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ABSTRACT

This study represents part of an extended research program 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 model in combination with a television program which placed considerable emphasis on make-believe. Other variables examined included indications of positive emotionality during play, ability to concentrate and carry through a sequence of connected activities, and the likelihood of direct physical assault on other children. Results indicated that children were most influenced when an adult acted as an intermediary while they watched television. Results are discussed in terms of the above mentioned variables. Educational implications are also cited. (Author/SBT)

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Fostering Imaginative Play in Pre-School Children:

Effects of Television-Viewing and Direct Adult Modeling

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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, and Diamond, 1973; Fein, 1974) as well as by specific training procedures (Smilansky, 1968; Freyberg, 1973; Marshall and Hahn, 1967; Saltz and 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 model 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, Rubinstein, and Comstock, 1972). There has also been evidence that children will modify behavior in a prosocial direction following exposure to particular television content (Stein, Friedrich, and Vondracek, 1972; Friedrich and 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 "Mister Rogers' 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 model. 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 present before them the room 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 produce 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 Mister Rogers' 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 Mister Rogers or by direct play training. Previous research (Freyberg,1973; Singer and 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 Mister Rogers' 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. In other words it was felt that as children show an increase in spontaneous make-believe play they might show a corresponding reduction in the tendency to be directly assaultive.

To amplify some of the findings with particular concern for the affective components since these are a special focus of the Mister Rogers' 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 and 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,

1973) has 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.

Other phases of this study included an extensive examination of the relationship between mothers' attitudes towards women, towards child-rearing, self-concept and sex role orientations and the viewing habits of the children. An examination of the specific impact of particular programs on the group atmosphere during viewing was also carried out. These data are still subject to analysis and will be reported at another time. The study to be described here bears comparison with the recent work of Stein, Friedrich, and Vondracek (1972) and Friedrich and Stein (1973). These authors were particularly concerned with examining the possibility that the "Mister Rogers' Neighborhood" program would have a positive effect on prosocial behavior as measured both through interview and behavioral indications. They also were concerned with verbal labeling and special role-playing training for the children growing out of the Mister Rogers' program. 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. Another difference is that the latter study (Friedrich and Stein, 1973) involved children in the kindergarten age whereas the subjects of the present study were all three and four year olds. 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 shown by children in a day care 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 day care 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 "Mister Rogers' 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 who 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 model 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, imaginativeness of play, and impulsivity. 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, Impulsivity and Predisposition to Imaginative Play (based upon both interview and a variant of the Rorschach inkblot 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 fifteeen children each who were enrolled in a day care 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 day care 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 Mister Rogers' program at all because the educational television channel on which it was shown projected a weak signal in the area in which they resided. The study was carried out during the summer months of July and August. 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 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

The observers for this study were all graduate or undergraduate students from the University of Bridgeport, Manhattanville College, or Yale University. They were trained in administration of the Peabody Intelligence Scale (picture-vocabulary), the interview procedures to be described below, the inkblots measures, and a measure of impulsivity based on the Liebold finger mazes. Following trial procedures on children not included in the study they 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.

Independent Variables

Because of the youth of the children the Peabody Picture Vocabulary test was employed to estimate intelligence. This test is an easily administered procedure which clearly emphasizes the verbal and vocabulary components of intelligence. It was felt to be especially important as a control to rule out the possibility that children with higher general vocabulary levels might produce more verbalizations which would lead to higher scores in imaginativeness. 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). Table 1 presents

the means and standard deviations for the four groups for age, intelligence and the other independent variables.

Insert Table 1 about here

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 head," 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. As suggested in an earlier study (Singer and Singer, 1973) situational contingencies are much more likely to influence the tendency of imaginative play to occur in such young children but it is important to have some indication as to possible predisposition lest we overlook in the results an interaction between individual styles and experimental manipulations.

Impulsivity

A major dimension of cognitive style reported as occurring quite early in children is that of reflectiveness-impulsivity as described by Kagan (1965). An attempt was made to tap this dimension by the use of a series of finger mazes which proved to be reasonably practical for this young age group. These mazes called for the children to start at a certain point and trace with their fingers through to an end point without going up blind alleys. The number of errors made by the child and the time taken were established as a ratio. It was assumed that reflective children would take longer to reach the end point but would also make fewer errors along the way. Impulsive children might be expected to move more rapidly through the maze but to enter many more cul-de-sacs in attempting to reach the goal. This measure was included particularly because it was felt that it might well link with imaginativeness play on the one hand and likelihood of direct aggression on the other.

Dependent Variables

Imaginativeness of Play. The major dependent variable of the study was the spontaneous o-currence 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. While there is no way of being certain that actual imagery is introduced in the situation it is clear that the child in providing novel orientations for the situation, changing its time and space relationships, and behaving as if other persons were present or involved in some adventurous activity is behaving in an as if dimension. 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 and 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 and 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 distractability 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 and 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 traing 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).

Qualitative Observations. While the major dependent variables were rated on five-point scales there was an attempt made also to develop some more general picture of the overall pattern of behavior of the children as individuals and also as a group. Each rater had spent ten weeks in the school and was assigned protocols of individual children about whom he or she was expected to write a detailed case study based upon their observations of the child at various points and taking into account the scores obtained by the child on the various dimensions. These reports were prepared with the rater still without information about the specific experimental hypotheses. In addition to the case histories of the individual children the raters, teachers and nursery school director, and parents were questioned in detail about the behavior of their children. It must be stressed that parents did not understand the specific groups to which their children had been assigned although they had been given information in general about the nature of the project when signing appropriate informed consent documents. Just as the experiment terminated and data collection was completed for the observations of the children a crisis arose in the school concerning zoning violations and the threat of its sudden closing. This led to the principal investigators' involvement as consultants to the school in mobilizing parent and community support to delay abrupt closing of the school and to arrange for its relocation and for the development of an architectural plan for a model day care center in association with the Yale School of Architecture. The press of these events at the conclusion of the more formal experimental phase of the study precluded systematic long-term data collection about the children's continuing response to the experimental treatments through observation or in detailed reports from parents but informal information was obtained through a series of group meetings with parents that were held subsequently.

Intervention Procedures

The specific methods employed within each condition are too detailed to present here. The following is a brief description of each of the experimental conditions:

Group 1-Television-Viewing. 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 "Mister Rogers' 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. The programs were showed in blocks of smaller groupings in slightly different phases for each of the two television-viewing conditions since the children were viewing at identical times and therefore the same videocassette could not be employed simultaneously. All children in both groups, however, saw the identical tapes ultimately. Altogether there were eleven programs seen over a two-week period by all children in the group. The programs were chosen because they attempted togenerate clearcut situations that could be helfpul in children's identifying their own emotional reactivity or expressing these and also because they all included a segment called the "Neighborhood of Make-Believe" in which use is made of puppet characters of distinctly pretend quality along with humans who also are playing fantasy roles. 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 Mister Rogers' 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 Mister Rogers' program although some attention was paid to ascertain whether this did occur at all.

Practical considerations in the running of a large day care 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 Mister Rogers. This procedure may also have presented special difficulties because Mister Rogers' style is one of simulated direct communication with an individual child. Since it was important to avoid any gross disruption of normal day care 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 2. The second television-viewing situation was in most respects identical with the first in the programming presented except for a slight difference in phase of program sequences and in the way the children sat around and viewed the program. The major difference 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 Mister Rogers, to specific events taking place, encouraged them occasionally to imitate particular sequences occurring (such as Mister Rogers 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 Mister Rogers as represented on television.

Adult-Make-Believe Training: Condition 3. 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 Mister Rogers material not in terms of specific content since the children were unfamiliar with the Mister Rogers 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 and 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. Basically this same routine was followed in all groups with the exception that the children in two experimental conditions saw the television program as soon as all had been assembled in the morning. In a very few instances if a child arrived too late for his showing or for participation in the group make-believe session this was provided for him in an afternoon session. On the whole there was very little variation in the general sequence for the groups.

Despite an effort at random assignment of children to groups there did emerge a sizable difference in the initial level of imaginative play shown by the control group. This group seemed at least in its first few weeks to be more highly imaginative both in its pretesting and in the level of make-believe manifested during spontaneous play. The striking feature was that in the course of

the regular nursery school routine there was if anything a fairly sharp decline in the degree to which the children engaged in pretend games spontaneously. This is particularly important when set against the context of the results obtained for the three experimental groups. In other respects as far as could be ascertained the control children and the day to day routine they followed was essentially comparable to that of the three experimental conditions.

Results

Reliability of Ratings

The first question tobe 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 tau 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 many of the 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 represent means for a ratings each on two separate observation samples.

Major Dependent Variables

Imaginativeness of Play. The means in standard deviations by experimental condition for the subjects on the predispositional variables and on the specific major variables are presented in Table 1. Despite the random assignment of children to experimental conditions it is apparent that 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 at least as measured by their scores on the Barron Inkblots. In addition their general Imaginativeness of Play Predisposition as estimated both by interview and Barron Inkblots combined shows a greater tendency toward make-belie-e play and this is borne out by their initially higher score on this dimension 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 controlgroup 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

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Insert Figure 1 about here

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four groups yields an F of 5.25, $p < .003$. 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.

A question that must be addressed relates to the fact that the control group began initially at a higher level of imaginativeness of play and showed a rather sizable drop in this activity. While one cannot be certain as to the basis for the change it does seem clear that at the very minimum the experimental manipulations and particularly those involving either the television-viewing with the adult present or the direct imagination training both serve not only to prevent a comparable drop over the few weeks period in spontaneous pretend or make-believe play but if anything to increase the amount of such play. While it is not clear what the role of the initially high predisposition to make-believe play as shown in the Control group particularly on the basis of their scores on the inkblot measure it does seem likely that the drop in imaginativeness of play over the two-week period was somewhat less for the more imaginative children in that control group. We shall examine the issue of predispositional trends further when we look at the correlational data.

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 Mister Rogers 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. It is impressive indeed how similar the children's scores were on the two separate observation periods. 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 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 Mister Rogers' show to enhance make-believe play in the nursery and day care 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 alsobe 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 themean 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 from 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.

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 it seems in terms of the viewing conditoins 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

The inclusion of the specific moods in the study was designed to give some indication of the interplay of different affective states in such young children. While naturally it would be anticipated that the more positive emotions such as

Elation and liveliness would generally follow the same trend as the more global positive affect score and the more negative emotions such as Sadness, Anger and Shame or Fearfulness would be more comparable in outcome to the low scores on the positive affect dimension these variables were primarily of interest in attempting to evaluate more general aspects of play rather than as an assessment of the specific experimental manipulations. An examination of the patterns of change in the affects indicates very little of note. The only one of the mood changes that yields a significant F is the Fearfulness score. Here the relationship is a curvilinear one with the Control group showing a large drop in Fearfulness over time by comparison with both television groups. The live model group showed a smaller but sizable reduction in Fearfulness relative to the television groups. This unanticipated result which yields an F of 3.36, $p < .03$, with a nonlinear comparison F significant at $p < .04$ may reflect the possibility that some aspect of the television viewing had less impact on a natural reduction in fearfulness on the part of the children in the course of their spontaneous play than might have been expected. We simply do not have at this point any reasonable explanation for this result, however. A somewhat similar trend is evident in the case of the emotion of Shame where the three experimental groups show no particular change whereas the control group had a tendency to again reduce the likelihood of this emotion being manifested.

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 whereas what we see in the case of the children exposed to the three experimental conditions 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 aggressive 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 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. As might be expected age ought to correlate with some indications of imaginative play at least within a broad range of subjects. There were indications in earlier research that there is a slight increase in imaginative play between ages three and five. An examination of the correlation matrix for the present investigation indicates that while age for this sample correlates +.30 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. Age does correlate -.30 with the Threshold for Human MOvement on the Barron Inkblots. That is, the older the child the greater the likelihood for him to see movement responses on the blots. This certainly is in keeping with general literature on the Rorschach and considering the relatively narrow range of ages in this sample and the considerable homogeneity in IQ the finding is interesting indeed. Age also correlates +.28 with Imaginative Play Predisposition based upon a combination of the Interview about play and the inkblot scores. Unfortunately the correlation of Age with actual ratings of ongoing

during the ten-minute samples observed, while positive, is too low tobe of statistical significance. It is worth noting also that age correlates with the measure of reflectiveness-impulsivity, the finger maze score employed. The Correlation is -.53 suggesting that the younger children made many more errors in relation to the time taken to run the maze with their fingers. Perhaps the only other correlations that might be worth mentioning in fact is the very slight trend for the older children to show somewhat more contemptuous or aggressive responses within this setting. Even here the results are not statistically significant.

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). The only finding out of the whole matrix of relevance to the role of intelligence in relation to the play variables is a result which suggests that the less intelligent children became more fearful in the latter phase of the observation period or following the experimental manipulations. Again we have no clear explanation for this finding which may conceivably be attributable to chance in such a large matrix since no initial hypothesis was made about it.

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 in themselves are 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 a 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 great variety of both positive and negative emotions expressed in the course of ongoing play. Few of these correlations as such are significant however

Impulsivity. The finger maze method was used in an effort to tap impulsivity as indicated. It correlated particularly with Age and IQ and with Imaginative Predisposition as noted. Impulsivity also was associated with lowered concentration, increased ratings of Anger, somewhat less Fearfulness in the ratings, greater Sadness, more indications of Shame and Contempt and, of particular interest, greater tendency to be Aggressive prior to the experimental manipulations. Clearly this measure does seem to have some promise as a way of tapping certain of the motor tendencies of children of this age group and ought to be explored further.

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.

Positive Affect

Some of the associations between this variable and Imagination and other measures have been cited already. A tendency to show positive emotionality in the pre-experimental play of the children is also associated significantly with such emotion shown after the experimental manipulation and is also associated with Concentration shown prior to the experiment. There is of course as one might expect a very high correlation between Liveliness and the general Positive Affect score ($r = .71$, $p < .001$). Following the experimental manipulation Liveliness correlates significantly but much more modestly for this sample ($r = .29$, $p = .05$). A similar pattern emerges for Elation which correlates $r = .70$, $p < .001$ with Positive Affect. Needless to say this correlation falls off somewhat also following the experimental manipulation. Positive Affect is also negatively correlated with Sadness in the pre-experimental play period, -.52 at $p < .001$. There is also a negative correlation with ratings of Fatigue, $r = -.48$, $p < .005$).

Concentration

The results for this variable have already been cited. In general Concentration seems to be associated with Imaginativeness of Play Predisposition and also with ongoing Imaginativeness in Play and Positive Emotionality. It too is correlated with positive emotions such as Elation ($r = .34$, $p < .01$) but few other major associations emerge.

Aggression

Of particular interest for our research has been the evaluation of spontaneous Aggression in the course of the natural play of the children. The association with the Impulsivity on the finger mazes has already been mentioned. Of interest also is the fact that those subjects who scored high on Aggression in their

pre-experimental play turn out to be those who show considerably more Imagination following the experimental manipulation ($r = .28$, $p < .05$). As might be expected Aggression correlates highly with Anger ($r = .46$, $p < .001$) and also more modestly with Liveliness ($r = .27$, $p < .05$). Consistency in the childrens' style is also in evidence when the correlations between the initial ratings of Aggressive behavior are examined in association with Contempt both prior to and following the experiment ($r = .47$, $r = .35$, respectively, $p < .01$). The prior Aggression score correlates significantly with the score following the experimental procedures as well ($r = .43$, $p < .001$).

Other Affective Variables

Without going into details on each of the specific mood states it is apparent that there is reasonable consistency in the ratings of these variables and in the actual overt patterning of behavior. For example children rated as Angry during the pre-experimental phase of the study turn out also to be those who receive higher ratings on Fearfulness, Sadness ($r = .42$, $p < .001$), Contempt ($r = .75$, $p < .001$) and of course Aggresstion. The score for Elation in pre-experimental play shows no correlations with age or IQ but is significantly correlated with the appropriate cluster of positive affects and negatively correlated with the appropriate cluster of negative emotions such as Fearfulness and Sadness. Actually the children who show greater Elation in the post-experimental phase of the study demonstrate even a more striking pattern of relationships. They turn out to be those who initially reported more Imaginativeness in their own play Interview and of course also show the pattern of association positively with Imaginativeness of Play in the post-experimental phase, Positive Affect during this same period. They show a negative correlation with Anger and Fearfulness, a positive correlation with Liveliness. There are also of course positive correlations between the pre- and post-measures of Elation and then negative correlations with SAdness, Shame and Fatigue.

Without going into all of the other variables and their pattern of interrelationships it seems sufficient to note that there was clear indication that children initially predisposed to imaginativeness at least in their first indications of play prior to introduction of some experimental procedure tended to show more positive emotionality and more specifically, considerable liveliness in their motor activity and elation as manifested in smiling and laughing and other indications of pleasure. They alsotended to show somewhat better ability for concentration and somewhat less in the way of a range of negative emotions. Ongoing imaginativeness of play seems especially associated with a number of positive emotions such as liveliness and elation and negatively associated with sadness, shame, fatigue and anger. While very likely the nuances of specific emotions cannot be precisely differentiated in such young children who are still in a stage of growth and development in their affective expression the method of systematic rating of the emotional responses during natural-occurring behaviors seems worth further exploration. Certainly the indications are of considerable consistency on the part of the children over fairly extended periods and with samplings of their behavior taken days apart both prior to and following several weeks of experimental intervention.

In summary, then, 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 extend 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 addresss 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 are 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 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 tobe overtly aggressive. This result contrasts with an earlier one (Singer and Singer, 1973) where aggression and Imaginative Play Predisposition were inversely correlated only for the boys. In that study the boys showed greater aggression and imaginativeness in their spontaneous play although their self-reports of imagination revealed considerably less fantasy than did the self-reports of the girls. The results in this study did not seem to indicate such striking sex differences, however.

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 Mister Rogers' Neighborhood might serve by itself to become the basis for stimulating increased imaginative play in children in

day care 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 day care 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 day care settings. One possibility that might be given considerable thought would be the further exploration of training of teachers in association with programs such as Mister Rogers 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 program like the Mister Rogers' 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 Mister Rogers 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 imaginativeness 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 in this study demonstrable (Singer, 1973; Smilanski, 1968). Nevertheless it seems likely that careful attention to curriculum in nursery schools or day care 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.

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Footnote

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Table 1

Means and Standard Deviations for Changes in Imaginativeness, Positive Affect, Concentration and Aggresstion

Group	Variable							
	Imaginativeness		Positive Affect		Concentration		Aggression	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Control (N=15)	-.800	.997	-.100	.554	.067	1.448	.100	1.214
TV Alone (N=15)	.100	.939	.217	.718	0.0	.585	.667	1.632
TV & Model (N=15)	.283	.880	.267	.910	.033	.611	-.117	1.332
Model Alone (N=14)[a]	.536	.944	.589	1.020	.518	.942	.107	1.152

[a]One child was absent.

Table 2

Analysis of Variance: Change Variables

Variable	MS	df	F	p Value
Imaginativeness Change	4.982	3	5.248**	.003
Positive Affect Change	1.153	3	1.613	.197
Concentration Change	0.847	3	.853	.472
Aggression Change	1.679	3	.861	.467

** < .01

Table 3

Linear Comparison: Difference Variables

Variable	MS	df	F	p Value
Imaginativeness Change	12.760	1	13.440	***
Positive Affect Change	3.259	1	4.556*	.038
Concentration Change	1.398	1	1.408	.241
Aggression Change	.422	1	.216	> .5

* < .05

** < .01

*** < .001

Change Scores