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# The Development and Increase of Two Prosocial Behaviors as a Function of Social and Peer Reinforcement with Preschool Children

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# THE DEVELOPMENT AND INCREASE OF TWO PROSOCIAL BEHAVIORS AS A FUNCTION OF SOCIAL AND PEER REINFORCEMENT WITH PRESCHOOL CHILDREN

by

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Social behavior, many times referred to as prosocial behavior, has been defined by many researchers in many ways. One common method of analyzing prosocial behavior has been to discuss behavior in terms of proximity and verbalization. Buell, Stoddard, Harris and Baer (1968) studied collateral social development while reinforcing outdoor play with preschool children. Their definition of social behavior was structured around touching, verbalization, proximity to other children and cooperation. Results indicated that social interaction showed a collateral development with gains in outdoor play. That is, the use of outdoor play equipment increased as a function of positive reinforcement and social interaction progressively increased as equipment use increased.

Strain and Timm (1974) studied social interaction in preschoolers as a function of social reinforcement. Interaction was defined along two dimensions, motor-gestural and vocal-verbal. Results showed verbal praise to peers for interaction with the subject and praise to the subject for interaction with the peers increased interaction for both.

In a study by Bennet and Maley (1973), prosocial behavior was defined as interaction with other patients along specified dimensions and also cooperation. The experimental group was given contingent reinforcement for interactions with other patients according to instructions. The control group was instructed in the same manner but received non-contingent reinforcement. Results showed a strong contingent reinforcement effect on interactions as well as generalization to other areas of social behavior.

Hart, Reynolds, Baer, Browley and Harris (1968) also used cooperation as their dependent variable in studying a preschool child using contingent and non-contingent social reinforcement. Reinforcement under one condition was presented randomly throughout the school day while it was presented contingent upon cooperative play under the second condition. Change in cooperation and proximity to other children was reported not from teacher attention but from contingent teacher attention.

Prosocial behavior has been broken down into specific behaviors by Yarrow and Waxler (1976). They specifically identified helping, sharing, defending, sympathy, rescueing, and cooperation and operationally defined prosocial behaviors to test these concepts. Their procedure utilized "set up" situations to test children's prosocial behavior toward staff and/or teachers, not peers. No reinforcement was administered either contingently or non-contingently. They concluded that predictability of prosocial behaviors in preschool children was uncertain and that prosocial behaviors occur with low frequency in peer interactions.

Generalization of social responding to children not involved in the procedure was shown in a study by Whitman, Mercurio and Caponigri (1970) involving severely retarded children. Increased social responding by the two "social isolates" was seen using contingent reinforcement during training. During a subsequent non-training phase, decreases in total time spent responding were shown but number of interactions was greater than during Baseline I. Results also showed a generalization to social responses not reinforced in the training period.

Azrin and Lindsley (1956) developed cooperation between children by manipulating the reinforcement-response contingency alone. No instructions were given to children participating in a cooperative stylus game. All teams learned to cooperate within ten minutes after instituting the procedure. However, verbal agreement between team members on dividing the reinforcers was necessary to facilitate cooperation. The experimenters found that the frequency of cooperative responding increased when reinforced and decreased when reinforcement was withdrawn.

Brotsky and Thomas (1967) studied cooperative behavior in preschool children under conditions similar to Azrin and Lindsley (1956). Their apparatus consisted of sets of colored knobs which, if pulled within five seconds of each other by each member of a subject dyad, produced an edible. Cooperative and non-cooperative responses were recorded. Other variables such as age, sex, verbalization and economic status were also considered to determine their relation to cooperation at the task. Results showed no significant increase in cooperative responses as compared to non-cooperative responses under the reinforcement contingency. There was a positive correlation between age and verbalization and the amount of cooperative responding. A positive correlation between those variables and cooperative responding tended to support the author's conclusion that increases in cooperative responding were a function of learning to pull knobs rather than learning to emit the cooperative behavior. This discrepancy could also have been a function of the differences in time requirements in the two studies. Azrin and Lindsley required that a response be made within

.04 seconds of another to be considered cooperative. Brotsky and Thomas' time requirement was .5 seconds.

Sharing has often been cited as a specific favorable social behavior in the literature. Cooke and Apolloni (1976) reported increases in sharing, smiling, contact and verbal complimenting as a function of modelling and praise. Rogers-Warren, and Baer (1976) used modelling and reinforcement of true reports of behavior to increase both sharing and actual reports of sharing with preschool children.

Offers to share, acceptance of others offers to share and refusals of others' offers to share were recorded during a study by Warren, Rogers-Warren, and Baer (1976). Their study evaluated the role of offer rates in controlling sharing and attempted to produce rates of share-offers with the highest acceptance probability. They discovered a strong inverse relationship between rates of offers to share and acceptance rates of share offers.

Hopkins (1968) studied the acquisition and maintenance of smiling with retardates. He employed candy and social reinforcement, instructions and reinforcement schedules as independent variables. He concluded that social reinforcers often maintain undesireable behaviors and that carefully distributed social reinforcement is sufficient to eliminate the undesireable behaviors and maintain desireable behaviors.

Stokes, Baer, and Jackson (1974) found that training and maintenance of a greeting response by a single experimenter was not sufficient for generalization of that greeting response to other

staff members. They found that for three of four subjects the addition of a second training experimenter facilitated much higher rates of generalization. Greeting responses in one child over-generalized to inappropriate situations.

Another method of changing or increasing social behavior has been to focus on manipulating antecedant events instead of, or along with reinforcement contingencies. Mithang and Wolfe (1976) employed task arrangements and verbal contingencies to increase and control verbal behavior between two pairs of retarded children. They implied that some tasks or arrangements of tasks promote more interaction between participants than others.

Quilith and Risley (1973) results were similar to Mithang and Wolfe (1976) but with respect to specific play materials. The authors designated one group of toys isolate toys. Among these were puzzles, tinker-toys and play dough. Another group of game or competition toys were designated social toys. They found that extreme differences in social play resulted from the particular toys presented for play and did not depend on the children or their interactions with adults.

The present study attempted to increase two specific prosocial behaviors, helping and sharing, as a function of contingent social reinforcement and natural reinforcement available within the setting with socially deprived preschool children. These behaviors were chosen with the assumption that other defined prosocial behaviors such as cooperation, proximity and verbalization were contained within the limits of those two behaviors and the assumption that these behaviors could be increased and generalized by utilizing peer reinforcement.

## Method

### Subjects

The subjects were six underprivileged preschool children, three male and three female, who were regular attenders in the pre-elementary department of the Learning Village in Kalamazoo, Michigan. Ages ranged from four years to six years old. These children were chosen because they were the only children in that particular department who attended with any regularity. The children were presumed to be of normal intelligence as no formal records were available.

### Setting

The procedure was instituted in the pre-elementary department of the Learning Village. The purpose of the Learning Village was to help underprivileged preschool children, many of who had been considered to have a high probability of failure upon reaching the first grade (Ulrich 1975, unpublished). Some students in the program were enrolled by a state agency while others were private tuition students. The pre-elementary department had separate programs for math, reading, and language using the DISTAR system but no formal program for social development had been set up. Helping and sharing had been verbally encouraged in the pre-elementary department but no formal procedure had been established nor was reinforcement for the behaviors consistently administered.

### Procedure

Sessions were run for twenty minutes with each of three dyads,

four days per week, each dyad procedure occurred separately. Dyads were chosen with regard to free time from other scheduled department activities. Children worked at four general table tasks differing slightly from week to week but of the same general nature. (ie. Monday-coloring; Tuesday-Tinker Toys; Wednesday-Play Dough; Thursday-puzzles.) Two children, one data recorder, and the experimenter were present for each session. All sessions were held in the same room at a time scheduled separately for each group. A multiple baseline design was chosen to ensure that increases in the dependent variable were a function of the independent variable rather than the passage of time, other environmental influences, or generalization.

Recording procedures and reliability. The procedure was a multiple baseline design across subjects. Helping and sharing data was recorded in one minute intervals with only one response scored per interval, that being the first occurrence. Non-occurrences during a particular interval were also recorded. Helping and sharing were recorded as separate behaviors, scored separately, but graphed as combined data. Individual subject data was taken. Percentage of prosocial behavior was calculated by dividing the number of intervals within which helping or sharing occurred by the total number of intervals in which they could have occurred multiplied by 100.

Helping was defined as a one-to-one interaction facilitating a peer's participation in or completion of a required task. Sharing was defined as giving when asked, without argument, or offering without being asked, any object or material available for use in the session.

Data was recorded by three Western Michigan University Psychology 351 credit students placed at the Learning Village. Recorders were instructed on the method of recording and familiarized with the data sheets. Behavioral definitions were studied and several meetings were held prior to the onset of data collection to discuss definitions and possible situations and how they should be scored. Recorder preparation was informal in that no formal data collection occurred prior to baseline. However, recorders did spend a significant amount of time discussing the definitions with the experimenter, thus facilitating inter-recorder agreement.

Reliability checks were made every fourth session. This data was taken by the experimenter positioned at a large table opposite the recorder. As some written mark was required for each interval, reliability agreement cued by movement of the recorder to write was kept to a minimum. Reliability was scored for each interval as agreement or disagreement. Agreement was a perfect match of one of the three possibilities (share-help-nothing) and a disagreement any combination other than a perfect match. Reliability per session was computed as the number of agreements divided by the number of agreements plus disagreements, multiplied by 100.

Reliability checks showed 98.75%, 100%, and 99.78% reliability for Dyads I, II, and III respectively. Overall reliability for the study was 99.51%.

Accompanying social reinforcement for helping and sharing was an attempt to enhance natural reinforcement within the setting through peer reinforcement for help and/or share offers. This was facilitated

initially by prompts from the staff to the children receiving the prosocial benefits (ie. "Chad, wasn't that nice of Torial to give you that? Can you tell him so?").

Baseline. Children were given table tasks. Explanations were given as to how to use the materials at the beginning of each session for all phases. Helping and sharing behaviors were recorded. No reinforcement was given for helping and sharing. This condition lasted for eight sessions.

Phase I. Social reinforcement from teacher and staff such as praise, pats on the back and clapping was given contingent upon each appropriate helping and sharing behavior for Dyad I. No social reinforcement was given contingent upon helping and sharing for Dyads II and III. Helping and sharing were recorded in one minute intervals for all dyads in all phases. Throughout each period children were intermittently praised for working hard or attending to the task. This occurred in every phase for every dyad.

Phase II. Social reinforcement was continued on a continuous reinforcement schedule for Dyad I and initiated for Dyad II contingent upon appropriate helping and sharing behaviors. Dyad III was not reinforced for helping and sharing.

Phase III. Social reinforcement was continued for Dyad II and initiated in Dyad III for appropriate helping and sharing. Dyad I had been terminated at this time.

## Results

An increase in helping and sharing behaviors was shown for all groups with the introduction of contingent positive reinforcement and peer reinforcement. Individual data was generally characteristic of group data with the exception of extreme high and low data points.

Baseline. Data showed an average of 6.06%, 6.12% and 6.25% for Dyads I, II, and III respectively. Dyad I showed a high point of 15% with six out of the other seven data points falling below the average. Dyad II showed a high data point of 20% and a low of zero, with six of the eight data points falling below the mean. Dyad III values ranged from 10% to 2.5% with half of the data points falling above the mean and half below the mean.

Phase I. This phase showed an average increase of 40.19% in percentage of prosocial behavior as a function of positive reinforcement for Dyad I with a high group data point of 67.5% and a low group data point of 32.5%. The average percentage of prosocial behavior for Dyad I in Phase I was 46.25%. Dyads II and III averaged 7.5% and 8.75% respectively under continued baseline conditions.

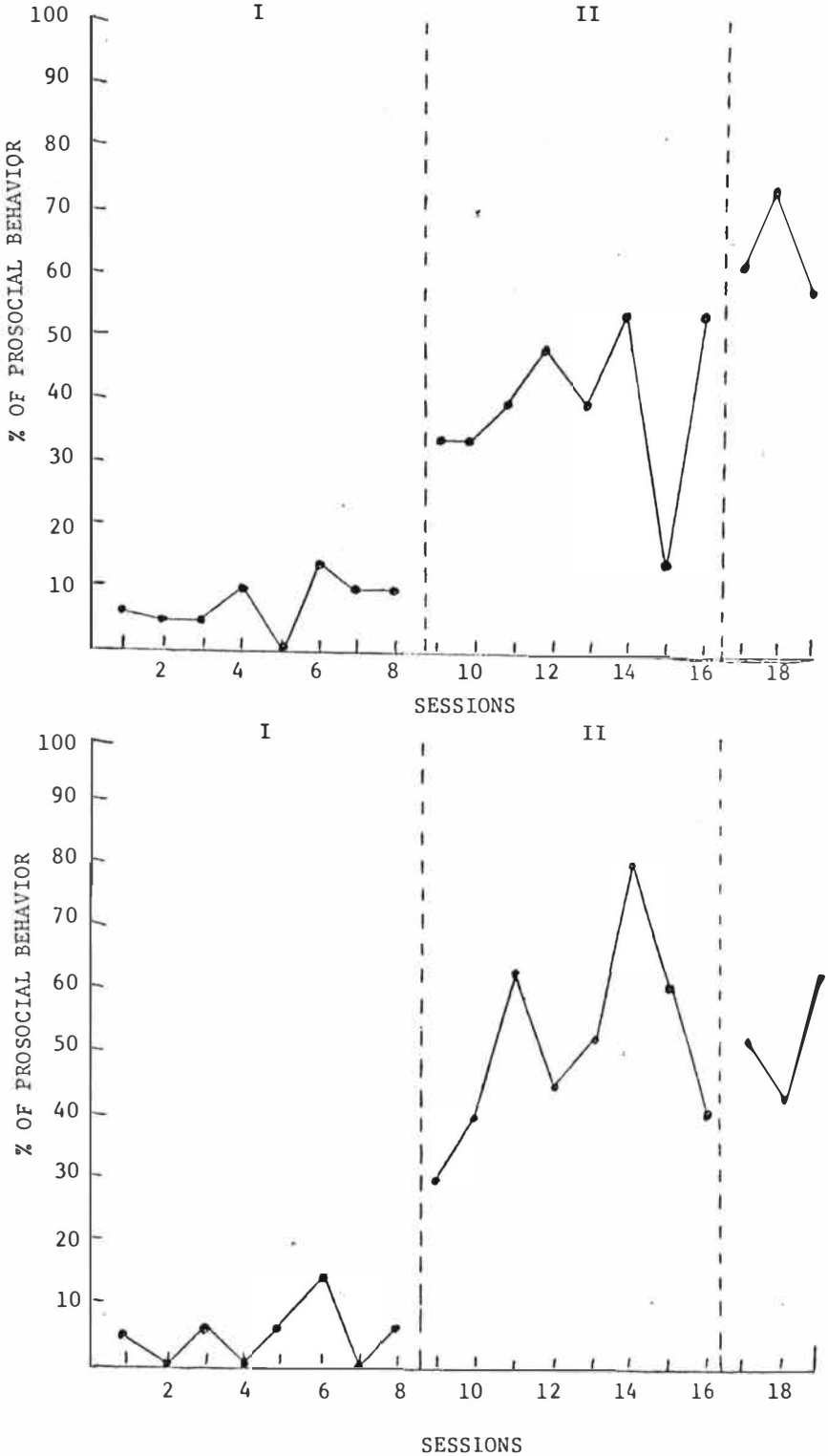
Phase II. An increase of 14.58% was shown in the average percentage of prosocial behavior under continued positive reinforcement for Dyad I in Phase II: they exhibited an average of 63.83% during this phase. The onset of positive reinforcement in Dyad II produced an increase of 38.12% over baseline. The average percentage of prosocial behavior for Dyad II was 45.62% in this phase. Dyad II data

showed a high percentage of 77.5% and a low of 20% for this phase. Continued baseline for Dyad III during Phase II was 8.93%.

Phase III. The average percentage of prosocial behaviors increased for Dyad II (continued intervention) from 45.62% in Phase II to 58.75% in this phase. The intervention group for this phase, Dyad III, averaged 63.5%, an increase of 57.25% from baseline conditions.

Figure 1 presents the percentage of prosocial behavior over sessions for Dyad I. Dyad I showed only three data points for Phase II as one group member dropped out early. Figures 2 and 3 show similar data for Dyads II and III respectively. Dyad III showed seven sessions in Phase II and seven in Phase III instead of eight as information of termination of one group member was received and intervention was started immediately.

Figure 1: Percentage of Prosocial Behavior for Dyad I During Baseline and as a Function of Positive Reinforcement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SESSIONS
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% OF PROSOCIAL BEHAVIOR
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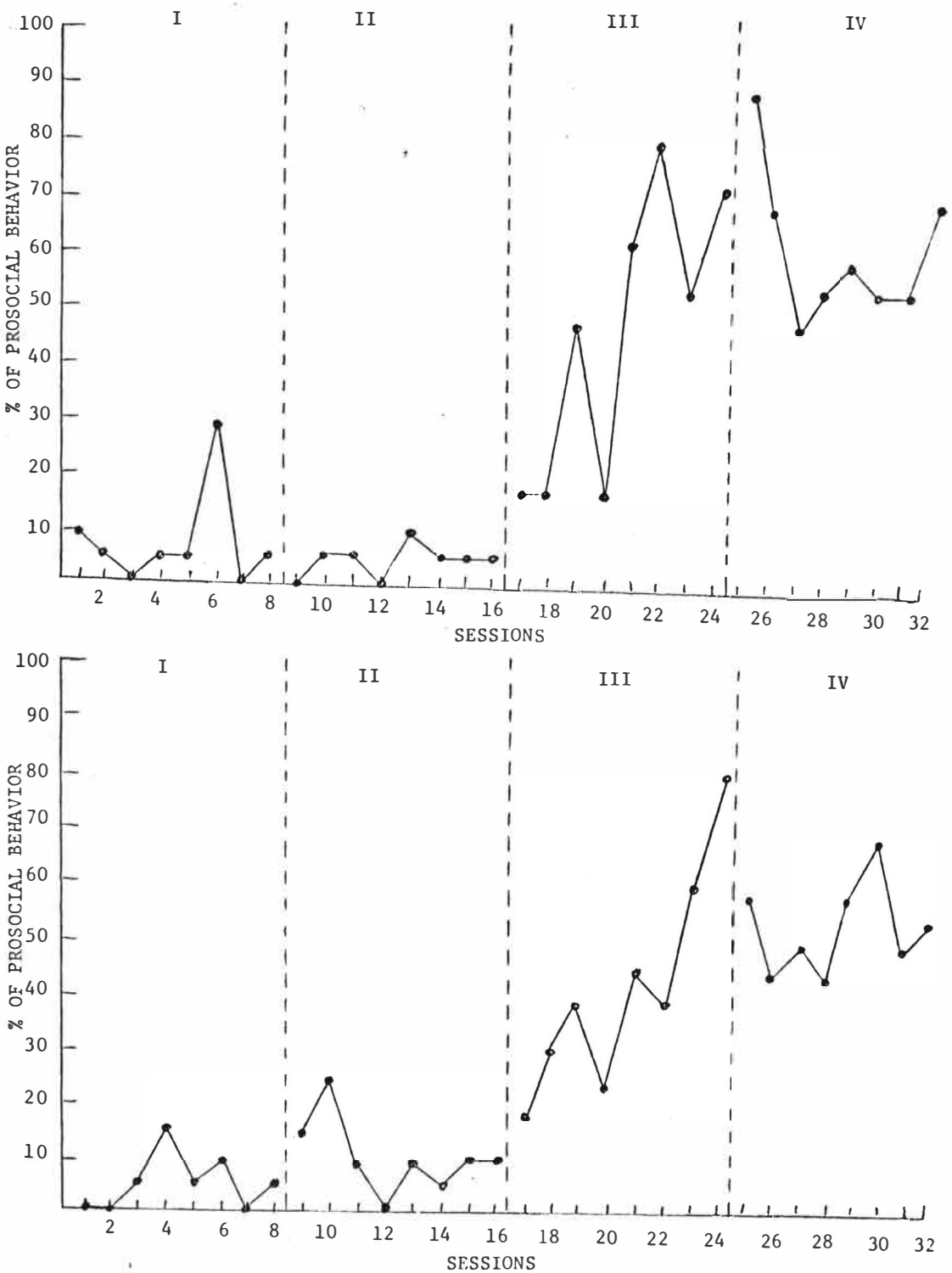
SESSIONS

Figure 1

Figure 2: Percentage of Prosocial Behavior for Dyad 2 During Baseline and as a Function of Positive Reinforcement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% OF PROSOCIAL BEHAVIOR
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SESSIONS

Figure 2

Figure 3: Percentage of Prosocial Behavior for Dyad 3 During Baseline and as a Function of Positive Reinforcement

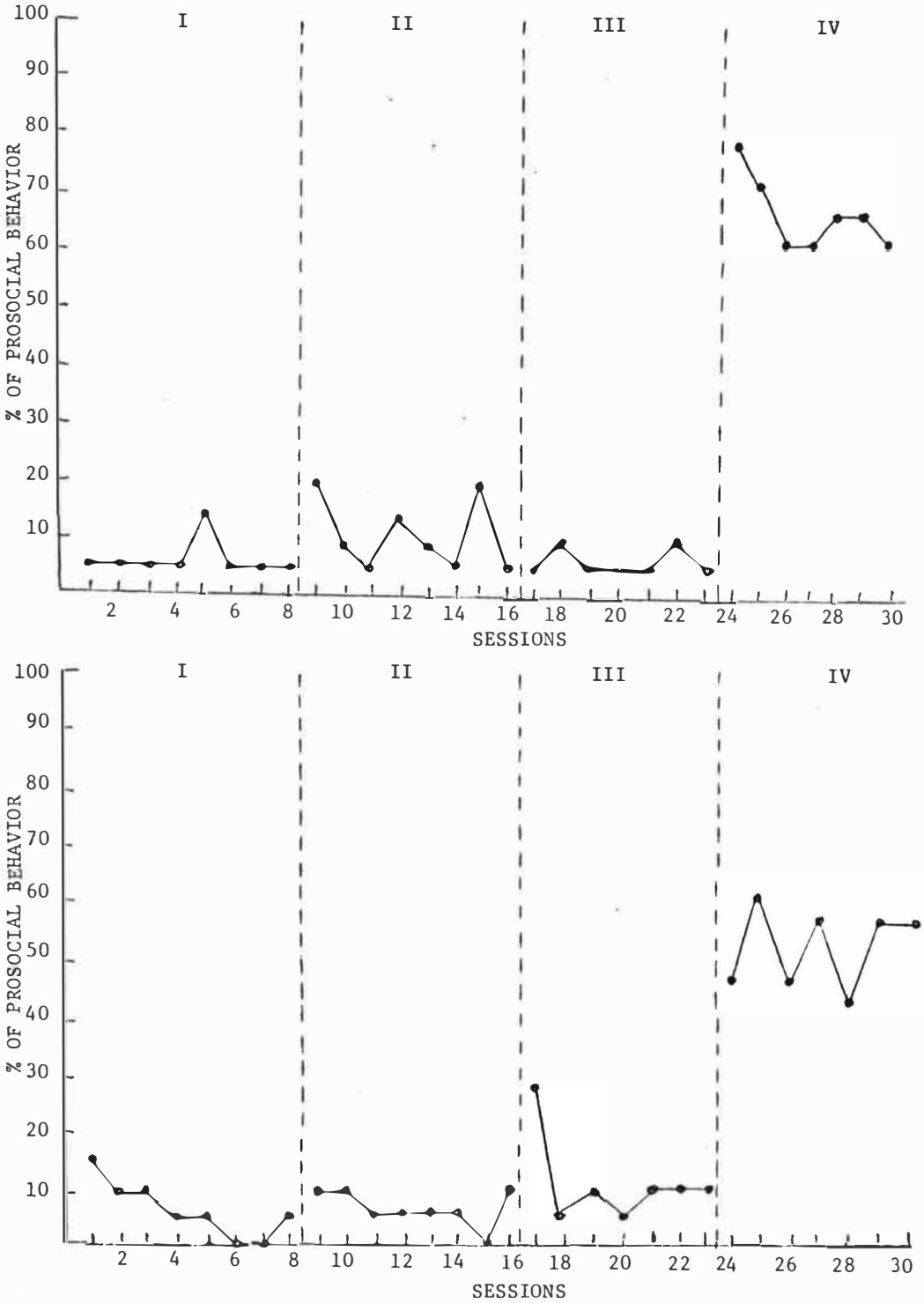
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Figure 3

## Discussion

The marked differences in prosocial responding between baseline and intervention showed that positive reinforcement of such behaviors does indeed lead to increases in their occurrence. Maintenance of lower rates during continued baseline for Dyads II and III further showed the reinforcement function.

The high rates seen in initial intervention sessions tended to indicate that prosocial behaviors were not necessarily learned in that session quickly, but were rather behaviors already in the children's repertoire or observed by the children in the other children and increased by the procedure. This is seen especially with the high initial rates of Dyads II and III. Yarrow and Waxler's results (1976) showed a low frequency of prosocial behaviors occurring in peer interactions when no positive reinforcement was administered. The present baseline results agreed with Yarrow and Waxler but in addition show that definite increases resulted from the implementation of an experimental procedure.

Buell, Stoddard, Harris and Baer (1968) showed that prosocial interaction showed a collateral development when reinforcing outdoor play in preschool children. The present study showed no collateral development of helping and sharing when participation in the group activity was reinforced, but only when reinforcing the prosocial behaviors helping and sharing.

This study encouraged peer reinforcement of prosocial behaviors in a slightly different manner than a study done by Strain and Timm (1974). Strain and Timm found that reinforcement from teacher to

either subject or peers for interaction increased all interactions. The present study encouraged reinforcement within the peer group in an attempt to facilitate helping and sharing in somewhat the same manner.

Although data was not taken for interaction and cooperation behaviors in this study, it is possible that these prosocial behaviors also increased as a result of increases in helping and sharing behaviors. Bennet and Maley (1973) found that reinforcement of interaction among mental patients generalized to other areas of social behavior. As helping and sharing were chosen here because of their wide prosocial scope, one could assume cooperation and interaction would have increased to facilitate increases in helping and sharing. This hypothesis could be tested by further research.

The inclusion of peer reinforcement for helping and sharing served as an attempt at generalizing the prosocial behaviors to the pre-elementary classroom. The peer reinforcement was an initial step to enhance all natural reinforcers in that environment, acceptance of share-offers and reinforcement for share-offers not accepted. It could also serve as a fine maintenance method as teacher attention in the classroom is often neither frequent nor contingent on specific behaviors.

Increased social responding outside of reinforced sessions was observed in this situation similar to that shown by Whitman, Mercurio, and Caponigri (1970). This generalization manifested itself in behaviors not specifically reinforced within sessions as well as in helping and sharing behaviors in which the subjects of this study

interacted with peers not members of the specific experimental groups. Generalization of social responding was also shown as several new children entered the classroom and also during playground interaction with other children of the school in other departments. Not only was helping and sharing observed with these children toward other children but also explanations from the subjects regarding "proper behavior" were offered to these new children and were observed by staff and the experimenter.

Azrin and Lindsley (1956) showed increased cooperation as a function of manipulation of the reinforcement-response contingency. Although it was claimed that this increase was a function of manipulating this relationship alone, it was stated that some type of verbal interaction or agreement between subjects was necessary to facilitate cooperation. Peer reinforcement in the present study could serve this purpose. This addition not only served as informative of desired behavior with the interaction between subjects but also served as a built-in maintenance procedure at the termination of manipulation of contingencies by experimenter and staff.

Substantiated rate of non-cooperative or anti-helping and anti-sharing behaviors may have been of further interest in the present study in determining overall effect of the increase in helping and sharing. Brotsky and Thomas (1967) observed marked increases in both cooperative and non-cooperative behaviors. Although no formal data was taken regarding this issue in the present study, informal observations of occurrences of negative interactions were noted by those taking data. The trend of negative interactions between

subjects during group sessions seems to have been decreasing as a function of increasing prosocial interactions.

Although helping and sharing seem to be extremely desireable behaviors to shape in young children the problem of excesses must be considered too. Warren, Rogers-Warren and Baer (1976) found that share-offers increased beyond a certain number were no longer accepted. Since one natural reinforcer for sharing is the acceptance of the share-offer an increase in sharing to inappropriate levels could therefore begin to eliminate the behavior through unaccepted or punished share-offers. Rogers-Warren and Baer did not observe inappropriate sharing when studying increases in sharing and praising, but rather found that as rates of praising increased more inappropriate praise was observed.

In the present experiment the problem of excess prosocial behavior manifested itself somewhat differently. As sharing and helping increased experimenters and staff did notice what appeared to be inappropriate or overemphasized occurrences of the behaviors. However, little or no rejection of the offers was observed. There could be several possible explanations for these continued acceptances. As little helping and sharing was seen previously, the novelty of the situation and the behaviors could have maintained the acceptance behavior. Another alternative explanation for the low refusal rate could stem from the fact that most of the children did not have an excess of material goods of any kind.

Quilitch and Risley (1973) refer to specific toys as being isolate toys, that is primarily played by one child and not generative

of social interaction. Among those mentioned were puzzles, Tinker Toys and Play Dough. The present study utilized these three isolate toys and observed increases in helping and sharing despite the effects of these toys. Perhaps much larger increases in these behaviors could have been acquired had the toys been chosen to facilitate helping and sharing.

It is true that some problems with the present study do exist. Measurement of both time intervals and the target behavior could be improved by using more precise measurement tools and improved reliability measures. Increased control and measurement of peer reinforcement would also facilitate a tighter study and possibly generate new ideas and answers.

These problems in themselves generate suggestions for future research. Peer reinforcement may be an interesting and efficient method of working with anti-social as well as prosocial behaviors. Also the inclusion or exclusion of more behaviors in the definitions of prosocial behaviors needs consideration to facilitate accurate and beneficial observation. Perhaps we will find that we are defining two behaviors that actually overlap into one behavior or that one behavior by our definition is really two.

The fact that tasks can be arranged and certain toys do generate more social behavior is an interesting idea for more future consideration alone or in combination with other ideas.

Negative interactions and their trends of increase or decrease in accord with prosocial behavior is an area that could yield considerable insight to child psychology. Finally, the never ending

question of generalizing the prosocial behaviors to a world outside the classroom or home will need even more research.

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