjunction with specific adult interventions of the type suggested above.

What emerges vividly from this research is the association of imaginative-ness of play or make-believe and pretend games with a considerable amount of positive emotion on the part of the child and to a somewhat lesser extent with the child's capacity to concentrate. Clearly these results point up the desirability of more extended emphasis on this form of play for the children. All of the proposed cognitive as well as affective gains associated with imaginative play are obviously not demonstrable in this study (Singer, 1973; Smilanski, 1968). Nevertheless it seems likely that careful attention to curriculum in nursery schools or daycare centers can begin to provide conditions for exploring potential positive gains from enhanced imaginative play in preschoolers. The possibility of providing parents with training in how to play with their children or how to use television programming more effectively for expanding play horizons also is suggested by these results and related findings of others. Clearly we need a series of investigations to explore optimal combinations of adult modeling and exploitation of the attractiveness and power of television to help children to enjoy their play more and to be able to use it to develop significant cognitive and emotional skills.

References

- Bandura, A. Psychological modeling: Conflicting theories. Chicago: Aldine-Atherton, 1971.
- Biblow, E. Imaginative play and the control of aggressive behavior. In J. L. Singer (Ed.), The child's world of make-believe. New York: Academic Press, 1973.
- Carlson, R., & Levy, N. A brief method for assessing social-personal orientation. Psychological Reports, 1968, 23, 911-914.
- Cicchetti, D. V. A new measure of agreement between rank-ordered variables. Proceedings, 80th Annual Convention, American Psychological Association, 1972.
- deMille, R. Put your mother on the coiling: Children's imagination games. New York: Walker & Co., 1967.
- Fein, G. G. Transformations and codes in the pretend play of young children. Paper presented in Symposium on Play, American Psychological Association, New Orleans, 1974.
- Fein, G., Branch, A., & Diamond, E. Cognitive and social dimensions of pretending. Manuscript in preparation, 1974.
- Freyberg, J. Increasing the imaginative play of urban disadvantaged kindergarten children through systematic training. In J. L. Singer, (Ed.), The child's world of make-believe. New York: Academic Press, 1973.
- Friedrich, L. K., & Stein, A. H. Prosocial television and young children: The effects of verbal labeling and role playing on learning and behavior. Progress Report to Office of Child Development, 1973.
- Goldberg, L. Aggression in boys in a clinic population. Unpublished doctoral dissertation, City University of New York, 1973.
- Gottlieb, S. Modeling effects upon fantasy. In J. L. Singer, The child's world of make-believe. New York: Academic Press, 1973.

- Izard, C. The face of emotion. New York: Appleton-Century-Crofts, 1971.
- Marshall, H., & Hahn, S. C. Experimental modification of dramatic play. Journal of Personality and Social Psychology, 1967, 5, 119-122.
- Murray, J. P., Rubinstein, E., & Comstock, G. Television and social behavior. Vol. II. Publication of National Institute of Mental Health, Document 20402, 1972.
- Piaget, J. Play, dreams and imitation in childhood. New York: Norton, 1962.
- Pulaski, M. A. Toys and imaginative play. In J. L. Singer (Ed.), The child's world of make-believe. New York: Academic Press, 1973.
- Saltz, E., & Johnson, J. Training for thematic-fantasy play in culturally-disadvantaged children: Preliminary results. Technical Report #3, Center for the Study of Cognitive Processes, Wayne State University, 1973.
- Singer, L. G., & Singer, J. L. Some characteristics of make-believe play in nursery school children: An observational study. Paper read at meetings of Eastern Psychological Association, Boston, 1972. Also in J. L. Singer (Ed.), The child's world of make-believe. New York: Academic Press, 1973.
- Singer, J. L. Imagination and waiting ability in young children. Journal of Personality, 1961, 29, 366-413.
- Singer, J. L. Daydreaming. New York: Random House, 1966.
- Singer, J. L. The influence of violence portrayed in television or movies upon overt aggressive behavior. In J. L. Singer (Ed.), The control of aggression and violence. New York: Academic Press, 1971.
- Singer, J. L. The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.
- Smilansky, S. The effects of sociodramatic play on disadvantaged preschool children. New York: Wiley, 1968.

Stein, A. H., Friedrich, L. K., & Vondracek, F. Television content and young children's behavior. In Television and social behavior. Vol. II. Report to Surgeon General's Committee on Television and Social Behavior. National Institute of Mental Health, 1972.

Tomkins, S. Affect, imagery, consciousness. New York: Springer, 1962-1963.

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Footnote

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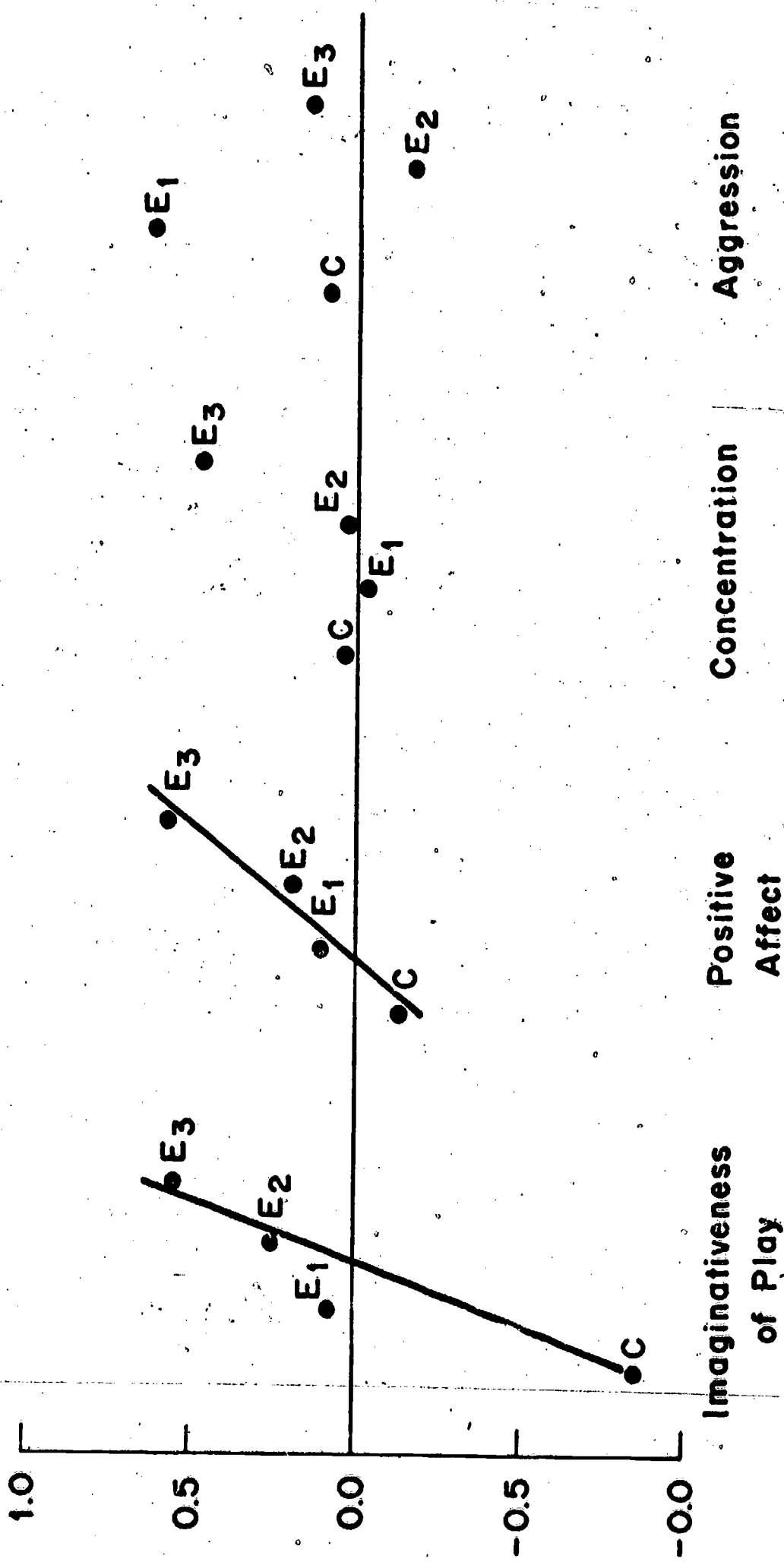


Figure 1. Changes in ratings for Play Variables Observed at Pre- and Post-Experimental Periods. (C = Control; E1 = 1st Experimental Period; E2 = 2nd Experimental Period; E3 = 3rd Experimental Period)