

MEASUREMENT AND FACILITATION OF AFFECTIONATE
BEHAVIOUR IN YOUNG CHILDREN

by

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ABSTRACT

The first portion of the research was concerned with developing reliable scoring procedures for behaviours involving affectionate and aggressive physical contact. Behaviours of young children directed at stuffed animals and at peers were studied. After a reliable and practicable scoring system had been developed the second portion of the research was carried out. This consisted of using simple and naturalistic procedures, in the context of reading a story, to increase the rate of affectionate behaviours in groups of young children. A story stressing affectionate behaviours by a young boy toward animals was presented in three different ways. The modes of presentation were reading the story only (Verbal Cuing treatment), reading the story and modelling the affectionate behaviours (Modelling treatment), and reading the story and modelling the affectionate behaviours and then having the children practice these behaviours (Modelling/Practice treatment). An additional group was read a different story that had a similar plot but which did not refer to affectionate behaviours (Control treatment).

Subjects were 4 and 5 year old boys and girls attending day care centres. Scoring was done on a 15 second interval

basis--that is the occurrence or non-occurrence of each of four types of behaviour was recorded for each 15 second interval. The behaviours scored were affection to toys, affection to peers, aggression to toys, and aggression to peers. Behavioural definitions of affection and aggression were developed. Only behaviours involving physical contact with a stuffed toy or peer were scored. The nature of the physical contact was the main factor used in arriving at scoring decisions but accompanying verbal behaviour and facial cues were also used if necessary and if useful.

Two separate observational procedures were developed. Procedure A involved observing one child at a time in a small group. Each child was given a stuffed animal and there were no other toys available. In the present experiment, groups of four children (two boys and two girls) were used and each child was observed for 4 minutes (16 observational intervals of 15 seconds duration each). In this procedure behavioural data were obtained, in sequence, for all members of the group. Procedure B was used in large groups and also involved focusing observations on one child at a time. In setting B, one large stuffed animal was introduced and there were numerous other toys and activities available. During each interval, the behaviour of the child who had physical contact with the stuffed animal was scored. Physical contact with the stuffed animal was the sole

criterion for determining who was to be observed. Inter-observer reliabilities averaging 90% were attained under both procedures.

Setting A was used in the manipulation phase of the research. Children were observed in play with the stuffed animals before and immediately after the treatments. This portion of the research was completed by 24 boys and 24 girls. Of the four dependent behaviours of affection to toys, aggression to toys, affection to peers, and aggression to peers, only the behaviours directed at toys were analyzed in detail as there were not sufficient behaviours directed at peers for a meaningful analysis.

Analysis was by way of 4 x 2 x 2 analyses of variance for each class of behaviour. The variables were treatment with four levels, pre versus post manipulation with two levels, and sex. Results indicate that the Modelling/Practice treatment significantly ($p < .05$) increased affection to toys in both sexes and significantly ($p < .05$) decreased aggression in boys. There also appeared to be a possible trend toward decreased aggression in girls, although this trend failed to reach the $p < .05$ level of significance. It is concluded that simple procedures for training affectionate behaviours of young children may be practicable. If interpersonal affectionate behaviours can be trained similarly to toy directed affectionate behaviours, then the

refinement and use of such procedures holds promise for increasing the positiveness of interpersonal interactions involving young children.

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INTRODUCTION

There have been a number of studies of the factors influencing aggressive behaviours in young children (Bandura, Ross & Ross, 1961; Bandura & Walters, 1963; Cowan & Walters, 1963; Hops & Walters, 1963; Walters & Brown, 1963). Some aspects of pro-social behaviours such as cooperation, altruism, sympathy, sharing, helping, donating and rescuing have also received experimental scrutiny (Bryan & Walbeck, 1970; Bryan & London, 1970; Harris, 1970; Liebert & Fernandez, 1970; Midlarsky & Bryan, 1973). Affection is a class of behaviours that is not typically included with pro-social behaviours in the literature. However, affectionate behaviours seem to be clearly positive social behaviours. Affectionate behaviours seem opposites to aggressive behaviours and are, to some extent, incompatible with them.

Study of aggressive behaviours may provide information on how such behaviours come about and are strengthened. However, such study appears to lead only to two main strategies of decreasing the rate of these behaviours. One strategy is to reduce facilitating and cuing factors and the other is to operate directly on established undesirable behaviours with punishment or extinction operations. Both strategies can be useful in limited circumstances. Often, however, aggressive behaviours do become established and

attempts to suppress such behaviours sometimes result in the respondent emotional behaviour associated with punishment or extinction contingencies.

Affectionate behaviours are important in their own right. Development of techniques for increasing the rate of affectionate behaviours may lead to some control over aggressive behaviours simply by facilitation of the behaviours that are somewhat incompatible with aggressive behaviours. Such control would exist without directly attempting to suppress the undesired behaviours.

Recent work on affection appears to have been stimulated mainly by Harlow's (1958, 1959) experiments on physical contact in monkeys. Harlow demonstrates that for infant monkeys, physical contact (contact comfort), is a powerful primary reinforcer. Careful observational work by Bowlby (1958) indicates that physical contact is also an important aspect in the development and maintenance of affection between adult and infant humans. His work further indicates that adequate positive interpersonal physical contact and stimulation is a crucial variable in the normal emotional and physical development of infants.

Experimental investigation of the importance of physical contact with peers, in monkeys, has been carried out by Harlow, Harlow, Dodsworth and Arling (1966). Harlow et al. raised monkeys so that they could see and hear their peers but had no opportunity for physical contact. These

experimental animals suffered broad ranging disturbances of behaviour, including instances of self-destructive behaviour. Prolonged lack of physical contact with peers at sensitive stages of development produced progressive, as far as can be determined, irreversible impairment to the monkeys' capacity for later social behaviour and especially to behaviours involving cooperative physical contact such as mutual grooming and sexual behaviour. The implication is that the apparently non-purposeive physical interactive play engaged in by young monkeys is essential to their later general social adjustment and is specifically necessary for later affectionate behaviour toward peers.

Investigation of the behaviour of young children (2-5 years) toward their peers has been carried out in a kindergarten setting by Walters, Pearce and Dahms (1957). Their objective was to establish the comparative frequency of affectionate and aggressive behaviours. However, the definition of affection that was used is so broad that it subsumes most pro-social behaviours and the frequency of affectionate behaviours involving physical contact is not reported separately. They did find that both physical and verbal affectionate and aggressive behaviours occurred in their subjects and that the behaviours could be scored with a reasonable degree of interobserver agreement.

Using the generalized imitation paradigm, Acker, Acker and Pearson (1973) demonstrated that generalized imitative

physical affection was most facilitated by prior imitative physical contact training as opposed to verbal contact training. The objects of affection used were a toy teddy bear and an adult human. Additional findings showed that generalized imitative physical aggression was equally facilitated by imitative physical contact training.

Acker and Acker (1970) attempted to use a generalized imitation paradigm to obtain generalized imitative affection or aggression. They successfully established generalized imitation to neutral behaviours but found it was difficult to obtain generalized imitative physical affection or aggression. The lack of generalization of imitation would suggest that the affectionate and aggressive behaviours belong to "classes" of behaviour that are different from the neutral behaviours.

The instrumental conditioning paradigm has also been used to shape components of affectionate behaviour. Brackbill (1958) succeeded in shaping smiling in 3 to 4 month old infants. Acker and Acker (1970) report briefly on attempts to shape affectionate hugging in young children. The use of differential reinforcement for successive approximations to affectionate hugs did produce hugs. However, other components of the children's behaviour were incompatible with affection. These included failure to smile, frowns, lip-biting, and furrowed eyebrows. Acker and Acker suggest that shaping by its very nature may be inappropriate to the study

of affection. That is, the nonreinforcement inherent in almost any shaping program, along with extinction for previously satisfactory and reinforced behaviours, could elicit respondent behaviour which is incompatible with affection.

An alternative to shaping is the use of a modelling approach. Fryrear and Thelen (1969) used affectionate models to increase affection in young children in a nursery school setting. No reinforcement was given to either model or child. A weak modelling effect was obtained.

It appears that of the methods discussed, the modelling paradigm, at present, holds the most potential for increasing the rate of affectionate behaviours. It is also the simplest procedure to carry out and is therefore most practical for use in everyday situations.

The present research took place in a play context. Although the effects of play on subsequent behaviour and social interaction have not been experimentally studied and are hard to assess (Berlyne, 1969), play has been widely held to be of importance. Erikson (1963) considers play a developmental and social tool. Piaget considers play an important factor in children's moral development (1932) and cognitive development (1945). Play is also considered important in role learning, in development of motor and sensory functions, and in general, strengthening of intellectual capabilities (El' Konin, 1960). In Piagetian terms, it can perhaps be said that it is during play that many of

the schemas necessary for learning later more complex social behaviour are developed. In view of the suggested importance of play, the large proportion of time that children engage in play, and the occurrence of the behaviours of interest during play, the play context was considered the most appropriate setting for the present study. In brief, the study was concerned with affectionate behaviours involving physical contact in the play setting.

In order to study such behaviours, a reliable observational system had to be developed, since no appropriate system is reported in the literature. In developing the observational system there was a constant attempt to meet certain desirable criteria. These included the goal of obtaining data in as naturalistic a setting as possible. This goal led to observing subjects in groups rather than alone and observing during self-directed activity rather than observing how an assigned experimental task is carried out. There was also an attempt to have as complete a record of physical contact behaviours as possible. Finally, there was the goal of making the behavioural records as objective as possible by scoring behaviour on the basis of formal rules developed during the research rather than on the basis of subjective reactions to specific behaviours.

Part I of the study was devoted to developing this observational system. This included refining settings in which the relevant behaviours would occur and could be

observed, refining a procedure which defines the behaviour of the observers, and developing a practical and coherent set of scoring rules. The ultimate goal of Part I was to obtain an acceptable level of interobserver reliability using the standardized settings, procedures, and scoring rules.

After this goal was met, Part II of the research commenced. This involved using techniques appropriate and familiar to young children to increase their affectionate behaviours involving physical contact.

PART I

*Development of the Observational
and Scoring Systems*

In the development of a methodology of direct observation of affectionate and aggressive behaviours there was a constant attempt to meet certain desirable conditions. The most important condition was to obtain results in as naturalistic a setting as possible. This was an important goal as behaviour under conditions in which children usually spend much of their time is, by definition, closer to their general behaviour than behaviour that would exist under an unusual, highly structured experimental setting. Children spend much of their time in unstructured play and there is a strong indication (Piaget, 1932, 1945; El' Konin, 1960; Erikson, 1963), although no experimental evidence, that during play there is a development of behavioural repertoires that are precursors of more adult forms of behaviour.

Observation in naturalistic settings is more difficult than observation under more controlled conditions because of the difficulty of sorting out the more relevant behaviours from the many less relevant complex and varied behaviours that are constantly occurring when children interact, especially during play. However, information is also lost when increased structure is imposed on the setting.

There is also a desire to have as complete a record of the relevant behaviours as possible. These behaviours were defined loosely at the initial stages of the study as instances of "affectionate or aggressive behaviour involving physical contact." It became quickly apparent that the task of the observers could be simplified, and the interobserver reliability improved, by severely restricting the definition of the behaviours to be observed. There was an attempt to avoid this course of action and the definition of the behaviours to be observed was only limited to the extent that was absolutely necessary to obtain interobserver reliability. The reason for taking this approach is that this study is a first in the specific field and it seems a better strategy to have an overview of the range of naturally occurring behaviours before restricting the scope of the observations. In terms of behaviour of children with their peers, any one of these behaviours can be important, and the usefulness of the results to individuals working with children could be impaired by restricting the observations to unduly specific types of behaviour.

There was also a requirement that the behavioural recording had to be in a form that could be done on the spot to avoid distortions due to memory loss. Another goal was to make the act of recording as unobtrusive as possible.

Actual development of the observational technique commenced with the observation of 3, 4 and 5 year old children

in pre-schools and day care centres in the Victoria area. Initial observations were carried out with the observers attempting to make no overt intrusion into any facet of the operation of the centres such as activities, groupings of children, toys available, etc. The purpose of this stage was to determine what forms of peer directed physically affectionate or aggressive behaviours occur in children who are engaging in their usual activities, and to ensure that the scoring system would be developed with consideration to the realities of everyday child behaviour.

Children were observed in both indoor and outdoor play. Individuals were observed and groupings of 2 to 20 children were observed. Children were observed with adult supervision present and for brief periods with supervision absent. Supervision was by either a trained day care worker or by a mother of one of the children. Children were observed during structured activities such as fingerpainting, listening to stories, and imitating physical education exercises modelled by an adult, playing games, making various objects, and "dancing" to music. They were also observed in unstructured play activities, e.g., play with their choice of the available toys and equipment. Such activity would typically involve playing with blocks, looking at picture books, playing with toy vehicles and dolls. No adult intervention occurred as long as they were not being greatly disruptive.

Two main results emerged from these observations of children at their usual activities. It was noted that children have a lower rate of interpersonal affection or aggression towards their peers involving physical contact than was expected. All children observed had very few such contacts per hour and some had none. It was also apparent that the behaviours that did fall into the observational categories (interpersonal physical contacts involving affection or aggression) appeared in most cases to be cued by events that were directly related to the contingencies involved with the activity in which the child was engaged at the time. For example, a child building with blocks has his structure knocked down by another child, he angrily pushes at the offending child; in painting a child runs out of a colour, grabs it from another child, tussle results; child falls from climbing apparatus, bruises knee, receives "sympathetic" pats from another child; child breaks crayon, starts to cry, receives affectionate hugs and pats from another child.

The revelation of the obvious fact that the nature of the activity and setting affect the nature of the interaction made it clear that the base rates of affectionate and aggressive behaviours would be specific to the situation in which they were measured and that the settings in which later investigations would be done would have to be given careful consideration and standardized. The low base rates

of the behaviours under observation were also of concern; refinement of an observational system would require a totally impracticable amount of observation time under such conditions. It was, however, noted that affectionate or aggressive behaviours involving physical contact toward toy objects were at a much higher level than were these behaviours towards peers. Direct interpersonal affectionate or aggressive physical contacts averaged less than 10 per hour per child. Many children displayed no such behaviours during 30 minute observational periods. Affectionate or aggressive behaviours to toys occurred roughly 8 to 20 times more often. In many instances, these behaviours toward toys also seemed similar in form to interpersonal behaviours. That is, many of these behaviours were instances of hugging, hitting, kissing, stroking, and so forth--behaviours that were being directed at toys but which could be appropriately directed at children under certain circumstances.

Interviews with the children and child care workers revealed that children in day care centres are not representative of the same segment of the community as children in pre-schools. Many day care children came from single parent homes, and in almost all cases, all the adults in the family worked outside the home. Pre-school children attended the pre-school part time, and almost all had their mothers home during the day. In view of the disparate backgrounds it was felt advisable to work with one group only and since day

care centre children were more accessible and available in greater numbers further observations are restricted to this group. Due to unreliable weather it was also decided to restrict observations to indoor settings.

Since the nature of the interactions had been observed to be to some degree under the control of the toys available further observations were undertaken in rooms with from 4 to 20 children present and with a large quantity and variety of play objects available, e.g., blocks, musical toys, books, vehicles, dolls, puzzles, paper and crayons. The object was to avoid restricting the range of possible interactions. Physical contacts with peers and with play objects were scored in three categories of behaviour--affectionate (hugging, stroking, kissing, etc.); aggressive (hitting, kicking, pushing, etc.); and neutral (holding or touching without affection or aggression).

Observation was done on a basis of 10 second intervals; that is, a tally was made in each category if a behaviour, falling into the category, occurred at least once during the interval. No tally was made if no behaviour falling into the category occurred during the interval. This procedure of recording occurrence or non-occurrence, by intervals, was adopted rather than recording the absolute count because it was felt to be a more practical and reliable procedure for scoring since accurate, continuous counts of behaviours such as pats, strokes, or punches are sometimes difficult to make.

Thus, in any one interval a child could have a tally for none, 1, 2, or all three of the categories. Initial interobserver agreement was in the range of 20% with respect to the affectionate and aggressive categories. Higher reliabilities were obtained for the neutral category but this may be a statistical artifact of the very high base rate of the neutral interactions.

It was quickly apparent that there were two main causes contributing to unreliability. First, the sheer frequency of physical contact (largely neutral) with toys made it difficult to keep track of and make discriminations about a child's behaviour. Secondly, the observers frequently disagreed or were uncertain as to how to score a specific behaviour. To alleviate the problem of the frequency of interactions consideration was given to eliminating the scoring of behaviours in the neutral category. The rationale for including the neutral category was to have some measure of the neutral physical interactions involving peers. The reason for including this measure was that it was hypothesized that neutral interpersonal contacts would increase with facilitation of affectionate contacts. This hypothesis was based on the expectation that facilitation of affectionate contacts would also tend to remove previously learned inhibitions against neutral interpersonal physical contacts. A measure of neutral behaviours was included to test this out. However, it was observed that scores in the neutral

category, as in the other two, were mainly composed of interactions with toys rather than peers. Since there was no separate measure of interactions with peers, the hypothesis could not be tested. In view of the low reliabilities it was felt that complicating the system so that behaviours to toys and peers would be separately scored would not be justified. And, further, because it was of little value, the neutral category was dropped.

This made the task of the observers more manageable as they were able to concentrate on aggressive and affectionate behaviours. However, reliability was still in the range of 50% and it was noted that disagreements occurred most frequently in instances of interactions with objects (blocks, jigsaw puzzles, toy vehicles, etc.) toward which, or through which, affection or aggression is not usually expressed. It appeared that many of the behaviours that were being scored into the affection or aggression categories were not behaviours that were precursors of, nor similar in form to, interpersonal behaviours.

It became apparent that restriction of the objects with respect to which scoring would occur would alleviate the situation. There was an attempt made to improve reliability by observing only behaviour that involved contact with a smaller standardized set of toys. However, scoring remained difficult and interobserver reliability was low.

Finally, it was decided that objects with respect to which scoring would occur would have to meet the following criteria: (a) that the toys would cue behaviour, including affectionate and aggressive behaviour, similar in form to interpersonal behaviour; (2) that the toys would be familiar and attractive to children (to facilitate interaction). After some experimentation with dolls, puppets, and stuffed animals, the latter were found to be the most useful. Stuffed animals that were not representations of characters appearing in current children's television serials were obtained, as there was a possibility that there would be changes in behaviour to a television character as a result of his televised exploits. The toys used were a rabbit, a puppy, a bird, and a teddy bear. The stuffed animals cued a great deal of affectionate and aggressive behaviour that was similar in form to interpersonal behaviour.

It was decided to observe behaviour under two procedures. In procedure A, four children were placed in a small room with the four stuffed animals and some picture books. No other toy objects were available. Behaviours involving physical contact with peers and with stuffed animals were the only ones scored. There were two observers in the room and they observed each of the four children in sequence. This was a fairly structured setting, although the behaviour of the children was not structured in terms of assigning a task or similar constraints. This method produced

behavioural data for all children in the group.

In procedure B, a large number of children were present (up to 20) in a large room. The whole range of toys and activities usually available in the day care centre were made accessible to the children. One stuffed toy, the puppy, was also present. Observation was directed at the behaviour of the child who was in physical contact with the puppy in each interval. Scoring was with respect to that child's behaviour toward the puppy and toward other children. This procedure permitted organized observation in a large group without restricting the types of toys or activities available and without interfering with the groupings of children. Behavioural data for those children who came into physical contact with the puppy were obtained. However, some members of the group did not come into physical contact with the puppy and thus there were group members for whom there were no data. Nevertheless, this procedure of selecting a stimulus and recording only the behaviours of those who came into contact with it was seen as a valuable procedure for sampling behaviour of members of a group. This procedure is especially useful in the day care situation, where it would be impractical to have enough observers to observe all group members. Also, if necessary, the stimulus can be made immobile (not done in this study) and eliminate the need for observers to "trail" their subjects.

Procedure A was used first. Interobserver reliability improved to around 75% after a few sessions and it seemed that the observers could handle a more complex scoring system. It seemed that there would be value in again incorporating a neutral category and in breaking up the affection category into three subcategories: (a) pat, fondle, stroke; (b) hug; (c) kiss. These behaviours appeared discriminable, and the establishment of subcategories of affection would provide more information and would permit the examination of theoretically interesting questions, i.e., does facilitation of one component act only on that one or on some other(s) as well? Are there classes of affectionate behaviours?

However, attempts to use this more complex system made it apparent that it was too difficult for the observers to handle. Obtained interobserver reliabilities were low. An observer had to mark 5 categories for each 10 second interval. Attempts were made to utilize longer intervals up to 30 seconds but information is lost as the interval is lengthened and the improvement in reliability was not sufficient to warrant use of intervals longer than 15 seconds. Thus, 15 seconds was the interval used throughout the remainder of the study under both procedures.

Difficulties remained in discriminating the three affection subcategories and they also did not seem sufficiently exhaustive of the range of affectionate behaviours. Therefore, it was decided to return to the use of only the

two basic categories: affection and aggression. Also, it was considered important to be able to differentiate in the record, behaviours directed at peers from behaviours directed at stuffed toys. Thus different designations were used to represent each type of behaviour. For a sample of scoring sheets, see Appendix A. Note that a notation is made regardless of whether or not a relevant behaviour occurs. This eliminates the possibility of feedback to the subject from the observers' recording behaviour and also inadvertent feedback to the second observer who must remain independent. The observer needs to make only two marks at the end of most time intervals; the exception is when the same category of behaviour is directed at both a toy and a peer in the same interval. Note that both affection and aggression can occur in the same interval or that neither may occur. Note also that the objects of behaviours in an interval may be a peer, a toy, or both.

Considerable observational time was invested in improving the reliability of this scoring system. Even though the two observers already had some experience observing in similar situations, initial reliability was only about 75%. It became apparent that the definitions of affection and aggression would have to be refined and expanded. Instances where disagreements occurred were examined and it was noted that one source of unreliability was novel behaviours that were not clearly covered by the definitions in use at each

stage of refinement. At each instance of disagreement or uncertainty the two observers discussed the behaviours in question, and tried to find where it fit best into the definitions, or if the behaviour did not fit, then what assignment of it was the most appropriate in terms of developing rational and coherent definitions. For example, consider the behaviour of sitting on top of another who is sprawled on the floor. The sitting is accompanied by slight bouncing motions and smiling. This behaviour could be viewed as neutral playful contact or as aggression because of the effect on the child underneath. It was decided that to be sat on would generally be aversive and therefore the behaviour was scored as aggression. Other decisions had to be made in instances where interpretation of an established portion of a definition was equivocal--for example the definition of affection had to be expanded to include "snuggling" but did not define exactly what behaviour this included. For example, consider the behaviour of two children both standing and leaning against each other touching at the shoulders and with no other point of contact. This could be interpreted as a variant of snuggling, or as a neutral contact, or even as aggression because of the pushing force that may be involved. It was decided that in the absence of other clear cues, when the nature of the physical contact is not clear, as in this instance, the behaviour would not be scored. In both these examples of difficult to categorize

behaviours, contact was through parts of the body other than the hands. It was noted that generally contacts involving the hands were easier to categorize than contacts involving other parts of the body.

Other decisions had to be made with respect to the use of verbal and facial cues. It was decided that if, and only if, the nature of the physical contact was not clear, then verbal cues would be utilized. This means that for a behaviour such as neutral touching (unclear physical contact) verbal cues, when present and clearly interpretable, may be used for scoring. Examples of useful verbal cues would be statements such as "I love you puppy"; "You are my favourite"; "I hate you." Non-verbal vocalizations are also considered at this stage. Examples are "cooing," "snarling." However, these cues were only used to arrive at a scoring decision if they were clear. For example, barking can be an affectionate, aggressive, or neutral vocalization but this is sometimes a difficult discrimination to make so "barks" were not considered in making any scoring decisions. If primary physical contact cues and secondary vocal cues (if present) are not clear, then and only then, facial cues were used in making scoring decisions. Examples are smiling, or sticking the tongue out. It was very rarely (less than 1% of behaviours scored) necessary to resort to facial cues. In most instances, when used they were helpful in scoring peer directed as opposed to toy directed behaviours.

It was necessary to adopt this hierarchical decision system rather than using all available cues simultaneously to arrive at a decision, because there were a number of instances where contradictory cues were involved in a single physical contact. For example, a child gently stroking another with his hand made into the shape of a mouth, while saying "bite, bite"; children playing footsie, that is kicking each other softly while smiling and laughing. Without the hierarchical decision rules for using cues, such behaviours would be scored unreliably. As well, the present system relies primarily on the most overt and salient behaviours and uses the less overt classes of behaviour in order of decreasing saliency, and only when necessary. Of course, the primary reliance upon cues that are salient to the observers assumes that these cues are most important in the mutual interactions of children. It may be argued that the less overt cues may carry greater significance in some interactions. This may be true in some instances, however, the importance of the nature of the overt physical contact can hardly be dismissed in most cases.

Using this system greatly improved reliability. Disagreements still occurred because of behaviour not seen or else not noticed by one or the other observer. Some of these instances may occur because observers necessarily observe from different angles. One observer's vision may be momentarily blocked by a child, or an observer may fail to

notice a quick movement.

Progress in improving reliability was obtained primarily through elaboration of the definitions and through practice using the improved definitions. It was noted that much more time was required to discuss and elaborate the definition of affection than the definition of aggression although the final reliabilities obtained are essentially equivalent for the two classes of behaviour.

At one point consideration was given to scoring only behaviours where the physical contact was through the child's hands because of the number of rather difficult to classify behaviours that were engaged in when contact was through other parts of the body. However, by using the final definitions, this class of behaviours did not seem to remain a source of additional unreliability and behaviours involving contact through any part of the body were scored.

It must also be noted that the definition of physical contact was expanded to include the situations of indirect interpersonal physical contact. Examples are hitting someone with a stuffed toy, throwing the stuffed toy so that it hits someone, holding a paw of the puppy and with it stroking another child. Although there is no actual physical contact between the two children in these instances, the behaviours were still scored because there is contact through the stuffed toy. Indirect contact was defined to occur only through the stuffed toys. For example, throwing a book at

another child would not be scored if there was no physical contact between the thrower and the one at whom the book was thrown.

Method

Subjects

Subjects were 4 to 5-1/2 year old boys and girls enrolled at day care centres in Victoria, British Columbia. Children from six centres were observed. Two adults, a male and a female, served as observers. Both are students enrolled in a psychology program and have had previous experience as observers.

Procedure

Two different conditions for observations were used.

Procedure A. Subjects were selected from the day care group at large by inviting children to come and play with some new toys. Any child who refused the invitation was not coerced to join. When 2 boys and 2 girls were obtained, the group was escorted by both observers to the experimental room. This was, of course, a different room at each day care centre but was in all cases roughly 3 metres by 4 metres in size. There was some furniture in the room but the only play objects in the room were four stuffed toys and some children's picture books. The four stuffed toys were: a green puppy (60 cm long), a yellow bird (50 cm tall), a

brown teddy bear (40 cm tall), a white rabbit (20 cm long). About 40 children participated in this stage of the experiment.

After entering the room, the subjects were informed by both observers that the four stuffed toys were for them to play with and that they could play with them in whatever manner they liked. After these instructions were completed, observers remained in the room and waited 2 minutes for adaptation to toys and surroundings to occur and then began recording. Both observers remained in the room throughout the observational period of 12 minutes. Scoring was on the basis of the defined categories. Observers scored onto a recording sheet designed to facilitate scoring (see Appendix A). For each interval the observer recorded whether at least one instance of each category of behaviour had occurred toward a toy or another child. If it had occurred toward a toy, a T was placed in the appropriate category, if it had occurred toward a child a P was placed in the appropriate category, if toward both, then both a T and P were placed in the category. If no behaviour at all had occurred in a category, then a dash was marked for that interval.

Intervals were of 15 seconds duration and observations were obtained over 16 consecutive intervals for each child in the group. All four children were observed in sequence.

In some instances the subject moved into a position where observation was not possible. Typically this occurred

when some children "flopped" over each other or when several played in a corner or under furniture. If during an interval a child became unobservable to either observer, then that observer signalled the other and observation was suspended and no scoring was recorded for that partial interval. If the subject's position changed within 15 seconds such that observation was again possible, then observation was started again at the end of the 30 seconds. If at the end of 30 seconds observation was still not possible, the male observer would intervene with instructions to play in a different place or way. Instructions would be "That is not a good place to play," "Please play in this part of the room," or "Do not play on top of each other." If an intervention occurred, scoring was not resumed until 30 seconds had elapsed. Each time the observation had to be suspended, or an intervention occurred, this was recorded. Aside from the initial instructions and possible interventions, observers behaved in a non-interactive manner with the subjects throughout the observational period. To compensate for this behaviour, which must have appeared rather cold to the subjects, the observers interacted for some minutes with each child at the conclusion of the observational period. Interaction would typically involve asking children how they liked the toys, which toy they liked the best and why, whether they had similar toys at home, and so forth. There was no physical contact with the children.

Procedure B. The setting for observations was a large room with from 8 to 20 children present engaged in non-directed play. Also present were from 1 to 3 members of the regular day care staff, engaged in their usual duties. Children had access to a wide variety of activities and toys. Observation occurred during a period of the day when the children customarily engaged in non-directed play, in the same room and with the same array of toys present.

The observers entered the room with the male observer carrying the large stuffed puppy. He held it in a neutral (neither affectionate nor aggressive) manner to control for any possible modelling effect. The male observer made the following announcement: "I have a puppy for you to play with. I want you to take turns and share it. Who would like to take a turn first?" He then handed the puppy to the child who had approached the closest. The observers then waited for 2 minutes to elapse and then started recording.

A child becomes a subject for observation by coming into physical contact with the puppy. He remains a subject for observation for as long as he maintains contact. Under this system, physical contact with the puppy is the criterion for deciding who is to be observed. If more than one child has contact, then the one who has the most contact is observed. Recording is with respect to that child's behaviour toward the puppy and toward other children while he is in contact with the puppy. Behaviour was coded by the same

criteria as previously mentioned. When the puppy was transferred from one child to another during an interval, then any relevant behaviours engaged in by either child, while he was in contact, were recorded. If one child alone had the puppy for 12 intervals (3 minutes), then recording was suspended. The male observer approached the child and said to him, "You have had a turn with the puppy. Let's see if anyone else wants to take a turn now." Then he took the puppy, held it up and announced, "Is there anyone who would like to take a turn playing with the puppy?" He then handed the puppy to the first child to approach and recording was resumed. If no child played with the toy for a period extending to 12 intervals (3 minutes) then the male observer prompted interaction by approaching the toy, holding it up, and announcing, "The puppy is all alone. Would anyone like to take a turn playing with him?" He then handed the toy to the first child to approach. Each instance where intervention occurred was recorded.

Definitions for Scoring

The primary requirement for a behaviour to be scored is that there be physical contact between the subject under observation and the recipient of the subject's behaviour. Only behaviours toward stuffed toys and other children were scored. This physical contact may be direct contact or an indirect contact as would occur, for example, if a toy was

being used to hit someone.

The primary cue used to determine whether a behaviour is affectionate or aggressive was the actual nature of the physical contact. If the behaviour was a clear instance of hugging, kissing, cuddling, snuggling, stroking, fondling, holding by hand, patting, gently tossing up and down, holding in lap, or going through motions of feeding, cleaning, or caring for an imagined injury, then affection was scored. If the behaviour was a clear instance of hitting, slapping, kicking, choking, biting, throwing, stepping or sitting on, scratching, pulling or grabbing, or dragging by a part of the body other than hands, or taking forcefully away from, then aggression was scored.

If physical contact behaviour occurred without it being any clear instance of the above behaviours then, and only then, vocalizations that were directed at the toy or person with which there was physical contact were considered in making the discrimination. Vocalizations that would result in a behaviour being scored as affectionate were verbalizations of affectionate or nurturant themes and vocalizations such as "cooing." Vocalizations that would result in a behaviour being scored as aggression were verbalizations of aggressive themes or aggressive vocalizations such as "snarling."

If the nature of the physical contact was not clear and if there were no vocalizations accompanying it or if the

vocalizations that did occur were not useful in making a discrimination, then, and only then, facial cues were used. Facial cues could be affectionate as in smiling or aggressive as in clenching jaws. If facial cues had to be resorted to and yet were not clear enough for a discrimination to be made, then the behaviour was left unscored.

Each instance of affectionate or aggressive behaviour was also scored with respect to whether the recipient of the behaviour was a toy or a person or both. For example, aggressive behaviour may be directed at a toy only (hitting toy), at a person only (hitting person), or both (hitting a person with a toy).

Interobserver Reliability

As you will recall, the object of Part I of the research was to establish a scoring system and to attain an acceptable level of interobserver reliability between the two observers. In calculation of reliability data, behaviours to stuffed boys and behaviours to peers were treated separately. The following representations were made for each category in each interval:

"A" represents the case where the two observers used the same code (i.e., they both agreed that affection to toy had occurred, etc.).

"D" represents the case where the two observers had recorded different codes. This situation may arise because

of differences on how to score a specific behaviour or because of one observer failing to notice an action in the fast moving scene.

Instances when both observers agreed on the absence of scorable behaviour (negative agreement) were not included in reliability calculations as they would spuriously inflate the extent of agreement. Thus interobserver reliability was calculated by the formula $\frac{A}{A+D}$. The rationale for calculating reliability separately for each category (affection to toys, affection to peers, aggression to toys, aggression to peers) was that to do so would pinpoint the specific areas requiring attention during the development of the scoring system. As well, reliability for each of these categories was calculated by sex of subject to probe for any further possible areas of weakness in the scoring system. Results are reported in Table I.

TABLE I

Final Obtained Interobserver Reliabilities, Reported by
Behavioural Category, for the Two Observational Settings

| Behaviour Category | Procedure A (4-Person Group) | | Procedure B (Large Group) | |
|-----------------------------|---------------------------------|----|------------------------------|----|
| | $\frac{A}{A+D}$ | % | $\frac{A}{A+D}$ | % |
| Affection by boys to toys | $\frac{23}{25}$ | 92 | $\frac{15}{18}$ | 83 |
| Affection by girls to toys | $\frac{39}{43}$ | 91 | $\frac{18}{20}$ | 90 |
| Aggression by boys to toys | $\frac{33}{37}$ | 89 | $\frac{33}{35}$ | 94 |
| Aggression by girls to toys | $\frac{18}{20}$ | 90 | $\frac{17}{19}$ | 90 |
| All behaviours to peers* | $\frac{16}{19}$ | 84 | $\frac{23}{24}$ | 96 |
| TOTAL | $\frac{129}{144}$ | 90 | $\frac{106}{116}$ | 91 |

*Reported together as there were not enough behaviours in each category to calculate separate reliability values.

PART II

Introduction

Part II of the research was concerned with developing and evaluating procedures for increasing the rate of affectionate behaviour in the day care setting. The basic question asked was whether there are any simple procedures that can be shown to increase the rate of affectionate behaviour in small groups of pre-school children. The goal was to examine naturalistic procedures--that is, practices that are familiar to and appropriate for the children involved. Familiar procedures were used because it was considered desirable to have treatment procedures that could be replicated and used by individuals without involved special training. It was also expected, but not tested, that unfamiliar procedures or contexts could possibly cue behaviours that are incompatible with affectionate behaviours. Therefore, procedures requiring special skills from the administrator of the treatment, or practices that are unfamiliar in the context of play and affection, such as instructions for affectionate behaviour or shaping of affectionate behaviour, were not used.

The initial step in the development of the procedures for increasing the rate of affectionate behaviour was to examine the techniques that day care staff use to obtain

desired behaviours from children. The following classification of techniques can be made. Behaviours are often under *direct instructional control*. *Verbal cues* that are not direct instructions (prompts) are also often used to cue behaviours. In some instances the desired behaviour is *modelled* and occasionally there is an opportunity for children to practice the desired behaviour after it is modelled. Sometimes there is *corrective feedback and/or reinforcement* for the practiced behaviour.

As previously indicated there was a desire to avoid using direct instructions or planned contingent reinforcement procedures to increase the rate of affectionate behaviours involving physical contact. There is evidence (Acker & Acker, 1970) that shaping may be inappropriate for producing such behaviours. There is reason to believe that instructions alone can also be ineffective in producing affectionate behaviours (Piroit & Acker, in preparation). Omitting these two methods leaves three types of procedures that appear to be effective for increasing the rate of affectionate behaviours. These are: (a) verbal cuing, (b) verbal cuing with modelling, (c) verbal cuing with modelling and with practice. Although these procedures do not provide clear tests of opposing social learning theories, they are simple and familiar and can easily be made to form the basis for simple, familiar, appropriate, and interesting manipulations. Thus, these procedures were the basis for

the experimental conditions used.

The next step in the development of the actual manipulations was to consider the context in which they were to be presented. The context of reading a story appeared suitable since it is a familiar situation for all the children.

Stories are flexible, that is, they can be written such that they discuss any of a variety of behaviours. Interesting stories hold the attention of most children and thus are useful vehicles for presenting information. Furthermore, this mode of presentation can be varied so as to incorporate each of the three basic experimental conditions. That is, the story can be read (Verbal Cuing condition); it can be read and certain behaviours can be modelled (Modelling condition); it can be read, certain behaviours can be modelled, and children can be prompted to practice certain behaviours during the presentation (Modelling/Practice condition). Unfortunately, there does not appear to be any evidence in the literature on the behavioural consequences of reading stories to young children.

Two stories were prepared by the authors. These stories are parallel forms, with the same basic theme. However, the story for the experimental condition is laced with references to considerate, careful, nice, nurturant, and especially affectionate behaviours by a young boy towards animals, whereas the story for the control condition omits reference to such behaviours. (See Appendix B for stories.)

Pretest measures of affectionate and aggressive behaviours were obtained in a free play situation with groups of four subjects. Groups were then exposed to either a purely verbal presentation of the "control" story or one of the three types of presentations of the "experimental" story. Immediately after this, posttest measures were obtained, again in a free play situation. The primary dependent measure was the amount of affectionate behaviours to toys emitted during the free play situation.

All three types of presentations of the experimental story can be viewed as possible setting events for affectionate behaviours. That is, presentation of the story, by some or all of the procedures, may be a discriminative stimulus to the subjects that affectionate physical contact behaviours to toys may be reinforced and are unlikely to be punished. It can be assumed that at least some of the children, especially girls, have been reinforced for affectionate behaviours with stuffed toys and that some, especially boys, may also have been punished or ignored as a consequence of such behaviours. For those children who have been punished, some types of presentation of the experimental story may serve as a signal that affectionate behaviours are unlikely to be punished in the present setting.

There is no clear basis for making hypotheses about differences in magnitude of effects between experimental conditions. Subjects in the *Verbal Cuing* condition receive

the least information. The *Modelling* condition receives the verbal treatment plus modelling. The *Modelling/Practice* condition receives the verbal treatment plus modelling plus practice. Therefore, it is expected on this basis that the *Modelling/Practice* treatment would be at least as effective as the *Modelling* treatment and that the latter would be at least as effective as the *Verbal Cuing* treatment.

Bandura and Walters (1963) have demonstrated that modelling is a sufficient condition for facilitating aggressive behaviours. The *Modelling* treatment in this study is to some degree a test of whether this is true for affectionate behaviours. It is both a less stringent test than Bandura's (as the subjects in this group also receive verbal stimuli) and a more stringent test since the subjects in this study receive a greater variety of stimuli and have a larger range of alternative responses than subjects in Bandura's study had.

In Piagetian terms, all the children participating are likely in the preoperational stage of intelligences. In this stage, their learning is related to the concreteness of the stimuli to which they are exposed. Thus, their learning is believed to be based largely on imitation and even more on practice.

In the *Verbal Cuing* treatment there is opportunity for neither imitation nor practice. In the *Modelling* treatment there is opportunity for imitation but not practice. In the

Modelling/Practice treatment there is opportunity for both imitation and practice. Such an analysis would predict a relative hierarchy of treatment effects, specifically Modelling/Practice > Modelling > Verbal Cuing. However, again there is no basis for predicting significant differences between means as the amounts of practice and modelling required to yield specific magnitudes of effects have not been established.

The treatment manipulations bear only on the class of behaviours designated affection to toys, however, measures on the collateral behaviours of affection to peers, aggression to toys and aggression to peers were obtained. Since aggressive behaviours would seem to be incompatible with affectionate behaviours, it was expected that aggression to toys might decrease if affection to toys increases. However, such an effect may not occur since all of the treatment conditions, especially the Modelling/Practice condition, may facilitate physical contact with the toys. It has been previously found (Acker, Acker & Pearson, 1973) that physical contact training accompanied by modelling of aggressive and affectionate behaviours increases both affectionate and aggressive imitative behaviours toward the object of the training.

There is also no clear basis for predicting whether stimulus generalization will occur from toys to peers. However, the data were examined to see if this did occur.

Method

Subjects

Subjects participating in the study were 4 and 5 year old boys and girls attending day care centres in Victoria, British Columbia, Canada. Subjects participated in two sessions and there were a total of 60 participants in the first session. Of these, 48 completed the second session. Five subjects were unavailable for the second session due to being absent and a further 7 subjects were dropped as data for only 48 subjects were required. Twenty subjects from each centre were assigned to 5 groups of 4 subjects. Each group was composed of 2 boys and 2 girls. These subjects were obtained by the supervisor of each day care centre individually asking children to take part. There were two refusals to take part.

The effect of having the day care supervisors selecting children was that the experimental groups were composed of children who usually had been playing together and were well known to each other. The alternative procedure of making random groupings based on the class list would have been most disruptive to the operation of the centres as it would often have led to drawing children from several ongoing activities, each time a group was formed for observation. As well, the random procedure would have resulted in groups that are less comparable to the usual situation in which

children playing with each other are well known to each other.

Assignment of groups to treatment conditions was done randomly. Four of the five groups observed at each day care centre were randomly assigned to one of the four treatment conditions such that the treatment conditions were blocked across day care centres. The fifth group at each centre was used to supply replacement subjects for the other groups for absent subjects at the second session. Absent subjects were replaced by a subject of the same sex. Five subjects had to be replaced.

Stimuli

The experimental story is approximately 1,000 words long and has four hand-drawn and coloured illustrations. One of the illustrations depicts affectionate behaviours. The story repeatedly stresses the nice, considerate, feeding, patting, hugging, and kissing behaviours of a young boy directed at animals. The control story is about 800 words long and is presented with three of the illustrations, omitting the illustration that depicts affectionate behaviours. The four animals mentioned in the story and shown in the illustrations are close approximations to the four stuffed toy animals which the children have available in the free play situation. These are the same four animals used in Part I of the research.

Procedure

Each of the 48 children completing the experiment was observed in two sessions. The first, or pretest session, was identical for all subjects and was performed in a manner similar to the sessions for establishing interobserver reliability, with two minor refinements in procedure. The children were escorted to the experimental room by the male observer and the instructions were given only by him instead of by both observers. Also, there were no other toy objects, aside from the four stuffed toys, present in the experimental room, although of course the children sometimes incorporated other items (furniture, curtains, etc.) into their play. All subjects were also familiar with at least one of the observers.

The second session was performed approximately one week after the initial session. Children were formed into the same groups in the second session as in the initial session, with the exception of absentees, who were replaced by children on whom there was pretest information, as previously indicated. In all treatments only the male observer administered the manipulation and the female observer was not present during this phase. Thus, she scored "blind."

In all treatment conditions the children were escorted to the experimental room by the male observer who indicated to them that he was going to read them a story. The children were asked to sit in a circle on the floor by the

observer who placed the four animals on the floor beside himself. In the control condition, the observer read the control story and neither modelled nor directly prompted any behaviours. In the Verbal Cuing condition the observer read the experimental story and verbally stressed 14 instances when the behaviours "patted," "hugged," and "kissed" were mentioned. Verbal stressing involved saying these key words louder and slower than other words. Again, the observer did not model or directly prompt any behaviours. In the Modelling condition the observer read the story and modelled the same 14 behaviours at the appropriate stages in the story. He stopped reading the story and modelled each behaviour for approximately 5 seconds. He modelled each behaviour on the animal that was referred to at that place in the story. Each animal had either three or four affectionate behaviours modelled on it. In the Modelling/Practice condition the observer read the story, verbally stressed the affectionate behaviours, and modelled them. He also prompted each child to practice the affectionate behaviours directed at one of the animals. That is, at each mention of an affectionate behaviour he stopped reading the story, picked up the animal referred to, modelled the affectionate behaviour, handed the toy to a child, and prompted the behaviour by saying, "Can you do that"; "Show me what the boy did"; "Let's see if you can do that too"; etc. After the child had performed the behaviours, the experimenter reinforced him once with

statements such as, "That's good," "That's fine," "That's right," "That's nice" and so forth. The experimenter then took the toy back and placed it beside himself. At the mention of an affectionate behaviour to another toy he would go through the procedure with the other toy and another child. Each child practiced either three or four times and, of course, observed the other children practicing. The amount of reinforcement given was not contingent on the quality of the behaviour exhibited by the child and was in all cases one relatively mild positive statement that signalled both satisfactory performance and the end of the practice. The intention was not to shape the correct behaviour but to avoid extinguishing it by not responding to it at all.

Prompting was done without pressure and 11 out of 12 of the children in this condition responded to minimal prompting. One child did not perform the behaviours after prompting and he was not pressed further. His behavioural data are included with those of the others in the Modelling/Practice group.

The female observer entered the experimental room after the manipulation phase of the second session. The observational and scoring procedures were exactly the same as in Part I of the research.

In each group of 4 children, the first child was simultaneously observed by both observers for the sixteen

15-second intervals. During the next 16 intervals, each observer recorded data for a child that he alone was observing. The fourth child in each group was again observed by both observers. Thus there is interobserver reliability data for 2 children out of each 4-member group. The total observational portion of each session lasted for forty-eight 15-second intervals (12 minutes).

The male observer who read, modelled, and prompted the affectionate behaviours was present during the free play situation as an observer. His behaviour during the free play was standardized. The alternative procedure of having the person who delivers the manipulations be absent from the free play sessions would not have paralleled the typical situation in day care centres in which the person who teaches certain behaviours is usually present when the children have an opportunity to perform those behaviours. Any tendency of the male observer to score behaviours in a biased manner would be revealed in lower interobserver reliabilities with the "blind" observer.

The behavioural data obtained in the initial session are referred to as "pretest" data and the data obtained in the second session, after the manipulation, are referred to as "posttest" data.

Results

The primary behaviour of interest was affection to toys. In order to assess whether there were significant differences in the amount of this behaviour, a $4 \times 2 \times 2$ analysis of variance was performed. The variables were treatment with four levels (control, verbal cuing, modelling, modelling/practice); pre- versus post-manipulation (designated "prepost"); and sex. Treatment and sex were handled as between factors and prepost was treated as a repeated factor. Raw data entered into the analysis consisted of the number of intervals that both observers agreed that affection to toys had occurred. The summarized results of this analysis are presented in Table II.

The results indicate significant main effects for treatment, prepost, and sex. The only significant interaction is treatment \times prepost. The effect of sex does not interact with the other independent variables. This result would justify collapsing across the sex factor for greater power in subsequent analyses. However, because of the large difference in amount of affection between boys and girls, such a pooling would be misleading and the data will be reported separately for each sex. Group means by treatment, prepost, and sex are reported in Table III.

In the absence of hypotheses about the relative magnitudes of specific post-treatment means, the differences

TABLE II

Summary of the ANOVA* for Affection to Toys

| Source | <i>df</i> | MS | <i>F</i> | <i>p</i> |
|---------------------------|-----------|--------|----------|----------|
| Treatment | 3 | 43.31 | 3.30 | .030 |
| Sex | 1 | 495.04 | 37.78 | .001 |
| Treatment x Sex | 3 | 11.24 | .86 | .471 |
| Error | 40 | 13.10 | | |
| Prepost | 1 | 18.38 | 5.31 | .027 |
| Treatment x Prepost | 3 | 23.01 | 6.65 | .001 |
| Prepost x Sex | 1 | .17 | .05 | .827 |
| Treatment x Prepost x Sex | 3 | 1.64 | .47 | .703 |
| Error | 40 | 3.46 | | |

*Cochran's *C* = .291; critical value for *df* (3, 45) is .360. Thus homogeneity of variance assumptions are satisfied.

TABLE III

Mean Number of Intervals During which Affection to Toys Occurred

| Treatment | Boys | | Girls | |
|--------------------|------|------|-------|------|
| | Pre | Post | Pre | Post |
| Control | 1.67 | .83 | 6.00 | 5.50 |
| Verbal Cuing | 1.17 | 1.00 | 4.83 | 3.67 |
| Modelling | 1.33 | 2.83 | 7.83 | 9.17 |
| Modelling/Practice | 2.00 | 4.67 | 5.33 | 9.50 |

between all possible pairs of means, within each sex, were computed. These differences were evaluated for significance by the Newman-Keuls Test. The results are reported for boys in Table IV and for girls in Table V.

The post Modelling/Practice mean is significantly higher than all other means, except the post Modelling mean, which itself is not significantly higher than the other means. The Modelling/Practice group is the only one to show significant pre to post increases.

The post Modelling and post Modelling/Practice means are both significantly higher than pre Control, post Control, pre Verbal Cuing, post Verbal Cuing, and pre Modelling/Practice means, although they are not significantly higher than the pre Modelling mean. Again the Modelling/Practice group is the only one to show significant pre to post increases.

The secondary dependent variable of interest was the behaviour aggression to toys. A $4 \times 2 \times 2$ analysis of variance with the same parameters as for affection to toys was performed. The summarized results of this analysis are reported in Table VI.

As can be seen, the sex variable was the only significant main effect. The treatment \times prepost interaction also reached significance. Group means for aggression to toys are reported in Table VII.

TABLE IV

Summary of the Newman-Keuls Test of the Differences for Boys
in Affection to Toys. Mean Number of Intervals in
Each Condition that the Behaviour Occurred

| | \bar{X}_1 | \bar{X}_2 | \bar{X}_3 | \bar{X}_4 | \bar{X}_5 | \bar{X}_6 | \bar{X}_7 | \bar{X}_8 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Group | .83 | 1.00 | 1.17 | 1.33 | 1.67 | 2.00 | 2.83 | 4.67* |
| Post Control ($\bar{X}_1 = .83$) | -- | .17 | .34 | .50 | .83 | 1.17 | 2.00 | 3.84* |
| Post Verbal Cuing ($\bar{X}_2 = 1.00$) | | -- | .17 | .33 | .67 | 1.00 | 1.83 | 3.67* |
| Pre Verbal Cuing ($\bar{X}_3 = 1.17$) | | | -- | .16 | .50 | .83 | 1.66 | 3.50* |
| Pre Modelling ($\bar{X}_4 = 1.33$) | | | | -- | .34 | .67 | 1.50 | 3.34* |
| Pre Control ($\bar{X}_5 = 1.67$) | | | | | -- | .33 | 1.16 | 3.00* |
| Pre Modelling/Practice ($\bar{X}_6 = 2.00$) | | | | | | -- | .83 | 2.67* |
| Post Modelling ($\bar{X}_7 = 2.83$) | | | | | | | -- | 1.84 |
| Post Modelling/Practice ($\bar{X}_8 = 4.67$) | | | | | | | | -- |

* $p < .05$

TABLE V

Summary of the Newman-Keuls Test of the Differences for Girls
in Affection to Toys. Mean Number of Intervals in
Each Condition that the Behaviour Occurred

| | \bar{X}_1 | \bar{X}_2 | \bar{X}_3 | \bar{X}_4 | \bar{X}_5 | \bar{X}_6 | \bar{X}_7 | \bar{X}_8 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Group | 3.67 | 4.83 | 5.33 | 5.50 | 6.00 | 7.83 | 9.17 | 9.50 |
| Post Verbal Cuing ($\bar{X}_1 = 3.67$) | -- | 1.17 | 1.66 | 1.83 | 2.33 | 3.16 | 5.50* | 5.83* |
| Pre Verbal Cuing ($\bar{X}_2 = 4.83$) | | -- | .50 | .67 | 1.17 | 3.00 | 4.34* | 4.67* |
| Pre Modelling/Practice ($\bar{X}_3 = 5.33$) | | | -- | .17 | .67 | 2.50 | 3.84* | 4.17* |
| Post Control ($\bar{X}_4 = 5.50$) | | | | -- | .50 | 2.33 | 3.67* | 4.00* |
| Pre Control ($\bar{X}_5 = 6.00$) | | | | | -- | 1.83 | 3.17* | 3.50* |
| Pre Modelling ($\bar{X}_6 = 7.83$) | | | | | | -- | 1.34 | 1.67 |
| Post Modelling ($\bar{X}_7 = 9.17$) | | | | | | | -- | .33 |
| Post Modelling/Practice ($\bar{X}_8 = 9.50$) | | | | | | | | -- |

* $p < .05$

TABLE VI
 Summary of the ANOVA* for Aggression to Toys

| Source | <i>df</i> | MS | <i>F</i> | <i>p</i> |
|---------------------------|-----------|--------|----------|----------|
| Treatment | 3 | 30.59 | 2.12 | .113 |
| Sex | 1 | 195.51 | 13.52 | .001 |
| Treatment x Sex | 3 | .16 | .04 | .988 |
| Error | 40 | 14.46 | | |
| Prepost | 1 | 11.34 | 3.41 | .072 |
| Treatment x Prepost | 3 | 14.01 | 4.21 | .011 |
| Prepost x Sex | 1 | .26 | .08 | .781 |
| Treatment x Prepost x Sex | 3 | 1.98 | .60 | .621 |
| Error | 40 | 3.32 | | |

*Cochran's *C* = .165; critical value for *df* (3, 45) is .360. Thus homogeneity of variance assumptions are satisfied.

TABLE VII

Mean Number of Intervals During which Aggression to Toys Occurred

| Treatment | Boys | | Girls | |
|--------------------|------|------|-------|------|
| | Pre | Post | Pre | Post |
| Control | 7.00 | 8.17 | 4.67 | 5.17 |
| Verbal Cuing | 7.50 | 8.33 | 4.83 | 4.67 |
| Modelling | 5.83 | 4.67 | 3.67 | 1.83 |
| Modelling/Practice | 8.00 | 4.83 | 4.17 | 2.50 |

To further probe the data, all possible pairs of means, within each sex, were compared. Differences were evaluated by the Newman-Keuls test. The results of this analysis are reported for boys in Table VIII and for girls in Table IX.

As can be seen, for boys the post Modelling and post Modelling/Practice means are significantly lower than the pre Modelling/Practice, post Control and post Verbal Cuing means. The only significant pre to post decrease was in the Modelling/Practice group.

For girls, there are no significant differences between treatment means, although the trend of the data is in the same direction, that is, the post Modelling and post Modelling/Practice means are the two lowest among the set of eight means.

Similar $4 \times 2 \times 2$ ANOVAs were performed on behaviours directed at peers. The summarized results of the analysis on affection to peers are reported in Table X. Results for aggression to peers are reported in Table XI. There are no significant main effects or interactions contributing to the means of either dependent variable.

Table XII gives interobserver reliability data for Part II of this study.

Discussion

The primary accomplishment of the present study was the development of an objective scoring system for aggressive

TABLE VIII

Summary of the Newman-Keuls Test of the Differences for Boys
in Aggression to Toys. Mean Number of Intervals in
Each Condition that the Behaviour Occurred

| | \bar{X}_1 | \bar{X}_2 | \bar{X}_3 | \bar{X}_4 | \bar{X}_5 | \bar{X}_6 | \bar{X}_7 | \bar{X}_8 |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Group | 4.67 | 4.83 | 5.83 | 7.00 | 7.50 | 8.00 | 8.17 | 8.33 |
| Post Modelling ($\bar{X}_1 = 4.67$) | -- | .16 | 1.16 | 2.33 | 2.83 | 3.33* | 3.50* | 3.66* |
| Post Modelling/Practice ($\bar{X}_2 = 4.83$) | -- | -- | 1.00 | 2.17 | 2.67 | 3.17* | 3.34* | 3.50* |
| Pre Modelling ($\bar{X}_3 = 5.83$) | -- | -- | -- | 1.17 | 1.67 | 2.17 | 2.34 | 2.50 |
| Pre Control ($\bar{X}_4 = 7.00$) | -- | -- | -- | -- | .50 | 1.00 | 1.34 | 1.33 |
| Pre Verbal Cuing ($\bar{X}_5 = 7.50$) | -- | -- | -- | -- | -- | .50 | .67 | .83 |
| Pre Modelling/Practice ($\bar{X}_6 = 8.00$) | -- | -- | -- | -- | -- | -- | .17 | .33 |
| Post Control ($\bar{X}_7 = 8.17$) | -- | -- | -- | -- | -- | -- | -- | .17 |
| Post Verbal Cuing ($\bar{X}_8 = 8.33$) | -- | -- | -- | -- | -- | -- | -- | -- |

* $p < .05$

TABLE X

Summary of the ANOVA for Affection to Peers

| Source | <i>df</i> | MS | <i>F</i> | <i>p</i> |
|---------------------------|-----------|------|----------|----------|
| Treatment | 3 | 5.78 | 1.93 | .141 |
| Sex | 1 | .38 | .13 | .726 |
| Treatment x Sex | 3 | 4.04 | 1.35 | .273 |
| Error | 40 | 3.00 | | |
| Prepost | 1 | .67 | .74 | .395 |
| Treatment x Prepost | 3 | 1.06 | 1.17 | .332 |
| Prepost x Sex | 1 | .04 | .05 | .831 |
| Treatment x Prepost x Sex | 3 | .04 | .05 | .987 |
| Error | 40 | .90 | | |

TABLE XI
 Summary of the ANOVA for Aggression to Peers

| Source | <i>df</i> | MS | <i>F</i> | <i>p</i> |
|---------------------------|-----------|------|----------|----------|
| Treatment | 3 | 3.18 | .85 | .476 |
| Sex | 1 | 5.04 | 1.34 | .253 |
| Treatment x Sex | 3 | 2.13 | .57 | .640 |
| Error | 40 | 3.75 | | |
| Prepost | 1 | .37 | .82 | .371 |
| Treatment x Prepost | 3 | .85 | 1.85 | .154 |
| Prepost x Sex | 1 | .38 | .82 | .371 |
| Treatment x Prepost x Sex | 3 | .46 | 1.00 | .403 |
| Error | 40 | .46 | | |

TABLE XII

Interobserver Reliability Data for Part II

| Observers | Session | Behaviours Directed at Toys | | | | | | | |
|-----------|---------|------------------------------|------|-------|------|------------|------|-------|------|
| | | Affection | | | | Aggression | | | |
| | | Boys | | Girls | | Boys | | Girls | |
| 1 & 2 | Pre | 16/19† | 84% | 42/49 | 86% | 40/46 | 87% | 34/40 | 85% |
| 1 & 3 | Pre | 3/4 | 75% | 17/19 | 89% | 30/34 | 88% | 20/24 | 83% |
| 1 & 3 | Post | 27/32 | 84% | 82/93 | 88% | 68/74 | 92% | 41/46 | 89% |
| | | Behaviours Directed at Peers | | | | | | | |
| 1 & 2 | Pre | 5/7 | 71% | 6/6 | 100% | 5/5 | 100% | 6/6 | 100% |
| 1 & 3 | Pre | 2/2 | 100% | 4/5 | 80% | 3/3 | 100% | 0/0 | |
| 1 & 3 | Post | 14/16 | 88% | 10/13 | 77% | 7/7 | 100% | 5/5 | 100% |

†Fractions indicate the value of $\frac{A}{A+D}$

and affectionate behaviours that involve physical contact. There have been numerous previous studies investigating pro-social and aggressive behaviours in young children but the present study used a scoring system that is unique in a number of ways.

The scoring criteria were designed to measure one important and specific class of behaviours--behaviours involving physical contact--and these behaviours were clearly differentiated from other aggressive and pro-social behaviours. The scoring system was designed to allow objective scoring of the maximal proportion of behaviours that are in the physical contact class. The objectivity and completeness of the scoring system arise from the specificity of the behavioural definitions used and from the hierarchical rules that were developed for using various types of behavioural cues in scoring decisions. The scoring system is also more applicable for use in minimally structured situations, and in situations where several children are present together, than other scoring systems. The obtained interobserver reliabilities are in the same range or higher than the values recorded in similar previous studies (Shroeer & Flapan, 1971a, 1971b; Walters, Pearce & Dahms, 1957).

Concern may exist with respect to the validity of the scoring system. Such concern will most likely be directed at the affection portion of the system rather than the aggression portion, as the behavioural definitions of

aggression used here have greater overlap with previously used and published definitions than the affection definitions. This appears to be primarily due to the greater number of reported studies investigating aggression than affection. The question of whether the behaviours that are being scored as affectionate are in fact behaviours that would be placed in the same category by other investigators may be raised. Such concern may be expressed at two levels. One level has to do with cognitive states and is associated with the view that affection is more "feeling than behaviour." Certainly, the scoring system does not attempt to obtain information about feelings of warmth, empathy, concern, and nurturance, through verbal reports. In some views, such verbal reports would give the most direct information about whether the child is being affectionate or not. However, such verbal behaviour has been shown to be under the close control of aspects of the social situation (Rosenthal, 1966) including perceived expectations and manner of asking questions, and is, in general, highly unreliable. In view of this and the limited verbal repertoires of the children, interview data were not systematically obtained. At any rate, the primary concern was with the nature of physical contact behaviours because of their importance in interpersonal interactions.

There is a fair degree of consensus on what behaviours are aggressive. There is less consensus on what behaviours

are affectionate. The fact that aggressive behaviours appear to vary inversely with the behaviours that are being defined as affectionate, lends support to the belief that the definitions of affection used here are valid and are tapping one aspect of the aggression-affection dimension.

A second level of concern with respect to the validity of the scoring system has to do with the behaviours that are being increased by the Modelling/Practice manipulation and that are being scored as affectionate. Are these behaviours the same as those produced in other situations? These behaviours would typically be hugs, pats, strokes, holding hands, snuggling, holding in lap, holding and making affectionate verbalizations, making feeding motions, and kisses. Certainly there is a possibility that the behaviours that appear affectionate at a gross level may be found to differ in subtle yet important ways, from affectionate behaviours in other situations, when subjected to a closer analysis. Such results were obtained by Acker and Acker (1970) in their attempts to shape affectionate behaviours. They were successful in obtaining behaviours that were approximations to the desired affectionate behaviours at a gross level but which were accompanied by more subtle inconsistent components such as frowning and lip-biting.

The scoring system relies primarily upon the nature of the physical contact and in most cases does not rely upon subtle aspects of the child's position and facial expression

in arriving at scoring decisions. Thus subtle inconsistencies in behaviour would not prevent a behaviour from being scored as affectionate if it appeared affectionate at a gross level.

Therefore, it is conceivable that subtle yet important differences exist between the affectionate behaviours produced by the Modelling/Practice manipulation and those produced by other means. Only a scoring system that makes discriminations at a much finer level and which simultaneously considers a number of aspects of the child's behaviour would be able to determine how similar or disparate pre and post manipulation behaviours are.

Such a scoring system would have to incorporate factors such as nature of the physical contact, posture, facial expression and verbalizations. Each of these factors can be broken into sub-components. For example, facial expression has important components such as amount of eye contact, position of lips and amount of facial muscle tension. Any system that is more complex than the one used in this study would probably require video-recording of the behaviours, as the present system taxed the observers near the limit of their information gathering abilities. However, if the behaviours could be viewed several times, more information could be extracted.

Even though it is difficult to be certain that pre and post manipulation behaviours were of the same "quality" the

observers did not notice any subtle differences, or any increase in the proportion of behaviours in which inconsistencies occurred between components of the behaviour. In the study by Acker and Acker (1970), the explanation for the occurrence of inconsistent components of behaviour along with gross affectionate behaviours was that the withholding of reinforcement necessary during shaping of gross affectionate behaviours could have elicited emotional responses evidenced through frowns, lip-biting, and other expressions of stress. In the present study, the manipulations did not involve procedures that were unfamiliar to children. In fact, the children probably originally learned affectionate behaviours through the same processes (modelling, practice) that are being used in the experiment to increase these behaviours. Thus there is no reason for learning theory, and no observational evidence, to suggest that the affectionate behaviours produced by the manipulations differ in any way from those occurring in other situations.

Two observational settings were used in Part I. Setting A involved observing one child at a time in a group of four, while setting B involved observing behaviours directed at one toy in a large group of children. Setting A only was used in Part II because of concern that manipulations involving a toy would increase its saliency leading to intense and perhaps aggressive competition for the one toy in setting B. However, with increased experience with

setting A it became apparent that this was not as natural as setting B, even though it was less artificial than settings used in previous research. The artificiality seemed to arise from the fact that adults (the observers) were present yet did not exercise behavioural control and did not interact with or respond to the children. Some groups of children seemed to take this opportunity to "show off" or "test" the observers by engaging in what appeared to be unusually loud or vigorous, although not aggressive, play--perhaps in an attempt to get a response from the non-interacting observers.

The results from Part II indicate that the Modelling/Practice treatment was effective in increasing affection in both boys and girls. The Modelling/Practice groups were the only ones that showed significant pre to post increases in affection. Boys in this group also showed significant pre to post decreases in aggression. Girls in this group showed a trend toward decreased aggression which reached the $p = .07$ level of significance. Girls had lower pre scores on aggression than boys, thus a "bottoming" effect may have been contributing to the lack of significance. Further research with more extended treatment and greater experimental control could possibly result in significantly decreased aggression in girls. The Modelling treatment groups did not show significant changes in either affection or aggression although both boys and girls showed pre to post increases in affection and decreases in aggression.

In a sense, the present study extends the findings of Bandura and Walters (1963) by showing that modelling plus practice increased affectionate behaviour in young children. Modelling alone, which appears sufficient to cause increased aggression, did not produce significant increases in affection. It is possible that more extensive exposure to the model, the use of female models, and greater experimental control could lead to significant increases in affection as a result of modelling alone. The findings also lend tangential support to the theories of Piaget as the obtained hierarchy of treatment effectiveness reflects the predictions made from his model of the modes by which 4 and 5 year old children assimilate information.

It is worth noting that prior to treatment girls engaged in three to four times more affection to toys than did boys. Boys engaged in roughly twice as much aggression to toys than did girls. These differences are presumed to reflect differential reinforcement histories between the sexes for physically affectionate and physically aggressive behaviours.

It must also be noted that it is possible to interpret the Control and Verbal Cuing treatments as being instances where "do not touch the stuffed animals" was the behaviour modelled. There were in fact slight pre to post trends toward decreased affectionate contacts with the animals in these two conditions. However, this trend did not hold for

aggressive contacts.

A potentially more serious threat to the clear interpretation of the results lies in the fact that there were differences in the duration of contact between the model and the children in the administration of the different treatments. The Verbal Cuing treatment took longer than the Control treatment as the pertaining story was some 200 words longer. The Modelling treatment lasted longer than the Verbal Cuing by the amount of time that it took the model to demonstrate the behaviours. The Modelling/Practice treatment was of longer duration yet because of the extra time required for the children to practice. Thus, duration of time spent in the treatment phase is confounded with treatment. These differences in duration of contact with the model are small in proportion to the total amount of time that children had with the model so that familiarity with the model did not vary greatly between groups. However, these differences are reasonably large as a proportion of the duration of the manipulation phase alone and thus could be contributing to obtained differences among the conditions.

Certainly further investigation of the Modelling treatment is indicated because of the prevalence and salience of modelled behaviours in the experience of young children. Possibly greater magnitude of effects could be obtained through more extensive exposure to the modelled behaviours. Also, since the strength of the modelling effect seems to be

associated with the perceived sex appropriateness of the behaviour modelled (Bandura, Ross & Ross, 1961) and since models seem to have a greater effect on same sex subjects (Rosenblith, 1959), a more powerful effect may be found, especially in girls, if a female were used to model affection. Fryrear and Thelen (1969) have shown that a female model is more successful than a male in transmitting affection. In the present experiment, the lack of significant effects from the Modelling treatment may also partly be due to the fact that children were observed in groups rather than when alone (the latter pertaining in most other studies of modelling). The greater range of stimuli available to a child in a group may decrease the saliency of the model.

At this stage, the most important conclusions to be drawn from the research do not have to do with the specific magnitudes of effects that have been obtained by use of the various treatment conditions. The main value of the manipulation phase of the research lies in the demonstration that a simple procedure can increase affection in boys and girls and can decrease aggression in boys and possibly in girls. It appears that the Modelling/Practice treatment provides a response set toward affectionate behaviour; thus an alternative and somewhat incompatible behaviour to aggression is increased and aggressive behaviour decreased.

Acker, Acker and Pearson (1973) found that their manipulations consisting of modelled affection and aggression in

concert with physical contact training increased both imitative physical affection and imitative physical aggression. In the present study, the boys in the Modelling/Practice treatment showed both a significant increase in affection and a significant decrease in aggression. The girls showed a significant increase in affection and no significant change in aggression. The disparity between the two sets of results seems to be due to the modelling and practice of the specific desired behaviours in the present study rather than the training of a class of behaviours (physical contact behaviours) which subsumes both affectionate and aggressive behaviours. Aggression was never modelled by the experimenters in the present study. As well, the naturalistic and familiar context of the present research may lessen any possible tendency to inhibit affectionate and increase aggressive behaviours which may occur under unfamiliar or anxiety-producing experimental conditions.

In addition, the direct training of affectionate behaviours through modelling plus practice, in a familiar context as employed in the present study, appeared to obviate instances of frowning, lip-biting, furrowed eyebrows, and other indicators of stress observed when shaping procedures were used to produce affection (Acker & Acker, 1970).

The finding that a natural and easy procedure which can be incorporated into regular story-telling activities in homes and day care centres can increase affectionate

behaviours suggests that direct training of affectionate behaviours is practicable.

Increasing positive behaviours, behaviours that enhance the likelihood that a person will be reinforcing to others and will be reinforced by others, may increase the pleasantness of interpersonal relationships (Stuart, 1969). A child with a history of positive interactions may be more likely to come under the positive control of others, that is, be more sensitive and responsive to others, than individuals without this reinforcement history (Stuart, 1970, 1971). Such a child may also be more successful at exerting positive control over others. Affectionate behaviours are certainly among the important positive social behaviours.

Research on affectionate behaviours has long been neglected. Development and use of naturalistic methods of increasing affectionate behaviours has the potential to greatly improve the quality of life for children and for those who live with them.

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APPENDIX A

Sample Scoring Sheets

Sample Data Sheet for Procedure B

DATE: 16/1/76 DAY CARE: 1 + 2
 TREATMENT: 1 GROUP SIZE: 10 M = 7 F = 3
 OBSERVER: JM

| | Behaviour | | Interv. Exchange Proma | Behaviour | | | Behaviour | | |
|----|-----------|-----|------------------------------|-----------|-----|----|-----------|-----|----|
| | AFF | AGG | | AFF | AGG | | AFF | AGG | |
| 1 | - | T | | 1 | - | - | 1 | - | - |
| 2 | - | T | | 2 | - | T | 2 | - | T |
| 3 | T | T | | 3 | - | T | 3 | - | TP |
| 4 | T | T | | 4 | - | T | 4 | - | TP |
| 5 | - | T | | 5 | - | - | 5 | - | TP |
| 6 | T | T | | 6 | - | - | 6 | - | TP |
| 7 | - | T | | 7 | - | - | 7 | - | TP |
| 8 | - | TP | | 8 | - | - | 8 | - | TP |
| 9 | - | TP | | 9 | - | - | 9 | - | T |
| 10 | - | T | | 10 | T | T | 10 | - | TP |
| 11 | - | TP | | 11 | - | T | 11 | - | TP |
| 12 | - | TP | | 12 | - | T | 12 | - | TP |
| 13 | - | - | | 13 | T | - | 13 | - | TP |
| 14 | - | - | | 14 | - | T | 14 | - | TP |
| 15 | - | - | | 15 | T | - | 15 | - | TP |
| 16 | - | T | | 16 | - | - | 16 | - | TP |
| 17 | - | - | | 17 | - | T | 17 | - | T |
| 18 | - | - | | 18 | - | T | 18 | - | - |
| 19 | - | - | | 19 | - | T | 19 | - | - |
| 20 | - | - | | 20 | - | TP | 20 | - | TP |
| 21 | - | - | | 21 | - | T | 21 | - | TP |
| 22 | - | - | | 22 | T | - | 22 | - | TP |
| 23 | - | T | | 23 | - | TP | 23 | - | - |
| 24 | - | T | | 24 | - | T | 24 | - | - |

APPENDIX B

- Stimuli: 1. Experimental Story
2. Control Story
3. Illustrations.

EXPERIMENTAL STORY

CHRISTOPHER'S VISIT TO THE ZOO

One day Christopher went to visit the zoo. He took with him some lettuce, peanuts, and bread to feed to the animals. Going along with Christopher was his puppy, whose name was Dino. They went along the streets to the zoo and Dino was very excited and he kept running in front of Christopher and then running back to him. He was saying, "Hurry up you slowpoke, I want to get to the zoo quickly."

Soon, they got to a place that was just across a busy street from the zoo. Christopher and Dino still had to cross the street before they were on the zoo grounds. There was a policeman at the crossing and when he saw Christopher and Dino he raised one hand and blew on his whistle for the cars to stop. Then he smiled at Christopher and waved with his other hand for him and Dino to cross over.

As soon as they were safe on the other side they started up a path to where the animals were kept. Along the way a small white rabbit came bouncing out from behind the trees. It was a very brave rabbit and it came right up to Christopher. It said, "Please--can you give me some food? The zoo-keeper never gives me enough to eat." Christopher could tell that this was true because the white rabbit was very skinny. So Christopher gave the rabbit some bread and lettuce and patted him. The rabbit said, "Thank you, you are much nicer to

me than the zoo-keeper. Can I go home with you?" Christopher said he would like that so the three of them continued on their way together.

Soon they arrived at the cage where the bears were kept. There were some big adult bears and a baby bear in the cage. All the visitors were throwing peanuts to the bears but the baby bear couldn't get any because the big bears always got to them first. When the baby bear saw the little white rabbit he was very curious because he had never seen anything quite like that before. He tried to get to the rabbit. And do you know what he found out? He found that because he was so tiny he could get out under the bars of the cage. When Christopher saw how small and hungry looking the bear was he gave him lots of peanuts and patted him. So the bear started following Christopher too, because Christopher was much nicer to him than the zoo-keeper and the other bears.

By this time, it was getting late, so Christopher and the animals started home. First there was Christopher, then the puppy, the rabbit, and the bear. On their way they passed by a house where the birds were kept. A yellow bird flew out and said, "Can I go home with you too? The zoo-keeper never gives me enough birdseed."

So now there was Christopher and four animals following him--the puppy, the rabbit, the bear, and the bird. They were on their way out from the zoo when all of a sudden the zoo-keeper saw them. He started chasing them. But Christo-

pher and the animals were almost at the busy street. When the policeman saw them, he was so surprised he almost dropped his whistle. He stopped the traffic until Christopher and the animals got safely to the other side. Then he let the cars and trucks go again and when the zoo-keeper got there he couldn't cross the street. The policeman would not stop the traffic for him and he couldn't cross the street because he would have been run over. He had to give up the chase and go back to the zoo.

Christopher and the animals hurried home. When they arrived, Christopher quickly let all the animals inside and then locked the door behind him. He felt safe because he knew the zoo-keeper would never be able to find them.

The animals were hungry and Christopher gave each one a plate of food. He gave his puppy a bone, and he patted the puppy until he finished eating. Then he gave the rabbit some carrots and lettuce and he patted the rabbit until it finished eating. The rabbit's fur was very soft and nice to touch. Christopher then gave the bear some honey and patted the bear while he was eating the honey. Christopher then fed some birdseed to the bird, and patted the bird while it ate.

All the animals liked to be patted because it felt good to have Christopher be so nice to them. Because Christopher patted them they knew that he was their friend.

After this it was bedtime. Before going to bed himself Christopher made up a bed for each animal. First he hugged his puppy, then he lifted him up carefully, put him in his bed, and kissed him goodnight. Christopher was always very careful and gentle in the way he carried his animals because he knew it would hurt them if he carried them the wrong way. After the puppy was in bed, Christopher carefully picked up the rabbit, carried him to bed and kissed him goodnight. He then carefully picked up the bear, carried him carefully to bed, hugged him, and kissed him goodnight. Christopher then carefully picked up the bird, hugged him, carried him to his bed, and kissed him goodnight.

All the animals then went to sleep dreaming about their new friend, Christopher, who had treated them so nicely and carefully. They dreamed about how nice it was going to be to play with him and with each other the next day.

CONTROL STORY

One day Christopher went to visit the zoo. Going along with Christopher was his puppy, whose name was Dino. They went along the streets to the zoo and Dino was very excited, and he kept running in front of Christopher and then running back to him. He was saying, "Hurry up you slowpoke, I want to get to the zoo quickly."

Soon, they got to a place that was just across a busy street from the zoo. Christopher and Dino still had to cross the street before they were on the zoo grounds. There was a policeman at the crossing and he raised one hand and blew his whistle for the cars to stop. Then he motioned with his other hand for Christopher and Dino to cross over.

As soon as they were safe on the other side, they started up a path to where the animals were kept. Along the way a small white rabbit came bounding out from behind the trees. It was a very brave rabbit and it came right up to Christopher. It said, "Hi! Welcome to the zoo. Would you like me to show you around?" Christopher said he would like that, so the three of them continued on their way together.

Soon they arrived at the cage where the bears were kept. There were some big adult bears and one young bear in the cage. The young bear was small enough that he could get out between the bars of the cage. He did just that and joined Christopher, Dino, and the rabbit on their way around the

zoo. On their way they passed by the house where the birds were kept. A yellow bird flew out and said, "Can I go around with you too?" Christopher said he would like that so now there were four animals following him--the puppy, the rabbit, the bear, and the bird.

It was getting late and soon it would be time for Christopher to go home. But before leaving, he had an idea and he spoke to the rabbit and the bear and the bird. "I have seen where you live; now would you like to come with me and see the house where I live?"

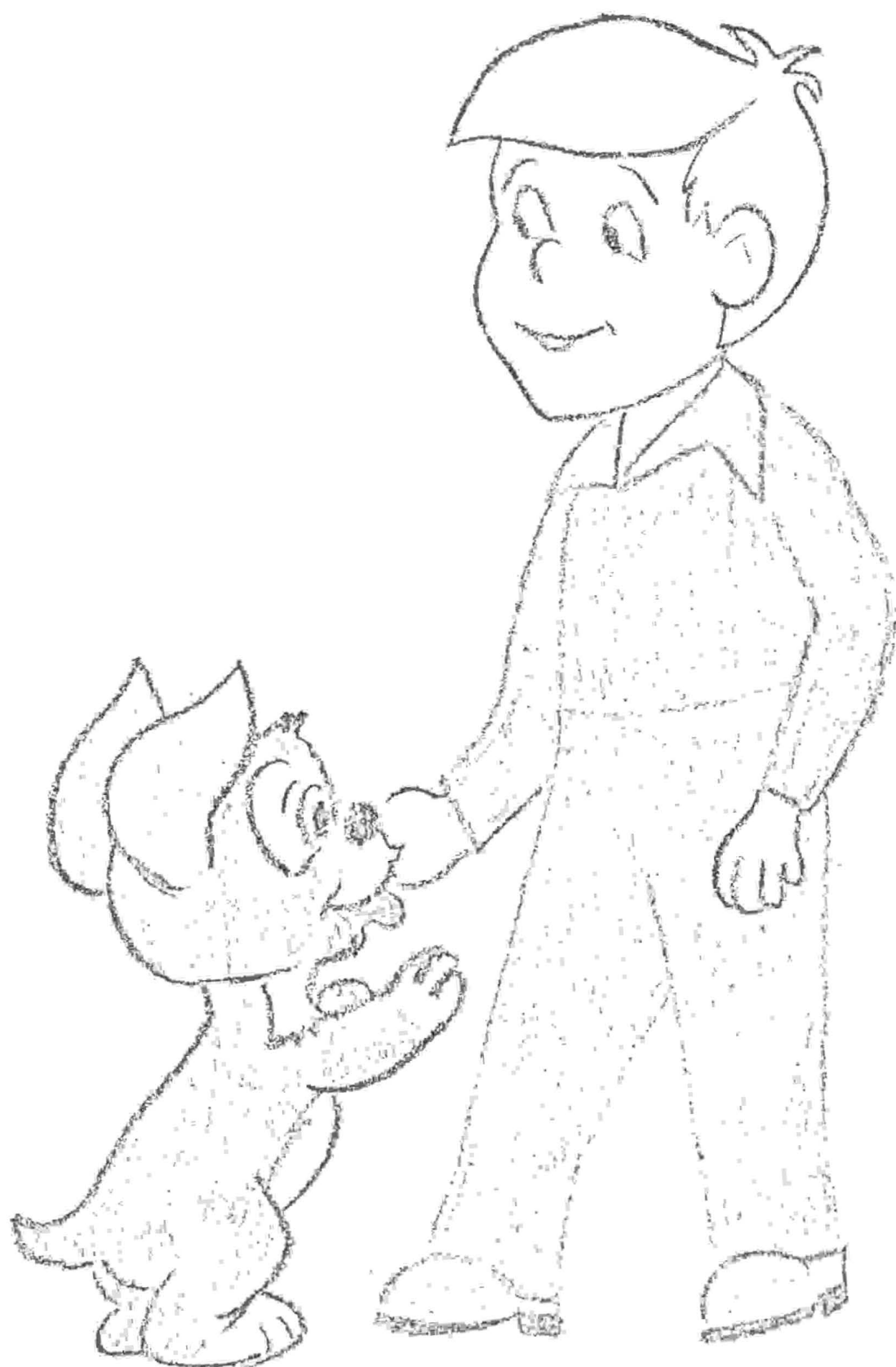
All the animals were excited and wanted to go. So they started on the way to Christopher's house and soon they were at the busy street. When the policeman saw Christopher and all the animals he was so surprised he almost dropped his whistle. He stopped the traffic until Christopher and the animals got safely to the other side. Then he let the cars and trucks go again.

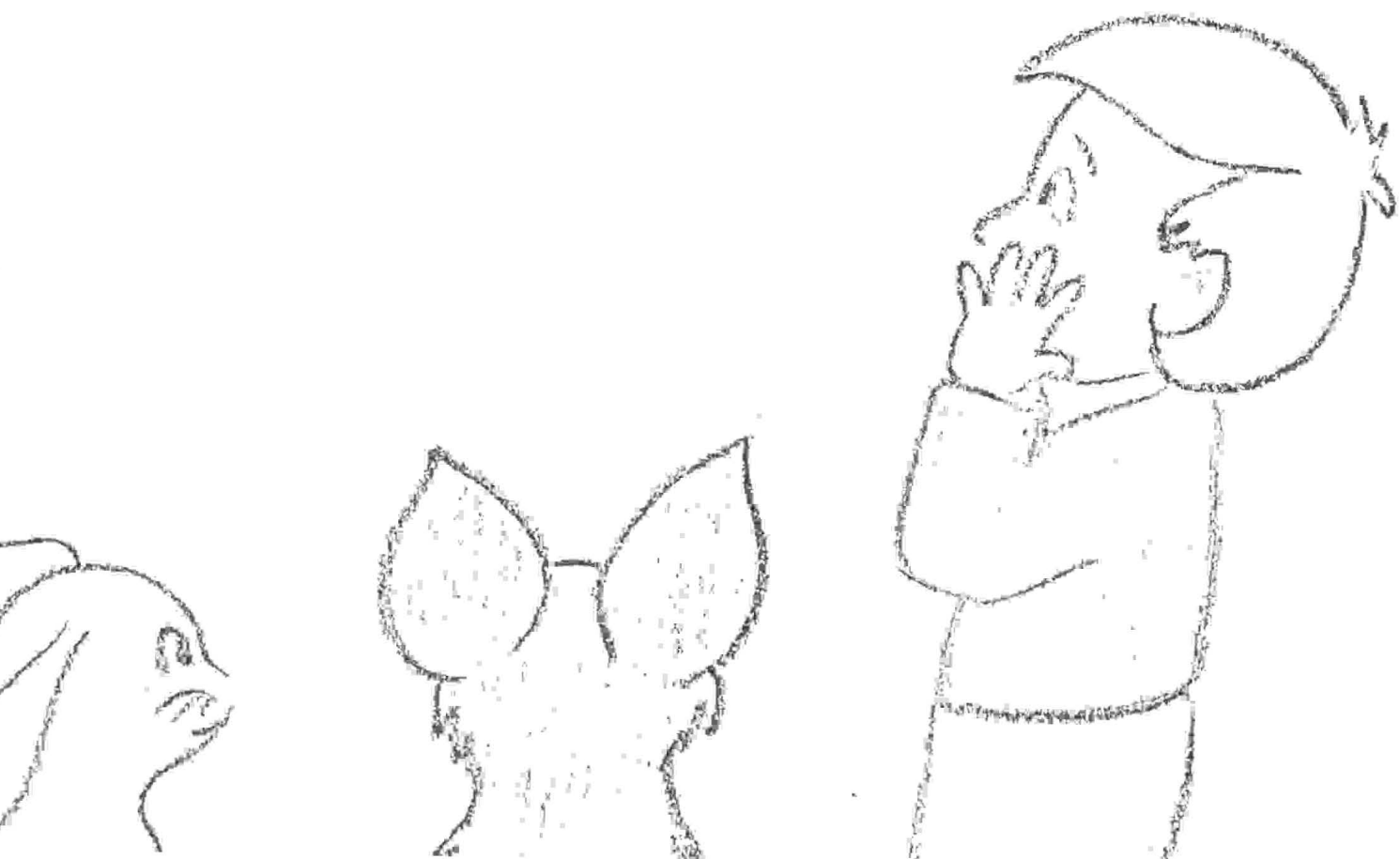
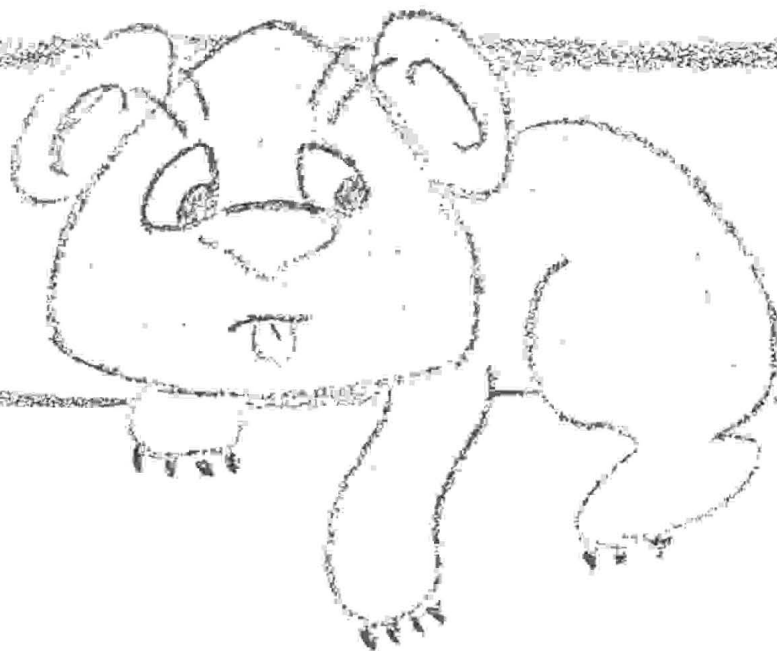
Christopher and the animals hurried to his house. When they arrived Christopher let the animals inside and started to show them around. The animals from the zoo were surprised by what the inside of a house looked like because they had never been in one before. Christopher and his puppy led the way and the other animals followed them around the house. First they went in the basement but there wasn't too much to look at there, so they soon went upstairs to the kitchen.

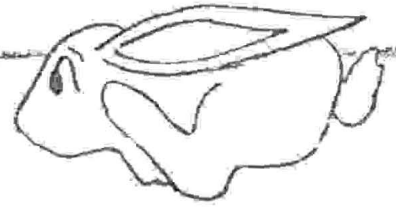
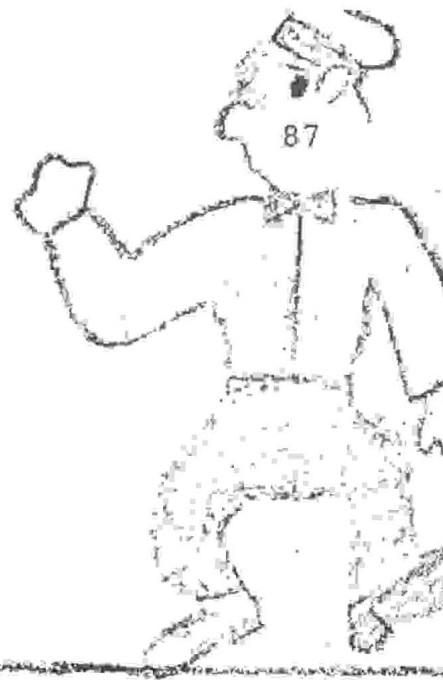
The rabbit smelled the food in the garbage under the kitchen sink. When Christopher wasn't looking he climbed up the garbage can, pulled up the lid and crawled inside. As soon as he was inside, he knew that he had made a mistake because the lid closed and he was trapped inside in the dark. There was no way for him to get out. Meanwhile the young bear had smelled the food from the cupboard and when Christopher wasn't looking, he crawled inside, pulled the door closed behind him and started eating the goodies. He filled up on meat and cheese and apples. Then he decided to get out because he was full, but he found that he couldn't get out because he couldn't reach the handle of the cupboard door. While all this was happening, the yellow bird had flown into a cupboard too and was filling himself up on the bread and other food inside.

Christopher didn't know what had happened to the animals from the zoo. He didn't know where they had gone. So he asked Dino, the puppy, to find them. Dino sniffed around and barked at the garbage. Christopher opened the lid and found a very fat white rabbit inside. The rabbit had eaten all the leftovers. Then the puppy started barking at the cupboard. Christopher opened the door and out came a very fat bear and the yellow bird. They had eaten most of the food inside. The yellow bird had eaten so much that he couldn't fly.

Because all the animals were so full of food that they could barely walk, Christopher let them stay over at his house during the night before taking them back to the zoo the next morning.









APPENDIX C

Raw Scores

Raw Scores for Boys

| Condition | S | Behaviours to Toys | | | | Behaviours to Peers | | | |
|-----------|---|--------------------|------|------------|------|---------------------|------|------------|------|
| | | Affection | | Aggression | | Affection | | Aggression | |
| | | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| Control | 1 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 0 |
| | 2 | 2 | 0 | 6 | 6 | 0 | 0 | 3 | 5 |
| | 3 | 4 | 2 | 12 | 11 | 0 | 1 | 0 | 0 |
| | 4 | 0 | 1 | 7 | 9 | 4 | 2 | 6 | 4 |
| | 5 | 1 | 0 | 6 | 11 | 0 | 0 | 0 | 1 |
| | 6 | 3 | 2 | 8 | 7 | 0 | 0 | 0 | 0 |
| Verbal | 1 | 0 | 1 | 11 | 10 | 1 | 0 | 2 | 0 |
| | 2 | 4 | 0 | 7 | 5 | 0 | 2 | 0 | 0 |
| | 3 | 1 | 0 | 4 | 8 | 0 | 0 | 0 | 0 |
| | 4 | 2 | 3 | 6 | 7 | 0 | 0 | 0 | 0 |
| | 5 | 0 | 0 | 13 | 11 | 0 | 0 | 0 | 3 |
| | 6 | 0 | 2 | 4 | 9 | 0 | 0 | 0 | 0 |
| Model | 1 | 1 | 0 | 4 | 2 | 2 | 3 | 0 | 0 |
| | 2 | 0 | 3 | 5 | 6 | 0 | 0 | 5 | 4 |
| | 3 | 0 | 2 | 11 | 7 | 0 | 0 | 0 | 0 |
| | 4 | 5 | 6 | 5 | 5 | 1 | 0 | 0 | 0 |
| | 5 | 0 | 4 | 4 | 1 | 0 | 1 | 0 | 0 |
| | 6 | 2 | 2 | 6 | 7 | 0 | 0 | 1 | 0 |
| Practice | 1 | 3 | 4 | 6 | 4 | 0 | 3 | 0 | 0 |
| | 2 | 5 | 3 | 14 | 7 | 3 | 3 | 3 | 1 |
| | 3 | 1 | 5 | 8 | 3 | 0 | 0 | 1 | 0 |
| | 4 | 2 | 6 | 4 | 1 | 6 | 5 | 0 | 0 |
| | 5 | 0 | 3 | 7 | 4 | 0 | 0 | 0 | 0 |
| | 6 | 1 | 7 | 9 | 10 | 2 | 4 | 3 | 0 |

Raw Scores for Girls

| Condition | S | Behaviours to Toys | | | | Behaviours to Peers | | | |
|-----------|---|--------------------|------|------------|------|---------------------|------|------------|------|
| | | Affection | | Aggression | | Affection | | Aggression | |
| | | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| Control | 1 | 8 | 6 | 2 | 2 | 2 | 3 | 1 | 2 |
| | 2 | 0 | 4 | 12 | 14 | 0 | 0 | 0 | 0 |
| | 3 | 7 | 5 | 5 | 3 | 0 | 0 | 0 | 0 |
| | 4 | 6 | 6 | 2 | 7 | 0 | 0 | 2 | 3 |
| | 5 | 4 | 3 | 4 | 0 | 0 | 0 | 0 | 0 |
| | 6 | 11 | 9 | 3 | 5 | 5 | 2 | 0 | 1 |
| Verbal | 1 | 4 | 8 | 7 | 3 | 0 | 0 | 0 | 0 |
| | 2 | 3 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| | 3 | 3 | 0 | 8 | 10 | 0 | 0 | 0 | 0 |
| | 4 | 9 | 6 | 5 | 6 | 1 | 0 | 6 | 4 |
| | 5 | 2 | 1 | 5 | 4 | 0 | 3 | 0 | 0 |
| | 6 | 8 | 5 | 2 | 3 | 1 | 1 | 0 | 0 |
| Model | 1 | 2 | 5 | 6 | 3 | 0 | 0 | 0 | 0 |
| | 2 | 11 | 10 | 5 | 4 | 3 | 2 | 0 | 0 |
| | 3 | 16 | 14 | 0 | 0 | 3 | 3 | 0 | 0 |
| | 4 | 12 | 11 | 1 | 2 | 2 | 0 | 0 | 0 |
| | 5 | 0 | 5 | 7 | 0 | 0 | 3 | 0 | 0 |
| | 6 | 6 | 10 | 3 | 2 | 0 | 0 | 0 | 0 |
| Practic | 1 | 2 | 6 | 3 | 1 | 0 | 1 | 0 | 0 |
| | 2 | 5 | 6 | 4 | 4 | 0 | 0 | 0 | 0 |
| | 3 | 4 | 12 | 2 | 0 | 0 | 3 | 0 | 0 |
| | 4 | 6 | 6 | 4 | 3 | 2 | 1 | 1 | 0 |
| | 5 | 9 | 11 | 3 | 3 | 2 | 2 | 0 | 0 |
| | 6 | 6 | 6 | 9 | 4 | 0 | 2 | 0 | 0 |

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MEASUREMENT AND FACILITATION OF AFFECTIONATE BEHAVIOUR

IN YOUNG CHILDREN

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July 30, 1976

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