SOME DETERMINANTS OF AFFECTIONATE BEHAVIOR IN YOUNG CHILDREN

by

MICHAEL PIROT

A.B., Whittier College, Whittier, California, 1967

M.A., Whittier College, Whittier, California, 1970

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in the Department

of

Psychology

We accept this dissertation as conforming

to the required standard

[redacted]

MICHAEL PIROT

UNIVERSITY OF VICTORIA

July, 1976

Supervisor: [redacted]

This research is concerned with the determinants of affectionate behavior in young children, and is focused upon the uncovering of the means by which to increase positive social behavior (e.g. modelling of prosocial behavior), rather than being concerned with negative social behavior and the means by which to decelerate it (e.g. punishment and extinction with their potentially unfortunate social consequences).

In two experiments, the determinants of affectionate behavior in young children were explored. Experiment I was the study of the effects of modelling and instruction upon imitative, concurrent, and free-play affectionate behavior of young children towards a toy object (teddy bear). The experiment consisted of two phases: a modelled caretaking or an instructed caretaking training phase followed by a free-play phase during which generalization data were taken.

Three groups were set in Experiment I: a) an Imitative Caretaking group in which caretaking behavior was modelled, with assessment of imitative caretaking and concurrent affectionate behavior; b) an Instructed Caretaking group in which instructions to caretake were given, with assessment of instructed caretaking and concurrent affectionate behavior; and c) a Control group, which received no training. All three groups were assessed as regards free-play affectionate behavior and aggressive behavior in a single phase free-play period.

The results of Experiment I demonstrated that the Imitative Caretaking group produced a mean imitation rate of 69% during training and that this training produced significantly more free-play affectionate behavior than did the Instructed Caretaking and Control groups. The

Imitative Caretaking group also produced significantly more concurrent affectionate behavior than the Instructed Caretaking group. The Instructed Caretaking group did not produce significantly more free-play affectionate behavior than the Control group. There was some evidence that physical contact and imitative caretaking may have been the effective variables producing the free-play affectionate behavior of the Imitative Caretaking group. Consequently these factors were systematically varied in Experiment II in order that their effects upon free-play affectionate behavior could be assessed.

Experiment II was conducted to explore the effects of imitative caretaking, non-imitative caretaking, and imitative neutral physical contact upon free-play affectionate and concurrent affectionate behavior. The experiment consisted of two phases: a training phase followed by a free-play phase (consisting of two periods) during which generalization data were taken.

Three groups were set in Experiment II: a) an Imitative Caretaking group (replicate of a group of the same name in Experiment I); b) a Non-Imitative Caretaking group (modelled caretaking kept constant, but physical contact obviated); and c) an Imitative Neutral Physical Contact group (physical contact kept constant, but the caretaking context obviated).

The results of Experiment II demonstrated that (imitative) caretaking and physical contact produced in imitation in the Imitative Caretaking group interacted as variables in such a manner to produce significantly more free-play affectionate behavior relative to the Non-Imitative Caretaking and Imitative Neutral Physical Contact groups.

The increased free-play and concurrent affectionate behavior demonstrated by the Imitative Caretaking group of Experiment I was replicated

by a similar group in Experiment II. These results suggest that these phenomena are reliable. The magnitude of treatment effect for the Groups factor was significantly increased by Experiment II as compared to Experiment I, and thus increased the percentage of variance accounted for. Also the variability of the Imitative Caretaking group of Experiment II was significantly decreased for the girls, but not for the boys. This suggests that greater experimental control was accomplished by requiring that the children in imitation groups in Experiment II produce 100%-criterion imitation (which was not demanded in Experiment I where the imitation rate was free to vary, producing 69% for the Imitative Caretaking group).

Experiments I and II showed nearly nil amounts of aggressive behavior during training and free-play, and as such, conclusions about this rate are tenuous.

Sex was not a significant factor in almost every analysis of both experiments, suggesting that for three- to five-year-old children these treatment effects are not sex-dependent.

The generalization data of both experiments were taken in a cue-minimal/model-absent context, and as such provided a stringent test of the ability of the treatments to generalize to the free-play period. The Imitative Caretaking group produced generalization effects, suggesting that the effects of this treatment may generalize across a variety of stimulus situations. Consequently the techniques created by these experiments may provide teachers and parents a reliable means by which

to increase positive social behavior.

TABLE OF CONTENTS

Page

I. INTRODUCTION..... 1

The Necessity for this Research..... 1

Child Prosocial Literature..... 3

Play Literature..... 6

Nurturance Literature..... 8

Affection Literature..... 9

Summarized Relevance of the Literature and Rationale of Proposed Study.....10

II. EXPERIMENT I.....13

Method.....15

Subjects.....15

Apparatus and Setting.....15

Familiarization Procedure.....16

Imitative Caretaking Group Procedure: Training Phase.....16

Imitative Caretaking Group Procedure: Free-Play Phase.....20

Instructed Caretaking Group Procedure.....23

Control Group Procedure.....24

Results.....26

Reliability Data.....26

Dependent Measures Data.....26

Discussion.....39

III. EXPERIMENT II.....44

Method.....46

Page

Subjects, Apparatus, and Experimental Setting....46

Imitative Caretaking Group Procedure....46

Non-Imitative Caretaking Group Procedure....47

Imitative Neutral Physical Contact Group Procedure....48

Results....50

Reliability Data....50

Dependent Measures Data....50

IV. GENERAL DISCUSSION AND CONCLUSIONS....65

V. REFERENCES....72

VI. APPENDIX A....78

LIST OF TABLES

Table — Page

Experiment I

1 Means and Standard Deviations of the Proportion of Total Free Time in Which Affectionate Intervals Occurred for Each Condition...28

2 Summary of the ANOVA of the Mean Proportion of Total Free Time in Which Affectionate Intervals Occurred.....28

3 Unplanned Tukey HSD Test Performed Upon the Levels of the Groups for Total Time Spent in Free-Play, Collapsed Across Sex.....29

4 Mean Proportion of Total Free Time Spent in Affectionate and Aggressive Behavior for the Groups Collapsed Across Sex.....31

5 Means and Standard Deviations of the Number of Concurrent Affectionate Behaviors of the Imitative Caretaking and Instructed Caretaking Groups During Training, Collapsed Across Sex.....33

6 Summary of the ANOVA of the Mean Number of Concurrent Affectionate Behaviors Produced During Training of the Imitative Caretaking and Instructed Caretaking Groups.....33

7 Training Data of the Imitative Caretaking Group.....34

8 Training Data of the Instructed Caretaking Group.....35

9 Fischer Exact Probability Test Performed Upon the Training Data Between Sexes Categorized in Various Manners of the Imitative Caretaking and Instructed Caretaking Groups.....36

Experiment II

10 Means and Standard Deviations of the Proportion of Total Free Time in Which Affectionate Intervals Occurred for Each Condition in the Pre-Compelled Phase.....51

11 Summary of the ANOVA of the Mean Proportion of the Total Free Time in Which Affectionate Intervals Occurred in the Pre-Compelled Phase.....51

12 Summary of the Planned Newman-Keuls Test of the Mean Proportion of Total Free-Play Time in Which Affectionate Intervals Occurred for Each Condition in the Pre-Compelled Phase.....53

Table | Page

13 Means and Standard Deviations of the Proportion of Total Free-Play Time in Which Affectionate Intervals Occurred for the Groups in the Post-Compelled Phase Collapsed Across Sex.....56

14 Summary of the ANOVA of the Mean Proportion of Total Free Time in Which Affectionate Intervals Occurred for the Groups in the Post-Compelled Phase.....56

15 Summary of the Planned Tukey HSD Test Performed Upon the Proportion of Total Free Time in Which Affectionate Intervals Occurred for the Levels of the Groups Factor in the Post-Compelled Phase Collapsed Across Sex.....57

16 Means and Standard Deviations of the Number of 5-Second Intervals in Which Affectionate Behavior Occurred Over the Total Time of 5 Minutes of the Groups Factor, Collapsed Across Sex.....59

17 Summary of the ANOVA of the Mean Number of 5-Second Intervals in Which Affectionate Behavior Occurred Over the Total Time of 5 Minutes.....59

18 Planned Tukey HSD Test Performed Upon the Mean Number of 5-Second Intervals in Which Affectionate Behavior Occurred Over the Total Time of 5 Minutes of the Levels of the Groups Factor Collapsed Across Sex.....60

19 Means and Standard Deviations of the Number of Concurrent Affectionate Behaviors of the Groups Collapsed Across Sex Produced During Training.....61

20 Summary of the ANOVA of the Mean Number of Concurrent Affectionate Behaviors Produced During the Training.....61

21 Planned Tukey HSD Test Performed Upon the Means of Concurrent Affectionate Behaviors of the Levels of the Groups Factor During Training Collapsed Across Sex.....62

22 Summary of the ANOVA Performed Upon the Mean Number of Prompts of the Imitative Caretaking Compared to the Imitative Neutral Physical Contact Required to Reach 100%-Criterion Imitation During the Training Phase.....64

23 Cochran's Value and Associated Probability of the Rejection of the Hypothesis of the Homogeneity of Variance of the Selected ANOVAs of Experiments I and II.....79

Acknowledgements

I wish to express my love for my wife Alison, without whose support in what may have been the most trying time of my life and hers, this dissertation would not have been written. It is to you, Alison, that this dissertation is dedicated. Namaste to Allan Hunter, who has exemplified for me the Agape.

I also wish to express my heart-felt thanks to the members of my doctoral committee, Drs. C. Galloway, P. Duncan, R. Hoppe, and R. Watson, whose sage counsel aided this work. A very special thank you goes to Dr. Loren E. Acker, my supervisor, who, true to his personal and psychological philosophy, rarely if ever punished, always cared, led me to a better understanding, and in the guidance of this dissertation modelled scientific practice par excellence.

I. INTRODUCTION

Symbolic of the indifference of people in urban environments is the case of Kitty Genovese who in 1964 was fatally stabbed to death while at least 38 neighbors watched, with not a one apparently feeling compelled to call the police. Witnesses claimed that they "didn't want to get involved." This incident has received from the public and from psychologists detailed and continued attention and has come to be regarded as a classic case in the annals of human social behavior--a case of the absence of altruism (Rosenthal, 1964).

Since that time wholesale violence greater than that in any other period of history has taken place: the Vietnam war; race riots in many North American cities; and the climb of violent crimes in all categories. Perhaps as a reflection of the times, social psychologists have addressed themselves to the problems of violence, so that entire chapters of social psychology textbooks are devoted to "aggression, violence, and war" (Wrightsman, 1972).

One obvious problem with the study of negative social behaviors such as aggression, violence, and war is that we study them after the fact, when they have already taken their toll on society. Perhaps a different research strategy is called for--research into prosocial behavior: cooperation, peace, affection, and intimate behaviors--that may prevent problems before they occur. In other words, rather than attempting to study negative behaviors and the means to decelerate them, perhaps what is more pressingly needed is the study of positive behaviors and the means to encourage them. And by so doing, some of the negative social behaviors that abound in our world may be assuaged.

The experimental study of positive behavior received its first impetus from Harlow's work on affection and love in monkeys (1958) which demonstrated the importance of physical contact ("contact comfort") in the normal development of these animals.

Harlow's work helped extend to the human domain non-experimental research on the effects of maternal deprivation upon children's behavior. However, prior to Harlow's work, Spitz (1946) observed that young children spending their first year in institutions where care was inadequate, cried continually during the second half of the first year, but that after several months their crying subsided and they became unresponsive to adults, a phenomenon this author labeled "anaclitic depression." Bowlby (1960) also observed that young children between 15-30 months, separated from their mothers, after a time also became generally unresponsive to adults, even their mothers. Dennis (1960) observed two groups of children, one deprived and another enriched as regards caretaking. In the second year of life, only 42% of the deprived children could sit alone, while 90% of the enriched group children could; only 5% of the former group could walk or stand while holding on to something, while 60% of the enriched group children could. Provence and Lipton (1962) studied infants in institutions in which nutrition and physical care were adequate and therefore eliminated these variables as functional in the behavior observed. After four months of age the babies vocalized little, and by eight months lost interest in grasping and approaching toys; during the second half of the first year "autistic" rocking commenced, "stranger anxiety" was not evinced, the infants' facial expressions were bland, and the children did not seek to avoid aversive stimulation. This research suggests that a certain kind or quality of caretaking is necessary

for normal motoric and social development in young children.

Over the past decade there has been an increased interest in positive or prosocial forms of behavior (Wispē, 1972). The term "prosocial," like "aggression," is difficult to define because it connotes a number of different behaviors. Prosocial behavior may include the following behaviors or attitudes: "altruism" as regard for the interests of others without concern for one's self interest; "sympathy" as sharing of pain or sadness of another; "cooperation" as the willingness to work with others (usually but not always for a common end); "helping" as the giving of assistance to provide what is needed to accomplish an end; "donating" as the action of making a gift or giving a contribution, usually to charity; and "rescue" as the removal of another from apparent danger. Though not included in the prosocial literature, affectionate behavior may be viewed as a kind of prosocial behavior. The procedures of the present research will involve "caretaking" a sick teddy bear by children, which consitutes "helping" behavior. Therefore this procedure may be viewed as a type of prosocial behavior.

Child Prosocial Literature.

Two paradigms have been common to research of child prosocial behavior: rescue activity and donation responses. In the former situation, the child is exposed to an emergency in which a peer is in some sort of distress; in the latter situation, the child is provided an opportunity to sacrifice some prized object. This latter paradigm has been the more common, with social influence of one kind or another as the variable of interest (e.g., the viewing of some person who helps or who preaches giving, or who donates an amount of money). Measures are then obtained of how this model or social influence affects the observing child.

Bryan (1972) has reviewed the explanations for adult and child helping behavior. The standard explanation is the "social responsibility norm" (Berkowitz and Daniels, 1964) where helping behavior is thought to be a function of the child's having learned a norm and being reminded of it by the experimental situation. There is some research to bear out that children believe that one should help another in need (Bryan and Walbek, 1970a), but the data are limited to children of middle and upper income families. Reminding children of the norm has not been shown to increase the probability of helping (Bryan, 1972).

A second explanation of the influence of a prosocial model upon children's helping behavior is that it reflects their being cued to perform as a function of the demand characteristics or setting events of the experiment (Aronfreed, 1968). This position suggests that, from a variety of subtle cues, the child infers what the experimenter expects and performs accordingly. Harris (1971) however, failed to find that praise given by the experimenter to a charitable model increased the donation behavior of observing children. Bryan and Walbek (1970b) had the experimenter serve as model for half of the subjects, while the remaining subjects viewed a model who was a stranger. Children in this experiment did not perform differentially. Grusec and Skubinski (1970) failed to find that a model's verbalizations indicating the experimenter's expectations for charity affected most of their subjects. Bryan (1972) concluded from these experiments that the experimenter-demand hypothesis had not been confirmed.

A third explanation of helping behavior suggests that the model provides the child with information as to the appropriate or allowed behavior within a particular situation. Presumably what is operating is that the child desires to be "correct" or has a reinforcement history to act

"correctly" and thus responds to cues for expected behavior, and acts accordingly. Although Bryan (1972) assumed this to be a separate case of prosocial behavior, it appears to be a case of the experimenter-demand explanation in which experimenter demands are made explicit. Liebert and Fernandez (1970) found that children exposed to multiple charitable models who donated a specific amount also donated that specific amount. It is likely that these authors were successful because the cues provided were more explicit than simply an absence-of-demand of Bryan and Walbek (1970b) and the mere verbal exhortations of Grusec and Skubinski (1970). Additional evidence for this explanation is provided by experiments using the rescue paradigm. Staub (1970), by instructing a child that he could enter a room, increased the likelihood that he would enter a room in which a stooge was distressed. Staub (1971) varied instructions about entering a room: permission, no information, and prohibition, and found that children performed differentially in coming to the aid of the distressed person. The group that was prohibited performed the same as the group that received no information; Staub concluded that no information was tantamount to prohibition. It would appear that children are sensitive to prohibitions in the experimental situation, and it may be possible that behaviors which have not been demonstrated or condoned are seen as prohibited. These results provide strong support for an experimenter-demand explanation for prosocial behavior: behavior that is cued or expected occurs, while behavior that is not cued or expected does not occur. What appears to be necessary is that cues or expectations be sufficiently obvious to guide the children's behavior.

Aronfreed (1968) has drawn experimental attention to the possibility that positive affect is necessary for an altruistic act, suggesting that

a donor's positive affect is created by means of empathic conditioning to the recipient's positive affective reactions to the donor's helping act (the learning bond being one of contiguity). In this regard Midlarsky and Bryan (1967) found that a close pairing of a recipient's expression of joy with a treatment designed to increase the child's positive affect, increased his willingness to sacrifice candies on behalf of the recipient. Using a vicarious paradigm, Midlarsky and Bryan (1973) found that children who witnessed a model demonstrating positive affect as a result of his charitable behavior, were more likely to donate than were children who observed no such affective operation. It appears from this research that the model and subject's affective response is an important determinant of a child's helping behavior.

Play Literature.

The proposed research may be viewed as an attempt to duplicate that situation in which a parent teaches his child a set of behaviors through play. Whether or not "true" play is occurring is equivocable, but insofar as a toy object, a play pretext, and play instructions are used, at least nominally "play" can be defined as taking place.

It has been difficult to characterize play (Berlyne, 1969) and to assess its effects upon subsequent behavior and interaction with children and others. Nonetheless a number of authors have attempted to define play (Beach, 1945; Piaget, 1936, 1937, 1945; Meyer-Holzapfel, 1956). Play is considered to be an important factor in the cognitive development of the child (Piaget, 1932), as a substitute satisfaction for desires whose direct expression is thwarted (Axline, 1947; Erikson, 1943; Hartley, Frank, and Goldenson, 1952; Lewin, 1935), promotion of divergent thinking (Lieberman, 1965), role learning, facilitation of new motor patterns, heighten-

ing of sensory functions, promotion of incidental remembering, and general strengthening of intellectual capacities (El'konin, 1960). As the child grows older his type of play changes, and this is believed to affect his interaction with others (Parten, 1929, 1933; Parten and Newhal, 1943). The relationship between social interaction and play may possibly be reversed, for as the child grows older his interaction with others changes, and therefore his play may change. The causal relationship of social interaction with others and play is not known; no experimental literature exists on the subject. Even so, there is a great social importance imparted to play. Play per se, either in what characterizes it or what theories there are that account for it, is not the concern of the proposed experiment. The experimenter will engage the child in what is instructionally labelled as "play", will model behaviors in a play context, provide a play pretext, and ask the child to engage in free-play with the toy (object).

There is an important exception in which experimentally induced play affects subsequent behavior. Although not reviewed in the play literature, the case in point is Bandura, Ross, and Ross' (1961, 1963) research on the modelling of aggression. Their subjects were given a play-instructed context, play objects were used for modelling and testing, and a frustration-experience was given using play objects. The subjects' behavior may be viewed as play, but because of the aggressive modelling, what occurred was aggressive play. In other words, it is plausible that the experimental-play-setting events interacted with the children's history of play; because what was modelled was aggressive play, the children behaved accordingly.

In some respects the proposed research is related to Bandura, Ross, and Ross' study of the observational learning of aggression (1961, 1963).

There is a concern in the proposed study for the explanation of the observational learning of affection. However, it will not be the obverse of Bandura's research even though a modelling procedure will be used, and there will not be direct reinforcement given to the child for imitation. Bandura, Ross, and Ross were primarily interested in the observational learning phenomenon per se, and only secondarily interested in its effects upon aggressive behavior. The proposed research is focused upon the conditions that determine affectionate behavior, and secondarily interested in the imitation data. Bandura, Ross, and Ross (1961, 1963) and Flanders (1965) have demonstrated that observational learning is a reliable phenomenon; what is yet unexplored is its relevance to the prosocial domain.

The proposed research is expected to provide information on the effects of modelling and instruction upon imitative caretaking and concurrent affection, and upon subsequent free-play affectionate behavior. This research will add to the understanding of play and its effects upon subsequent behavior.

Nurturance Literature.

Nurturance has been widely explored in the modelling literature. The proposed study will attempt to experimentally induce affectionate behavior in young children. Nurturance may be related to this operation. Yarrow and Scott (1972) viewed as components of nurturance the following attitudes or behaviors: attentive interest, praise, encouragement, respect, helping, withholding critical evaluation, providing helpful materials, withholding arbitrary control over the child, and affection. These authors view nurturance as denoting a number of attitudes or behaviors and include

affection as one component.

Experimenter-manipulated nurturance has been reported as having a contradictory effect upon imitative behavior: as increasing imitation (Bandura and Huston, 1961; Staub, 1971), as having no effect upon imitation (Grusec and Skubinski, 1970; Rosenhaun and White, 1967), and even as reducing the likelihood of imitation (Bandura, Grusec, and Menlove, 1967). It is clear that nurturance does not have a simple or predictable effect upon imitation.

Research that assesses the effects of nurturance upon imitation uses nurturance as an independent variable. The proposed research will not attempt to create a nurturant or nonnurturant environment for the child, and as such will not use nurturance as an independent variable. However, there will be a familiarization period with the experimenter and toy object before the formal experiment is begun. This will comprise of a neutral-theme puppet show presented by the experimenter-model, with the toy teddy bear watching the puppet show. This operation is intended to reduce experimenter-strangeness and introduce the children to the toy object to be used in a play situation. Consequently, it is only in a very weak sense that this familiarization operation could be construed as nurturant.

Yarrow and Scott (1972) used nurturance as a variable, demonstrating its effects upon children's own nurturance behavior. The proposed research may manipulate what may be a component of nurturance, namely caretaking behavior and assess its effects upon children's free-play behavior.

Affection Literature.

More directly relevant to the proposed study than the child prosocial, play, and nurturance literature is a small body of research that takes as

its dependent variable some sort of affectionate behavior. Brackbill (1958) succeeded in shaping a component of affection, namely smiling, in infants. Acker, Schaub, and Bruce (1970) also used a shaping procedure to produce hugging in young children, but the hugging was accompanied by unaffectionate facial expressions such as frowns, lip biting, and furrowed eyebrows (presumably due to the aversive aspects of the nonreinforcement received by the children integral to a shaping procedure).

An alternative to shaping is the use of a modelling technique. Fryrear and Thelen (1959) used modelling to increase affection in young children. These authors found an interaction between the sex of the model and sex of the subjects. The modelling effect was not strong. Nonreinforced imitation of affection was demonstrated by Acker, Acker, and Pearson (1973) who increased affection by prior imitative physical contact training (as opposed to verbal contact training) with a toy teddy bear and adult human. The proposed research is considered an extension of the interest on the conditions that determine affection. However, a more naturalistic setting will be used, employing as independent variables modelling, instructions, physical contact, and a caretaking context.

Summarized Relevance of the Literature and Rationale of Proposed Study.

In reviewing the various bodies of literature, it can be seen that they do not answer the question of the proposed research (i.e., do the independent variables mentioned above affect affectionate behavior?) Child prosocial research has not addressed itself to this problem. In child prosocial research the two dependent variables most explored are rescue activity and donation responses, and not affectionate behavior, which is the focus of the proposed research. The problem with the play

research is that there is little or no experimental information on the effects of play upon subsequent behavior and interaction with others. Bandura, Ross, and Ross' (1961,1963) research has given us some information in this regard, but their focus was primarily upon observational learning per se and secondarily upon aggression. The proposed study is not focused primarily upon observational learning (though modelling will be used), but is concerned with several variables that may affect affectionate behavior. The nurturance literature is not directly relevant to the proposed study because there will be no manipulation of nurturance as an independent variable.

The research on child prosocial behavior, play, and nurturance does not make affection the dependent variable. In fact, there is little research that makes affectionate behavior a dependent variable. Acker, Acker, and Pearson (1973) demonstrated that prior physical contact increased generalized imitative physical affection, as opposed to prior verbal contact, which did not. These authors demonstrated that imitative affectionate behavior is a member of the response class of imitative physical contact. The proposed research asks a more basic question: will modelling of caretaking affect imitative, concurrent, and subsequent free-play affectionate behavior? The proposed research is a more naturalistic experiment than that of Acker, Acker, and Pearson (1973) as there will be an attempt to duplicate the situation in which a parent shows, through play with his child (using instruction, modelling, and physical contact produced in that play), how to behave in a caretaking/affectionate manner.

A caretaking play pretext of "teddy-bear-is-sick" will be used because pilot data showed that affectionate behavior occurred in this play situation, but did not occur in a play situation where the caretaking pretext was with-

drawn.

Finally, this procedure will be used because it is theoretically important to know whether or not modelling is effective in inducing children to behave affectionately. This technique may prove to be socially significant as a means by which to promote prosocial behavior. This then may provide the mental health and teaching professions and parents clues to ways in which positive behavior may be encouraged rather than just resorting to punishment and other procedures to reduce negative and aggressive behaviors.

II. EXPERIMENT I

This research was the study of the effects of modelling and instruction upon imitative, concurrent, and free-play affectionate behavior of young children towards a toy object (teddy bear). The experiment consisted of two phases: a modelling or instructed play phase followed by a free-play phase during which generalization data were taken.

Three groups were set: a) an Imitative Caretaking group in which caretaking was modelled, with assessment of the child's imitative caretaking and concurrent affectionate behavior; b) an Instructed Caretaking group in which instructions to caretake were given, with assessment of the child's instructed caretaking and concurrent affectionate behavior; and c) a Control group in which no training was given. All three groups were assessed as regards free-play affectionate behavior and aggressive behavior in a single-period free-play phase.

Because the free-play phase had a cue-minimal/model-absent stimulus situation, it was implausible that there was extant many environmental cues to set the occasion for production of affectionate behavior. If, however, generalized affectionate behavior is found, this may suggest that these procedures provided a powerful technique to affect behavior in a situation with few cues (that evoke behavior), and may affect behavior in a more enduring fashion. This research, however, did not test the possibility that these techniques can affect behavior in an enduring fashion. This experiment proposed not to examine conditions that discourage negative behaviors (e.g. punishment and extinction with their potentially unfortunate consequences) but rather explore the conditions (e.g. modelled caretaking) that encourage positive social behavior. The study of the

ways to increase positive behavior may help prevent socialization problems, rather than having to resort to decelerating negative behaviors that have already occurred.

Method

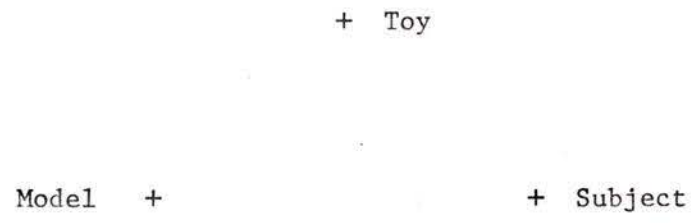
Subjects.

Fifteen boys and fifteen girls served as subjects in this experiment. All subjects were drawn from one preschool within the Victoria, British Columbia area. Only children who had received parental approval were selected to serve as subjects. The children ranged in age from 3 years, 6 months to 5 years of age, with mean age at 4.48 years.

Five boys and five girls were randomly assigned to each of three groups: a) an Imitative Caretaking group ($\bar{X}$ age 4.64 years); b) an Instructed Caretaking group ($\bar{X}$ age 4.38 years); and c) a no-training Control group ($\bar{X}$ age 4.43 years).

Apparatus and Setting.

The study was conducted in a 2.74 m X 2.13 m room within a mobile laboratory which was located on the preschool grounds. The mobile laboratory had two rooms connected by a door and a one-way mirror installed for unobtrusive viewing. In the middle of the experimental room were three chairs set in a triangular formation. The subject, experimenter (a male graduate student in psychology), and a stuffed toy teddy bear (36 cm long, with moveable arms and legs) were seated as follows:



With the child present, the experimenter placed the following items on the chair with the teddy bear: a paper napkin (serviette), a thermometer-device, a plastic spoon, a square-shaped "pill", a plastic glass, and a piece of rectangular-shaped cloth that could be placed over the teddy bear.

Apparatus used before the beginning of the formal experiment consisted of two puppets and the toy teddy bear as above. This apparatus was used in the familiarization procedure in the preschool play room for all children as a group.

Familiarization Procedure.

Before the commencing of the formal experiment, the experimenter had presented a neutral-theme puppet show involving princess and fox puppets. The experimenter had been introduced by the preschool supervisor to all the children as they sat as a group in the preschool classroom. After acknowledging the introduction, the experimenter stated that Teddy Bear (who was sitting next to the experimenter) would also be watching the puppet show. The experimenter then presented the puppet show. After the puppet show was finished, the experimenter stated that he hoped that the children and the teddy bear had enjoyed the puppet show. He then said that he would be playing with some of the children and the teddy bear over the next few days in a special playroom (mobile laboratory) set up next to the preschool room. This procedure was done in order to reduce experimenter-strangeness and to introduce the children to the use of the teddy bear in a play context.

Imitative Caretaking Group Procedure: Training Phase.

Subjects were taken individually to the mobile laboratory by the

a. put on lap

b. insert medicine while cradling in arm

c. stroke throat and tummy of bear

Setting Instruction: "Teddy needs some medicine, so now you give Teddy his medicine."

3. water

"I'd better give you some water to help the medicine go down."

a. put on lap

b. tilt plastic glass while cradling in arm

Setting Instruction: "Teddy needs some water to help his medicine go down; so now you give Teddy his water."

4. see if Teddy is all right

"Good, Teddy; you took your medicine and water. I'd better see if you are better now, and see if you are still hot with a temperature."

a. put on lap

b. put hand on forehead

c. hug bear

Setting Instruction: "Teddy has taken his medicine and water, so now you check him to see if he is hot with a temperature."

5. sleep

"You look tired, Teddy Bear. I know you have been sick, so you'd better go to bed, so you will feel better when you wake up. I am going to put you to bed now."

a. put on lap and cradle in arms

b. lie down and tuck in covers

c. kiss good night

d. pick up in arms and rock to sleep

a. put on lap

b. insert medicine while cradling in arm

c. stroke throat and tummy of bear

Setting Instruction: "Teddy needs some medicine, so now you give Teddy his medicine."

3. water

"I'd better give you some water to help the medicine go down."

a. put on lap

b. tilt plastic glass while cradling in arm

Setting Instruction: "Teddy needs some water to help his medicine go down; so now you give Teddy his water."

4. see if Teddy is all right

"Good, Teddy; you took your medicine and water. I'd better see if you are better now, and see if you are still hot with a temperature."

a. put on lap

b. put hand on forehead

c. hug bear

Setting Instruction: "Teddy has taken his medicine and water, so now you check him to see if he is hot with a temperature."

5. sleep

"You look tired, Teddy Bear. I know you have been sick, so you'd better go to bed, so you will feel better when you wake up. I am going to put you to bed now."

a. put on lap and cradle in arms

b. lie down and tuck in covers

c. kiss good night

d. pick up in arms and rock to sleep

experimenter (who also served as model and one of the observers). Each child was asked to sit down and was shown how to play a dice-throwing game. This procedure was done to further reduce experimenter-strangeness and to equate all groups for the amount of time spent by the children in the training phase in experimenter-interaction. After this the child was asked to seat himself on one side of the teddy bear while the experimenter seated himself on the other chair. Then the experimenter asked the child, "Do you remember Teddy? He was watching the puppet show with you when I gave it." After acknowledgement by the child, the modelling procedure was begun, with the following Pretext Instruction:

> "Oh Teddy, you look sick. Do you hurt, Teddy Bear? You do? Oh my goodness! I do hope you are going to be all right, Teddy Bear. I'd better take care of you so that you will be all right."

Immediately after this instruction, the modelling sequences were commenced as follows:

1. <u>temperature-taking</u>

"Do you hurt, Teddy Bear? I'd better take care of you. I'd better take your temperature."

a. put on lap and cradle in arm

b. insert thermometer-device

c. stroke head

d. read thermometer-device

Setting Instruction: "Teddy is sick, so you take his temperature."

2. <u>medicine</u>

"I'd better give you some medicine, Teddy Bear, to make you feel better. Here is some medicine."

Setting Instruction: "Teddy is tired and sleepy now, and needs his sleep because he is sick. Now you put Teddy to bed."

6. feed bear

"Oh Teddy, you are waking up now! I can see your eyes opening. I'll bet you are hungry. I'd better feed you now. How would you like a nice piece of cake?"

a. put on lap and cradle in arm

b. feed with spoon

c. wipe mouth with napkin

Setting Instruction: "Teddy has awakened now, and is very hungry, so now you feed Teddy Bear so he will get well and strong."

After the modelling and imitation by the child of each sequence of behaviors (e.g. Number 6 "feed bear", a-c), the teddy bear was returned to his chair before the next sequence of behaviors was initiated. After the modelling of each sequence of behaviors the model gave the Setting Instruction of that sequence to the child, then waited at least 10 seconds for the child to imitate; if the child did not respond within the 10-second interval, the next modelling sequence was given (with no verbal prompting to imitate given). If, however, the child responded within 10 seconds, the experimenter observed and recorded the behavior without comment until the child indicated that he was finished responding to that sequence. If the child did not indicate that he was finished, the experimenter asked, "Are you finished?" After acknowledgement, the experimenter went on.

Scoring comprised of whether or not the child imitated the modelled behaviors. The frequency of concurrent affection and aggression also

was taken; this was scored by the same criterion (to be stated later) as for the free-play affectionate behavior and aggression of the subsequent free-play phase.

Pilot data showed that children engaged in concurrent behavior during the training phase, generally of an affectionate kind. Bandura, Ross, and Ross (1961, 1963) found "nonimitative aggression" to be an important finding, and Yarrow and Scott (1972) found "novel nurturant acts" as discriminators of their independent variables. It was expected then that the Imitative Caretaking group would produce more concurrent affectionate behavior than the other two groups. This result would suggest that certain affectionate concurrent behaviors may be members of the same response class as that of imitated behavior, with the modelling stimulus setting the occasion for their occurrence (Peterson, 1968).

Imitative Caretaking Group Procedure: Free-Play Phase.

After the modelling treatment phase was completed, the following free-play instruction was given to the child in order to commence this period:

> "Teddy has been sick, but is all well now, and would like to play with you. Play with Teddy Bear now for as long as you would like. I will be sitting in the next room, working on some papers. I will leave the door open so you can come and tell me when you are finished playing with Teddy. When you are finished playing with Teddy, you come in and say you are finished, and say you don't want to play with Teddy any more."

Then the model entered the observation room (situated next to the experimental room connected by a door and a one-way mirror), taking with him all stimulus objects of the Imitative Caretaking group except the teddy bear, which was left sitting on its chair in the experimental room. The experimenter (who always served as the model and one of the observers in this experiment) then situated himself, and asked the child if

he were all right; after ascertaining this, he again said, "Now play with Teddy" and commenced observation.

Two measures were recorded on the data sheet: (1) the number of 5-second intervals spent in play with the teddy bear in this period; and (2) the frequencies of affectionate behavior and aggression as per criteria to be stated. The sheet had a code for two possible behaviors, affectionate behavior and aggression, and a dash for any 5-second period in which neither of these occurred. An apparatus that delivered a tone (which the child could not hear) delivered a tone every 5 seconds via an earphone to the observer. The observer marked the appropriate coded behavior after each tone. Once a coded behavior occurred in any given 5-second period, that cell was considered filled (i.e., it was possible for only one occurrence of affectionate behavior or aggression to be recorded within any 5-second period; there was no instance in which both an affectionate behavior and aggression occurred within a single 5-second interval).

If the child left the experimental room and came into the observation room interrupting the observer without saying that he wished to stop his play with the teddy bear, the observer, without looking up or at the child, said, "I'm sorry, I cannot talk to you now; I am busy writing on these papers." Duration of interruptions were subtracted from the total duration measure of free-play.

The experimenter/model/observer was situated in the observation room out of view of the child because knowledge of group assignment may have caused the experimenter to act in such a way as to differentially cue the child to behave accordingly. In Bandura, Ross, and Ross' research (1961),

the child had to remain in a completely strange experimental setting for 20 minutes. In this experiment time spent in the experimental setting was considered a variable of interest, and consequently was free to vary. The child was instructed that the model would be close at hand in the next room, with no requirement that the child spend a relatively long period of time in the setting. Consequently it was believed that the child would not prematurely leave or feel that he must remain longer than he wished.

The criterion for the occurrence of an affectionate behavior in the free-play phase was as follows: (1) physical contact with the teddy bear with explicit affectionate behavior (stroking, hugging, kissing, fondling, patting, cuddling); or (2) neutral physical contact with the teddy bear, accompanied by affectionate verbalizations (e.g., "I like you;" "You have nice eyes") directed towards the teddy bear; or (3) the teddy bear used as an instrument of affection (e.g., teddy bear hugs an imaginary friend). The criterion for the occurrence of an aggressive behavior was as follows: (1) physical contact with the teddy bear with explicit aggressive behavior (e.g., throwing the teddy bear, punching the teddy bear); or (2) neutral physical contact accompanied by aggressive verbalizations (e.g., "I hate you, teddy bear;" "You are ugly"); or (3) using the teddy bear as an instrument of aggression (e.g., teddy bear hits another object).

There were two dependent measures of the free-play phase. The first measure was the frequency of affectionate behavior and aggression during this phase. Like Bandura, Ross, and Ross (1961,1963), this study measured physical aggression, but unlike them, was focused primarily upon affectionate behavior. The reason that aggression was considered at all

was that Acker, Acker, and Pearson (1973) found that prior imitative physical contact training increased not only generalized imitative affection, but also generalized imitative aggression. Insofar as the treatments had physical contact elements, aggression in the free-play phase may have been effected.

The second dependent variable was the amount of time (within the nearest 5 seconds) spent in play with the teddy bear during the free-play phase. Cheyne (1971) used a temporal measure. The reason for this measure was so that the proportion of time spent in affectionate, aggressive, and neutral behavior could be computed.

Instructed Caretaking Group Procedure.

This group was treated in the same manner as the Imitative Caretaking group in the familiarization procedure and introduction to the setting. The same experimental setting and apparatus were used in this procedure as were used in the Imitative Caretaking procedure.

The experimenter then gave the child the same Pretext Instruction as that used in the Imitative Caretaking group procedure; then he immediately gave the first Setting Instruction as used in the Imitative Caretaking group procedure. The experimenter delivered the first instruction, and waited at least 10 seconds for the child to respond; if the child did not respond within the 10-second interval, the next Setting Instruction was given, and so on until all six Setting Instructions were given. In all other particulars, the experimenter behaved in the same manner as that for the Imitative Caretaking group procedure.

After completion of the treatment phase, the experimenter immediately gave the same instructions as were given to the Imitative Caretaking group for the commencing of the free-play period. The experimenter acted in the

same manner (situating himself in the next room to observe) as that of the Imitative Caretaking group.

During the training phase, this group was scored for concurrent affection and aggressive behavior. As there was no imitation training in this group, imitation rate was not scored. Instead, this group was scored for acts resemblant to the modelled acts of the Imitative Caretaking group. Any behavior which was topographically similar to one of the modelled acts of the Imitative Caretaking group was scored. Additionally, the number of physical contact behaviors and caretaking behaviors made by the child towards the teddy bear were scored. This group was scored in the same manner as the Imitative Caretaking group for all generalized affectionate and aggressive behavior in the free-play phase.

By comparison of the Instructed Caretaking group to the Imitative Caretaking group and the Control, it was possible to determine whether instructions were sufficient to produce affectionate behavior, or whether (additionally) modelling was necessary. This group also allowed assessment of the natural rate of generalized affectionate behavior set by merely the Pretext Instruction and Setting Instructions. This should render some information in regards to the ability of instructions (to caretake) to induce affectionate behavior.

Control Group Procedure.

This group was treated in the same manner as the Imitative Caretaking group in the familiarization procedure and introduction to the setting. The same experimental setting was used, but the only materials used were the teddy bear sitting on a single chair in the middle of the

room.

Following this, the child was given the same instruction that commenced the free-play of the other two groups. The experimenter acted in the same manner as in the treatment groups (situating himself in the next room to observe).

As there was no training phase, data collected for this group were the data of the free-play phase of the other two groups.

This group was contrasted with the Imitative Caretaking group, making it possible to determine whether or not modelling was effective in producing free-play affectionate behavior. Likewise, by contrasting the Instructed Caretaking group with this Control, it was possible to determine whether or not instructions effect free-play affection. Thus this Control group served as a baseline of the natural frequence of occurrence of free-play affectionate behaviors, with no treatment applied other than the simple free-play instruction (which was free of any emotive component) mentioned above.

Results

(See Appendix A for tests of homogeneity of variance on selected ANOVAs.)

Reliability Data.

Inter-observer reliability for the training data was assessed. It was computed by the same formula as above. Imitative Caretaking reliability for imitations and partial imitations was 100%, for concurrent affectionate behavior and aggressive behavior, 90%. These data were taken on 20% of the subjects selected at random. Reliability for the Instructed Caretaking group for acts resemblant to modelled acts of the Imitative Caretaking group was 100%; for the caretaking acts, 100%; and for physical contact acts, 100%. These data were taken on 20% of the subjects chosen randomly from the group.

Inter-observer reliability for the free-play data were taken and assessed at 87%. It was computed by the following formula: Total Agree/(Total Agree + Disagree) of 5-second intervals of affection and aggression. The data were taken by two observers (experimenter and a fifth-year female education student) on 47% of the subjects distributed equally across groups and selected randomly.

Dependent Measures Data.

In order to assess whether or not significant differences existed as regards free-play affectionate behavior between the Groups and the Sexes, the first analysis was a 3 X 2 analysis of variance (ANOVA) for the three groups (Imitative Caretaking, Instructed Caretaking, and Control) and sex (male and female) of the mean proportion of total free time in which affectionate behavior intervals occurred (affection). Each subject's score was computed by dividing the total number of 5-second intervals by that subject's total time in 5-second intervals

spent in free-play. The summarized data are presented in Table 1 and the summarized results of the analysis are presented in Table 2. It can be seen that the overall Groups effect was significant, accounting for 26.53% (Eta^2) of the variance, while Sex and its interaction with the Groups were not, both of which accounted for a negligible percent of the variance.

The results of a planned F-test found that the Imitative Caretaking group ($\bar{X}$ = .445) produced significantly more affectionate behavior than the Control group ($\bar{X}$ = .079), $F_{(1,24)} = 7.957$, $p < .01$. A planned Tukey Honestly Significant Difference (HSD) test was performed upon the remaining comparisons of the levels of the groups because they were not orthogonal and to control for the experimentwise error rate. The Imitative Caretaking group produced significantly more affectionate behavior than the Instructed Caretaking group ($\bar{X}$ = .138), HSD(24) = .267, difference between means = .307, $p < .05$. The Instructed Caretaking group did not show significantly more affectionate behavior than the Control group, HSD(24) = .276, difference between means = .0589, not significant.

A 1 X 3 ANOVA was performed upon the total time spent in free-play across the three groups, collapsed across Sex (because it and its interaction with the Groups were not significant in the overall analysis), and was found to be significant, $F_{(2,27)} = 3.513$, $p = .044$. An unplanned Tukey HSD test was performed upon the levels of the groups, with the summarized results of this analysis presented in Table 3.

It can be seen that the Imitative Caretaking group was significantly different from the Control group in regards to total time spent in free-

Table 1

Means and Standard Deviations of the Proportion of Total Free Time in Which Affectionate Intervals Occurred for Each Condition

Condition	N	Mean	Standard Deviation
Imitative Caretaking (male)	5	.513	.454
Imitative Caretaking (female)	5	.376	.433
Instructed Caretaking (male)	5	.071	.104
Instructed Caretaking (female)	5	.205	.276
Control (male)	5	.029	.064
Control (female)	5	.130	.140

Table 2

Summary of the ANOVA of the Mean Proportion of Total Free Time in Which Affectionate Intervals Occurred

Source	DF	MS	F	% of Variance (Eta^2)
Groups	2	.3849	4.59*	26.53
Sex	1	.0078	0.09	0.30
Groups X Sex	2	.0549	0.65	3.78
Error	24	.0839		
Totals	29			

*p = .021

Table 3

Unplanned Tukey HSD Test Performed Upon the Levels of the Groups for Total Time Spent in Free-Play, Collapsed Across Sex

Difference Among Means

Group	Control	Instructed Caretaking	Imitative Caretaking
Control $\bar{X}$ = 9.500	-	4.500	18.100*
Instructed Caretaking $\bar{X}$ = 14.000	-	-	13.600
Imitative Caretaking $\bar{X}$ = 27.600	-	-	-

*(df = 24) $p < .05$

play.

Because the total time spent in free-play differed across groups, it is possible that the significant differences between groups as regards affectionate behavior could be reflecting an increasing probability of occurring with the passage of time. In order to test this possibility and to assure that the probability of affection was independent of time spent in free-play, correlations were performed upon the proportion of affectionate behavior to total time spent in free play. These results showed that the relationship was consistently low across groups: Imitative Caretaking, $r(9) = .17$; Instructed Caretaking, $r(9) = .03$; Control, $r(9) = .28$; overall, $r(29) = .35$; there existed no significant relationship. These results suggested that the differences obtained between groups as regards the proportion of affectionate behavior was not an artifact of the differences between groups as regards total time spent in free play.

An analysis of the mean proportion of the total free time in which aggressive intervals occurred (aggression) could not be performed because the Imitative Caretaking and Instructed Caretaking groups produced no amount of aggression while the Control group produced only a very small amount (eleven occurrences of 5-second intervals of aggression), as may be seen in Table 4. It can be seen, however, that the Imitative Caretaking and Instructed Caretaking groups produced less aggression than the Control group.

In order to assess whether or not significant differences existed as regards concurrent affectionate behavior between the Groups and Sexes, a 2 X 2 ANOVA for the two Groups (Imitative Caretaking and

Table 4

Mean Proportion of Total Free Time Spent in Affectionate and Aggressive Behavior for the Groups Collapsed Across Sex

Group	Control	Instructed Caretaking	Imitative Caretaking
Proportion of Affection	.079	.138	.445
Proportion of Aggression	.103	.000	.000

Instructed Caretaking) and Sex (male and female) was performed upon the number of concurrent affectionate behaviors produced during the training phase. The summarized results are presented in Table 5, and the summarized analysis is presented in Table 6. It can be seen that the overall Groups effect was significant, accounting for 23.84% (Eta^2) of the variance, while Sex and its interaction with the Groups were not, accounting for a negligible percent of the variance.

A planned Tukey HSD test was performed upon the mean number of concurrent affectionate behaviors of the groups collapsed across sex. The Imitative Caretaking group produced significantly more concurrent affectionate behavior than did the Instructed Caretaking group, HSD(24) = 2.101, difference between means = 2.300, $p < .05$.

Fisher Exact Probability Tests were performed upon the training data (using the number of subjects exhibiting one or more instances of a behavior) categorized as to sex in various manners. The results showed that sex was not a significant factor for the training data of the Imitative Caretaking and Instructed Caretaking groups. The data for the Imitative Caretaking group are presented in Table 7 and the data for the Instructed Caretaking group are presented in Table 8. Probability values obtained in the Fisher Exact Probability Tests on this data are given in Table 9.

To assess whether the Imitative Caretaking group produced significantly more caretaking behavior than the Instructed Caretaking group, a 1 X 2 ANOVA was performed upon the mean number of imitations (Imitative Caretaking, $\bar{X} = 12.889$) compared with the mean number of resemblant acts (acts topographically like the modelled acts)+ caretaking acts (Instructed Caretaking, $\bar{X} = 4.700$), and was found to be significant, $F_{(1,17)} = 22.980$,

Table 5

Means and Standard Deviations of the Number of Concurrent Affectionate Behaviors of the Imitative Caretaking and Instructed Caretaking Groups During Training, Collapsed Across Sex

Group	N	Mean	Standard Deviation
Instructed Caretaking	10	0.300	.483
Imitative Caretaking	10	2.600	3.026

Table 6

Summary of the ANOVA of the Mean Number of Concurrent Affectionate Behaviors Produced During Training of the Imitative Caretaking and Instructed Caretaking Groups

Source	DF	MS	F	% of Variance (Eta^2)
Groups: Concurrent Affection	1	26.450	5.111**	23.84
Sex	1	1.250	0.241	1.13
Groups: Concurrent Affection X Sex	1	0.450	0.087	0.41
Error	16	5.175		
Totals	19			

**p = .038

Table 7

Training Data of the Imitative Caretaking Group

Subject	Imitations (19 Possible)	Partial Imitations	Concurrent Affection	Concurrent Aggression	% Imitated
Male					
1	6	2	4	0	31.58
2	14	0	1	0	73.68
3	10	1	0	0	52.63
4	17	0	1	0	89.47
5	17	0	5	0	89.47
Female					
6	9	2	0	0	47.37
7	12	1	1	0	63.16
8	15	0	0	0	78.95
9	15	0	5	0	78.95
10	16	0	9	0	84.21
					$\bar{X}$ = 68.95

Table 8

Training Data of the Instructed Caretaking Group

Subject	Resemblant Acts + Caretaking Acts	Concurrent Affectionate Acts	Resemblant Acts + Physical Contact Acts	Aggressive Acts
Male				
11	6	0	2	0
12	0	0	0	0
13	5	0	3	0
14	9	1	7	0
15	0	0	0	0
Female				
16	4	1	3	0
17	8	1	4	0
18	3	0	0	0
19	2	0	1	0
20	10	0	7	0

Table 9

Fischer Exact Probability Test Performed Upon the Training Data Between Sexes Categorized in Various Manners of the Imitative Caretaking and Instructed Caretaking Groups

Test	p*
Imitative Caretaking:	
Male vs. Female	1.000
Imitative Caretaking, Concurrent Affectionate Acts:	
Male vs. Female	.417
Instructed Caretaking, Resemblant Acts + Caretaking Acts:	
Male vs. Female	.480
Instructed Caretaking, Resemblant Acts + Physical Contact Acts:	
Male vs. Female	.705

*p = exact probability (two-tailed)

$p < .0001$, suggesting that the Imitative Caretaking group produced more caretaking behavior than the Instructed Caretaking group during training.

To assess whether the Imitative Caretaking group produced significantly more physical contact acts than the Instructed Caretaking group, a 1 X 2 ANOVA was performed upon the mean number of imitations (Imitative Caretaking, $\bar{X} = 12.889$) compared with the mean number of resemblant acts + physical contact acts (Instructed Caretaking, $\bar{X} = 2.700$), and was found to be significant, $F_{(1,17)} = 5.012$, $p < .05$, demonstrating that the Imitative Caretaking group produced significantly more physical contact behavior than the Instructed Caretaking group during training.

To determine whether there was a relationship between the proportion of affectionate behavior in free-play and the number of caretaking imitations produced during training of the Imitative Caretaking group, a correlation was performed, $r(9) = .25$, $p > .50$, demonstrating no significant relationship. To determine whether there was a relationship between the proportion of affectionate behavior in free-play and the number of resemblant acts + physical contact acts of the Instructed Caretaking group, a correlation was performed, $r(9) = .59$, $p < .06$, demonstrating no significant relationship. However, these results suggest that prior physical contact experiences *per se* may be important in producing the affectionate behavior displayed during free-play. To determine whether there was a relationship between the proportion of affectionate behavior in free-play and the number of resemblant acts + caretaking acts, a correlation was performed, $r(9) = .53$, $p < .09$, demonstrating no significant relationship. These results suggest that imitative caretaking *per se* may be related to the production of affectionate

behavior during free play. These results, though not demonstrating significant relationships, have low p values, that may suggest that the variables of physical contact and caretaking are worth further experimental exploration. These confounded factors were unconfounded systematically by experimental manipulation of them in Experiment II.

Discussion

Experiment I demonstrated that the experimental analysis of affection-like behavior is possible. The Imitative Caretaking group produced significantly more free-play affectionate behavior than did the Instructed Caretaking and Control groups. The Instructed Caretaking group produced no significantly greater free-play affectionate behavior than the Control group.

Although the Imitative Caretaking group produced more total time in free-play with the teddy bear than the other two groups, free-play affectionate behavior was demonstrated to be independent of time, and therefore the greater amount of time spent in free-play was not a factor in producing the greater free-play affectionate behavior.

The Imitative Caretaking and Instructed Caretaking groups produced no amount of aggression, whereas the Control group produced it at a very low frequency. Therefore there is some suggestion that the procedures of the former two groups may have inhibited aggressive behavior relative to the Control group. However, as aggressive behavior occurred in such a small amount in the Control group and was not explicitly experimentally manipulated, conclusions as regards aggressive behavior cannot be made. Further research is suggested, however, to explore the possibility that conditions which encourage free-play affectionate behavior may also, at the same time, mitigate aggression.

Experiment I also demonstrated that the Imitative Caretaking group produced a significantly greater amount of concurrent affectionate behavior (and absolutely no occurrences of concurrent aggression) than did the Instructed Caretaking group during the training phase. This was

in accord with Bandura, Ross, and Ross (1961, 1963) who found that children produced concurrent novel aggressive acts during the modelling procedures, which they noted as "non-imitative aggression"; it is also in accord with Yarrow and Scott (1972) who found that children also produced concurrent "novel nurturant acts" during the modelling procedure. The concurrent affectionate acts of the present study may be members of the same response class as the imitative caretaking acts of the Imitative Caretaking group, set by the occasion of modelling stimuli during training.

An analysis of the training data of Experiment I showed that the children had a mean imitation rate of 69% in the Imitative Caretaking group (which was free to vary, with no verbal prompting of the child to imitate). On all measures, no significant main effect or Groups X Sex interaction was found. Apparently the phenomena studied here are not sex-dependent.

Because the stimulus items (plastic spoon, plastic glass, etc.) of the treatments (except the teddy bear) and the model were removed from view of the children during the free-play period, this experiment provided a test of the response generalization of the treatments to the free-play period. Despite the withdrawal of these items, generalized free-play affectionate behavior was produced by the children of the Imitative Caretaking group. Unlike Bandura, Ross and Ross (1961, 1963), in the present research the training and testing room were the same room. Therefore, this fact may limit the statements in regards to generalization, as the contextual cues provided by the training phase may have encouraged affectionate behavior during the free-play phase. However, most of the stimulus items of the training phase were removed from the experimental

room, except the Teddy Bear. In Bandura, Ross, and Ross (1961, 1963), the stimulus items of the training were present in the testing situation, and stimulus items (e.g. a toy gun) for which children may have a history of reinforcement for aggression were present. This was therefore a delimitation upon the inferences of generalization data of these authors.

The results of the Instructed Caretaking group of Experiment I demonstrated little production of free-play affectionate behavior. The children of this group during training produced very little instructed caretaking behavior. Consequently, not having the more effective imitative caretaking experiences provided by the Imitative Caretaking group, the Instructed Caretaking group appeared not to have the requisite training to produce subsequent free-play affectionate behavior. Previous research supports the weakness of instruction procedures to control behavior. Steinman (1970) found that retarded children may have weak histories of reinforcement for compliance with social demands, so that other social demand characteristics may be ineffective means by which to control behavior. Similarly, Oliver, Acker, and Strong (1976) speculated that young children may not have very strong histories of reinforcement for compliance with social demands, and consequently may be under less instructional control than older children. Martin (1971) has additional evidence for the weakness of instructional control in that he demonstrated that verbal instructions were not sufficient to maintain either imitative or non-imitative behavior in young children unless direct reinforcement was made contingent upon these behaviors.

An alternative explanation of the results of the Instructed Caretaking group's ineffectiveness to produce free-play affectionate behavior is that the children simply did not "know how to be affectionate" and that it was

necessary to "teach" them with the procedures of the Imitative Caretaking group. The evidence, however, showed that the Control group produced a mean proportion ($\bar{X}$ = .079) of free-play affectionate behavior, and that five of the ten children of this group showed one or more instances of 5-second intervals of free-play affectionate behavior. This suggests that the natural frequency of affection in young children may be at a low rate, and not that they do not "know how to be affectionate". This further implies that the procedures of the Imitative Caretaking group set the occasion for the production of free-play affectionate behavior in young children who already may have affectionate behavior in their repertoire. Thus, the Imitative Caretaking procedure may have acted as a "facilitatory" treatment of already existing affectionate behavior, rather than as a "teaching" procedure for entirely novel behavior.

The Imitative Caretaking group produced significantly more caretaking and physical contact behavior than the Instructed Caretaking group. Because the Instructed Caretaking group did not significantly differ from the Control as regards free-play affectionate behavior, it is possible that either the act of imitative caretaking or physical contact or both in combination may have been the critical experiences needed to produce free-play affectionate behavior in the Imitative Caretaking group. In addition, the high but non-significant correlations between resemblant acts + physical contact acts and free-play affectionate behavior, and between resemblant acts + caretaking acts and free-play affectionate behavior, additionally suggest that either of these two variables may have been the effective one in producing free-play affectionate behavior in the Imitative Caretaking group. Consequently these two factors of imitative caretaking and physical contact were unconfounded and system-

atically explored in Experiment II.

III. EXPERIMENT II

Experiment II was the study of the effects of imitative caretaking, non-imitative caretaking, and imitative neutral physical contact upon free-play and concurrent affectionate behavior. The experiment consisted of two stages: a training phase in which 100%-criterion imitation was demanded in both imitation groups; this was followed by a two-phase free-play period during which generalization data were taken for all three groups.

Three groups were set in Experiment II: a) an Imitative Caretaking group (replicate of a group of the same name in Experiment I); b) a Non-Imitative Caretaking group (modelled caretaking stimuli kept constant, but physical contact and imitation response obviated); and c) an Imitative Neutral Physical Contact group (physical contact kept constant, but the caretaking context obviated). Consequently, the confounded factors of imitative caretaking and physical contact of Experiment I were systematically varied so as to unconfound them and to explore their effects upon free-play affectionate behavior. A second purpose of Experiment II was to replicate the results of the treatment effect of the Imitative Caretaking group of Experiment I by a similar group in Experiment II, thus to investigate the reliability of the phenomena. A third purpose of Experiment II was to increase the magnitude of the treatment effect and to decrease the variability by demanding 100%-criterion imitation in the two imitation groups. This was done in order to determine if the treatment effect of Experiment I was at ceiling or whether it could be increased, thus increasing experimental control. Experiment II also controlled for the amount of time the child spent

with the teddy bear during training in all three groups by keeping time constant. Therefore, differential familiarity with the toy object could not account for the results.

Method

Subjects, Apparatus, and Experimental Setting.

Fifteen boys and fifteen girls served as subjects in this experiment. All subjects were drawn from two preschools within the Victoria, British Columbia area. Only children who had received parental approval were selected to serve as subjects. The children ranged in age from 3 years, 1 month to 5 years of age, with the mean age at 4.43 years.

Five boys and five girls were randomly assigned to each of three groups: a) an Imitative Caretaking group (replicate of the group of the same name of Experiment I, $\bar{X}$ age 4.80); b) a Non-Imitative Caretaking group ($\bar{X}$ age 4.25); and c) an Imitative Neutral Physical Contact group ($\bar{X}$ age 4.25).

Imitative Caretaking Group Procedure.

The procedure of the Imitative Caretaking group during the training phase was exactly the same as in Experiment I, except that 100%-criterion imitation was required, and when a child failed to produce an imitation he was prompted with the instruction "Will you do this?" concomitant to again modelling the behavior. The procedure for this group during the free-play period was exactly the same as that for Experiment I except in one respect: after the child returned to the experimenter and indicated that he did not wish to play with the teddy bear any more, that point was indicated on the data sheet (hereafter noted as the pre-compelled phase) and the experimenter stated to the child, "Oh, I'm not finished marking these papers; you go on and continue playing with Teddy until I am finished," and continued observing until 5 minutes total time had elapsed (hereafter noted as the post-compelled phase). The last 5-second

interval in which the child free-played under the instruction "Play with teddy bear for as long as you like..." was marked on the data sheet, so that the data before and after could be partioned into the pre-compelled and post-compelled components.

Non-Imitative Caretaking Group Procedure.

The procedure for the Non-Imitative Caretaking group was exactly the same as the procedure of the Imitative Caretaking group of Experiment II except in this respect: during training, the child was not allowed to physically contact the bear or to imitate the modelled acts; instead the child was instructed to participate by handing over the caretaking stimulus items (plastic glass, thermometer-device, etc.) so that the model could use them to caretake the teddy bear. In this manner this group was equated with the Imitative Caretaking group with respect to modelled caretaking, but was disallowed from physically contacting the toy teddy bear.

The children were given the Pretext Instruction of the Imitative Caretaking group of Experiment I and the following instructions, which preceded the modelling sequence in each case:

1. "Teddy is sick, so you hand me the thermometer so I can take his temperature."
2. "Teddy needs some medicine, so now you hand me his medicine (pill) so I can give Teddy his medicine."
3. "Teddy needs some water to help his medicine go down, so now you give me the glass so I can give Teddy his water."
4. "Teddy has taken his medicine and water, so now you look and see if he is still hot with temperature."

5. "Teddy is tired and sleepy now, and needs his sleep because he is sick, so now you give me the cover (blanket) so I can put Teddy to bed."
6. "Teddy has awakened now and is very hungry, so now you give me the spoon and napkin (serviette) so I can feed Teddy Bear so that he will get well and strong."

The free-play period (with two phases) was conducted in the same manner as for the Imitative Caretaking group of Experiment II.

Imitative Neutral Physical Contact Group Procedure.

The procedure for the Imitative Neutral Physical Contact group was exactly the same as for the other two groups of Experiment II, except for the training phase, in which the first neutral physical contact behavior was modelled; if the child failed to imitate, the behavior was again modelled and prompted by "Will you do this?" and so on for the remaining 19 neutral physical contact behaviors until 100%-criterion imitation was achieved. In this manner this group was equated for physical contact as the Imitative Caretaking group, but obviated the caretaking context by use of neutral physical contact behaviors. Prompts required to produce 100%-criterion imitation were scored for each behavior. The neutral physical contact behaviors used were as follows:

1. touch arm of animal
2. touch nose of animal
3. pick up animal with one hand and put down
4. lift leg of animal
5. touch animal on head with finger
6. touch animal on stomach with finger

7. rotate animal 360 degrees on horizontal plane

8. touch ear of animal

9. move arm of animal

10.-19. repeat above

20. turn animal on stomach, lying down

The free-play period (with two phases) was conducted in the same manner as the Imitative Caretaking group of Experiment II.

Results

Reliability Data.

Inter-observer reliability for the free-play data was taken and assessed at 97% in the same manner as in Experiment I. The data were taken on 45% of the subjects distributed equally across groups with subjects selected randomly.

Inter-observer reliability from the training data was assessed at 100% for concurrent affectionate behavior, aggression, and number of prompts to reach 100%-criterion imitation in the two imitation groups. The data were taken on 36% of the subjects in the same manner as that of Experiment I, distributed across groups and selected randomly.

Dependent Measures Data.

To assess whether significant differences existed as regards free-play affectionate behavior between the Groups and the Sexes in the pre-compelled phase, a 3 X 2 ANOVA for the three groups was performed upon the mean proportion of the total free time in which affectionate intervals occurred. Each subject's score was computed by dividing the total number of 5-second intervals by that subject's total time in 5-second intervals spent in free-play (replicate of the same group and analysis of Experiment I). The summarized data are presented in Table 10, and the summarized results for this analysis are presented in Table 11. It can be seen that the overall Groups effect was significant (accounting for a strengthened percent of the variance of 59.94%, Eta^2, and replicating the results of Experiment I); Sex was not significant, but the Groups X Sex interaction was significant, accounting for 8.89% (Eta^2) of the variance.

Table 10

Means and Standard Deviations of the Proportion of Total Free Time in Which Affectionate Intervals Occurred for Each Condition in the Pre-Compelled Phase

Condition	N	Mean	Standard Deviation
Imitative Neutral Physical Contact (male)	5	.080	.152
Imitative Neutral Physical Contact (female)	5	.004	.089
Non-Imitative Caretaking (male)	5	.052	.058
Non-Imitative Caretaking (female)	5	.024	.054
Imitative Caretaking (male)	5	.314	.292
Imitative Caretaking (female)	5	.568	.142

Table 11

Summary of the ANOVA of the Mean Proportion of the Total Free Time in Which Affectionate Intervals Occurred in the Pre-Compelled Phase

Groups	DF	MS	F	% of Variance (Eta^2)
Groups	2	.5360	23.872**	59.94
Sex	1	.0188	0.835	1.05
Groups X Sex	2	.0795	3.539*	8.89
Error	24	.0335		
Totals	29			

*p = .045
**p < .001

A planned Newman-Keuls analysis performed on the means of the levels of the Groups factor demonstrated that the males and females of the Imitative Caretaking group were significantly more affectionate than either of the two other groups of both sexes, and that the females of the Imitative Caretaking group produced more affectionate behavior than did the males. The summarized results are presented in Table 12.

In order to assess whether significant differences existed as regards the magnitude of treatment effect of the Groups factor of Experiment I (Eta^2 = 26.53%) compared with the same factor of Experiment II (Eta^2 = 59.94%) of the free-play affectionate behavior (pre-compelled phase for Experiment II), a post-hoc test developed by Fischer and suggested by Snedecor and Cochran (1967) was utilized. This involved the transformation of the correlation coefficient to a z-score (because of its non-linearity) and then back to a correlation (made linear by the computation procedure), with a Chi-square as the test statistic, $\chi^2(1) = 44.584$, $p < .001$. This result suggested that by requiring children to perform 100%-criterion imitation in Experiment II (not demanded in Experiment I), the magnitude of the treatment effect may have been increased. This suggested that this manipulation may have increased the amount of variance accounted for.

In order to assess whether significant differences existed as regards the treatment variance of the Groups factor of Experiment I (.385) as compared with the same factor in Experiment II (.536), a post-hoc test suggested by Rosenblood (personal communication, 1976) was utilized, $\underline{F}_{(2,2)} = 1.393$, $p > .50$. This suggested that treatment variance was not significantly increased by demanding 100%-criterion

Table 12

Summary of the Planned Newman-Keuls Test of the Mean Proportion of Total Free-Play Time in Which Affectionate Intervals Occurred for Each Condition in the Pre-Compelled Phase

	Differences Among Means					
Condition	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_4$	$\bar{X}_5$	$\bar{X}_6$
Imitative Neutral Physical Contact (female) $\bar{X}_1$ = .004	-	.019	.020	.048	.310*	.564**
Imitative Neutral Physical Contact (male) $\bar{X}_2$ = .023	-	-	.001	.029	.291*	.545**
Non-Imitative Caretaking (male) $\bar{X}_3$ = .024	-	-	-	.028	.290*	.544**
Non-Imitative Caretaking (female) $\bar{X}_4$ = .052	-	-	-	-	.262*	.534**
Imitative Caretaking (male) $\bar{X}_5$ = .314	-	-	-	-	-	.254*
Imitative Caretaking (female) $\bar{X}_6$ = .568	-	-	-	-	-	-

*$p < .05$
**$p < .01$

imitation in Experiment II.

In order to assess whether significant differences existed as regards the MS error variance of Experiment I (.084) as compared to Experiment II (.034), a post-hoc test suggested by Rosenblood (personal communication, 1976), was utilized, $F_{(24,24)} = 2.50$, $p < .05$. This suggested that the MS error variance significantly decreased going from Experiment I to Experiment II. Thus it is plausible, but not a firm conclusion, that the reason for this decrease in error variance in Experiment II was a result of requiring 100%-criterion imitation which was not demanded in Experiment I.

In order to further probe the significant decrease in error variability, and to assess whether significant differences existed as regards the variance of the Imitative Caretaking group of Experiment I compared with Experiment II, post-hoc F-tests (suggested by Snedecor and Cochran [1967]) were performed upon the variances of the two sexes. The boys of Experiment II (Var. = .085) did not produce significant reduction in variability compared to Experiment I (Var. = .206), $F_{(4,4)} = 2.42$, $p < .25$; however the reduction was in the predicted direction in the Imitative Caretaking group of Experiment II. The girls of Experiment II (Var. = .020) produced a significant reduction in variability as compared with the girls of Experiment I (Var. = .187) in the Imitative Caretaking groups, $F_{(4,4)} = 9.35$, $p < .05$. These results suggested that by requiring 100%-criterion imitation in Experiment II (not demanded in Experiment I), variability was decreased, thus increasing the effectiveness of this manipulation to control free-play affectionate behavior.

The general conclusion that may be made in regards to the analyses on the magnitude of treatment effects, treatment variance, MS error

variance, and the variances of the Imitative Caretaking group (boys and girls) of Experiment I compared with Experiment II, is that the significant differences may have been a result of requiring that 100%-criterion imitation be performed in the imitation groups of Experiment II. This suggests (though is not a firm conclusion because the conditions of Experiment II were not exactly the same as those of Experiment I) that experimental control was strengthened in Experiment II as compared with Experiment I.

To assess whether significant differences existed as regards free-play affectionate behavior between the Groups and Sexes in the post-compelled phase, a 3 X 2 ANOVA for the three Groups and Sex was performed on the mean proportion of total free-play time in which affectionate intervals occurred. The analysis also allowed for a replication of the results of the Imitative Caretaking group of Experiment I by the analogous group of Experiment II. The summarized data are presented in Table 13, and the summarized analysis is presented in Table 14. It can be seen that the overall Groups effect was significant, accounting for 29.21% (Eta^2) of the variance, while Sex and its interaction with the Groups was not significant, accounting for a negligible percent of the variance.

A planned Tukey HSD Test was performed upon the proportion of total free time in which affectionate intervals occurred for the levels of the groups in the post-compelled phase, collapsed across sex. The results are presented in Table 15.

To assess whether significant differences existed as regards free-play affectionate behavior between the Groups and the Sexes, a 3 X 2 ANOVA was performed for the three Groups (Imitative Caretaking, Non-

Table 13

Means and Standard Deviations of the Proportion of Total Free-Play Time in Which Affectionate Intervals Occurred for the Groups in the Post-Compelled Phase Collapsed Across Sex

Group	N	Mean	Standard Deviation
Imitative Neutral Physical Contact	10	.021	.059
Non-Imitative Caretaking	10	.012	.021
Imitative Caretaking	10	.113	.113

Table 14

Summary of the ANOVA of the Mean Proportion of Total Free Time in Which Affectionate Intervals Occurred for the Groups in the Post-Compelled Phase

Source	DF	MS	F	% of Variance (Eta^2)
Groups	2	.0312	5.179**	29.21
Sex	1	.0001	0.199	0.06
Groups X Sex	2	.0033	0.542	3.06
Error	24	.0060		
Totals	29			

**p = .014

Table 15

Summary of the Planned Tukey HSD Test Performed Upon the Proportion of Total Free Time in Which Affectionate Intervals Occurred for the Levels of the Groups Factor in the Post-Compelled Phase Collapsed Across Sex

Group	Difference Among Means		
	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$
Imitative Neutral Physical Contact $\bar{X}_1 = .012$	-	.009	.101*
Non-Imitative Caretaking $\bar{X}_2 = .021$	-	-	.092*
Imitative Caretaking $\bar{X}_3 = .113$	-	-	-

*(df = 24) $p < .05$

Imitative Caretaking, and Imitative Neutral Physical Contact) and Sex (male and female) of the mean number of 5-second intervals in which affectionate behavior occurred over the total time of 5 minutes. The analysis also provided for a replication of the Imitative Caretaking group of Experiment I. The summarized data are presented in Table 16 and the summarized results of this analysis are presented in Table 17. It can be seen that the overall Groups effect was significant, (accounting for 44.00% of the variance), while Sex and its interaction with the Groups were not, both of which accounted for a negligible percent of the variance.

A planned Tukey HSD Test was performed upon the mean number of 5-second intervals in which affectionate behavior occurred over the total time of 5 minutes of the levels of the Groups factor (collapsed across Sex because it and its interaction with the Groups in the overall analysis were not significant). The summarized analysis is presented in Table 18.

To assess whether significant differences existed as regards concurrent affectionate behavior between Groups and Sexes, a 3 X 2 ANOVA was performed for the three Groups and Sex upon the mean number of concurrent affectionate behaviors produced during the training stage. The summarized data are presented in Table 19; the summarized analysis is presented in Table 20.

A planned Tukey HSD Test was performed upon the mean number of concurrent affectionate behaviors of the levels of the Groups factor during training collapsed across Sex. The results of this analysis are presented in Table 21, which shows that the Imitative Caretaking group produced significantly more concurrent affectionate behavior than

Table 16

Means and Standard Deviations of the Number of 5-Second Intervals in Which Affectionate Behavior Occurred Over the Total Time of 5 Minutes of the Groups Factor, Collapsed Across Sex

Groups	N	Mean	Standard Deviation
Imitative Neutral Physical Contact	10	1.700	4.347
Non-Imitative Caretaking	10	2.300	2.214
Imitative Caretaking	10	15.000	11.652

Table 17

Summary of the ANOVA of the Mean Number of 5-Second Intervals in Which Affectionate Behavior Occurred Over the Total Time of 5 Minutes

Source	DF	MS	F	% of Variance (Eta^2)
Groups	2	564.233	9.878**	44.000
Sex	1	43.200	0.393	1.684
Groups X Sex	2	11.100	0.825	0.865
Error	24	57.117		
Totals	29			

**p = .001

Table 18

Planned Tukey HSD Test Performed Upon the Mean Number of 5-Second Intervals in Which Affectionate Behavior Occurred Over the Total Time of 5 Minutes of the Levels of the Groups Factor Collapsed Across Sex

	Difference Among Means		
Group	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$
Imitative Neutral Physical Contact $\bar{X}_1 = 1.700$	-	.600	13.30**
Non-Imitative Caretaking $\bar{X}_2 = 2.300$	-	-	12.70**
Imitative Caretaking $\bar{X}_3 = 15.00$	-	-	-

**(df = 24) $p < .01$

Table 19

Means and Standard Deviations of the Number of Concurrent Affectionate Behaviors of the Groups Collapsed Across Sex Produced During Training

Group	N	Mean	Standard Deviation
Imitative Neutral Physical Contact	10	0.300	0.483
Non-Imitative Caretaking	10	0.300	0.483
Imitative Caretaking	10	3.900	3.755

Table 20

Summary of the ANOVA of the Mean Number of Concurrent Affectionate Behaviors Produced During the Training

Source	DF	MS	F	% of Variance (Eta^2)
Groups	2	43.200	8.075**	39.72
Sex	1	0.833	0.156	0.383
Groups X Sex	2	0.933	0.175	0.858
Error	24	5.350		
Totals	29			

**p = .002

Table 21

Planned Tukey HSD Test Performed Upon the Means of Concurrent Affectionate Behaviors of the Levels of the Groups Factor During Training Collapsed Across Sex

Groups	Difference Among Means		
	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$
Imitative Neutral Physical Contact $\bar{X}_1 = .300$	-	.000	3.600**
Non-Imitative Caretaking $\bar{X}_2 = .300$	-	-	3.600**
Imitative Caretaking $\bar{X}_3 = 3.900$	-	-	-

**$p < .01$

the two other groups.

To assess whether significant differences existed as regards the number of prompts to reach 100%-criterion imitation between the Groups and Sexes, a 2 X 2 ANOVA for the two Groups (Imitative Caretaking and Imitative Neutral Physical Contact) and Sex (male and female) was performed upon the number of prompts required to reach 100%-criterion imitation during the training phase. The summarized results of this analysis are presented in Table 22. It can be seen that the overall Groups effect was not significant, accounting for a negligible percent of the variance. Sex and its interaction with the Groups also were not significant, both of which accounted for a negligible percent of the variance.

Table 22

Summary of the ANOVA Performed Upon the Mean Number of Propmts of the Imitative Caretaking Compared to the Imitative Neutral Physical Contact Required to Reach 100%-Criterion Imitation During the Training Phase

Source	DF	MS	F	% of Variance (Eta^2)
Groups: Prompts	1	22.050	4.065[1]	19.520
Sex	1	4.050	0.747	3.585
Groups X Sex: Prompts	2	0.050	0.009	0.044
Error	16	5.425		
Totals	19			

1 Groups on Prompts $p = .061$

IV. GENERAL DISCUSSION AND CONCLUSIONS

Experiment II demonstrated that the combined effects of the (imitative) caretaking and physical contact produced in imitation of the Imitative Caretaking group interacted as variables producing significantly more free-play affectionate behavior than the Non-Imitative Caretaking and Imitative Neutral Physical Contact groups. These two latter groups themselves did not differ significantly from one another.

The Imitative Caretaking group of Experiment II replicated the phenomena of the Imitative Caretaking group of Experiment I as regards free-play affectionate behavior, aggressive behavior, and concurrent affectionate behavior. This strongly suggests the reliability of the phenomena. The total free time in which affectionate intervals occurred in the pre-compelled phase of the free-play period in Experiment II was $\bar{X} = .441$, as compared with the same computation in Experiment I (in which there was no compelling instruction to return to play; the children were completely free to vary in terms of time spent in free-play), $\bar{X} = .445$. The means are highly similar. The total free time in which affectionate intervals occurred in the post-compelled phase (with the instruction to return to play until the experimenter had "finished marking on the papers") of the free-play period of Experiment II demonstrated that the Imitative Caretaking group produced a significantly greater proportion of free-play affectionate behavior than did the other two groups. This was a further replication (under conditions of "compelled play") of the efficacy of the Imitative Caretaking group to produce free-play affectionate behavior. Therefore, replication of the free-play phenomenon of the Imitative Caretaking group as regards the production of free-play affectionate behavior was amply demonstrated.

The results of the Imitative Caretaking group of Experiment II as regards concurrent affectionate behavior produced during the training phase replicated the results of the same group in Experiment I. The Imitative Caretaking group produced significantly more concurrent affectionate behavior during training than did the other two groups of Experiment II. This suggests that the concurrent affectionate behavior phenomenon is reliable; therefore replication is amply demonstrated. It appears that the Imitative Caretaking group procedure generated affectionate behaviors within the training phase as well as generating such behaviors later on during the free-play phase.

An analysis of the number of prompts required to produce 100%-criterion imitation in the Imitative Caretaking and Imitative Neutral Physical Contact groups of Experiment II demonstrated no significant differences. Consequently a differential amount of prompting did not occur, and thus cannot account for differential occurrences of concurrent or free-play affectionate behavior.

The magnitude of treatment effect of the Groups factor of Experiment II (Eta^2 = 60%) as regards the pre-compelled free-play affectionate behavior was significantly greater than the magnitude of treatment effect of Experiment I (Eta^2 = 27%), where children's time spent in free-play was not compelled by instruction. This suggests that the increased amount of variance accounted for may have been a result of requiring 100%-criterion imitation in Experiment II, not required in Experiment I.

The means of the proportion of free-play affectionate behavior in the Imitative Caretaking group of Experiment I (not compelled to play longer than desired) as compared to the equivalent group of Experiment

II in the pre-compelled phase, were nearly the same, $\bar{X}$ = .445 for the former and $\bar{X}$ = .441 for the latter. This suggests that the average effect may have been already at ceiling in Experiment I. However, the variability of these two groups decreased from Experiment I to Experiment II. The results of an ANOVA of the variances of the Imitative Caretaking group of Experiment I compared with the same group in Experiment II (pre-compelled phase) demonstrated that the girls significantly decreased in variability in Experiment II as compared with Experiment I; the boys, while not significantly decreasing, showed decreased variability in Experiment II as compared with Experiment I.

A significant increase in the magnitude of treatment effect (Eta^2 = amount of variance accounted for) and a decrease in variability in the Imitative Caretaking group in Experiment II as compared with that of Experiment I, suggests that by requiring 100%-criterion imitation in Experiment II, there was consequently increased experimental control over the free-play affectionate behavior of the children.

The relatively low frequency of free-play aggressive behavior of Experiment II replicated the results of Experiment I. Because aggressive behavior occurred so infrequently in both experiments, conclusions as regards aggression are not possible. There was some suggestion from the results of the present research indicating that aggression may be mitigated by the Imitative Caretaking procedure (and even by the Instructed Caretaking procedure). In order to determine whether an affection-inducing procedure can reduce aggression, the probability of aggression would first have to be increased (e.g., with a Bandura-type aggressive modelling procedure or by choosing a situation in which its rate of occurrence is higher); then the rate of aggression would have to be

decreased as a function of an intervening affection-inducing procedure. If affection-inducing procedures (such as imitative caretaking) can buffer children against the effects of modelled aggression, then a valuable social tool would be demonstrated.

Sex was generally not a significant factor in Experiment II either as a main effect or in a Groups X Sex interaction (with the exception of a Groups X Sex interaction in the pre-compelled free-play phase of the Imitative Caretaking Group), replicating the results of Experiment I. In the exception, the girls in the Imitative Caretaking group produced significantly greater free-play affectionate behavior than did the boys during the pre-compelled phase. However, both the boys and the girls of this group produced significantly greater free-play affectionate behavior than that demonstrated by both sexes of the other two groups. This Groups X Sex interaction was not found in Experiment I, and therefore may not be very reliable. The tentative conclusion that might be made is that free-play affectionate behavior at this young age group probably is not sex-dependent. It should be noted, however, that other literature on emotive behaviors have shown sex effects. Bandura, Ross, and Ross (1963) found that boys imitated aggressive behavior significantly more than did girls, and that male models were more effective transmitters of aggression than were females. Fryrear and Thelen (1968) though finding that boys and girls imitated modelled affectionate behavior, did find that girls imitated significantly more for a female model than for a male model, whereas for the boys, the sex of the model did not produce a significant difference. The sex of model seemed to be of importance only when the subjects were females. The sex of model was not manipulated in the present study, and therefore further

research is suggested to explore the effects of sex of model upon free-play affectionate behavior as induced through an imitative caretaking procedure.

The present study provided a test of the treatments' effectiveness to generalize to a delayed cue-minimal/model-absent free-play period. In the generalized imitation literature, there are suggestions that under conditions of minimal surveillance by the adult-model, generalized imitation does not occur (Oliver and Hoppe, 1974; Peterson et al., 1971). In the present study, the model and stimulus items of the caretaking procedure (thermometer-device, plastic glass, etc.) were removed from the free-play phase, leaving only the teddy bear and instruction to play. Consequently this phase was a minimal-cue/minimal-social demand situation. Even so, the children demonstrated free-play affectionate behavior in the Imitative Caretaking group. This suggests that the toy itself along with instructions to play provide sufficient cues to set the occasion for affectionate behavior. It is possible, then, that the affectionate behavior could generalize across a wide variety of settings so long as the toy is present and instructions to play are given. Further research is necessary to test this possibility. Again, referring to the failure of generalized behaviors to occur in the absence of adult-model surveillance as noted in the literature cited above, the present study found free-play affectionate behavior occurring with relatively little surveillance. It is possible that the socially meaningful behavior employed in the present study (i.e. affection) may be less bound to adult presence and surveillance and explicit social demands than are the contrived motoric behaviors typically employed in generalized imitation studies. However, further research is needed to demonstrate the long-term and

widespread effects of affection-inducing procedures upon the subsequent behavior of young children.

The relatively small amount of free-play affectionate behavior produced in the Imitative Neutral Physical Contact group of Experiment II seems to contradict the results of Acker et al., (1973). These authors used a generalized imitation paradigm to demonstrate that imitative neutral physical contact training was functional in increasing generalized imitative affectionate behavior. Children were required to imitate a number of neutral physical contact behaviors during training (e.g., lift arm of teddy bear; touch stomach of teddy bear, etc.) before probing for occurrences of generalized imitations of physically affectionate behaviors. However, the procedures of these authors and of the present study are markedly different. The previous authors provided for reinforced physical contact training, whereas the present experiment did not provide for explicit reinforced imitative physical contact training. Prior reinforcement of physical contact may be a necessary condition to be functional in subsequently increased amounts of generalized imitative physical affectionate behavior. Also the dependent variables of Acker et al.'s (1973) experiment and the present study differed; Acker et al. probed for occurrences of only hugging and kissing, whereas the present study measured a much broader class of affection-like behaviors. Acker et al. used first- and second-grade children whereas the present study used three- to five-year-old children. Further research should be directed towards uncovering which of the many differences may account for the conflicting results.

Experiments I and II utilized a play-like situation in which the experimenter engaged the child (in a way not unlike a parent-child inter-

action) in certain kinds of play, with an assessment of the effects of these situations upon the children's free-play affectionate and aggressive behavior. This along with Bandura, Ross, and Ross' research (1961, 1963) seems to be the only experimental demonstration that play-like experiences with common toys can affect subsequent behavior. Bandura, Ross, and Ross' research demonstrated that a certain kind of experimenter-induced play can produce aggressive play behavior; the present research demonstrated that a certain kind of experiment-induced play can produce affection-like behavior. Since it is widely believed that play affects subsequent behavior and is important to the development of the child (Piaget, 1945, 1932; Axline, 1947; Erikson, 1943; Hartley, Frank, and Goldenson, 1952; Lewin, 1935; El'konin, 1960), experimental research of this kind is necessary for verification of this belief. What remains to be demonstrated is whether social agents, such as teachers, parents, and professionals, can utilize processes like those of the present research in the natural environment to affect behavior in a positive manner.

V. REFERENCES

Acker, L., Acker, M., & Pearson, D. Generalized imitative affection: Relationship to prior kinds of imitative training. Journal of Experimental Child Psychology, 1973, 16, 111-125.

Acker, L., Schaub, R., & Bruce, M., On the behavior of pigeons and children, in television series University of the Air, Canadian Television Network, Ottawa, 1970.

Aronfreed, J. Conduct and Conscience: The Socialization of Internalized Control over Behavior. New York: Academic Press, 1968.

Axline, V. Play Therapy. Boston: Houghton Mifflin, 1947.

Bandura, A., Grusec, J., & Menlove, F. Some social determinants of self-monitoring reinforcement systems. Journal of Personality and Social Psychology, 1967, 5, 449-455.

Bandura, A., & Huston, A. Identification as a process of incidental learning. Journal of Abnormal and Social Psychology, 1961, 63, 311-318.

Bandura, A., Ross, D., & Ross, S. Transmission of aggression through imitation of aggressive models. Journal of Abnormal and Social Psychology, 1961, 63, 575-582.

Bandura, A., Ross, D., & Ross, S. Imitation of fil-mediated aggressive models. Journal of Abnormal and Social Psychology, 1963, 66, 3-11.

Beach, F. Current concepts of play in animals. American Naturalist, 1945, 79, 523-541.

Berkowitz, L., & Daniels, L. Affecting the salience of the social responsibility norm: Effects of past help on the response to dependency relationships. Journal of Abnormal and Social Psychology, 1964, 68, 275-281.

Berlyne, D. Laughter, humor, and play. In E. Aronson & G. Lindzey (Eds.), The Handbook of Social Psychology (Vol. III). Don Mills: Addison-Wesley Publishing Co., 1969, 795-852.

Boneau, C. The effects of violations of assumptions underlying the t test. Psychological Bulletin, 1960, 57, 49-64.

Bowlby, J. Separation anxiety. International Journal of Psychoanalysis, 1960, 41, 89-113.

Brackbill, Y. Extinction of the smiling response in infants as a function of reinforcement schedule. Child Development, 1958, 29, 115-121.

Bryan, J. Model affect and children's imitative behavior. Child Development, 1971, 42, 2061-2065.

Bryan, J. Why children help: a review. Journal of Social Issues, 1972, 28, 87-104.

Bryan, J., & Walbek, N. Preaching and practicing self sacrifice: Children's actions and reactions. Child Development, 1970(a), 41, 329-353.

Bryan, J., & Walbek, N. The impact of words and deeds concerning altruism upon children. Child Development, 1970(b), 41, 747-757.

Cheyne, J. Effects of imitation of different reinforcement combinations to a model. Journal of Experimental Child Psychology, 1971, 12, 258-269.

Dennis, W. Causes of retardation among institutional children. Journal of Genetic Psychology, 1960, 96, 47-59.

El'konin, D. Detskaia Psikhologiia (Child Psychology). Moscow: Uchpedgiz, 1960.

Erikson, E. Clinical studies in childhood play. In R. G. Barker, J. S.

Kounin, & H. F. Wright (Eds.), Child Behavior and Development. New York: McGraw-Hill, 1943.

Flanders, J. A review of research on imitative behavior. Psychological Bulletin, 1968, 69, 316-337.

Fryrear, J., & Thelen, J. Effects of sex of model and sex of observer on the imitation of affectionate behavior. Developmental Psychology, 1969, 1, 298.

Grusec, J., & Skubinski, L. Model nurturance, demand characteristics of the modelling experiment and altruism. Journal of Personality and Social Psychology, 1970, 14, 352-359.

Harlow, H. The nature of love. American Psychologist, 1958, 13, 673-685.

Harris, M. Models, norms and sharing. Psychological Reports, 1971, 29, 147-153.

Hartley, R., Frank, L., & Goldenson, R. Understanding Children's Play. New York: Columbia University Press, 1952.

Lewin, K. A Dynamic Theory of Personality. New York: McGraw-Hill, 1935.

Lieberman, J. Playfulness and divergent thinking: An investigation of their relationship at the kindergarten level. Journal of Genetic Psychology, 1965, 107, 219-224.

Liebert, R., & Fernandez, L. Effects of single and multiple modelling cues on establishing norms for shaping. Proceedings of the 78th Annual Convention of the American Psychological Association, 1970.

Martin, J. The control of imitative and nonimitative behaviors in severely retarded children through "generalized-instruction" following. Journal of Experimental Child Psychology, 1971, 11, 390-400.

Meyer-Holzapfel, M. Uber die bereitschaft zu spiel- und instinkthandlungen.

Z. Tierpsychol., 1956, 13, 442-462.

Midlarsky, E., & Bryan, J. Training charity in children. Journal of Personality and Social Psychology, 1967, 5, 408-415.

Midlarsky, E., & Bryan, J. Affect expressions and children's imitative altruism. Journal of Experimental Research in Personality, 1972.

Oliver, P., Acker, L., & Strong, D. Effects of reinforcement histories of compliance and noncompliance on nonreinforced imitation. Journal of Experimental Child Psychology, 1976, (in press).

Oliver, P., & Hoppe, R. Factors effecting nonreinforced imitation: The model as a source of information or social control. Journal of Experimental Child Psychology, 1974, 17, 383-398.

Parten, M. An Analysis of Social Participation, Leadership, and Other Factors in Pre-School Play Groups. Unpublished doctoral dissertation, University of Minnesota, 1929.

Parten, M. Leadership among pre-school children. Journal of Abnormal and Social Psychology, 1933, 27, 430-440.

Parten, M., & Newhal, S. Social behavior of pre-school children. In R. G. Barker, J. Kounin, & H. Wright (Eds.), Child Behavior and Development. New York: McGraw-Hill, 1943.

Peterson, R. Some experiments on the organization of a class of imitative behaviors. Journal of Applied Behavior Analysis, 1968, 1, 225-235.

Peterson, R., Merwin, M., Moyer, T., & Whitehurst, G. Generalized imitation: The effects of experimenter absence, differential reinforcement, and stimulus complexity. Journal of Experimental Child Psychology, 1971, 12, 114-128.

Peterson, R., & Whitehurst, G. A variable influencing the performance

of non-reinforced imitative behaviors. Journal of Applied Behavior Analysis, 1971, 4, 1-9.

Piaget, J. Le Jugement Moral Chez l'Enfant. Paris: Alcan, 1932; The Moral Judgement of the Child. London: Kegan Paul, 1932.

Piaget, J. The Origins of Intelligence. Neuchâtel: Delachaux and Niestlé, 1936; New York: International Universities Press, 1952.

Piaget, J. The Construction of Reality in the Child. New York: Basic Books, 1954 (original printing 1937).

Piaget, J. Play, Dreams and Imitation in Childhood. New York: Norton, 1951 (original printing 1945).

Provence, S., & Lipton, R. Infants in Institutions. New York: International Universities Press, 1962.

Rosenblood, L. 1976, personal communication.

Rosenhan, D., & White, G. Observation and rehearsal as determinants of prosocial behavior. Journal of Personality and Social Psychology, 1967, 5, 424-431.

Rosenthal, A. Thirty-Eight Witnesses. New York: McGraw-Hill, 1964.

Snedecor, G., & Cochran, W. Statistical Methods. Ames: The Iowa State University Press, 1967.

Spitz, R. Motherless infants. Child Development, 1949, 20, 145-155.

Staub, E. A child in distress: The influence of age and number of witnesses on children's attempts to help. Journal of Personality and Social Psychology, 1970, 14, 130-140.

Staub, E. Helping a person in distress: The influence of implicit and explicit "rules" of conduct on children and adults. Journal of Personality and Social Psychology, 1971, 17, 137-144.

Steinman, W. The social control of generalized imitation. Journal of

Applied Behavior Analysis, 1970, 3, 159-167.

Wispé, L. Positive forms of social behavior: An overview. Journal of Social Issues, 1972, 28, 1-19.

Wrightsman, L. Social Psychology in the Seventies. Monterey: Brooks Cole, 1972.

Yarrow, M., & Scott, P. Imitation of nurturant and non-nurturant models. Journal of Personality and Social Psychology, 1972, 23, 259-270.

VI. APPENDIX A

The results of Cochran's test for the homogeneity of variance on the ANOVAs of Experiment I and II are presented in Table 23.

Though it is clear that the assumption of the homogeneity of variance was violated in several of the important ANOVAs, and this therefore may jeopardize protection for Type I errors, this problem was obviated on the following bases: 1) there was replication of some of the major results of Experiment I by Experiment II; 2) a conservative post-hoc statistical test strategy was employed, usually using a Tukey Honestly Significant Differences Test (where the rejection of the null hypothesis was less than the .01 level of confidence in three of the cases, and less than .05 level in two of the cases); and 3) the F test is robust in respect to violations of homogeneity of variance and normalcy of distribution assumptions (Boneau, 1960).

Boneau discussed the effects of violations of assumptions underlying t tests; this "... can be generalized quite readily to the F test." (p. 328). Boneau conducted a Monte Carlo simulation study of the effects of the violations of the normalcy of distribution and homogeneity of variance assumptions underlying t tests. He concluded "... that for a large number of different situations confronting the researcher, the use of the ordinary t test and its associated table will result in probability statements which are accurate to a high degree, even though the assumptions of homogeneity of variance and normality of underlying distributions are untenable." (p. 327). The robustness of the F test therefore in regards to violation of the normalcy of distribution and homogeneity of variance assumptions is reasonably guaranteed.

Table 23

Cochran's Value and Associated Probability of the Rejection of the Hypothesis of the Homogeneity of Variance of the Selected ANOVAs of Experiments I and II

Test	Cochran's Value	p
Experiment I		
Mean Proportion of Total Free Time in Which Affectionate Intervals Occurred	.4091	not significant
Mean Number of Concurrent Affectionate Behaviors of the Imitative Caretaking and Instructed Caretaking Groups During Training Collapsed Across Sex	.9752	$<.01$
Experiment II		
Mean Proportion of Total Free Time in Which Affectionate Intervals Occurred for Each Condition in the Pre-Compelled Phase	.5973	$<.01$
Mean Proportion of Total Free Time in Which Affectionate Intervals Occurred for Each Condition in the Post-Compelled Phase	.7665	$<.01$
Mean Number of Concurrent Affectionate Behaviors Collapsed Across Sex Produced During Training	.9680	$<.01$

VITA

Surname: PIROT Given Names: MICHAEL ALPHONSE

Place of Birth: RIVERSIDE, CALIFORNIA

Date of Birth: JANUARY 7, 1945

Educational Institutions Attended,
with Dates of Entering and Leaving:

WHITTIER COLLEGE	1963	to	1969
UNIVERSITY OF VICTORIA	1971	to	1976

Degrees, Diplomas, Etc., Awarded,
with Dates and Names of Institutions:

A.B.	1967	WHITTIER COLLEGE, WHITTIER
M.A.	1969	WHITTIER COLLEGE, WHITTIER

Honours and Awards:

Whittier College Scholarship, 1963-1969

University of Victoria Fellowship, 1971-1974

National Research Council Grant, 1974-1976

Canada Council Grant, (declined) 1974

Publications:

Auditory discrimination in Transcendental Meditators, Scientific Research on TM: Collected Papers, 1976.

Report and validation of a novel sampling technique, Perceptual and Motor Skills, 1976.

PARTIAL COPYRIGHT LICENSE

I hereby grant the right to lend my dissertation (the title of which is shown below) to users of the University of Victoria Library, and to make single copies only for such users or in response to a request from the library of any other university, or similar institution, on its behalf or for one of its users. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by me or a member of the University designated by me. It is understood that copying or publication of this dissertation for financial gain shall not be allowed without my written permission.

Title of Dissertation

DETERMINANTS OF AFFECTIONATE BEHAVIOR IN YOUNG CHILDREN

Author [redacted]
Signature

Michael Pirot
Name

August 15, 1976
Date