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THE DEVELOPMENT, DURABILITY, AND GENERALIZABILITY
OF SHARING IN PRESCHOOL CHILDREN

by

Edward James Barton

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Psychology

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1977

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Edward James Barton

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ABSTRACT

The Development, Durability, and Generalizability
of Sharing in Preschool Children

by

Edward James Barton, Doctor of Philosophy

Utah State University, 1977

Major Professor: Frank R. Ascione
Department: Psychology

The purpose of this study was to investigate three different programs designed to increase verbal and physical sharing and to determine the generalizability and durability of the behaviors that were trained. Eight groups of four preschool children, balanced for sex, were observed for 16 minutes daily during a free play period in their preschool classroom. After eight days of baseline, 24 children received one of three types of training for eight sessions. Eight children were taught to verbally share, eight to physically share, and eight to both verbally and physically share. All of these children received a treatment package composed of instructions, modeling, behavioral rehearsal, prompting, and praise. After the training phase, these children were returned to the baseline condition for eight days. The remaining eight children served as a no treatment control. Each day immediately following free play the children were observed for 12 minutes while working on a different task (art) in a different classroom, with a different experimenter, observers, and materials. Four

weeks after training ended all the children were observed for an additional five days during both the free play and art activities.

Children trained to verbally share showed an increase in verbal sharing which diminished when treatment was withdrawn and failed to generalize to another setting (art). There was, however, a concomitant increase in physical sharing during both activities that was maintained even during the follow-up. Similarly, children taught to share verbally and physically demonstrated the same effects of treatment as those receiving only training in verbal sharing. The magnitude of these effects, however, was slightly greater for those children who were taught both types of sharing. Training in only physical sharing produced larger increases in physical sharing in both settings than the other two approaches but these effects were lost when treatment was terminated. Verbal sharing among these children was unaffected by the treatment. Finally, for those children who did not receive any training, no systematic increases in either verbal or physical sharing were observed. Therefore, the high level of physical sharing during the follow-up for those children who were only taught to verbally share and for those who were instructed to verbally and physically share was not due to the change in the natural course of sharing over time but rather due to the treatments. Training children to verbally share, physically share, or both had no effect on the rate with which they refused to share.

The present findings suggest that to facilitate sharing among preschool children, at a minimum they must be taught to share verbally. Training children to share only physically is not recommended because

it was not durable and did not generalize. Training both verbal and physical sharing produced results with a magnitude slightly greater than teaching just verbal sharing but in the absence of a cost-benefit analysis, the additional training is questionable.

Without special programming some of the effects generalized to another setting and were maintained about four weeks after the termination of the treatment. There was response generalization of verbal to physical sharing but not vice versa. Hypotheses concerning why generalization occurred without specific programming, future areas of research, and ethical considerations are discussed.

(170 pages)

INTRODUCTION AND REVIEW OF THE LITERATURE

Forty-two years ago a researcher at the University of Southern California reported that "it appears as if it will be possible to establish a preschool environment which will tend to induce sharing behavior" (Currier, 1934, p. 75). Since the beginning of formal education many teachers no doubt have used a variety of techniques to develop sharing among school children. Likewise, during the past 20 years a number of laboratory studies have been conducted that suggest that sharing can be systematically encouraged among young children. There is, however, very little empirical evidence that sharing can be taught in a naturalistic setting. In fact, Currier's prediction was not verified with supportive data until 1976.

The following review will attempt to:

- (a) demonstrate the need for naturalistic research on prosocial behavior,
- (b) critique definitions of cooperation, altruism, and sharing to generate a workable definition of sharing that is independent of the other two response classes,
- (c) analyze the relationship of certain subject characteristics (i.e., age and sex) to sharing,
- (d) describe behavioral techniques that have been successfully used in the laboratory to encourage sharing,
- (e) evaluate the few studies that have used similar techniques to develop sharing in naturalistic settings, and

(f) identify crucial gaps in our knowledge about the origins and maintenance of sharing.

Historical Background and Need

During the past two decades, there has been a proliferation of research on prosocial behavior. Prior to the sixties, very few studies looked at behaviors that helped others. Probably one of the major reasons for the recent surge of investigations of prosocial behavior was the suggestion that Americans were becoming apathetic to the needs of others (Hoffman, 1975). This lack of concern for others was poignantly brought to national attention by the murder of Kitty Genovese, which was witnessed by 35 people who neither interceded nor called for the police (Rosenthal, 1964).

"Except for formal manners which are often diligently emphasized by parents, a child's social behaviors are usually left to be developed in the course of his interactions with the peers and the adults in his environment" (Risley & Baer, 1973, p. 311). Although some training may occur prior to six years of age, much of the responsibility of developing prosocial behavior in our young is left to the schools. The American educational system, however, "has been negligent in its attention to systematic methods and strategies for enhancing" prosocial behavior (Strain, Cooke, & Appolloni, 1976, p. 1). Even though there is widespread agreement among psychologists and educators that the development of prosocial behavior has been neglected too long (e.g., Beatty, 1969; Henderson, 1972), little attention has been paid to the systematic encouragement of prosocial behavior among young children

(Strain et al., 1976). Most of the research in this area has examined correlates of prosocial behavior such as sex, age, social class, and nationality or has attempted to provide theoretical accounts governing its occurrence. The remaining studies, although investigating techniques to develop prosocial behavior, have been conducted primarily in laboratory settings. Only a few studies have attempted to encourage such behavior in the natural environment.

It is generally assumed by behavioral psychologists that environmental variables play a predominant role in the young child's ability to interact with peers (e.g., Appolloni & Cooke, 1975; Bloom, 1964). The very recent trend in preschool and kindergarten education emphasizing the development of prosocial behavior reflects this position (Bereiter, 1972). Current preschool and kindergarten programs "provide children with extensive opportunity to interact with other children; social interaction between children is promoted by scheduling activities and providing play materials and physical settings which maximize contacts between participating children" (Risley & Baer, 1973, p. 311). Even though there is an emphasis on prosocial behavior, teachers may not treat the development of this skill as systematically as would be desired. Although most teachers keep a very precise record of a child's academic and cognitive growth, few maintain similar data on prosocial development. "However, this casualness is sometimes unwarranted for a child may learn to interact with other children by coercing and intimidating them and to interact with adults by crying, having tantrums, and whining" (Risley & Baer, 1973, p. 314). Thus, research investigating

strategies that teachers can use to develop prosocial behavior is sorely needed.

Types of Prosocial Behavior

Prosocial behavior may be defined as those responses emitted by an individual that benefit others. This definition excludes nonsocial behaviors, such as isolate play, which do not enhance another's condition, and antisocial behaviors, such as stealing, that are detrimental to another. In most cases, it is easy to determine whether a social behavior should be classified as prosocial or not. Certain behaviors present problems, however. For example, competition usually would not be classified as prosocial as it typically does not benefit anyone other than the person making such a response. But there are some situations when competitive behavior results in positive consequences for others (e.g., gas wars mean lower prices for the consumer).

Many types of prosocial behaviors have been studied: aiding, altruism, comforting, cooperation, defending, generosity, helping, other-centeredness, rescuing, sharing, and sympathizing. Some of these are mutually exclusive (e.g., rescuing and sharing) while others represent different terms for similar activities (e.g., aiding and helping). In the following sections, definitions of three types of similar prosocial behavior (i.e., cooperation, altruism, and sharing) will be critiqued to generate a definition of sharing that is independent of the other two.

Cooperation

Cooperation has been defined as occurring in situations where two or more individuals are involved in any activity and some form of verbal, physical, or visual interaction is evident (Nordquist & Bradley, 1973). Although this definition appears quite satisfactory, it could be applied to a number of other prosocial behaviors (e.g., sharing) as well as a variety of antisocial behaviors (e.g., aggression). Mithaug (1973) has defined cooperation as occurring when there is an interdependent task that requires the responses of two or more individuals for completion. This definition does not include situations where working alone can result in some reinforcement but where working together produces even more of a payoff. Some researchers (e.g., Evans, 1965) have argued that these situations should be included in the definition of cooperation. In fact, Mithaug (1969) originally included such situations in his study of cooperative responses. Doing so, however, makes defining sharing as independent of cooperation impossible. In addition, it is very difficult to determine if individual reinforcement is more valuable to the person than group reinforcement. Therefore, for purposes of this review, Mithaug's (1973) definition of cooperation will be used. Since the present study will not be concerned with the measurement of cooperation, the remainder of the review will exclude cooperation studies. (For an in depth analysis of the cooperation literature, refer to Hake and Vukelich, 1972, and Lindsley, 1966.)

Altruism

Unlike cooperation, there is much less agreement among researchers on what altruism is and whether or not such a term has heuristic value.

A typical definition of altruism is that "the donor wants the recipient to be happy; no consideration of interpersonal debt or profit is involved" (Dreman, 1976, p. 189). Such a definition is impossible to verify empirically as is the following definition: "behavior intended to benefit another but which appears to have a high cost to the actor with little possibility of material or social reward" (Bryan & London, 1970, p. 200). There are at least two serious problems with these definitions. First, each refers to the intent of the act, which of course cannot be directly observed but only inferred from interviews, questionnaires, or historical factors. Second, these definitions imply that altruism is an end in itself (Leeds, 1963), that it occurs in the absence of reinforcement (Rosenhan & White, 1967), and that there is a net cost to the actor (Hoffman, 1975). These assumptions can never be proven since altruism may be maintained on extremely lean, intermittent schedules of reinforcement (Ferster & Skinner, 1957) or by subtle payoffs that are difficult to detect. The benefactor, in fact, might view his/her acts as having a net gain. These definitions suggest that altruism is a behavior separate from other prosocial behaviors (e.g., generosity, rescuing) which produce obvious returns (e.g., giving to a church results in tax exemptions).

The value of the term altruism, as currently defined, is questionable. However, it is beyond the scope of this paper to determine the heuristic value of the term. There have been several articles analyzing the altruism literature that address the issue of definitions (Bryan & London, 1970; Harris, 1968; Krebs, 1970; Macaulay & Berkowitz, 1970; Midlarsky, 1968; Rushton, 1976). The present review will only refer to those altruism studies related to sharing.

Sharing

Unlike altruism, reference to sharing as a category of prosocial behavior results in little controversy. However, there does not exist a universally agreed upon definition of sharing. Even authors of textbooks in child development fail to define specifically what sharing involves. Typically, the subject index refers the reader to other prosocial categories such as cooperation (e.g., Hetherington & Parke, 1975). Instead of formulating a general definition of sharing, most researchers restrict themselves to operational definitions, for example the donation of: tokens (e.g., Ascione, Note 1), money (Bryan, 1971), pictures (e.g., Doland & Adelberg, 1967), candies (e.g., Elliott & Vasta, 1970), trinkets (e.g., Floyd, 1964), marbles (e.g., Fisher, 1963), food (Hollis, 1966), etc. Recently, some researchers have measured the length of time that a common material is used by two or more individuals and the frequency of verbal attempts at initiating or reciprocating sharing (e.g., Barton & Osborne, in press).

Only two general definitions of sharing have been offered in the literature and both have major drawbacks. First, Staub and Sherk (1970) defined sharing as behavior demanding sacrifice of material possessions for the benefit of others. There are two problems with this definition. First of all, their definition is not specific enough to exclude other prosocial behaviors (e.g., altruism). In addition, their definition does not include verbal attempts at initiating and reciprocating sharing of tangible objects.

Second, using a matching-to-sample procedure, Hake, Vukelich, and Olvera (1975) recently attempted to distinguish operationally between

cooperation, altruism, and sharing. Their work represents an initial and commendable attempt at distinguishing between three types of pro-social behavior since each represents a different type of response with different antecedent conditions and behavioral effects. Hake, Vukelich, and Olvera (1975) defined sharing as: (a) an increase in "the percent of the number of reinforcers or cooperative responses of one subject relative to the number of the other subject" (p. 63) plus (b) "a predominant method of responding within trials that consisted of no response from one subject and a take response (i.e., taking the problem for himself versus giving the problem to his partner) from the other subject" (p. 64). There are some problems, however, with attempting to use this definition with the behavioral interchanges that occur in a more naturalistic environment such as a classroom (e.g., differences in reinforcer value independent of number and the changing topography of the subjects' responses). In addition, there are types of sharing that occur outside of the laboratory (e.g., building a cabin using Lincoln Logs) that do not involve the predominant response pattern described by Hake, Vukelich, and Olvera (1975). Although their definition might be excellent for use as a standard in laboratory studies, it is not easily applied to naturalistic settings.

Trying to derive a definition of sharing applicable to the natural environment is a formidable task. This author, however, suggests that sharing is composed of two types of responses: physical sharing and verbal sharing. Physical sharing is defined as occurring in situations where two (or more) persons are simultaneously using a material object (e.g., beating a drum) or when an individual allows another to use a

temporarily tangible object which the former currently possesses (e.g., rolling a ball back and forth). Verbal sharing is defined as all verbal attempts to initiate or reciprocate physical sharing.

In the sharing situation, the resource desired may be controlled by one individual or by neither. In addition the task requires both individuals to respond. Based only on these two criteria, one could not distinguish sharing from cooperation or competition. Unlike the latter two types of behaviors, with sharing, alternative responses of just one actor can result in reinforcement for the actor. For example, instead of playing catch with another, a child can throw the baseball against a building and produce many of the same reinforcers as by sharing the ball. In cooperative tasks (e.g., mutually moving a heavy object that cannot be moved singly resulting in both individuals being rewarded) and competition (e.g., playing monopoly where only one can win), alternative responses (e.g., working or playing alone) will not produce reinforcement for either actor. In the sharing situation, unlike altruism, there is a high probability of immediate reinforcement for both actors. Finally, there is no permanent loss of a current or potential resource for a person who shares. If a person loses part of an item permanently (e.g., some M&M candies from a bag) it will be considered an altruistic act. A suggested classification of the differences between competition, cooperation, altruism, and sharing is presented in Table 1. Although such a distinction has not generally been made in the past, it is offered by the author so that future investigations can be more meaningfully compared.

Table 1
 Classification of Competition, Cooperation, Altruism, and Sharing

	Status of actors ^a	Task requires both actors to respond	Alternative responses produce reinforcement for one of the actors	High probability of immediate reinforcement for both actors	One actor suffers permanent loss of current or potential resource
Competition	equal	yes	no	no	yes
Cooperation	equal	yes	no	yes	no
Altruism	unequal	no	yes	no	yes
Sharing	equal	yes	yes	yes	no
	or				
	unequal				

^aStatus of actors refers to whether the desired resource is controlled by one individual (i.e., unequal) or by neither (i.e., equal).

Some might argue that people can also share ideas (e.g., mental telepathy) and feelings (e.g., empathy). The author has not included these in his definition because they represent usually unobservable behaviors. The author's definition of sharing also does not include donating possessions with no possibility of ever having them returned (e.g., perishable objects). As such, almost all of the studies on sharing would fail to meet the requirements of this definition. Even though such studies would probably be better placed under the topic of altruism, they will be included in the present review to provide the rationale for the proposed research.

The review will be limited to studies on sharing or those directly related to sharing. Furthermore, only studies using preadolescents, that look at the relationship of age or sex to sharing, and studies on the development of sharing will be discussed. Investigations of the attractiveness of the recipient, personality traits of the benefactor, and demographic aspects such as ordinal position in the family, social class, and nationality will not be discussed since they are not relevant to the proposed research. These studies have been extensively reviewed in other sources (Bryan & London, 1970; Krebs, 1970; Midlarsky, 1968; Rushton, 1976).

Relationship of Age to Sharing

The relationship of age to prosocial behaviors has a long history of investigation. Parten (1932) was the first to study this relationship. She observed nursery school children (2.0 to 4.4 years) in a free play situation with toys during almost an entire school year and found that within this age range, cooperation increased with chronologi-

development. Cooperation was defined as situations in which "the child plays in a group that is organized for the purpose of making some material product, or of striving to attain some competitive goal, or of dramatizing situations of adult and group life, or of playing formal games" (Parten, 1932, p. 251). Shortly thereafter, Graves (1937) replicated Parten's study with preschool children (mean age 4.0 years) and discovered a similar increasing trend with cooperation "defined as the carrying on of an activity with regard for and dependence upon another child" (p. 350). In each of these investigations, cooperation is only vaguely defined, but it can be inferred that much of what they observed was sharing.

Fifteen years later, Ugurel-Semin (1952) was the first to specifically look at the relationship between age and sharing. Ugurel-Semin gave children (4 to 16 years) from Geneva and Istanbul nine nuts which they could share with their partners. The older children (14 to 16 years) gave their partners the most nuts; the mean number of nuts donated was found to increase with age. Ugurel-Semin's findings have been supported by many subsequent laboratory experiments for the age range 5 to 13 years (Dreman, 1976; Elliott & Vasta, 1970; Emler & Rushton 1974; Green & Scheider, 1974; Handlon & Gross, 1959; Harris, 1970; Midlarsky & Bryan, 1967; Morris, Marshall, & Miller, 1973). Two laboratory studies investigating the sharing of marbles among 5- to 7-year-olds (Presbie & Kanareff, 1970) and the sharing of candy among 5- to 6-year-olds (Zinser, Perry, & Edgar, 1975) found no age differences. Recently, Yarrow, Waxler, Barrett, Darby, King, Pickett, and Smith (1976) observed children (3 to 7.5 years) in a free play

setting and discovered no age differences in the sharing of either Cheerios or a fishing pole. Generally, however, most research supports a developmental increase in sharing (Krebs, 1970; Rushton, 1976). Even though it appears that sharing increases with age, a number of studies have reported sharing in 5-year-olds (e.g., Ascione, Note 1; Barton & Osborne, in press; Rogers-Warren & Baer, 1976) and even as early as 2 years of age (Rheingold, Hay & West, 1976).

There are many plausible reasons why sharing increases with age. These age differences might be a response to the nature of the task or the value of reinforcement. Specifically, when sharing increases with age, it may be a result of the value of the reinforcer decreasing with age. Some researchers (e.g., Rubin & Schneider, 1973), however, have suggested that sharing occurs more as children become older because they become less egocentric (Flavell, 1968). Piaget (1932) maintains that it is not until later childhood (7 to 8 years) that a child is able to consider reciprocal relations. There are many other possible explanations of why sharing increases with development. A few of these have been offered by Staub (1971), who suggested that as the child becomes older there are more chances to: (a) observe sharing, (b) learn prosocial norms, and (c) be reinforced for sharing. Another possibility, one that has not yet been explored, is that sharing may merely reflect a concomitant increase in the use of language. If this hypothesis is viable, one would expect young children with superior verbal skills to share more than young children with a less developed repertoire of communication. This is suggested by the fact that in a naturalistic study of preschool children (5- to 6-years-old), Wahler (1967) found

that by increasing the frequency of speech, there was a corresponding increase in cooperation.

Relationship of Sex to Sharing

Unlike age, sex does not appear to be correlated with sharing. Some exceptions include one study that found that fifth-grade girls share more than fifth-grade boys (Grusec & Skubiski, 1970). On the other hand, there have been three reports that boys share more in preschool (Dreman & Greenbaum, 1973), in kindergarten (Staub, 1971), and in fourth-grade (Staub & Sherk, 1970). The remaining studies investigating this relationship have reported no sex differences in sharing (Elliott & Vasta, 1970; Emler & Rushton, 1974; Fisher, 1963; Handlon & Gross, 1959; Harris, 1970, 1971; Presbie & Coeteux, 1971; Ugurel-Semin, 1952; Yarrow, Scott, & Waxler, 1973; Yarrow et al., 1976). It appears, therefore, at least with respect to donations, that neither sex is superior in sharing.

Developing Sharing in Experimental Settings

Almost all attempts by researchers to develop sharing behavior have been conducted in an experimental setting such as a laboratory. The reason for this is that such research is easier to conduct, costs less, and, in general, presents fewer interpretational problems than more naturalistic studies since greater control can be exerted over other variables. Probably the greatest advantage is that it is easier to operationalize the dependent measure. For example, it is much easier to record token insertions into a token box than the variety

of responses subsumed under "sharing." These investigations have resulted in the application of the following behavioral techniques for increasing the frequency of sharing in the laboratory setting: modeling, reinforcement (i.e., tangible and social), exhortations, and behavioral rehearsal. In this section, research relating to each of these techniques will be discussed.

Modeling

The majority of experimental studies concerned with the development of sharing have used the modeling technique (i.e., 19 of the 23 reviewed in this paper). Each of these reports suggests that exposing a child to a sharing model is a very powerful means for increasing sharing behavior. In addition, a model's behavior has been shown to influence the amount that is shared and choice of the recipient of sharing (Harris, 1970). For example, Harris (1970) found that fourth- and fifth-grade children shared more after observing a model share, regardless of whether the model shared with a charity or with them, than children observing no sharing. Furthermore, children who were the recipients of the model's generosity tended to share with her whereas those who observed her share with a charity usually gave to the charity. In a subsequent replication and extension study using third- and fifth-grade children, Harris (1971) compared the effects of a model giving to the subject, giving to a preferred charity (i.e., Toys for Tots), giving to a less preferred charity (i.e., mental health), and not giving. The results were similar to the earlier experiment with the exception that the children also gave to the charity to which the model had not donated.

The remaining modeling studies have looked at contextual variables that might influence sharing. Each of these variables--nurturance of the model, reinforcement of the model, punishment of the model, and exhortations by the model--is discussed.

Nurturance of the model. Researchers studying the effect of nurturance of the model in isolation from other variables have not found that it increases sharing. For example, Rosenhan and White (1967) found that modeling resulted in a significant increase in sharing among fourth- and fifth-graders but that prior exposure to a warm, neutral, or hostile model had no effect on the number of donations. Likewise, Grusec and Skubiski (1970) reported that modeling resulted in greater sharing than merely hearing a model verbalize what he thought was the appropriate behavior (i.e., making a donation to charity) but there was no difference in the amount shared by nurtured and non-nurtured subjects.

It may be that the lack of positive findings for the effect of nurturance on modeling is due to a failure to consider the subject's history of social reinforcement. Hartup and Coates (1967), using nursery school children as subjects and their peers as models, pursued this possibility. Children were observed in a classroom and the frequency with which they received reinforcement from their peer group was recorded. On this basis, subjects were placed in either a high or low history of reinforcement group. Half of the individuals from each of these groups were then assigned a peer model who had given them reinforcement at a high frequency during the observations (nurturant model). The remaining children were assigned to peers who had issued them social reinforcement at a low frequency (nonnurturant model).

Subjects who had a history of frequent reinforcement imitated a nurturant model more than a nonnurturant model. Subjects with a history of infrequent reinforcement, however, imitated a nonnurturant model more than a nurturant model. This study suggests that nurturance does effect the probability that an observer will imitate modeled sharing but that its direction depends upon the individual's history of social reinforcement.

Consequences to the model. According to Bandura's (1969) notion of "vicarious reinforcement", one would expect an observer to imitate a model who had been reinforced for sharing more than a nonrewarded model. Contrary to this expectation, Elliott and Vasta (1970) found that rewarding a model with a teddy bear and praise was no more effective in encouraging candy sharing among young children (5- to 7-years-old) than modeling without reward. However, when the experimenter verbalized the response-reinforcement contingency, rewarded modeling was significantly more influential than nonrewarded modeling. Presbie and Coeteux (1971), on the other hand, reported that first-graders gave more marbles to an unknown child after observing a model being praised by the experimenter than after watching a nonrewarded model even though the exact response-reinforcement contingency was not explicitly verbalized. The fact that the model in the Elliott and Vasta study was filmed as opposed to live (Presbie and Coeteux, 1971) is perhaps the salient feature in these studies, accounting for the different findings. It may be that it is more difficult for young children to discriminate the response-reinforcement contingency in symbolic modeling versus real life modeling. Nonetheless, explicit vicarious reinforcement appears to be an effective means of developing sharing.

Only one study has reported the effect of punishing a model for non-sharing, on the observer's subsequent behavior (Morris, Marshall, & Miller, 1973). These experimenters found in their first experiment that first- and second-grade females shared more after observing a peer model being punished for a refusal to share than after witnessing no consequence to a sharing refusal. Furthermore, sharing was also increased when the subjects viewed a peer being punished noncontingently. These findings, in combination with their second experiment on helping behavior that yielded similar results, suggest that vicarious punishment (contingent or noncontingent) results in a generalized inhibition of antisocial behavior. Although this is the only study of its kind, it appears that vicarious punishment--even noncontingent--may result in a subsequent increase in sharing behavior.

Modeling and exhortations. Some investigators (Aronfreed, 1968; Flanders, 1968) have suggested that modeling is effective because the observer gains information about what is appropriate in a given situation. If this is the only reason that modeling is effective, then one would expect preaching statements about sharing to be as effective as modeled behavior. Pursuing this possibility, Bryan and Walbek (1970a, 1970b) found that although modeling affected the sharing of third- and fourth-graders, exhortations did not. Likewise Grusec and Skubiski (1970) using the same-aged children reported similar results except that for girls, who had exposure to a nurturant model, preaching was effective. Subsequently Grusec (1972) found that performing and verbalizing models were equally successful in producing sharing in children (7- and 11-year-olds) except for the younger boys. Rushton (1975), using children 7- to 11-years old, and Rushton and Owen (1975) using children 8- to 10-years-old

have also reported that exhortations fail to have an immediate influence on sharing. Interestingly, however, the latter two investigations have reported that preaching has a long-term effect on sharing. Rushton (1975) discovered that if preaching was consistent with modeled behavior there was less sharing regression to the mean in an eight-week retest. Rushton and Owen (1975) also found that exhortations influenced sharing on a retest two weeks later but the results were weaker and less clear. All of these studies combined suggest that mere preaching of sharing has no immediate effect but that it may produce long-term results.

Three studies, however, have found exhortations to have a positive influence on sharing. Midlarsky and Bryan (1972) have reported that a model's preaching resulted in an increase of immediate donations of tokens to a charity. This result was greater for 11-year-olds than 10-year olds. The inconsistency of the immediate results of preaching of this study may be due to the fact that, unlike previous investigations (except Rushton, 1975), 11-year-olds were used. Similar to Rushton (1975), they found preaching had a long-term effect since 10 days later children with exposure to a generous model who preached generosity shared the most candy with the same charity. Poulos and Liebert (1972) hypothesized that preaching had not been shown to be as effective as modeling because they were never independently assessed. They found that independent use of both modeling and verbalizations increased sharing among second- and third-graders, although the exhortations did not result in the observer donating the recommended standard of four tokens. Pursuing this line of research, Rice and Grusec (1975) suggested that the previous negative exhortation findings also might

have been due to the fact that in the Grusec studies, in the modeled condition, the model played the entire game and actually donated half the winnings whereas in the preaching condition they did not play the entire game but merely exhorted sharing before being called away. They found that when modeling and exhortations were compared independently, and when the models and preachers who did not model were allowed to play the entire game, preaching was equally effective as modeling in producing sharing on an immediate test and also four months later. "In conclusion, then, it would seem that saying is sometimes as effective as doing. At other times it is not" (Rice & Grusec, 1975, p. 592).

Reinforcement

Although most investigators have used modeling to develop sharing, a few have used reinforcement. Tangible rewards have been found to influence sharing. Fisher (1963) reported that preschool children donated more marbles to an unknown child when reinforced with bubble gum. In fact, gum was found to be more effective than praise. This study raises the issue of whether social reinforcement can be effectively used to increase sharing.

Social reinforcement was used by Doland and Adelberg (1967) to encourage sharing among preschool children (mean age 4.5 years) who failed to donate mimeographed pictures to their peers. They did this by trying to prompt sharing with a clear indication that such behavior would be praised. Basically, the experimenter said, "I think it would be nice if you shared your pictures." Fifty percent of the nonsharers subsequently shared. The authors concluded that the increase in sharing was due to the subject's awareness of the possibility of social rein-

forcement. Unfortunately, a clear description of the reinforcement contingency was not provided. There was no direct indication that sharing would be reinforced. In addition the experimenter had never previously praised the subject. Social reinforcement per se, thus, was not responsible for the sharing. Once again we have inconclusive evidence that praise can be used effectively to encourage sharing.

Using young females (first- to fourth-grade), Midlarsky and Bryan (1967) found that experimenter praise alone did not affect a subject's willingness to share candy nor did hugs from the experimenter have the desired effect. Simultaneous use of hugs and praise, however, did result in these girls donating more M & M candies to needy children. This study suggests that praise alone may not be a potent enough to increase the frequency of sharing.

The previous study led to the possibility that a model's effectiveness could be enhanced if the model praised observer imitations of sharing. Midlarsky, Bryan, and Brickman (1973), using sixth-grade girls investigated this hypothesis with charitable, greedy, and neutral (i.e., she did not collect the pennies she earned) models. During the last 10 trials (out of 20) the model praised the subject each time pennies were given. The results showed that social approval had no effect on sharing. In a second experiment the model started praising the subject right from the very first trial. The results were similar except that in the neutral condition praise had a positive effect.

A recent study (Gelfand, Hartman, Cromer, Smith, & Page, 1975) investigated the effects of prompting and subsequent praise on young

children's (kindergarten and first-grade) willingness to donate pennies earned in a marble drop game to another player in a nearby room. Subjects who initially did not share did so after receiving verbal prompts and praise. This study demonstrates that adult praise can be used to reinforce sharing in young children although it may be necessary to prompt the response first.

Although few studies have investigated the effects of praise on sharing, it does appear to be effective in some situations. Some researchers have reported praise to be ineffective in changing subsequent frequency of sharing, but these findings could be an artifact of the methodology. All the studies that have attempted to determine the effect of praise on sharing have failed to determine if the adult's praise was reinforcing for other behaviors. As such, studies that have failed to find a positive influence of praise on sharing, are not justified in concluding that praise cannot be used as a reinforcer for sharing.

Behavioral Rehearsal

Another technique for developing sharing--possibly a very powerful one--is that of behavioral rehearsal, also referred to by some practitioners as role playing. Although only a few experimental studies have utilized this approach, the findings have been quite encouraging. Staub (1971) had kindergarten children take turns enacting the role of the helper and the helped. On a subsequent test he recorded whether the child helped another child who was in distress and the number of candies that the child put in a poor box. It was discovered that behavioral rehearsal resulted in girls attempting to help more than boys while boys shared candy more often than girls. Even though the

behavioral rehearsal did not involve sharing per se, the effects did generalize to sharing behavior and are suggestive.

Although no experimental study has demonstrated that behavioral rehearsal alone will positively influence sharing, it has been shown to enhance the effects of modeling. Rosenhan and White (1967) found that among fourth- and fifth-grade children who had observed a model donate a gift certificate to a charity, those who had contributed in the model's presence gave more in his absence than those who had not donated in his presence. White (1972) using same-aged children reported similar results whether or not the subjects were encouraged to rehearse sharing.

Developing Sharing in Naturalistic Settings

Even though the experimental studies conclusively demonstrate that sharing can be developed in a laboratory setting, such investigations leave many questions unresolved. Are the effects durable over time? Is laboratory sharing similar to such behavior in the real world? Does sharing of experimental rewards generalize to tangibles in the individual's natural environment? It may be that the sharing taught in these experimental studies remains abstract for the subjects and isolated from their everyday experiences. As Krebs (1970) has indicated, researchers must provide evidence that their treatment effects are lasting and generalize to other environments before they can conclude that they have a powerful technique for encouraging sharing. In the experimental studies, however, "children are not required to deal with altruism (i.e., sharing) in real and compelling social interaction . . .

there is little evidence from which one can judge the meaning, durability, and generalizability of the altruism that has been learned" (Yarrow et al., 1973, p. 243).

Only five laboratory studies have reported follow-up data (Midlarsky & Bryan, 1972; Rice & Grusec, 1975; Rushton, 1975; Rushton & Owen, 1975; Staub, 1971). Although the reports indicate that sharing is maintained in the absence of training, there are not enough data to recommend a specific type of treatment program. Furthermore, all of the follow-up data have been on the same behavior that was trained in the laboratory (i.e., donating to charity). Thus, there have been no reports that these experimental results generalize to the natural environment.

Rather than trying to generalize from the results of laboratory studies, a more effective approach might be to conduct such research in the natural environment. This approach would train children on tasks that are common to their everyday experiences. Certain setting events that are involved in these training situations may also be present in other real life encounters. As such, the prospect of generalization to other tasks should be much greater than in the experimental studies, where setting events are usually unrelated to the natural environment. A logical extension of the experimental studies on sharing, as suggested by Cooke and Appolloni (1976), would be to employ the techniques tested in the laboratory and attempt to systematically encourage sharing. This logic has recently prompted three such studies (Barton & Osborne, in press; Cooke & Appolloni, 1976; Rogers-Warren & Baer, 1976). These are the only naturalistic studies

that have attempted to develop sharing systematically through the use of experimental techniques.

In the first study of its kind, Cooke and Appolloni (1976) demonstrated that young handicapped children (6 to 9) could be taught to share toys in a free play situation. Four children were taken from the regular classroom to a playroom where training was conducted by an experimenter for 16 minutes per day. The training package included instructions, experimenter-modeling, behavior rehearsal, prompting, and experimenter-delivered praise. This "shot-gun" approach resulted in a rapid development of sharing and produced long-term maintenance (four weeks). Immediately following such training sessions, a 16-minute generalization session was held. These sessions were exactly the same as training except that three untrained classmates were brought into the room and more toys were added. For the trained subjects, sharing was greater during the "generalization sessions" following training sessions than during baseline. The extent of sharing, however, was less than during the training sessions. The nontrained classmates also showed collateral increases in sharing when the trained subjects received treatment.

Although the Cooke & Appolloni (1976) study is an excellent demonstration of the application of experimental techniques to a classroom, it fails to address the issue of response maintenance and generalization. Even though a four-week follow-up indicated that sharing occurred more frequently than at the start of the experiment, its frequency was less than during training. It is true that one may expect some regression after withdrawing treatment, but without the

use of a control group there is no empirical proof that the mere passage of time could not have produced similar results. Likewise, there is no demonstration that the toy sharing generalized to other rooms, to other experimenters, to other observers, to other toys, or to other activities. The importance of such data in determining the success of a treatment program is discussed in detail by Willems (1974). These criticisms were addressed by the present research.

The Cooke and Appolloni (1976) study raises an additional question. Can a classroom teacher use behavioral techniques to encourage sharing? In pursuit of this question, Barton and Osborne (in press) had a kindergarten teacher use a positive practice package (Foxy & Azrin, 1972) to train five deaf children to initiate and reciprocate verbal sharing. This procedure was conducted in the regular classroom during a 30-minute free play period in which the student had access to any of 10 toys. Whenever the teacher noticed a student not sharing either verbally or physically, the teacher required that student to practice verbal sharing three times with another student. The latter was required to acquiesce in the verbal sharing. The use of the positive practice resulted in an immediate increase in physical sharing. Following the summer vacation, 15 weeks following termination of the experiment, physical sharing still occurred at a mean of 300% over baseline. The follow-up data were obtained while the five children played with five new toys and five old toys, with three additional classmates who had not received training, and in the presence of a new teacher.

Some of the author's criticisms of the Cooke & Appolloni (1976) study are also applicable to Barton and Osborne (in press). Although the latter found enduring effects almost four months later, the design

did not include a control for maturational effects. Likewise, there was no demonstration that physical sharing generalized to a new classroom or to a new task.

The Barton and Osborne (in press) study, however, raises certain interesting issues in addition to those regarding the long-term and generalization effects. Unlike physical sharing, the positive practice procedure did not influence verbal sharing. Since the positive practice package involved the verbal mode, one would have expected verbal sharing to have increased. Their results, however, could be an artifact of their sample selection since hearing-impaired children with poor speech communication skills were used. This possibility is supported by Rogers-Warren and Baer (1976) who reported that preschool children with normal communication skills usually verbally arranged most sharing of materials. This result could also reflect the fact that five-year-olds only possess a limited verbal repertoire. No researcher has yet to report naturally occurring frequencies of verbal and physical sharing in the preschool environment. This raises the possibility that with normal children, perhaps training in verbal sharing will positively influence both verbal and physical sharing. Likewise, it may be that training in physical sharing will affect both physical and verbal sharing. Furthermore, if one trained both verbal and physical sharing, the combination may produce greater sharing than training either alone. These possibilities were addressed by the present research.

The only other study to attempt to develop sharing in the natural environment is that of Rogers-Warren and Baer (1976). As in the

Barton and Osborne study (in press), two types of sharing were recorded (i.e., verbal and nonverbal). Preschool children (3 years 2 months to 5 years 6 months) were taken to a playroom where training was conducted by the experimenter for 15 minutes daily. This session was divided into 10 minutes of working and 5 minutes during which children could report if they shared. The subjects sat on the floor around a large piece of paper and had access to various art materials. The experimenter used modeling, social reinforcement for any report of sharing, and social reinforcement for only true reports of sharing. Modeling and social reinforcement for true reports of sharing were maximally effective.

About an hour before training, 10-minute probe sessions were conducted in the regular classrooms, by a second experimenter, in a free play period, and with a new supply of materials (i.e., toys). During probe sessions sharing was never praised but other social behaviors (e.g., "playing nicely") were reinforced. The results of these probe sessions demonstrated that sharing generalized. This is the sole demonstration that the effects of training sharing generalize to a new setting, a new task, and to new materials. There is the possibility that praising other social behaviors during the probe may have encouraged more sharing, and thus a replication without such reinforcement is needed before true generalization of sharing can be acclaimed.

Although the Rogers-Warren and Baer (1976) procedure provides a nice model for studying generalization, it fails to address some important issues. No follow-up data were presented on subsequent

training and probe sessions. Are the specific and generalized effects of sharing durable? Secondly, even though both verbal and physical sharing were recorded the data were grouped into general sharing. Such a data analysis fails to address the important questions raised by the Barton and Osborne (in press) study. The present research addressed these criticisms.

The three naturalistic studies of the development of sharing suggest that teachers can train young children to share; however, the optimal treatment is still unknown. In addition, a number of very important questions about sharing remain unanswered.

Generality of Efforts to Encourage Sharing

The review of the sharing literature provides sufficient evidence to warrant the conclusion that sharing can at least be temporarily increased. The question that remains unanswered, however, is "what is the generality of these findings?" "A behavioral change may be said to have generality if it proves durable over time, if it appears in a wide variety of possible environments, or if it spreads to a wide variety of related behaviors" (Baer, Wolf, & Risley, 1968, p. 96). The research on sharing, thus far, has failed to demonstrate any of these types of generality. The Barton and Osborne (in press) study hints that the effects of treatment may be durable as much as four months later; however, there was no control for maturational processes. Likewise, only one study has addressed the issue of generalization to new environments. Rogers-Warren and Baer (1976) reported an increase in sharing in a different setting, on a different task, with different

experimenters, and with different materials. Their results, however, are only suggestive as sharing may have been produced by the procedure of reinforcing other social behaviors during the test for generalization (Willems, 1974). Finally, no one has investigated the possibility that increases in sharing spread to a wide variety of related behaviors.

Many reviewers of behavior therapy have provided "ample evidence demonstrating that behavioral treatment programs are often extremely effective in inducing initial therapeutic gains, but that these improvements sometimes fail to generalize to the natural environment and are short-lived" (O'Leary & Wilson, 1975, p. 451). For example, Wahler (1969) found that training two boys to cooperate and study more at home did not result in similar improvement at school. There are a number of strategies for facilitating generalization and maintenance (refer to O'Leary & Wilson, 1975). These appear to be fairly successful. Wahler (1969), for instance, reported that the boys improved their cooperation and studying skills at school after the teacher implemented a program at school similar to that used at home by the boys' parents. The issue is, thus, not whether generalization can be programmed but whether generalization is a direct result of the treatment program.

Specifically related to the present research are the questions: (a) do improvements in sharing generalize to other settings; and (b) do the improvements in one type of sharing (i.e., either verbal or physical) generalize to the other?

STATEMENT OF THE PROBLEM

The purpose of the proposed research was to investigate the effects of a treatment program designed to increase verbal and physical sharing among preschool children in a free play setting and to test the generalizability of the behaviors that were learned. Preschool children were observed in a classroom adjacent to a regular classroom during a free play period for 16 minutes daily. One group of children did not receive training. The remaining experimental groups received a training program composed of instructions, modeling, behavioral rehearsal, prompting, and praise. For one-third of these children, treatment was only applied to verbal sharing; for another third, treatment was only applied to physical sharing; and for the remaining third, treatment was applied to both types of sharing. Each day, following free play, the children were observed for 12 minutes while working on a different task (i.e., art activity) in a different room with a different experimenter, observers, and materials. Four weeks after the termination of the treatment, these children were observed during a similar free play period and an art activity for five days.

Specific questions that were addressed by this research were:

(a) When developing sharing, is it most effective to start training with verbal, physical, or both types of responses? This question addresses the issue of which condition produces the most verbal sharing and which produces the most physical sharing. It was hypothesized that

the order of increases in verbal sharing, from most to least, would be: training verbal sharing, training both verbal and physical sharing, training physical sharing, and no training. It was presumed that training both types of sharing would be less effective than training only verbal sharing, because the former would probably result in more physical sharing which would decrease the need for verbal sharing. The hypothesized order of increases in physical sharing from most to least was: training both verbal and physical sharing, training physical sharing, training verbal sharing, and no training. It was assumed that training just physical sharing might be somewhat aversive without concurrent training in verbal sharing. Therefore, it was thought that training both types of sharing would be superior to training just physical sharing.

(b) When developing one type of sharing, is there a concomitant increase in the other type of response? For example, does training children to physically share toys result in them making more verbal attempts at sharing those toys?

(c) Does the sharing developed in training immediately generalize to a situation involving a different experimenter, different observers, a different room, a different task, and different materials? If such generalization does occur, which training condition produces the greatest effect with respect to each type of sharing? In addition, if there is evidence of immediate generalization, is it maintained after the treatment has been terminated (i.e., during a reversal phase)?

(d) After one type of sharing or both types of sharing have been developed, are the effects maintained in the presence of the same experimenter, with the same materials, on the same task, but in the

absence of treatment (i.e., during a reversal phase)? If the effects of treatment generalize to the same situation without treatment and to different situations in which training was never given, is the increase due to the treatment program?

(e) Are the effects of treatment durable over time? Specifically, are the effects maintained during a follow-up conducted four weeks after the termination of the treatment? Furthermore, are both the specific (i.e., sharing of toys) and generalized (i.e., sharing of art materials) responses durable with respect to both verbal and physical sharing? If there is evidence of durability, does the sharing occur at a greater frequency than would be expected had intervention not occurred?

METHOD

Subjects

Thirty-two preschool children (16 males, 16 females) enrolled at the Child Development Center at Utah State University served as subjects. The Center primarily enrolled children of faculty and students. On December 2, 1976 the governing board of the Center unanimously approved the experimenter's study of these children and the use of the Center's facilities. The dissertation proposal was also reviewed and approved by Utah State University's Human Subjects Committee. A letter was sent to the parents of all the children enrolled in the Center's morning class ($n = 20$). It described the project including the nature of the baseline and experimental treatments, discussed procedures for maintaining confidentiality of the data, and requested permission for their children's participation in the experiment (refer to Appendix A). From 20 letters returned that indicated parental permission, eight boys and eight girls were randomly selected to serve as subjects. The children so selected had the right to choose to participate or not to participate. Four groups of four children each were formed. From the pool of 16 subjects, two boys and two girls were randomly selected to form a group. Three of the remaining four students received experiences similar to the subjects' as desired by the parents and child but their results were not used in the data analysis. This particular age (range: 3 years 0 months to 5 years 3 months; mean: 4 years 2 months) was chosen,

since the literature indicated little sharing occurs at such a young age (e.g., Krebs, 1970).

A second set of 20 letters was sent to parents of children enrolled in the afternoon session. The same subject selection procedure as previously described was used. The purpose of using these children was to increase the size of the groups in order to increase the power of the statistical analyses.

For purposes of simplicity, the remainder of this section only refers to the morning sections as the afternoon subjects received the same treatments in the same settings with only the experimenters, observers, and time of day being different.

Experimenters and Observers

Two undergraduate females served as experimenters and four undergraduates (males and females) were observers. All undergraduates were kept naive of the author's hypotheses.

Setting and Materials

Daily sessions were conducted Monday through Friday at the Child Development Center at times that minimally disrupted the children and teacher's daily schedule. A typical school day allowed the child the majority of the time to be free, to explore and play with materials as desired. Throughout the center, a number of materials (e.g., art supplies, toys, books) were available to the child. The only structured activities were art, music, and juice time. There were four classrooms in the building to which the children had access.

Free Play Sessions

Free play sessions were conducted in Room X (2.4 m by 3.0 m) with the door closed. This room was empty of all furnishings except for six toys. All toys used in this experiment could be used by two or more children simultaneously. Social toys were preferred since teaching children to share isolate toys might have been undesirable or at least counterproductive to the teacher's educational plans. For example, the teacher may have wanted a child to develop some motor coordination skills through the individual use of an isolate toy.

Using only social toys may have resulted in a slightly inflated baseline rate. Although no one has studied the effects of type of toy at the preschool level, it was known that social play occurs more among 7-year-olds when social versus isolate toys are provided (Quilitch & Risley, 1973). In addition, the social toys chosen allowed them to be used in isolation or with others. This precaution alleviated the problem of determining whether cooperation or sharing had occurred (since a child sharing a toy had the option of playing with it alone). In order to make the free play situation one in which sharing was likely to occur, three of the toys were "high demand toys", while the remaining three were "low demand toys". Thus, at least one child in the group ($n = 4$) needed to share a "high demand toy" or one child was forced to use a "low demand toy" or not play.

Prior to the experiment the author brought a pool of 24 social toys to the center and randomly chose four children (two males and two females) to help in the selection of the toys to be used in the project. The entire pool of toys was placed in front of the subject, and he/she was

asked to choose the one which he/she liked best. After each choice the author removed the chosen toy from the remaining pool. This procedure was continuously repeated until only one toy was left in the pool. The subject's first choice was assigned 24 points, the second 23, etc. After all four subjects had made their selection, points were totaled for each toy. The six highest rated toys were designated as "high demand" and the six lowest rated toys were designated as "low demand". The "high demand" toys were: a design board, a form puzzle, plastic needles, Lincoln Logs, Busy Blocks, and Legos. The "low demand" toys were: a daisy chain, lids, string blocks, a graded cylinder set, animals, and stacking blocks. These 12 toys were the only toys used in the experiment.

Finally, in order to decrease the probability of habituation to the six toys in Room X, two different toys (one "high demand" and one "low demand") were introduced each day. By daily changing the composition of the pool of toys, it was hoped that the children would not become bored by the same toys. Both a "high" and a "low demand" toy were changed each day rather than replacing one toy in order to hold the type of toys present constant across sessions.

Probe Sessions

Probe (generalization) sessions were conducted in Room Y (2.8 m by 2.8 m). Since one wall was open, other children were able to observe from Room Z but were not allowed to enter. Probes occurred immediately after the completion of the free play session and lasted 12 minutes. The children worked on or around a large piece of paper (1.5 m by 1.5 m) placed on the floor. The working area in which the paper was placed

measured 2.1 m by 2.4 m. During these art sessions the children were required to remain in the working area. The experimenter, who was not involved in the free play sessions, sat outside of the working area (.3 m from its periphery) but was free to periodically leave and reenter the room.

Four sheets of typing paper (or only three if one student was missing) were placed on the large sheet of paper. In addition, five sets of art materials were placed on the large paper. Each day one set of new materials was introduced from a pool of ten (i.e., crayons, pencils, magic markers, scissors, circle templates, construction paper, magazines, paste, paint, and rulers) and one set was removed from the previous five sets. In order to make the art activity one in which sharing was desirable, the number of items available in a particular set was always less than the number of subjects present. In addition, if one subject was absent, the number of sets available was reduced to four.

During the generalization sessions, the children were instructed to use the materials as they pleased. Although other materials were located around the periphery of Room Y, the children were asked to remain in the work area.

Experimental Design

Three experimental groups and one control group were used in the present experiment (refer to Table 2 for a summary of the design). For each of the experimental groups an ABA design was employed (Baer, Wolf, & Risley, 1968). Changing from one phase to the next was based on time rather than a criterion of baseline stability.

Table 2
Experimental Design

Group ^b	Sessions			
	1-8	9-16	17-24	25-29 ^a
Conditions				
Group V	Baseline	Treatment	Baseline	Baseline
Group P	Baseline	Treatment	Baseline	Baseline
Group VP	Baseline	Treatment	Baseline	Baseline
Group C	Baseline	Baseline	Baseline	Baseline

^aThese follow-up data were collected two school weeks after Session 24.

^bThe letters V, P, VP, and C connote training in verbal sharing, in physical sharing, training in both types of sharing, and no training, respectively.

Recent studies (Rogers-Warren & Baer, 1976) have demonstrated that it is difficult to obtain a stable baseline rate of sharing. Trying to establish a nonfluctuating operant level of sharing would have taken too long and produced a reactive effect of assessment (McNamara & MacDonough, 1972). Based on this rationale, it was decided to limit the initial baseline to eight sessions. In order to prevent length of the phase from confounding the results, each phase except the follow-up lasted eight sessions. One concern was that there might not have been significant treatment effects in eight days. Cooke and Appolloni (1976), however, using a treatment package similar to that in the present research, trained for only five days and obtained changes on the very first day of training. The other two naturalistic studies of sharing (Barton & Osborne, in press; Rogers-Warren & Baer, 1976) also reported that sharing was quickly facilitated.

The author decided to incorporate a control group for two reasons. First, recent research on sharing in the natural environment (Barton & Osborne, in press; Rogers-Warren & Baer, 1976) indicated a high probability that the effects of training would generalize to nontreatment phases. If this happened, functional control of the subjects' behaviors would need to be established through the use of a no treatment group (Hartmann & Atkinson, 1973). Second, to demonstrate that the treatments produce long-term changes in sharing that were greater than would be expected from maturational or other uncontrolled variables, a control group was needed (Kazdin, 1973).

Treatment Package

Each of the experimental groups received the same treatment package, however, for Group V it was only applied to verbal sharing, for Group P it was only applied to physical sharing, and for Group VP it was applied simultaneously to both verbal and physical sharing. The treatment package expanded one used by Cooke and Appolloni (1976) and included instructions, modeling, behavioral rehearsal, prompting, and praise of sharing.

Pretraining

Prior to the beginning of each training session for Groups V, P, and VP the experimenter instructed the children how to share in the appropriate mode(s) depending upon the group. The experimenter then modeled the response with one of the subjects (counterbalanced across the sessions) while the remaining children were present. After the modeling, each subject was required to rehearse the response once and was praised for doing so. The reason for incorporating this technique was that White (1972) found that it enhances the effect of modeling. Pretraining for each of the groups followed a script (refer to Appendixes B, C, or D).

Prior to the beginning of free play for Sessions 9 through 16, the experimenter read a short story to Group C. The purpose of this was to control for the additional amount of time that the experimenter was spending with the other groups.

Training Sessions

During Phase 2 the experimenter prompted and praised sharing among the experimental subjects during free play according to a predetermined schedule at a maximum rate of one per minute. A sheet was premarked for each minute of the session with two names (refer to Appendix E). For a subject whose name was placed in the prompt column and who was not sharing, the experimenter prompted with the appropriate instruction: "_____, why don't you ask _____ if you can play with the _____ with him/her?" or, "Why don't you play with the _____ with _____?" or, "Why don't you ask _____ if you can play with the _____ with him/her and then play with the _____ with _____?" For a subject whose name was placed in the praise column and who was sharing, the experimenter praised (e.g., "I really liked the way you asked Billy to play with that toy with you; that was good sharing") such behavior. During the training session each subject received up to a maximum of four prompts and four praises for sharing.

Types of Sessions

Sessions were conducted as scheduled unless more than one subject or one experimenter was absent.

Free Play Sessions

An experimenter, four subjects, and two observers were present during each free play session. None of the groups received the treatment package during the baseline phases, however, the three experimental groups received the package during the treatment phase. Throughout the

baseline conditions, the experimenter did not praise verbal or physical sharing. In addition the experimenter was instructed not to praise a child for any other behavior. During the baseline conditions, the experimenter praised the product of each subject's behavior or the material being used by the subject approximately twice (e.g., "That is a pretty drawing!"; "That is a neat toy!") in order to maintain rapport with the children throughout all phases.

Probe Sessions

A second experimenter, four subjects, and two different observers were present during the probes (i.e., art sessions). The treatment package was never used during these sessions. Restrictions on praise were the same as during the baseline free play sessions.

Follow-up Sessions

At the end of the winter 1977 quarter, four weeks after the termination of treatment, follow-up was conducted for five days. All the subjects were observed in both the free play and probe sessions. None of the components of the treatment package were employed. Follow-up sessions, therefore, were conducted in a manner similar to the initial baseline sessions.

After the follow-up data were accumulated, the author described to the teacher each of the treatment packages that were used and their effects. In addition, the teacher was given a copy of each of the scripts so that she would be able to continue with the treatments if she so desired.

Behavioral Definitions

The following child behaviors¹ were recorded: physical sharing, verbal sharing, and refusals to share. Experimenter prompts and reinforcement were also recorded.

Physical Sharing

Physical sharing was defined as occurring when a child: (a) handed a material to another child, (b) allowed another child to take his/her material, (c) used a particular material that another had used during the same observation interval, or (d) simultaneously used a material with another to work on a common project. Two or more children were considered to be simultaneously using a particular material when they were facing each other or the material and each was using a part of it to work on a common project (e.g., each child using separate logs to build one cabin). Physical sharing did not include simultaneous use of an object where a child's negative reactions (e.g., crying, screaming, complaining to the experimenter) indicated that the behavior

¹Two other child behaviors were recorded: verbalizations and proximity. Verbalizations were recorded when a child talked to another child and was not verbally attempting to initiate or acquiesce in physical sharing. Talking was defined as using speech to communicate and did not include merely making noises. Verbalizations also did not include talking to adults or to oneself. Proximity was recorded whenever a child was within .3 m of another child. These behaviors were recorded as it was thought that they might covary with verbal and physical sharing. Since they were not directly related to the purposes of the dissertation, these behaviors are not discussed in the main body of this manuscript. The data for proximity were unaffected by the treatment. On the other hand, verbalizations appeared to be affected by some of the manipulations and, therefore, such data are presented in Appendixes F and G for completeness.

of another was not prosocial (e.g., defacing another's work, or using an object to inflict harm on another). Likewise, situations in which a child reacted negatively to another child taking his/her materials were not recorded as physical sharing.

Verbal Sharing

Verbal sharing was defined as all verbal attempts at initiating physical sharing or verbal acceptance of such attempts. This definition included: (a) requests to share another's materials, (b) compliance with a request to share materials, (c) invitation to share one's own materials, or (d) acceptance of invitations to share. Once physical sharing of a particular material had begun, all subsequent verbalizations about that object were not considered verbal sharing. This definition also did not include situations where a child verbally attempted to get another's material to use alone.

Refusals to Share

Refusals to share were defined as all instances of noncompliance (e.g., saying "no") to a verbal attempt by a peer to share. Nonverbal noncompliance also included all instances where a child's behavior did not allow his/her peer to physically share, after being so asked (e.g., a child continuing to play with a toy alone). Failure to physically share after agreeing to do so was recorded as a refusal.

Experimenter Behaviors

The experimenters' use of prompts and praise during free play and the art activity were recorded. Prompts were scored whenever the experimenter (a) suggested that a child physically or verbally share,

or (b) modeled the correct response. Praise was scored whenever the experimenter used praise to consequence behavior.

Data Collection

During the free play sessions, two observers were located in adjacent corners of the room and during the probe sessions two different observers were situated approximately .3 m from the periphery of the large sheet of paper and about 2 m apart. In both types of sessions, an interval recording technique (Bijou, Peterson, Harris, Allen, & Johnston, 1969) using 5-second intervals was employed. The observers listened for directions from a prerecorded cassette tape via earphones. Every 5 seconds the observers heard "observe" or "record (and the number of the interval)". If any of the subject and experimenter responses (as previously operationally defined) occurred during the 5 second observation interval, the appropriate cell was marked on a precoded data sheet (Appendix H).

Each subject was monitored for 7 minutes (42 intervals) during the free play sessions and for 5 minutes during the probes (30 intervals). The data sheet was designed such that each minute the observers watched a new subject. The sequential order of monitoring each subject by each observer was counterbalanced across days such that each subject was observed approximately an equal number of times during each time interval during the course of the entire experiment. The experimenters, however, were monitored during every interval of both the free play and probe sessions.

Observer Reliability

Prior to the experiment, all observers were trained to a reliability of 85% on each of the subject behaviors that have been operationally defined.

The sequential order of observations for each observer was different. However, for 25% of each session both observers monitored the same individuals. Each observer was kept naive of the other observer's observational order so that they did not record behavior differentially when they knew that their responses were being checked for reliability (Johnson & Bolstad, 1973).

Observer reliability was calculated for each of the subject and experimenter responses. Agreement was defined as both observers recording a certain behavior for a particular subject for a given observation. Agreements on nonoccurrences were not included in the computation. Reliability was then computed for each of the behaviors by dividing the total number of cell agreements by the total number of cell agreements and disagreements. This decimal was then multiplied by 100. The average interobserver reliability for each of the child and experimenter behaviors is presented in Table 3 in terms of time of day and type of session.²

²The average interobserver reliability collapsed across time of day for verbalizations was 93% (range: 65-100%) during free play and 94% (range: 66-100%) during the art activity.

Table 3
Mean Percent Interobserver Reliability^a

Behavior	Time of day	
	Morning	Afternoon
Free play activity		
Verbal sharing	95%(50-100%) ^b	96%(50-100%)
Physical sharing	97%(79-100%)	95%(71-100%)
Refusals to share	80%(0 ^d -100%)	100% ^c
Experimenter praise	87%(62-97%)	100%(100-100%)
Experimenter prompt	85%(54-100%)	89%(60-100%)
Art activity		
Verbal sharing	88%(0 ^d -100%)	91%(0 ^d -100%)
Physical sharing	97%(75-100%)	96%(60-100%)
Refusals to share	83%(0 ^d -100%)	93%(25-100%)
Experimenter praise	e	e
Experimenter prompt	e	e

^aMeans only include sessions where a behavior was observed as occurring at least once.

^bPercentages within the parentheses indicate the range.

^cMean based on one session.

^dReliability is based on only one disagreement.

^eBehavior was never observed.

RESULTS

The data for the dependent measures of physical sharing, verbal sharing, and refusals to share are described separately. Initially, each dependent measure is analyzed across phases (i.e., initial baseline, treatment, second baseline, and follow-up³) for each group, followed by between group comparisons. Data are presented first for Group V (i.e., training only verbal sharing) followed by data for Group P (i.e., training only physical sharing), Group VP (i.e., training both verbal and physical sharing), and Group C (i.e., no training control). In all comparisons, data for the treatment setting (free play) are presented first followed by the generalization (art activity) data.

For each subject, the proportion of intervals during free play and art in which each target behavior occurred was computed by dividing the number of intervals in which that behavior was scored by the total number of observation intervals. Proportions rather than frequencies

³During the follow-up three subjects were lost: one moved, one chose to withdraw from the study, and one did not have transportation to school. Of these subjects, one was in the morning Group P, one was in the morning Group C, and the other was in the afternoon Group C. There were two other students in the morning Group C who frequently were ill. As a consequence, there were only five days left at the end of the winter quarter to conduct the follow-up sessions for this group. In order to obtain such data, two new children (one male, one female) were randomly selected and used in the morning Group C as needed. Although data were obtained from these children, their data were not used. Analysis of their data (refer to Appendix I) indicated that they did not behave at rates different from the other children in Group C in terms of the three target behaviors.

were used as some children occasionally left early or entered the activity after the group had already begun. Session means for each behavior were computed for each group by averaging the subjects' scores.

Physical Sharing⁴

Group Analyses Across Phases

The percent occurrence of physical sharing for each group is presented in Figure 1 for both the free play and art sessions. The mean percent of physical sharing during each phase for each group and the corresponding standard deviations are presented in Table 4.

Group V. During the course of the initial baseline in free play Group V showed a decrease in physical sharing. During the subsequent treatment condition this behavior occurred nearly four times more frequently than during the initial baseline. Physical sharing decreased slightly during the second baseline. During the follow-up, Group V continued to physically share at a rate near that of the treatment phase, despite the fact that the programmed contingencies had been removed for nearly four weeks.

Even though the children were not trained to share materials in the art activity, there was an increase in their physical sharing concurrent with such training in free play. In the subsequent return to

⁴For those readers who prefer to analyze the treatment effects in terms of the individual subject's data, Appendixes J, K, and L provide such information for physical sharing. Data for subjects in Group C were not included since their data showed only slight variations throughout the experiment.

Figure Caption

Figure 1. Mean percent physical sharing for each group in the training setting (circles) and in the generalization setting (triangles). The symbols G-V, G-P, G-VP, and G-C indicate the groups that were trained to verbally share, trained to physically share, trained to both verbally and physically share, and not trained, respectively. Phases are indicated at the top of each graph. Follow-up began two weeks after Session 24.

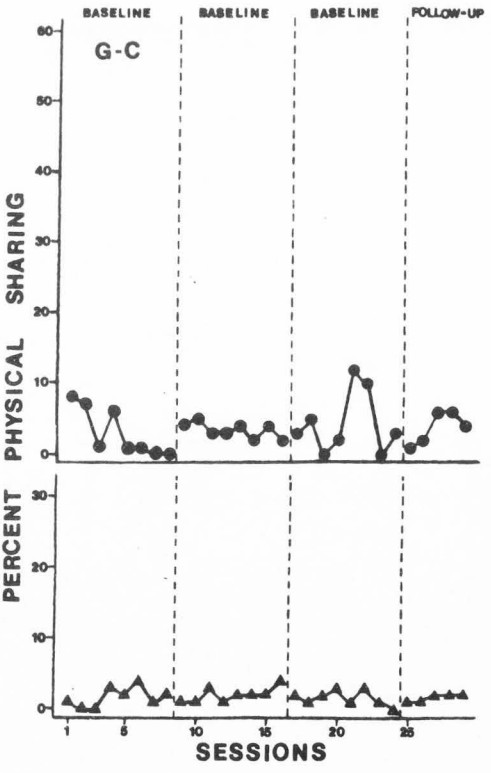
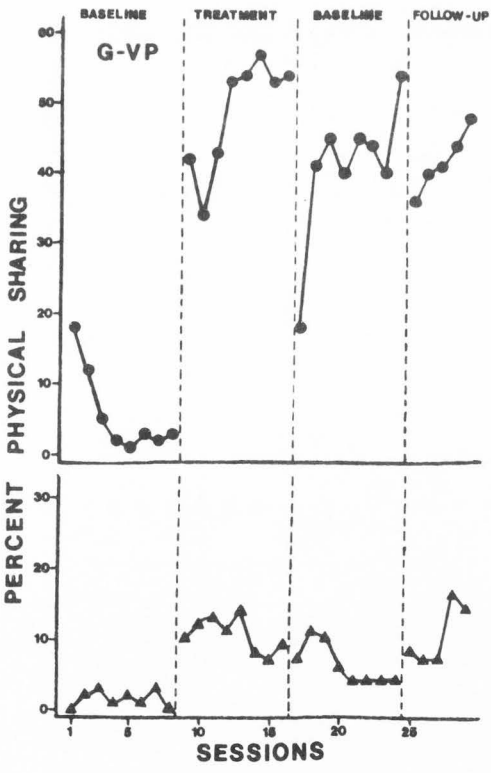
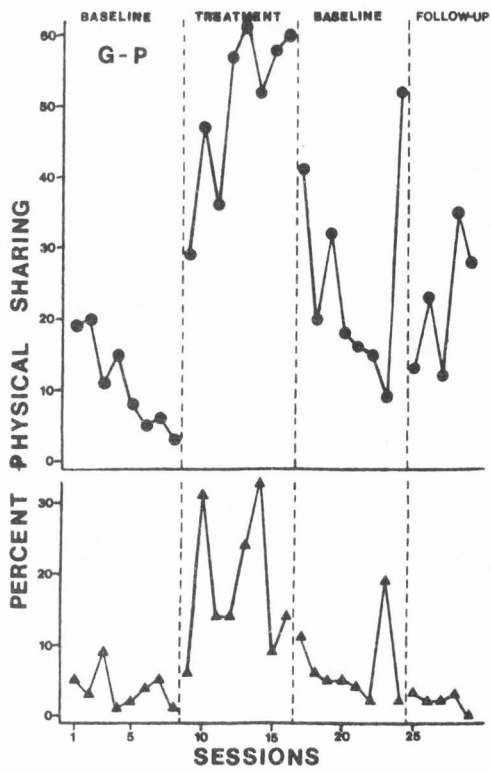
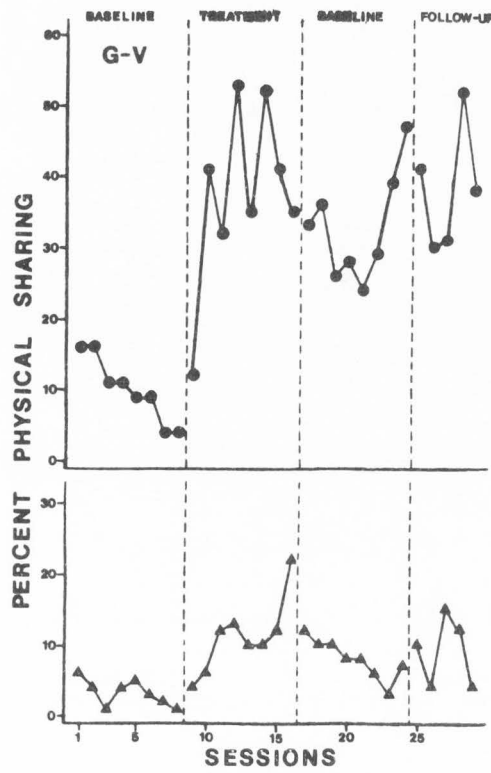


Table 4
 Mean Percent Physical Sharing and Standard
 Deviations for Each Group

Group	Phase							
	Baseline		Treatment ^a		Baseline		Follow-up	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Free play activity								
V	10.63	4.47	38.00	10.80	33.38	20.85	39.25	21.25
P	10.25	7.21	51.38	4.75	24.63	8.18	21.57	8.42
VP	5.88	2.70	48.38	4.17	41.25	16.99	41.39	25.83
C	3.50	3.82	3.50	2.56	4.25	7.56	3.67	2.42
Art activity								
V	3.00	2.00	11.75	6.45	8.38	3.16	9.75	4.98
P	3.63	1.19	16.00	3.42	7.25	2.96	2.00	1.29
VP	1.00	1.20	10.75	6.59	6.50	5.18	9.25	4.65
C	1.75	2.38	2.00	1.07	1.63	.74	1.33	.82

^aBaseline conditions were in effect for Group C during this phase.

the baseline condition, physical sharing decreased slightly; however, it still occurred nearly three times more often than during the initial baseline. This high rate of physical sharing in the art room was maintained during the follow-up.

Group P. Following a decrease in physical sharing in free play during the initial baseline, the introduction of treatment for Group P produced an immediate increase in this behavior. Physical sharing occurred five times more often during treatment than during the initial baseline. Withdrawing the treatment contingencies in the second baseline, however, reduced physical sharing to about half of its previous training level. During the follow-up, physical sharing in free play occurred about twice as often as during the initial baseline.

In the art activity Group P responded to the treatment condition with a four fold increase in physical sharing, however, during the subsequent baseline condition this behavior fell to about half of its treatment level. During the follow-up, physical sharing continued to decrease and eventually occurred less often than during the initial baseline.

Group VP. After a decrease in physical sharing during free play over the initial baseline period, Group VP showed an immediate increase on the first day of training which was sustained throughout the treatment phase. Except for a decrease on the first day during the second baseline, Group VP physically shared nearly as often as during treatment. This level of physical sharing was maintained throughout the follow-up phase.

In the art activity, Group VP also showed an immediate and sustained increase in physical sharing during treatment. In the second baseline physical sharing dropped to half of its treatment level but it returned to that level during the follow-up phase.

Group C. Unlike the previous groups, Group C did not physically share more in the free play activity during the second phase which corresponded in time to the other groups' treatment phase. During the third phase, they physically shared slightly more; however, in the follow-up this behavior returned to its initial baseline level.

In the art activity Group C physically shared throughout the entire experiment at a fairly constant rate varying only slightly from the operant level.

Between Group Analyses

In this section the four groups were compared to determine which treatment was most effective in facilitating physical sharing in both the training (i.e., free play) and generalization (i.e., art) settings. The data for physical sharing were submitted to a three-way analysis of variance (ANOVA)⁵. Specifically, a 4 (group) × 2 (sex) × 2 (experimenter) ANOVA was used. When the sex and/or experimenter variables did not significantly interact with the group factor, the appropriate one- or two-way ANOVA was used. The obtained F values and corresponding

⁵All ANOVAs and ANCOVAs were performance via the Statistical Package for the Social Science system of computer programs (Nie, Hull, Jenkins, Steinbrenner, & Brent, 1975).

significance levels are presented in Table 5⁶. For the final three phases, after the above appropriate analyses were conducted, three a priori comparisons were made. It was hypothesized prior to the study that the order of increases in physical sharing from most to least, would be: Group VP, Group P, Group V, and Group C. The three contrasts used were: (a) Groups VP, P, and V to C, (b) Groups VP and P to Group V, and (c) Group VP to Group P. The obtained F values and corresponding significance levels are presented in Table 6. When these predictions proved false but a significant F ratio was obtained, appropriate post hoc multiple comparisons were conducted using the Scheffé test as a stringent control for experimenter-wise error rate (Ferguson, 1976). The minimal significance level for the ANOVA (or analysis of covariance if appropriate) and a priori tests was .05 but for the Scheffé tests it was set at .10 because both Scheffé (1959) and Ferguson (1976) have made such a recommendation. While reading this section the reader is encouraged to refer also to Figure 1 and Table 4 in addition to Tables 5 and 6.

Initial baseline--free play. A three-way ANOVA of the percent physical sharing during the initial baseline yielded a significant main effect for group as did a subsequent one-way ANOVA. The Scheffé tests indicated that all the treatment groups were sharing at approximately

⁶Since the purpose of the study was not to analyze the effect of the sex and experimenter factors but rather to control for these variables, such analyses are not presented in the main body of the text. For those who wish to examine these data, Appendixes M and N present F ratios and significance levels for the main effects and interactions of these variables.

Table 5
Analyses of Variance and Covariance^{a,b}
for Physical Sharing

Phase	Test	F value for main effect of group	Significance level
Free play activity			
Baseline	3-way ANOVA	3.82	<u>p</u> <.05
	1-way ANOVA	4.09	<u>p</u> <.025
Treatment	3-way ANCOVA	217.50	<u>p</u> <.001
Baseline	3-way ANCOVA	19.69	<u>p</u> <.001
Follow-up	3-way ANCOVA	21.38	<u>p</u> <.001
Art activity			
Baseline	3-way ANOVA	3.09	<u>p</u> >.05
	1-way ANOVA	3.62	<u>p</u> <.05
Treatment	3-way ANCOVA	36.94	<u>p</u> <.001
Baseline	3-way ANCOVA	19.26	<u>p</u> <.001
Follow-up	3-way ANCOVA	11.40	<u>p</u> <.001
	1-way ANCOVA	10.93	<u>p</u> <.001

^aAll ANCOVAs used the initial baseline data as the covariate.

^bInitial difference in performance between groups is a threat to both internal and external validity. Problems with internal validity are circumvented using an ANCOVA, however, problems with external validity can not be conclusively disregarded.

Table 6
Physical Sharing A Priori Contrasts

Phase	Contrast	F value	Significance level
Free play activity			
Baseline	Groups VP,P,V to Group C	7.51	$p < .001$
Treatment	Groups VP,P,V to Group C	726.42	$p < .001$
	Groups VP,P to Group V	68.50	$p < .001$
Baseline	Groups VP,P,V to Group C	51.26	$p < .001$
	Group VP to Group P	25.52	$p < .001$
Follow-up	Groups VP,P,V to Group C	64.29	$p < .001$
	Group VP to Group P	10.61	$p < .010$
Art activity			
Baseline	Group VP,P,V to Group C	1.21	$p > .050$
Treatment	Groups VP,P,V to Group C	109.65	$p < .001$
	Groups VP,P to Group V	3.95	$p > .050$
Baseline	Groups VP,P,V to Group C	58.19	$p < .001$
Follow-up	Groups VP,P,V to Group C	10.99	$p < .005$
	Group VP to Group P	18.60	$p < .001$

equal rates (i.e., such contrasts produced nonsignificant F ratios) during the initial baseline but that Groups V and P physically shared marginally more than Group C ($F = 8.68$, $p < .10$ and $F = 7.78$, $p < .10$, respectively). Even though the subjects were randomly assigned to groups, there was some indication that they physically shared at different levels at the start of the study. Therefore, all the subsequent analyses of the data from the final three phases involved the use of the analysis of covariance (ANCOVA) with the data from the initial baseline as the covariate.

Treatment--free play. Physical sharing during treatment was analyzed using a three-way ANCOVA. There was a significant main effect for group. Subsequent a priori tests indicated that: (a) Groups VP, P, and V physically shared more than Group C, and (b) Groups VP and P physically shared more than Group V. The Scheffé test showed no difference in physical sharing between Group VP and Group P ($F = .32$, $p > .10$).

Second baseline--free play. Physical sharing in the second baseline phase was also analyzed using a three-way ANCOVA. Once again there was a significant main effect for group. Subsequent a priori tests showed that: (a) Groups VP, P, and V physically shared more than Group C, and (b) Group VP shared more than P. The Scheffé tests indicated: (a) no differences in physical sharing between Groups VP and V ($F = 2.85$, $p > .10$) and (b) no difference between Groups P and V ($F = 3.85$, $p > .10$).

Follow-up--free play. Finally, the data from the follow-up phase were analyzed using a three-way ANCOVA. Again, there was a significant

main effect for group. The a priori contrasts indicated that: (a) Groups VP, P and V physically shared more than Group C and (b) Group VP shared more than Group P. Subsequent post hoc comparisons indicated that Group VP did not share more than Group V ($F = .49, p > .10$) but that Group V physically shared more than Group P ($F = 14.91, p < .025$).

Initial baseline--art activity. A three-way ANOVA of the percent physical sharing during the initial baseline yielded a nonsignificant main effect for group; however, a subsequent one-way ANOVA was significant. Therefore, all possible post hoc comparisons were made. These yielded only one significant contrast. Group P physically shared more than Group VP, ($F = 8.87, p < .10$). Since there were initial differences between the groups in physical sharing all subsequent analyses of the data from the final three phases involved the use of ANCOVA with the data from the initial baseline as the covariate.

Treatment--art activity. The data from the treatment phase were analyzed using a three-way ANCOVA which yielded a significant main effect for group. There was only one significant a priori contrast. Groups VP, P, and V shared more than Group C. Using the Scheffé test, it was found that Group P shared more than Group V ($F = 10.19, p < .05$) and marginally more than Group VP ($F = 8.66, p < .10$). The difference between Groups V and VP was nonsignificant.

Second baseline--art activity. Physical sharing in the second baseline was then analyzed using a three-way ANCOVA. Once again there was a significant main effect for group. Only one a priori contrast was significant. Groups VP, P, and V physically shared more than

Group C. All subsequent comparisons between Groups VP, P, and V using the Scheffé test were nonsignificant.

Follow-up--art activity. The data for the follow-up phase were submitted to a three-way ANCOVA which yielded a significant main effect for group as did a subsequent one-way ANCOVA. Use of a priori contrasts indicated that: (a) Groups VP, P, and V physically shared more than Group C and (b) Group VP shared more than P. Additional post hoc comparisons showed that Group V shared more than Group P ($F = 12.99$, $p < .025$) but not significantly more than Group VP ($F = .54$, $p > .10$).

Verbal Sharing⁷

Group Analyses Across Phases

The percent occurrence of verbal sharing for each session for the groups is presented in Figure 2 for both the free play and art activities.⁸ The mean percents of verbal sharing during each phase for each group and corresponding standard deviations are presented in Table 7.

Group V. Group V verbally shared dramatically more in the free play situation during the treatment phase than during the initial baseline. In the second baseline, verbal sharing decreased from its treat-

⁷ Once again for those readers who prefer to analyze the treatment effects in terms of the individual data, Appendixes O, P, and Q provide such information for verbal sharing. Data for subjects in Group C were not included due to their extremely low frequency.

⁸ Note that the ordinate scales are different from those for physical sharing since verbal sharing occurred at a much lower rate.

Figure Caption

Figure 2. Mean percent verbal sharing for each group in the training setting (circles) and in the generalization setting (triangles). The symbols G-V, G-P, G-VP, and G-C indicate the groups that were trained to verbally share, trained to physically share, trained to both verbally and physically share, and not trained, respectively. Phases are indicated at the top of each graph. Follow-up began two weeks after Session 24.

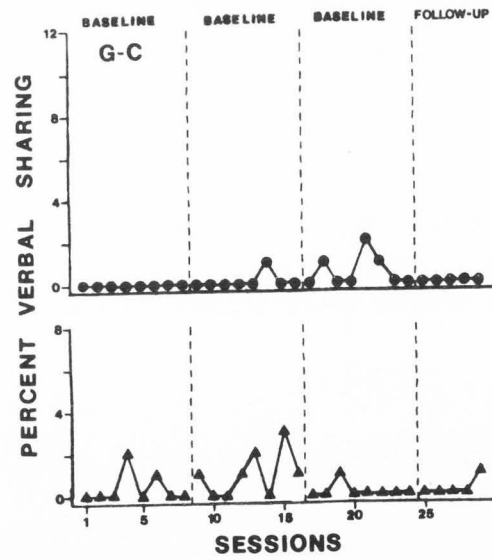
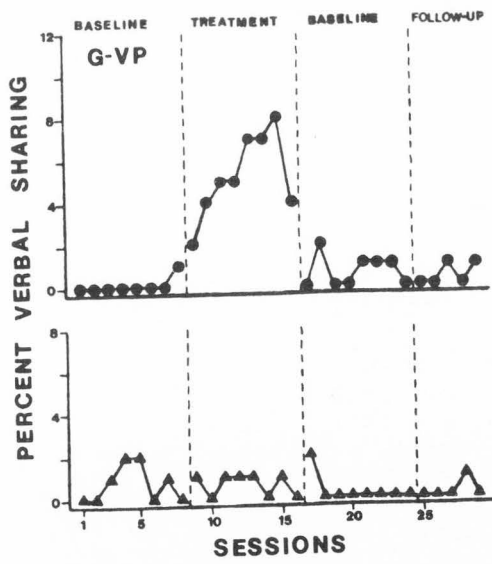
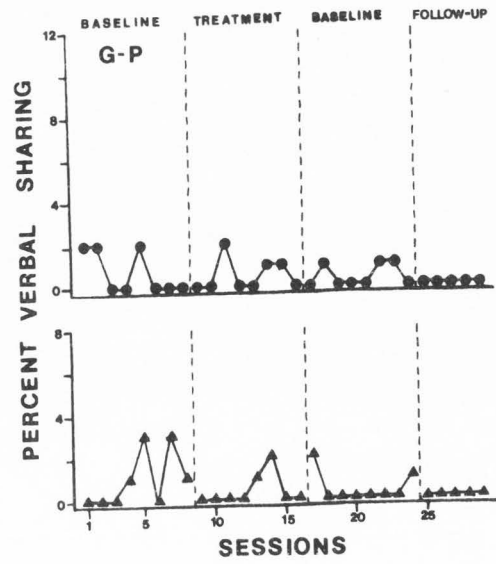
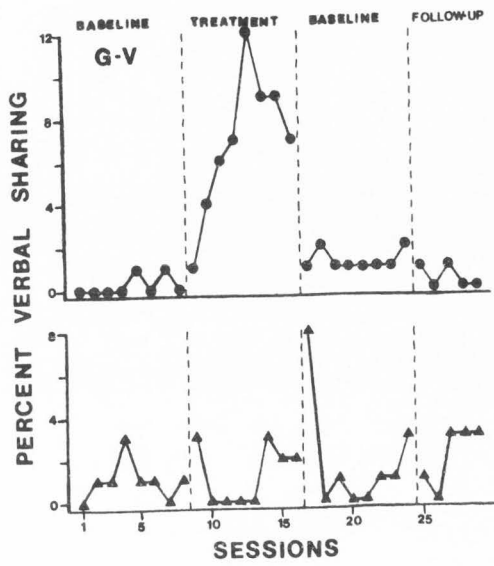


Table 7
 Mean Percent Verbal Sharing and Standard
 Deviations for Each Group

Group	Phase							
	Baseline		Treatment ^a		Baseline		Follow-up	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Free play activity								
V	.38	.52	8.00	1.77	1.38	1.19	.38	.52
P	.75	.89	.50	.54	.38	.52	0.00	0.00
VP	.13	.35	5.50	2.40	.63	1.19	.38	.52
C	0.00	0.00	.13	.35	.63	.92	0.00	0.00
Art activity								
V	1.13	1.13	1.25	1.04	2.00	1.85	2.63	2.20
P	.88	1.13	.38	.74	.50	.76	.14	.38
VP	.74	1.07	.56	1.27	.13	.35	.38	.52
C	.75	1.39	1.00	1.20	.13	.35	.17	.41

^aBaseline conditions were in effect for Group C during this phase.

ment level but was still three times greater than at the onset of the study. During the follow-up, however, verbal sharing decreased to its initial baseline level.

In the art activity the data were more variable. Group V showed slight increases in verbal sharing during the treatment, second baseline, and follow-up phases. Due to the extreme variability, however, differences between phases are difficult to discern.

Group P. Group P did not demonstrate an increase in verbal sharing during the experiment in the free play situation. In fact, at the end of the study almost no verbal sharing occurred. Likewise, in the art activity Group P also showed a reduction over time in verbal sharing. By the end of the study verbal sharing was only occurring at about one-fifth of the initial baseline rate.

Group VP. Treatment produced a dramatic increase in verbal sharing in the free play situation in Group VP. During the second baseline, verbal sharing was greatly reduced but it still occurred about four times more often than at the start of the study. Verbal sharing, however, continued to decrease during the follow-up phase such that Group VP shared only slightly more than at the onset of the study.

In the art activity, Group VP showed a slight reduction in the operant level of verbal sharing throughout the final three phases. Verbal sharing never occurred above a mean of 2% for any phase.

Group C. Group C showed little change in verbal sharing in the free play activity throughout the experiment. The mean percent of verbal sharing never exceeded 2% for any phase. Similarly, Group C rarely verbally shared in the art activity throughout the experiment.

Between Group Analyses

In this section the four groups were compared to determine which treatment was most effective in facilitating verbal sharing. The data were analyzed in the same manner as for physical sharing. Obtained F ratios for ANOVAs and a priori tests are presented in Tables 8 and 9, respectively.⁹ It was predicted that the order of increases in verbal sharing going from most to least would be: Group V, Group VP, Group P, and Group C. The three a priori contrasts used were: (a) Groups V, VP, and P to Group C, (b) Groups V and VP to Group P, and (c) Group V to Group VP. While reading this section, the reader is encouraged to also refer to Figure 2 and Table 7 in addition to Tables 8 and 9.

Initial baseline--free play. A three-way ANOVA of verbal sharing during the baseline phase yielded a nonsignificant main effect for group, however, a subsequent one-way ANOVA was significant. Of all the possible post hoc contrasts between groups, only one was significant. Group P verbally shared more than Group C ($F = 7.76, p < .10$). Therefore all analyses of the data from the final three phases involved the use of ANCOVA with the data from the initial baseline as the covariate.

Treatment--free play. The data for verbal sharing during the treatment phase were submitted to a three-way ANCOVA and yielded a significant main effect for group as did a subsequent two-way ANCOVA.

⁹For those who wish access to the effect of the sex and experimenter variables on verbal sharing, Appendixes R and S present F ratios and significance levels for the main effect and interactions of those variables.

Table 8
 Analyses of Variance and Covariance^a
 for Verbal Sharing

Phase	Test	F value for main effect of group	Significance level
Free play activity			
Baseline	3-way ANOVA	2.80	p>.050
	1-way ANOVA	2.97	p<.050
Treatment	3-way ANCOVA	102.13	p<.001
	2-way ANCOVA (G×E) ^b	112.91	p<.001
Baseline	3-way ANCOVA	2.38	p>.050
	2-way ANCOVA (G×E)	2.57	p>.050
Follow-up	3-way ANCOVA	1.16	p>.050
	1-way ANCOVA	2.01	p>.050
Art activity			
Baseline	3-way ANOVA	.33	p>.050
	1-way ANOVA	.38	p>.050
Treatment	3-way ANOVA	1.25	p>.050
	2-way ANOVA (G×E)	.93	p>.050
Baseline	3-way ANOVA	7.85	p<.005
	2-way ANOVA (G×E)	9.27	p<.001
	1-way ANOVA	6.00	p<.005
Follow-up	3-way ANOVA	7.54	p<.050
	1-way ANOVA	7.40	p<.005

^aAll ANCOVAs used the initial baseline data as the covariate.

^bLetters G and E respectively connote group and experimenter.

Table 9
Verbal Sharing A Priori Contrasts

Phase	Contrast	F value	Significance level
Free play activity			
Baseline	Groups V,VP,P to Group C	3.53	$p > .050$
	Group V to Group VP	.78	$p > .050$
Treatment	Groups V,VP,P to Group C	119.65	$p < .001$
	Groups V,VP to Group P	208.58	$p < .001$
	Group V to Group VP	23.47	$p < .001$
Baseline	Groups V,VP to Group P	5.88	$p < .050$
	Group V to Group VP	2.10	$p > .050$
Follow-up	Groups V,VP,P to Group C	23.00	$p < .001$
	Groups V,VP to Group P	4.00	$p > .050$
	Group V to Group VP	0.00	$p > .050$
Art activity			
Baseline	Groups V,VP,P to Group C	.03	$p > .050$
	Group V to Group VP	1.10	$p > .050$
Treatment	Groups V,VP to Group P	2.80	$p > .050$
	Group V to Group VP	0.00	$p > .050$
Baseline	Groups V,VP,P to Group C	2.46	$p > .050$
	Groups V,VP to Group P	3.74	$p > .050$
	Group V to Group VP	13.45	$p < .001$
Follow-up	Groups V,VP,P to Group C	2.38	$p > .050$
	Groups V,VP to Group P	6.17	$p < .025$
	Group V to Group VP	13.32	$p < .005$

A priori tests confirmed that: (a) Groups V, VP, and P verbally shared more than Group C, (b) Groups V and VP verbally shared more than Group P, and (c) Group V shared more than Group VP.

Second baseline--free play. The data from the second baseline were submitted to a three-way ANCOVA and yielded a nonsignificant main effect for group as did a subsequent two-way ANCOVA. Only one of the three a priori contrasts proved significant; Groups V and VP verbally shared more than Group P.

Follow-up--free play. A three-way ANCOVA of the follow-up data yielded a nonsignificant main effect of group. Submitting these data to a one-way ANCOVA also proved to be nonsignificant. Only one a priori contrast was significant: Groups V, VP, and P verbally shared more than Group C.

Initial baseline--art activity. The data on verbal sharing during the initial baseline were submitted to a three-way ANOVA. There was no significant main effect for group. A one-way ANOVA also proved to be nonsignificant, indicating that, initially, all the groups verbally shared approximately equally.

Treatment--art activity. A three-way ANOVA of the data from the treatment phase yielded a nonsignificant main effect for group as did a subsequent two-way ANOVA. All the a priori contrasts were nonsignificant.

Second baseline--art activity. The data from the second baseline were submitted to a three-way ANOVA and yielded a significant main effect for group as did subsequent two-way and one-way ANOVAs. Only one of a priori contrasts was significant: Group V verbally shared

more than Group C. The Scheffé tests indicated that Group V verbally shared more than Groups P ($F = 8.48, p < .10$), and C ($F = 13.18, p < .01$). All other post hoc comparisons were nonsignificant.

Follow-up--art activity. The follow-up data were then submitted to a three-way ANOVA. A significant main effect of group was found. A one-way ANOVA also was significant. The a priori contrasts indicated that: (a) Groups V and VP verbally shared more than Group P, and (b) Group V shared more than Group VP. Subsequent Scheffé tests indicated that only Group V shared more than Group C ($F = 13.64, p < .05$).

Refusals to Share

The children's rate of refusing to share (refer to Table 10) was unaffected by the various treatment conditions in the free play activity. Refusals to share occurred infrequently, always less than 1% of the session. The results for the art activity were similar. However, Group P refused to share more often than the other groups during the treatment. Since this was the only effect of the treatments on refusals to share, between group analyses are not reported.

Table 10
 Mean Percent Refusals to Share and Standard
 Deviations for Each Group

Group	Phase							
	Baseline		Treatment ^a		Baseline		Follow-up	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Free play activity								
V	.25	.46	.63	.74	.25	.46	0.00	0.00
P	.63	.74	.38	.52	.62	.92	0.00	0.00
VP	.25	.46	0.00	0.00	.13	.35	.50	1.41
C	0.00	0.00	.50	1.07	0.00	0.00	0.00	0.00
Art activity								
V	.25	.71	.50	.76	.50	.76	.75	1.39
P	.25	.46	6.75	19.09	.38	1.06	.43	.54
VP	0.00	0.00	.25	.71	.13	.35	.25	.46
C	.50	.76	.75	.71	.13	.35	.83	.98

^aBaseline conditions were in effect for Group C during this phase.

DISCUSSION

Preschool children were taught to share in a free play situation through treatment involving instructions, modeling, behavioral rehearsal, prompting and praise. The children trained to share verbally (Group V) showed an increase in verbal sharing which diminished when treatment was withdrawn and failed to generalize to another nontraining activity (i.e., art). There was, however, a concomitant increase in physical sharing during both activities that was maintained four weeks after the termination of the treatment. Likewise, children taught to share verbally and physically (Group VP) demonstrated similar effects of treatment as those receiving training only in verbal sharing. The magnitude of these changes, however, was slightly greater for Group VP. Training in only physical sharing (Group P) produced larger increases in physical sharing in both settings than the other two treatments but these effects were lost when treatment was terminated. Verbal sharing for children in Group P was unaffected by the treatment. Finally for those children who did not receive any training (Group C), no systematic increases in either verbal or physical sharing were observed. Therefore, the high level of physical sharing during the follow-up for Groups V and VP, was not due to changes in the natural course of sharing over time but rather due to the treatment. Training children to verbally share, physically share, or both had no effect on the rate with which they refused to share.

In the remainder of this chapter, questions raised in the Statement of the Problem are answered, possible explanations of the results are given, and future areas of research and ethical considerations are discussed. Initially, the direct effects of treatment are delineated. A discussion follows concerning the indirect effects: response generalization, stimulus generalization, and response maintenance. Subsequently, hypotheses regarding why the indirect effects occurred are offered. Future areas of research and ethical considerations are presented at the conclusion of this chapter.

Direct Effects of Treatment

In this section, three questions about the direct effects of treatment in the training setting are addressed. Did the treatment, as applied to each of the experimental groups, produce the desired results? After sharing was developed, was it maintained even in the absence of treatment (i.e., during the second baseline)? Was there demonstration of functional control?

Teaching the children to share verbally resulted in an increase in that behavior. Withdrawing the treatment produced a reduction in verbal sharing to the operant level. These changes indicated that the treatment package was the sole factor responsible for the increase in verbal sharing.

Teaching the children to share physically produced a large and immediate increase in physical sharing. Removal of the treatment resulted in a reduction in physical sharing, but this behavior still occurred somewhat more than during the initial baseline. Since there

was only a partial reduction in physical sharing and not a complete return to the operant level, it could be argued that the change in behavior was due to other uncontrolled variables. In using an ABA design where the target behavior fails to return to its operant level when treatment is terminated, demonstration of functional control is problematic (Baer et al., 1968). The use of a control group, however, eliminates this difficulty (Hartmann & Atkinson, 1973). In the present study, the control group physically shared at approximately equal rates throughout the first three phases of the experiment, indicating that the change observed in Group P's behavior was due to the treatment.

Teaching children to share verbally and physically produced an increase in verbal sharing. However, in the absence of treatment this behavior returned to its operant level demonstrating functional control of the behavior. On the other hand, these children showed an increase in physical sharing that was maintained even during the second baseline. Since the control group did not physically share more throughout the experiment, Group VP's increase in sharing was not due to uncontrolled variables.

Thus, the order of increases in verbal sharing, were as predicted from most to least: Group V, Group VP, Group P, and Group C. For physical sharing, however, not all the predictions proved accurate. As expected, all the experimental groups physically shared more than Group C. In addition, as predicted, Groups VP and P physically shared more than Group V but there was no difference between the former two groups. This indicates that during treatment teaching

both verbal and physical sharing did not enhance the effect of teaching just physical sharing as had been expected.

When developing one type of sharing, was there a concomitant increase in the other type of sharing?¹⁰ This phenomenon in which the treatment affects behaviors that were not directly modified, is referred to as response generalization. "That is, generalization occurs from the responses upon which treatment focused to other responses that may be related but were not specifically dealt with" (Kazdin & Bootzin, 1972, p. 359).

Children taught to share verbally also physically shared at higher rates. This increase in physical sharing during free play was maintained even in the absence of treatment. The effect of training verbal sharing, therefore, generalized across type of response to physical sharing. Children taught to share physically did not demonstrate an increase in verbal sharing. The effect of training physical sharing, thus, did not generalize to verbal sharing.

These results indicate that facilitation of sharing, among pre-school children, produces response generalization. This generalization, however, is unidirectional. Sharing generalized only from the verbal to physical mode and not in a reverse manner. Other investigators (Buell, Stoddard, Harris & Baer, 1968; Nordquist & Bradley, 1973; Sajwaj, Twardosz & Burke, 1972) researching other behaviors have obtained response generalization. However, this is the first study to test for unidirectional change since the others trained only one response.

¹⁰ An inspection of the data presented in Appendix F indicates that for both Groups V and VP, children verbalized more as result of treatment even though that behavior was not directly trained.

Generalization Across Settings

Did the effects of training in one situation generalize to a setting in which training had not occurred? This phenomenon of a response occurring under other (nontraining) stimulus conditions is referred to as stimulus generalization (Kazdin & Bootzin, 1972) or setting generality (Wahler, 1969). In the present experiment setting generality was studied by observing the children in a nontraining setting (i.e., art) that involved a different experimenter, observers, room, task, and materials.

Children taught to increase the frequency of their verbal sharing in free play did not do so in the art activity. Therefore, the effect of training verbal sharing was situation specific. On the other hand, when children were taught to share physically in the free play situation they also showed a corresponding increase of that behavior in the art activity. The magnitude of this generalization, however, decreased during the second baseline. The effect of solely training physical sharing appears to generalize to other settings while the treatment contingencies are in effect but this generalization is reduced in strength when the treatment is terminated.

Children taught to share both verbally and physically in free play did not show an increase of verbal sharing in the art activity. These children, however, did physically share more in the art activity and continued to do so even during the second baseline. Thus, setting generality for Group VP was consistent with data obtained from Groups V and P.

Training preschool children to share toys physically generalized to another setting (i.e., art activity), but training them to verbally share did not.

Durability of the Responses

Are the effects of treatment durable over time and are they greater than would be found with the mere passage of time? The second baseline may be viewed as a short-term durability test. This section, however, is concerned with whether or not the effects of training are maintained after the experiment has been terminated for a period of time. For instance, will a child who no longer has access to the materials utilized in the study, who no longer is required to play with his/her experimental group, and who is free to interact with nonsharing students continue to share more than someone who has not received training? This was tested first by conducting follow-up sessions four weeks after termination of the treatment, and second by including a control group. In the three preceding subsections of this chapter, three effects of treatment have been discussed (i.e., direct effects, generalization across types of response and generalization across settings). This section will discuss response maintenance with respect to each of these effects.

Direct Effects

During the follow-up free play sessions, children in Group V were sharing at approximately the same rate as at the start of the study. Thus, the verbal sharing taught was not durable over time. Likewise, Group P showed a much lower rate of physical sharing in free play

during the follow-up than during treatment but this was somewhat higher than its operant level. Since Group C physically shared during the follow-up as often as in the initial baseline, any gains in physical sharing for Group P were probably not simply due to the passage of time.

Group VP did not maintain the high level of verbal sharing it achieved during treatment. Children in this group, however, did continue to share physically at about the same rate during the follow-up as during the treatment. Since the control group physically shared at about the same rate at the end of the study as at the start, Group VP's high level of sharing during the follow-up was shown to be a function of the treatment.

Response Generalization

Only the data from Group V will be discussed in this section, since this was the only group to demonstrate response generalization. Specifically, these children were taught to share verbally and as a side effect they increased physical sharing. During the follow-up, Group V physically shared about at the same rate as during the treatment. Once again the data from the control group indicate that Group V's high rate of physical sharing during follow-up was greater than would have been expected from the mere passage of time.

Generalization Across Settings

As indicated on page 72 Group V's physical sharing increased in the art activity during treatment although this response was only trained in the free play setting. During the follow-up, Group V continued to share physically in the art setting at about the same rate

as during treatment. The data obtained from Group V, therefore, demonstrate that the generalization of physical sharing from free play to art was durable. Furthermore, the data from Group C indicate that this level of physical sharing was much higher than would have been due to the developmental course of sharing.

Group P physically shared more in the art activity during the treatment than the initial baseline but this gain was lost during the follow-up. Thus, group P's generalization of physical sharing from free play to art was not durable.

On the other hand, Group VP continued to show a high level of physical sharing during the follow-up in the art activity. Group VP's generalization of physical sharing from free play to art was, therefore, durable four weeks after the termination of treatment. Given Group C's data, Group VP's rate of physical sharing was much higher than would have been expected without intervention.

Most Effective Training

Is it better when developing sharing to start training with the verbal, physical, or both response classes? Specifically, which type of training produces the largest immediate and generalized effects that are durable over time?

Children trained to share physically demonstrated the largest increase in physical sharing (as compared to Groups V and VP) in both the free play and art activities. When training ceased, physical sharing in the free play situation decreased and, in the art activity, it eventually returned to its operant level. Furthermore, such training did not facilitate verbal sharing. Since there were only short term

effects on physical sharing and since there was no effect on verbal sharing, training children to share physically is viewed as the least desirable means of encouraging sharing behavior.

Children taught to share verbally did so in the free play setting while the treatment was in effect. However, there was no carry over to the art activity and in the absence of treatment verbal sharing returned to its operant level. On the other hand there was a large increase in physical sharing in both the training and generalization settings. In addition, these effects were still observed four weeks after termination of the treatment. These results combined with those for Group P have applied significance. They indicate that to develop physical sharing among preschool children that generalizes to a nontraining setting and is maintained in the absence of treatment, the trainer must teach the child how to share verbally. The effect of subsequent training of physical sharing on the gains produced by training of verbal sharing is not known at present.

Training children simultaneously in verbal and physical sharing produced the same results as teaching only verbal sharing. However, the effects of such training were of somewhat larger magnitude than for only encouraging verbal sharing. It appears that when facilitation of physical sharing is desired, the young child must at a minimum be taught to share verbally. The addition of concurrent training in physical sharing heightens the effect of only encouraging verbal sharing. This additional training, however, increases the cost of treatment in terms of time required of the trainer. Such cost compared to the small gains may not warrant training both classes of sharing simultaneously.

Refusals to Share

Did training young children to verbally share without training physical sharing produce an increase in the rate with which they refuse to share? Intuitively, if a child is prompted and reinforced for offering to share but if his/her peers are allowed to refuse to share, one would expect an increase in refusals to share. This particularly would be true in situations where one child is in possession of some material and a second child asks to share that material.

Recently, Warren, Rogers-Warren, and Baer (1976) reported that, with preschool children, as the rate of offering to share increased, the rate of acceptance of such offers decreased. In that study four toys were provided for four children. In such a situation, one would logically expect each child to be in possession of one toy. Offers to share, therefore, should be one of the following two types: (a) asking a second child to play with him/her with a toy that he/she currently possesses, or (b) asking a second child if he/she can play with a toy that the second child currently possesses. In situations in which there are more toys available than children present, one would expect that some of the toys would not be used by any child. An additional type of offer to share would be appropriate in this situation. A child could ask another to play with him/her with a toy that neither currently possesses. On an intuitive basis, one would expect fewer refusals to this last type of offer because the recipient is provided with an opportunity to play with a new toy. Therefore, it appears that Warren, Rogers-Warren, and Baer's results might have been a function of the number of materials present.

In the present experiment six toys were provided for four children. Each child was encouraged to share verbally (i.e., to offer to share physically and to accept such attempts). Thus, the present experiment was different from the Warren, Rogers-Warren, and Baer (1976) study in at least two ways: (a) the ratio of materials to children was greater, and (b) acceptance of share offers was prompted and praised. The children verbally and physically shared more as a result of the treatment, however, there were no increases in refusals to share. Since the data for verbal sharing were collapsed (i.e., the observers did not record offers and acceptances differentially), it is not known if offers and acceptances increased at corresponding rates. It would appear, however, that there was a complementary increase in acceptances in relation to offers since refusals did not increase. The present findings, compared to those of Warren, Rogers-Warren, and Baer's (1976), suggest that it is not enough to teach children to offer to share but that they must also be taught to accept such offers.

Generalization and Durability

The generalization and maintenance of responses following termination of treatment has become a topic in vogue with behavior modifiers. During the last few years, much journal space has been devoted to these issues (Barton & Osborne, in press; Clark, Boyd, & Macrae, 1975; Cooke & Apolloni, 1976; Fichter, Wallace, Liberman, & Davis, 1976; Frederiksen, Jenkins, Foy, & Eisler, 1976; Gladstone & Sherman, 1975; Horton, 1975; Koegel & Rincover, 1977; Martin, 1975; Miller & Sloane, 1976; Mithaug & Wolfe, 1976; Page, Iwata, & Neef, 1976; Rincover &

Koegel, 1975; Rogers-Warren & Baer, 1976; Rusch, Close, Hops, & Agosta, 1976; Wahler, 1975). Most researchers agree that, in general, behavior modification programs do not have generalized and durable effects without specific programming (Frederiksen et al., 1976; Herman & Tramontana, 1971; Horton, 1975; Kazdin & Bootzin, 1972; Koegel & Rincover, 1977; Miller & Sloane, 1976; Patterson & Teigen, 1973; Rincover & Koegel, 1975; Walker & Buckley, 1972). It appears that for some behaviors, "it may be necessary to use additional treatment strategies following the response-acquisition phase to ensure maintenance of the behavior in different situations over time" (Frederiksen et al., 1976, p. 125). In a few studies, however, there have been reports of stimulus generalization (Barton & Osborne, in press; Clark et al., 1975; Fichter et al., 1976; Gladstone & Sherman, 1975; Martin, 1975; Page et al., 1976; Rogers-Warren & Baer, 1976; Rusch et al., 1975), response generalization (Buell et al., 1968; Nordquist & Bradley, 1973; Sajwaj et al., 1972; Wahler, 1975) and, response maintenance (Barton & Osborne, in press; Fichter et al., 1976; Page et al., 1976) without specific programming.

In the present study, without using additional treatment strategies, stimulus generalization, response generalization and response maintenance occurred. These phenomena, however, were treatment and response specific. For all three experimental groups only physical sharing generalized across settings. The effects of training verbal sharing generalized to physical sharing but not vice versa. Finally, only Groups V and VP demonstrated maintenance of physical sharing over time. The data provide support for Koegel and Rincover's (1977) argument that

researchers need to distinguish between generalization and maintenance data. They note that generalization can occur without maintenance and vice versa. It may be that the lack of positive findings regarding the generalization and maintenance of behavior modification programs is due to a failure to discriminate between these two types of effects. For example, when an investigator reports that the effects of treatment were not observed six months later in a nontraining setting, the reader should not assume that there was no setting generality and response maintenance. It could be that the response did generalize to a nontraining setting but that the contingencies in the natural environment did not maintain it. Furthermore, had the researcher conducted the follow-up in the training setting, he/she may have found the response to be durable over time.

The present investigation was not designed to account for why these phenomena occur but rather to determine if, in fact, they would occur. As a consequence, no empirical evidence for the determinants of generalization and response maintenance can be provided. Several possible explanations, however, will be explored.

Generalization across settings as well as response maintenance may have been a function of stimulus control. Specifically, the sharing developed during training may have come under the control of antecedent conditions. One way that past researchers have brought about the transfer of treatment gains to other settings, has been to manipulate antecedent conditions (Horton, 1976; Rincover & Koegel, 1976). Furthermore, others (Lieberman, Teigen, & Patterson, 1973) have reported more generalization to transfer settings as the similarity to the training

situation increased. Many of the stimuli used in the present study in the probe setting were different from those in the training situation; different experimenters, observers, room task, and materials were used. Even so, a number of stimulus conditions were the same or similar: (a) the group composition was the same, (b) the children were observed within the same school building, and (c) two observers and one experimenter were present in both settings. It may have been that one or a combination of these factors were responsible for generalization and maintenance.

Generalization and maintenance might also have been related to the subjects' reinforcement history. During training, the children were praised by the experimenter at a maximum rate of approximately once every four minutes. The use of praise rather than tangibles such as tokens may have been important since "social reinforcement may possibly facilitate generalization because it is the relevant factor in the settings where generalization is tested" (Lieberman et al., 1973, p. 63). Although the experimenter only praised sharing in free play during treatment, it is possible that the children learned to reinforce each other's behavior. Furthermore, it might be that training sharing sets up a mutually reinforcing situation where the sharing by one child reinforces sharing by another child (Mithaug & Wolfe, 1976). Finally, since praise was issued during training on a variable-interval limited-hold schedule, the treatment might have produced physical sharing that was highly resistant to extinction (Ferster & Skinner, 1957).

None of these explanations in isolation, however, adequately explains why stimulus generalization and response maintenance were

response and treatment specific. Why verbal sharing did not generalize to art and why it was not durable is unclear. It may have been due to its relatively low rate of occurrence or to a lack of a necessity for verbal sharing once physical sharing was strongly established. Why Group P's physical sharing was not durable is also not known. Since the experimenter prompted and reinforced appropriate physical sharing during training, in the absence of treatment the children may have not known how to appropriately set up sharing situations because they had not had any training in verbal sharing. In addition, these children may have found physical sharing without a preceding verbal request to be aversive. Thus, when the experimental contingencies were no longer in effect, they may have physically shared less to avoid this aversive situation. Another hypothesis is that training in verbal sharing was in fact teaching the children to prompt their peers to share physically. Therefore, even in the absence of treatment physical sharing might have been prompted in Groups V and VP but not in Group P.

Why generalization across responses occurred is not clear. Such generalization is typically explained in terms of conditioning of a functional response class.¹¹ Gewirtz (1971) argues that when a behavior is explicitly reinforced, a large number of other responses

¹¹Members of a response class have been identified by: (a) common sense, (b) similarities in behavioral topography, and (c) functional analysis (Sajwaj et al., 1972). Since predictions based on common sense and topographies are often misleading, a functional definition of response class is usually given by determining which behaviors, in addition to those being treated, are affected by the manipulation.

within the same response class are indirectly reinforced. According to this view, if verbal and physical sharing are members of the same functional response class, one would expect reinforcement of verbal sharing to increase the probability of physical sharing and reinforcement of physical sharing to increase verbal sharing. In the present experiment, however, training in verbal sharing produced increases in physical sharing but not vice versa. These findings question the heuristic value of using the term, response class in Gerwitz's sense. We are left with the dilemma of verbal and physical sharing being members of the same response class when we look for generalization from verbal training to physical training and yet these same behaviors do not fit the response class definition if generalization is examined in the opposite direction.

Implicit in the definition of response class is a covariation of behaviors as a result of some manipulation (Sajwaj et al., 1972; Wahler, 1975). The present data, however, indicate that just because Response B is affected by reinforcement of Response A, one can not assume that Response A will be affected by similar consequences to Response B. Therefore, future investigations of response generalization need to determine if such generalization is unidirectional or reciprocal. The failure of previous methodologies to make such tests, may have propagated an unnecessary concept that has possibly resulted in misconceptions about why response generalization occurs. Furthermore, the value of this verbal label (i.e., the term response class) as distinct from a mere verbal description of the phenomenon is questionable.

Despite the conceptual problems associated with the term response class, one factor that may have accounted for the unidirectional response generalization was that training verbal sharing may have resulted in the facilitation of a number of behaviors that are important to successful social interactions. The training produced three behaviors that are important to successful social interactions (i.e., verbal sharing, physical sharing, and verbalizations). There also may have been increases in other behaviors such as smiling and praise. Although there is no empirical evidence to support this hypothesis, it is known that young children who verbalize more than their peers also physically share more (Barton, Note 2). On the other hand, according to the present findings training in physical sharing does not appear to foster other social behaviors. This may be because such training is very response specific and appears unrelated to the child's other social interactions.

One final hypothesis to explain the unidirectional response generalization is that the children who were taught to share verbally may have internalized a rule about physical sharing. Their physical sharing may have been verbally mediated by a rule which they had encoded (Bandura, 1969). This possibility is consistent with Piaget's (1932) theory of moral development. According to Piaget, these children should have been in or approaching the moral absolutism stage of moral development. During this period, children are viewed as obeying rules without question because they come from authority. If preschool children encode rules about sharing after being trained to share verbally, then one would expect them to share physically even in the absence of treat-

ment. However, training in physical sharing alone, may not aid in the development of such rules. Although this is a feasible explanation, future research on response generalization should be concerned initially with observable stimulus conditions that may account for this phenomenon. If this does not prove fruitful, then internal conditions such as verbal mediation can be explored.

Future Research

The present experiment is viewed as an initial exploratory study of the development, generalization, and maintenance of sharing. Many questions have been raised by it and future areas of research are numerous. Issues concerning the best way to develop sharing, how to facilitate generalization and durability, and why generalization and response maintenance occur without programming, need further investigation.

Stimulus generalization occurred without programming in the present experiment. Do young children, however, generalize their physical sharing to children outside of their training group? Do they continue to share physically when they are off the school campus? Do they continue to share materials when they don't know they are being monitored? What can the experimenter do to facilitate generalization of sharing to other settings?

In the present experiment there was evidence of response generalization from verbal sharing to physical sharing and verbalizations. Are other behaviors influenced by training (e.g., praising and smiling)?

If other behaviors are influenced, is the response generalization unidirectional?

Physical sharing was maintained in Groups V and VP for four weeks after the termination of treatment. How much longer would this behavior be maintained without special programming? What can the experimenter do to facilitate maintenance of physical sharing?

In the present experiment observers did not record attempts to initiate sharing differentially from acceptance of such attempts. Future research could determine if both increase at proportionate rates.

Finally, future research might attempt a micro-analysis of sharing interactions. An observational system different from that utilized in the present study will be needed so that entire sequences of sharing can be monitored. This approach will allow for the determination of the antecedent and consequent events surrounding sharing. Specifically, what events lead to the initiation and termination of sharing?

A Final Consideration

A final point to be considered is that treatment packages such as the one used in the present experiment might produce side effects that could be considered undesirable by some parents. A child who has been trained to share, may loan a treasured family possession to a peer. Some parents might find such behavior unacceptable. It is, therefore, ethically imperative to inform the parents of children, who receive such training, of the treatment components, possible benefits and possible dangers. This issue also raises another concern. When does

a high rate of sharing or any other prosocial behavior become inappropriate? Value judgments such as these are not easily answered but no doubt will continue to be an area of concern.

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APPENDIXES

Appendix A

Parental Permission Letter

January 3, 1976

Dear _____,

I would appreciate a few minutes of your time in reading this letter. I am a doctoral candidate in the Psychology Department at USU. During the first week in January, I will be beginning my dissertation research that is aimed at investigating the development of both verbal attempts at sharing and the actual sharing of tangible objects. I am seeking your cooperation and permission for your child's participation in this project. The project itself has been approved by both Sandy DeGraff of the Child Development Center and its governing board at the December 2nd meeting.

The study will be conducted at the Child Development Center and will last approximately 24 school days. This research has been designed so as not to disrupt your child's normal school day. For approximately 16 of the school days your child would be observed in a free play situation (6 available toys) with three other children for 16 minutes. During the remaining 8 days your child will be taught (via instructions, modeling, role playing, and praise) to share, however, no tangible rewards will be given for doing so. The free play will be conducted in the room north of the lavatory. Two observers will be recording instances of sharing. There will, thus, be three adults in the room with the group of four children.

As part of Ms. DeGraff's daily routine, she has the children work in small groups in an art activity. During this activity two observers will record instances of sharing, however, no training will be given. This part of the experiment will thus merely involve watching your child during part of the normal school day. Three weeks after the termination of the project your child would again be observed to look at the long-term results of our project.

As you can see from the above description, your child would be under adult supervision at all times and the normal daily routine will be only minimally altered. I would like to point out that the data we would gather in studying your child would be held in the strictest confidence. All children will be given code numbers for identification to preserve the anonymity of their data. In addition, your child also would have the right to choose to participate or not participate.

When the study is completed I will send you a short description of the overall results and would be happy to answer any questions that you might have about encouraging your child to share.

You may grant or refuse permission for your child's participation on the enclosed form. A stamped, self-addressed envelope is also enclosed for your convenience.

Thank you again for your patience in reading this letter. If you have any questions about this project feel free to contact me at the number below.

Cordially,

Edward J. Barton, M.A.
Doctoral Candidate
752-4100, Extension 7254

As I indicated to the Policy Board at the time they decided to allow Mr. Barton to do his study at the Center, I feel this would be a good experience for our children. It will help me to teach the children to share with each other - a skill we all know they need to develop. I hope you will allow your child to participate in this research. If you have any questions about it, please feel free to ask either Mr. Barton or me.

Sincerely,

Sandy DeGraff
Supervising Teacher
Child Development Center

PERMISSION REQUEST FORM

I, the undersigned, grant permission for my child,
_____, to participate in the
research project described in Mr. Barton's letter
dated January 3, 1976. I understand the nature
and content of the project.

SIGNED: _____
(parent's signature)

I, the undersigned, refuse permission for my child,
_____, to participate in the
research project described in Mr. Barton's letter
dated January 3, 1976.

SIGNED: _____
(parent's signature)

Appendix B

Script for Training Verbal Sharing

I want to talk to you about something today before we start to play. Making friends is important. One way to make friends is to share with other people. We can share by asking someone else to share a toy with us. Watch me ask someone to share. (Subject 1), will you help me show the other boys and girls how we ask someone to share? (Trainer picks up a toy.) (Subject 1), will you play with this toy with me? (Trainer waits for subject to say yes.) (Subject 1), I liked the way you agreed to play with the toy with me. (Trainer sets the toy on the floor.) Now you pick up the toy and ask me if I want to play with your toy with you. (Trainer waits for subject to ask; if no response, the question is modeled.) Yes, I'll play with your toy. Thank you for asking me. Now let's try something different. You keep the toy. May I play with your toy with you? (Trainer waits for appropriate reply or models as needed.) Thank you. I like the way you agreed to allow me to play with your toy. (Turning to the class) Does everyone know how to ask someone else to share? (If one or more subjects fail to understand, the demonstrations are repeated with Subject 1.)

Now that each of you knows how to ask someone else to share, we are going to practice. (Trainer gives toy to Subject 2.) (Subject 2), ask (Subject 3) if he/she will play with your toy with you (if incorrect response, the correct response is modeled). That was very good. I liked the way (Subject 2) offered to share and the way (Subject 3) accepted. (Subject 4), you haven't had a chance yet, so you ask (Subject 2) if you can play with his/her toy with him/her. (If incorrect response, the correct response is modeled.)

Now that everyone has had a chance to share and before you begin playing with the toys, remember it is important to ask the other people to share and to agree to let others share with you. Three people, four people, even ten people can share. Okay, go ahead and begin playing with the toys.

Appendix C

Script for Training Physical Sharing

I want to talk to you about something today before we start to play. Making friends is important. One way to make friends is to share with other people. We can share by playing with a toy with them. Watch me share. (Subject 1), will you help me show the other boys and girls how we share? Get that toy and begin to play with it. Now, to share I'll come over and begin to play with the toy with you. (The trainer does so and plays for about 10 seconds.) (Subject 1), I like the way you let me play with the toy with you--nice sharing. Now I'll get another toy and then you come over and play with it with me. (The trainer plays with a second toy and waits for the subject to respond correctly. If the subject responds incorrectly, he/she is instructed what to do.) Very good, I like the way you played with this toy with me. Nice sharing. Let's try something different. You keep the toy and continue to play. Then I'll come back and play with your toy with you. (Trainer watches the child play for about 5 seconds and then begins to play with the child with the toy.) I like the way you let me play with your toy with you. Nice sharing. (If incorrect, the subject is instructed on how to physically share.) Does everyone know how to share? (If one or more subjects fail to understand, the demonstrations are repeated with (Subject 1)).

Now that each of you knows how to share with someone, we are going to practice. (Trainer gives toy to Subject 2.) (Subject 3) and (Subject 2), show us how you share (Subject 2)'s toy. (If incorrect, the subjects are instructed on how to share correctly.) That was very good. I like the way (Subject 2) and (Subject 3) shared (Subject 2)'s toy. Nice sharing. (Trainer gives toy to Subject 4.) (Subject 4),

you haven't had a chance yet, so you can share this toy with (Subject 2). (Subject 2), you can practice again. (If incorrect, the subjects are instructed on how to share correctly.) That was very good. I like the way (Subject 4) and (Subject 2) shared (Subject 4)'s toy. Nice sharing.

Now that everyone has had a chance to share and before you begin playing with the toys, remember it is important to share with others and to let others share with you. Sharing is letting others use our things and using the same things together with someone else. Also keep in mind that more than two people can share. Three people, four people, even ten people can share. Okay, go ahead and begin playing with the toys.

Appendix D

Script for Training Verbal and Physical Sharing

I want to talk to you about something today before we start to play. Making friends is important. One way to make friends is to share with other people. We can share by asking someone else to share a toy with us, and then we play with the toy with them. Watch me share. (Subject 1), will you help me show the other boys and girls how we ask someone to share and then actually share? (Trainer picks up toy and begins to play.) (Subject 1), will you play with this toy with me? (Trainer waits for subject to say yes and for the subject to come over and play; if either physical or verbal sharing occurs but not both it is immediately praised; if incorrect, the subject is instructed on how to share correctly in the appropriate mode.) That was good sharing. I like the way you agreed to play with the toy with me and the way you actually played with the toy with me. (Trainer sets the toy on the floor.) Now you pick up the toy and ask me if I want to play with your toy with you. (Trainer waits for subject to ask; if no response, the question is modeled.) Yes, I'll play with your toy with you. (Trainer plays with the toy with subject.) That was good sharing. I like the way you asked me to play with your toy with you and the way you actually played with the toy with me. Now let's try something different. You keep the toy. May I play with your toy with you? (Trainer waits for appropriate reply; if either physical or verbal sharing occurs but not both, it is immediately praised; if incorrect, the subject is instructed on how to share correctly; trainer then plays with toy with subject.) Very good. I like the way you agreed to let me share your toy and the way you actually played with your toy with me. Good sharing. (Trainer turns to class.) Does everyone know how to ask

someone else to share and how to play with the toy with them? (If one or more subjects fails to understand, the demonstrations are repeated with Subject 1.)

Now that each of you know how to ask someone else to share and how to play with the toy with them, we are going to practice. (Trainer gives toy to Subject 2.) (Subject 3) and (Subject 2) show us how you share (Subject 2)'s toy. (Subject 2), ask (Subject 3) if he/she will play with your toy with you and then both of you play together. (If either physical or verbal sharing occurs but not both, it is immediately praised; if incorrect, the subjects are instructed on how to share correctly.) That was very good. I like the way (Subject 2) offered to share with (Subject 3) and the way (Subject 3) accepted. I also like the way they played with the toy together. Very good sharing. (Subject 4), you haven't had a chance yet, so you ask (Subject 2) if you can play with his/her toy and the two of you play with the toy together. (If either physical or verbal sharing occurs but not both, it is immediately praised; if incorrect, the subjects are instructed on how to share correctly.) That was very good. I like the way (Subject 4) asked (Subject 2) if he/she could play with his/her toy with him/her. A also like the way (Subject 2) agreed to share his/her toy and I like the way (Subject 4) and (Subject 2) played with the toy together. Nice sharing.

Now that everyone has had a chance to share and before you begin playing with the toys, remember it is important to share. Sharing is asking another person to use the same things, or agreeing to use the same things, and actually using the same things together. Three people,

four people, even ten people can share. Okay, go ahead and begin playing with the toys.

Appendix E

Experimenter Training Session Schedule

Name of Subject

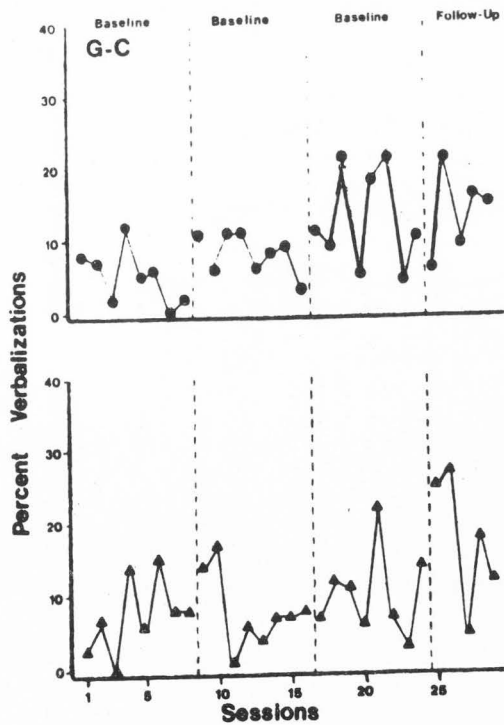
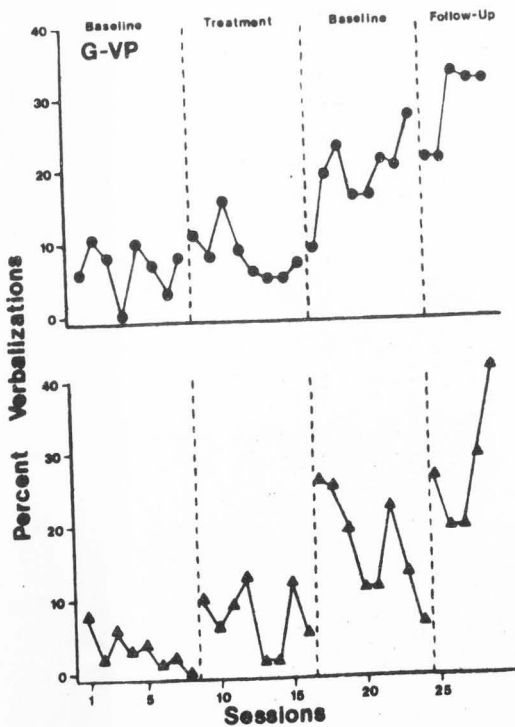
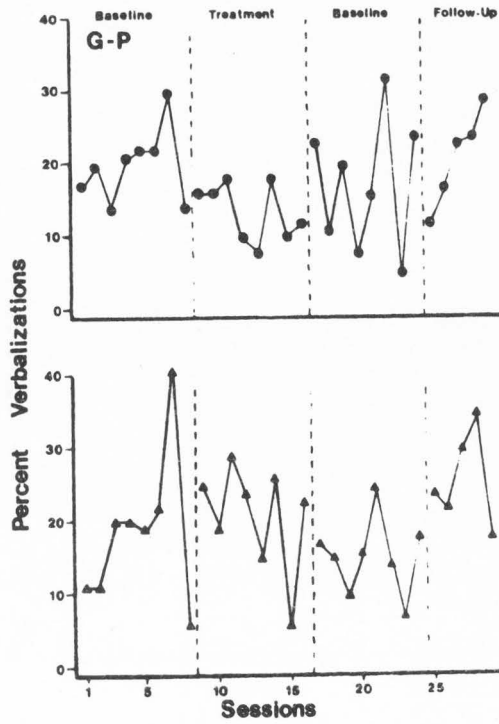
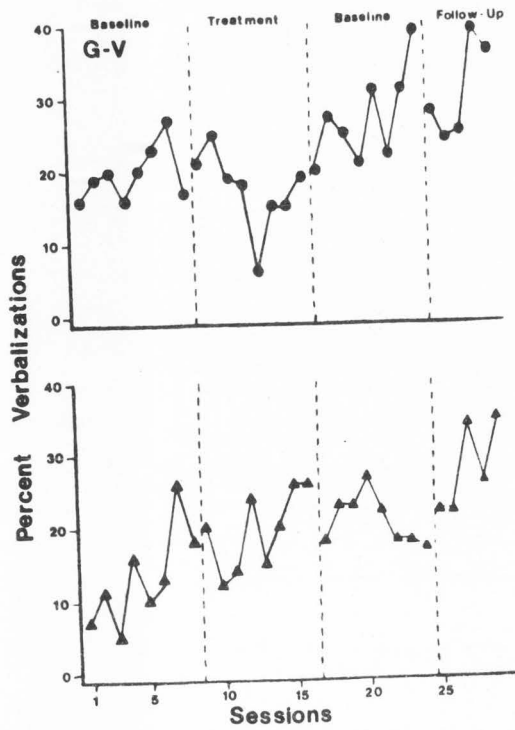
Minute	Prompt	Praise
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____
11	_____	_____
12	_____	_____
13	_____	_____
14	_____	_____
15	_____	_____
16	_____	_____

Appendix F

Mean Percent Verbalization for Each Group in the Training
Setting and in the Generalization Setting

Figure Caption

Figure 3. Mean percent verbalization for each group in the training setting (circles) and in the generalization setting (triangles). The symbols G-V, G-P, G-VP, and G-C indicate the groups that were trained to verbally share, trained to physically share, trained to both verbally and physically share, and not trained, respectively. Phases are indicated at the top of each graph. Follow-up began two weeks after Session 24.



Appendix G

Mean Percent Verbalizations and Standard
Deviations for Each Group

Table 11
 Mean Percent Verbalizations and Standard
 Deviations for Each Group

Group	Phase							
	Baseline		Treatment ^a		Baseline		Follow-up	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Free play activity								
V	18.75	3.06	16.00	5.78	27.13	19.92	30.75	14.20
P	19.25	10.44	12.88	9.61	17.25	12.42	20.71	10.59
VP	7.38	5.73	8.00	4.96	19.00	12.63	24.25	14.79
C	6.38	8.70	8.25	7.80	14.13	11.36	12.00	15.14
Art activity								
V	12.38	6.35	18.63	8.67	21.13	12.42	29.38	20.56
P	16.75	13.25	17.13	14.10	15.25	9.77	24.14	14.32
VP	3.38	3.46	7.25	7.91	16.75	10.44	23.38	13.44
C	7.88	8.77	6.50	7.23	12.50	7.73	16.33	20.72

^aBaseline conditions were in effect for Group C during this phase.

Appendix H
Observational Sheet

Date _____
 Observer _____

Session Type _____
 Session Number _____

	VS	PS	NS	V	P	EP	ER		VS	PS	NS	V	P	EP	ER		VS	PS	NS	V	P	EP	ER		VS	PS	NS	V	P	EP	ER
NAME								NAME								NAME								NAME							
1								25								49								73							
2								26								50								74							
3								27								51								75							
4								28								52								76							
5								29								53								77							
6								30								54								78							
NAME								NAME								NAME								NAME							
7								31								55								79							
8								32								56								80							
9								33								57								81							
10								34								58								82							
11								35								59								83							
12								36								60								84							
NAME								NAME								NAME								NAME							
13								37								61								85							
14								38								62								86							
15								39								63								87							
16								40								64								88							
17								41								65								89							
18								42								66								90							
NAME								NAME								NAME								NAME							
19								43								67								91							
20								44								68								92							
21								45								69								93							
22								46								70								94							
23								47								71								95							
24								48								72								96							

Appendix I

Data for Replacement Subjects During Follow-up

Table 12
Data for Replacement Subjects During Follow-up

Session number	Activity	Percent behavior		
		Verbal sharing	Physical sharing	Refusals to share
Male subject				
26	Free play	.00	.19	.00
27	Free play	.00	.45	.00
29	Free play	.00	.29	.00
26	Art	.00	.00	.00
27	Art	.00	.00	.00
29	Art	.00	.00	.00
Female subject				
26	Free play	.00	.07	.00
27	Free play	.00	.48	.00
26	Art	.00	.00	.00
27	Art	.03	.00	.00

Appendix J

Individual Data for Physical Sharing Among

Subjects in Group V

Table 13

Individual Data for Physical Sharing Among Subjects in Group V

SUBJECT CODE	SESSION TYPE, NUMBER AND PHASE																												
	BASELINE								TREATMENT								BASELINE								FOLLOW-UP				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	FREE PLAY ACTIVITY																												
MM1 ^a	.29	A ^b	.29	.34	.12	.00	.02	.00	.12	.81	.43	.74	.31	.79	.71	.62	.71	.81	.33	A	.41	.74	1.00	.86	A	A	.50	.91	.57
MM2	.33	.29	.02	.00	.10	.31	.02	.07	.07	.83	.45	.57	.38	.81	.60	.48	.83	.74	.38	.21	.29	.60	.98	1.00	.74	.36	.43	.95	.74
AM3	.01	.02	.00	.10	.00	.02	.02	.07	.31	.33	.26	.43	A	A	.31	.19	.21	.31	.24	.36	.33	.14	.26	.19	.21	.21	.29	.17	.17
AM4	.17	.17	.10	.02	.12	A	A	A	A	.17	.21	.71	.33	.29	A	.24	.21	.12	.17	.17	.17	.14	.14	.12	.17	.24	.21	.17	.05
MF1	.12	.29	.24	.05	.12	.17	.07	.02	.12	.14	.43	.36	.31	.64	.48	.38	.17	.24	.50	.43	.19	.19	.17	.64	.43	.64	.21	.67	.48
MF2	.00	.00	.24	.24	.19	.14	.12	A	A	A	.10	.38	.45	.62	.26	.41	.07	.33	.14	.24	.14	.19	.12	.57	.86	.36	.26	.79	.41
AF3	.26	.29	.00	.05	.00	.00	.05	.07	.00	.33	.43	.52	.14	.24	.26	.14	.26	.10	.14	.26	.24	.14	.36	.24	.10	.14	.24	.17	A
AF4	.05	.05	.02	.07	.10	.00	.00	.00	.17	.24	.21	.55	.50	.26	.26	.36	.19	.19	.14	.31	.14	.17	.05	.12	.38	.14	.24	.36	.24
	ART ACTIVITY																												
MM1	.00	A	.03	.07	.00	.03	.03	.00	.07	.07	.00	.10	.33	.13	.30	.63	.37	.17	.13	A	.03	.03	.07	.03	A	A	.23	.27	.03
MM2	.08	.03	.00	.10	.20	.03	.07	.00	.07	.07	.13	.20	.13	.20	.27	.73	.30	.27	.13	.07	.07	.03	.07	.07	.07	.07	.33	.13	.03
AM3	.07	.03	.00	.03	.00	.03	.00	.03	.00	.07	.13	.10	A	A	.08	.10	.07	.03	.17	.07	.13	.17	.00	.13	.10	.03	.17	.07	.07
AM4	.07	.03	.00	.00	.03	.00	A	A	A	.07	.23	.17	.13	.17	A	.13	.03	.03	.13	.10	.10	.03	.00	.27	.20	.03	.07	.17	.03
MF1	.08	.06	.08	.03	.06	.06	.03	.00	.06	.06	.06	.08	.06	.03	.06	.06	.03	.06	.06	.11	.11	.03	.03	.03	.06	.14	.25	.06	.13
MF2	.00	.00	.00	.00	.00	.07	.03	A	A	A	.10	.17	.03	.07	.00	.07	.03	.03	.03	.07	.10	.03	.03	.03	.10	.00	.03	.00	.00
AF3	.00	.03	.00	.06	.00	.00	.00	.00	.00	.00	.14	.08	.06	.17	.08	.05	.05	.11	.08	.08	.00	.14	.00	.03	.03	.00	.06	.03	A
AF4	.17	.10	.00	.00	.07	.03	.00	.03	.03	.07	.13	.13	.07	.27	.07	.00	.07	.10	.10	.03	.13	.10	.00	.00	.17	.03	.03	.23	.07

^aFor the first digit of the subject code the letters M and A respectively connote morning and afternoon; for the second digit letters M and F respectively connote male and female.

^bLetter A indicates that the subject was absent.

Appendix K

Individual Data for Physical Sharing Among

Subjects in Group P

Table 14
Individual Data for Physical Sharing Among Subjects in Group P

SUBJECT CODE	SESSION TYPE, NUMBER AND PHASE																												
	BASELINE								TREATMENT								BASELINE								FOLLOW-UP				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	FREE PLAY ACTIVITY																												
MM1 ^a	.19	.19	.19	.02	.00	.00	.02	.10	.29	.31	.33	.64	.67	.55	.74	.71	.52	.33	.62	.00	.21	.31	.12	.55	.12	.07	.05	.79	.69
MM2	.12	.02	.00	A ^b	.02	.00	A	.00	A	.50	A	.67	.79	A	.38	.45	A	.12	.07	.00	.02	.02	.12	.74	A	A	A	A	A
AM3	.31	.24	.14	.50	.36	.17	.00	.07	.14	.57	.62	.60	.52	.41	.50	.62	.31	.26	.14	.52	.31	.14	.05	.14	.12	.07	.05	.21	.21
AM4	.10	.26	A	.10	A	A	A	.00	.24	.33	.26	.60	.62	.33	.55	.67	.48	.17	.19	.21	.13	.12	.12	.14	.12	.05	A	A	.10
MF1	.07	.33	.19	.05	.00	.02	.02	.00	.36	.26	.52	A	.60	.79	.60	.55	.26	.29	.74	.00	A	A	.05	.83	.19	.05	.02	.71	.05
MF2	.13	.14	.00	.02	.00	.00	.10	.07	.33	.64	.52	.50	.62	.33	.62	.29	.62	A	A	A	.21	.19	.05	.55	.19	.26	.02	.14	.57
AF3	.40	.40	.02	.36	.19	.17	.17	.00	.41	.83	.24	.60	.64	.41	.76	.86	.31	.10	.17	.14	.07	.10	.05	.14	.12	.55	.29	.14	.21
AF4	.21	.00	.24	.00	.00	.00	.02	.02	.29	.29	.41	.36	.48	.79	.50	.64	.26	.10	A	.41	.19	A	.17	.26	.24	.57	.26	.10	.10
	ART ACTIVITY																												
MM1	.04	.07	.30	.07	.00	.00	.03	.00	.10	.30	.17	.30	.33	.23	.17	.10	.13	.10	.00	.00	.07	.00	.50	.00	.03	.03	.00	.03	.00
MM2	.20	.00	.00	A	.00	.00	.00	.00	A	.13	A	.10	.10	A	.13	.07	A	.07	.00	.00	.00	.00	.30	.03	A	A	A	A	A
AM3	.02	.00	.03	.00	.07	.10	.04	.03	.00	.07	.13	.17	.40	.07	.03	.13	.20	.03	.07	.13	.07	.03	.03	.07	.00	.00	.00	.00	.00
AM4	.00	.03	A	.00	A	A	A	.07	.00	.02	.13	.07	.33	.23	.07	.17	.00	.03	.07	.03	.00	.07	.00	.00	.00	.07	A	A	.00
MF1	.00	.03	.22	.03	.00	.00	.08	.00	.11	.17	.25	A	.42	.14	.08	.17	.06	.06	.06	.00	A	A	.36	.06	.03	.00	.03	.03	.00
MF2	.06	.07	.00	.00	.00	.03	.13	.00	.03	.37	.22	.17	.27	.07	.10	.13	.20	A	A	A	.07	.00	.30	.00	.03	.00	.00	.03	.00
AF3	.00	.00	.03	.00	.03	.00	.06	.00	.13	.07	.07	.00	.03	.78	.08	.14	.06	.06	.08	.03	.06	.03	.00	.03	.03	.03	.06	.03	.03
AF4	.00	.00	.07	.00	.07	.03	.03	.00	.06	.10	.04	.17	.07	.80	.03	.17	.13	.07	A	.13	.00	A	.00	.00	.10	.03	.00	.03	.00

^aFor the first digit of the subject code the letters M and A respectively connote morning and afternoon; for the second digit letters M and F respectively connote male and female.

^bLetter A indicates that the subject was absent.

Appendix L

Individual Data for Physical Sharing Among

Subjects in Group VP

Table 15

Individual Data for Physical Sharing Among Subjects in Group VP

SUBJECT CODE	SESSION TYPE, NUMBER AND PHASE																												
	BASELINE								TREATMENT								BASELINE								FOLLOW-UP				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	FREE PLAY ACTIVITY																												
MM1 ^a	.17	.19	.02	.00	.02	.07	.02	.05	.24	.12	.33	.62	A ^b	A	.64	.71	.14	.45	.71	.57	.86	.93	.93	1.00	.67	.83	.62	.74	.93
MM2	.00	.24	.10	.10	.02	A	.07	.05	.33	.29	.60	.62	.81	.55	.43	.55	.12	.38	.64	.57	A	.71	1.00	A	.60	.88	.83	.60	.86
AM3	.40	.00	.00	.00	.00	.00	.00	A	A	.33	.36	.55	.43	.50	.69	.45	.24	.17	.31	.10	.21	.26	.26	.19	.17	.07	.17	.26	.26
AM4	.40	.21	.07	.00	A	.02	.00	.00	.55	.38	.43	.74	.55	.50	.52	.48	.21	.91	.41	.50	.24	.41	.21	.43	.19	.45	.48	.24	.29
MF1	.35	.07	.02	.00	.02	.02	.00	.00	.26	.36	A	A	.56	.60	.50	.43	.14	.12	.29	.36	.71	.12	.10	.67	A	.07	A	A	A
MF2	.11	.03	.07	.02	.00	.00	.02	.05	.33	.50	.64	.38	.48	.50	.67	.48	.14	.17	.52	.43	.86	.83	.19	1.00	.55	.24	.33	.55	.33
AF3	.02	.05	.00	.00	.00	.00	.00	.02	.60	.33	.24	.33	.43	.60	.21	.69	.29	.33	.29	.41	.19	.24	.29	.26	.00	A	.00	.00	.00
AF4	.02	.19	.10	.02	.00	.12	.02	.05	.67	.43	.43	.45	.52	.74	.55	.50	.12	.74	.45	.24	.19	.00	.19	.26	.29	.21	.19	A	A
	ART ACTIVITY																												
MM1	.00	.03	.07	.00	.00	.03	.03	.00	.20	.03	.23	.30	A	A	.13	.23	.17	.10	.23	.13	.17	.10	.17	.13	.20	.07	.20	.13	.30
MM2	.00	.00	.07	.07	.00	A	.00	.00	.20	.17	.10	.13	.17	.20	.10	.03	.07	.10	.30	.07	.00	.03	.07	A	.13	.07	.13	.17	.13
AM3	.00	.00	.00	.00	.00	.00	.00	.00	A	.00	.00	.07	.00	.00	.03	.07	.00	.00	.00	.00	.00	.03	.03	.00	.00	.07	.07	.10	.07
AM4	.00	.00	.00	.00	A	.00	.00	.00	.03	.07	.07	.00	.10	.00	.07	.07	.00	.10	.03	.07	.00	.03	.00	.00	.03	.10	.00	.17	.10
MF1	.00	.07	.00	.00	.06	.00	.00	.00	.00	.31	A	A	.20	.20	.00	.10	.17	.33	.07	.08	.00	.00	.03	.10	A	.07	A	A	A
MF2	.00	.08	.08	.03	.07	.00	.00	.00	.17	.13	.33	.19	.25	.11	.17	.17	.11	.17	.14	.10	.17	.00	.06	.03	.11	.06	.08	.17	.14
AF3	.00	.00	.00	.00	.00	.00	.00	.00	.10	.07	.10	.00	.17	.00	.07	.03	.00	.03	.00	.00	.00	.03	.00	.00	.03	A	.00	.20	.07
AF4	.00	.00	.00	.00	.00	.00	.00	.00	.03	.14	.08	.11	.08	.06	.00	.00	.03	.06	.00	.00	.00	.08	.03	.00	.03	.06	.00	A	A

^aFor the first digit of the subject code the letters M and A respectively connote morning and afternoon; for the second digit letters M and F respectively connote male and female.

^bLetter A indicates that the subject was absent.

Appendix M

Analyses of Variance and Covariance for

Physical Sharing in Free Play

Table 16
 Analyses of Variance and Covariance^a for
 Physical Sharing in Free Play

Phase	Test	Factor or interaction ^b	F value	Significance level
Baseline	3-way ANOVA	E	.08	$p > .050$
		S	.98	$p > .050$
		G×E	2.66	$p > .050$
		E×S	.24	$p > .050$
		G×S	.26	$p > .050$
		G×E×S	.01	$p > .050$
Treatment	3-way ANCOVA	E	10.77	$p < .010$
		S	1.92	$p > .050$
		G×E	4.90	$p < .050$
		E×S	4.18	$p > .050$
		G×S	4.42	$p < .050$
		G×E×S	3.21	$p > .050$
Baseline	3-way ANCOVA	E	18.31	$p < .001$
		S	3.69	$p > .050$
		G×E	4.49	$p < .025$
		E×S	5.30	$p < .025$
		G×S	4.07	$p < .050$
		G×E×S	2.63	$p > .050$

Table 16 (Continued)

Phase	Test	Factor or interaction ^b	<u>F</u> value	Significance level
Follow-up	3-way ANCOVA	E	32.08	$p < .001$
		S	6.91	$p < .025$
		G×E	7.19	$p < .010$
		E×S	14.49	$p < .005$
		G×S	5.05	$p < .025$
		G×E×S	1.92	$p > .050$

^aAll ANCOVAs used Phase 1 data as the covariate.

^bLetters E, S, and G connote experimenter, sex, and group, respectively.

Appendix N
Analyses of Variance and Covariance for
Physical Sharing in Art

Table 17
 Analyses of Variance and Covariance^a for
 Physical Sharing in Art

Phase	Test	Factor or interaction ^a	F value	Significance level
Baseline	3-way ANOVA	E	.69	$p > .050$
		S	.08	$p > .050$
		G×E	1.70	$p > .050$
		E×S	.08	$p > .050$
		G×S	.08	$p > .050$
		G×E×S	.58	$p > .050$
Treatment	3-way ANCOVA	E	22.52	$p < .001$
		S	.54	$p > .050$
		G×E	5.57	$p < .010$
		E×S	7.69	$p < .005$
		G×S	9.82	$p < .001$
		G×E×S	1.74	$p > .050$
Baseline	3-way ANCOVA	E	25.35	$p < .001$
		S	4.43	$p > .050$
		G×E	8.23	$p < .005$
		E×S	1.12	$p > .050$
		G×S	4.79	$p < .025$
		G×E×S	1.37	$p > .050$

Table 17 (Continued)

Phase	Test	Factor or interaction ^a	<u>F</u> value	Significance level
Follow-up	3-way ANCOVA	E	1.43	$p > .050$
		S	.87	$p > .050$
		G×E	1.79	$p > .050$
		E×S	.60	$p > .050$
		G×S	1.18	$p > .050$
		G×E×S	.29	$p > .050$

^aAll ANCOVAs used Phase 1 data as the covariate.

^bThe letters E, S, and G connote experimenter, sex, and group, respectively.

Appendix 0

Individual Data for Verbal Sharing Among

Subjects in Group V

Table 18

Individual Data for Verbal Sharing Among Subjects in Group V

SUBJECT CODE	SESSION TYPE, NUMBER AND PHASE																												
	BASELINE								TREATMENT								BASELINE								FOLLOW-UP				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	FREE PLAY ACTIVITY																												
MM1 ^a	.00	A ^b	.00	.00	.00	.00	.00	.00	.12	.02	.10	.12	.12	.05	.12	.14	.02	.00	.00	A	.00	.00	.00	.00	A	A	.02	.00	.00
MM2	.05	.00	.02	.00	.00	.00	.00	.00	.17	.10	.05	.02	.21	.07	.05	.05	.05	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AM3	.00	.00	.00	.00	.00	.00	.02	.00	.07	.07	.05	.10	A	A	.07	.05	.00	.02	.05	.02	.02	.02	.01	.02	.02	.00	.02	.00	.00
AM4	.02	.00	.00	.00	.02	A	A	A	A	.07	.10	.02	.10	.10	A	.02	.02	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00
MF1	.00	.00	.00	.00	.02	.00	.00	.00	.12	.00	.00	.05	.12	.07	.05	.10	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00
MF2	.00	.00	.00	.00	.00	.00	.02	A	A	A	.05	.10	.12	.14	.12	.10	.00	.02	.00	.00	.00	.00	.02	.05	.00	.00	.00	.00	.00
AF3	.00	.00	.00	.02	.00	.00	.05	.00	.07	.02	.05	.05	.10	.12	.12	.02	.00	.07	.02	.02	.00	.02	.02	.07	.00	.00	.02	.00	.01
AF4	.00	.00	.00	.00	.00	.00	.00	.00	.05	.02	.07	.10	.07	.07	.10	.05	.02	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00
	ART ACTIVITY																												
MM1	.00	A	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.03	.00	.00	.07	.03	.00	A	.00	.00	.00	.00	A	A	.17	.00	.00
MM2	.03	.00	.00	.03	.00	.07	.00	.00	.03	.00	.03	.00	.00	.00	.00	.07	.13	.00	.00	.00	.00	.00	.00	.00	.03	.00	.03	.00	.00
AM3	.00	.00	.06	.07	.00	.00	.00	.07	.00	.00	.00	.00	A	A	.00	.07	.03	.00	.10	.00	.03	.00	.00	.07	.00	.00	.00	.03	.17
AM4	.00	.03	.00	.00	.00	.00	A	A	A	.00	.00	.00	.00	.07	A	.00	.13	.00	.00	.00	.00	.03	.00	.13	.03	.00	.00	.17	.03
MF1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.03	.00	.00	.00	.00	.00	.03	.00	.03	.00	.00
MF2	.00	.00	.00	.00	.00	.00	.00	A	A	A	.00	.03	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00
AF3	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.08	.03	.03	.19	.00	.06	.00	.00	.06	.06	.00	.00	.00	.00	.00	A
AF4	.00	.03	.00	.00	.07	.00	.00	.00	.13	.03	.00	.00	.00	.03	.07	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	.00

^aFor the first digit of the subject code the letters M and A respectively connote morning and afternoon; for the second digit letters M and F respectively connote male and female.

^bLetter A indicates that the subject was absent.

Appendix P

Individual Data for Verbal Sharing Among

Subjects in Group P

Table 19

Individual Data for Verbal Sharing Among Subjects in Group P

SUBJECT CODE	SESSION TYPE, NUMBER AND PHASE																												
	BASELINE								TREATMENT								BASELINE								FOLLOW-UP				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	FREE PLAY ACTIVITY																												
MM1 ^a	.00	.17	.00	.00	.00	.00	.00	.00	.00	.00	.05	.02	.02	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MM2	.02	.00	.00	A ^b	.00	.00	A	.00	A	.00	A	.00	.00	A	.00	.00	A	.00	.00	.00	.00	.00	.00	.00	A	A	A	A	A
AM3	.00	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.02	.02	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00
AM4	.00	.00	A	.00	A	A	A	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	A	A	.00	
MF1	.10	.00	.00	.00	.02	.00	.00	.00	.00	.00	.07	A	.00	.00	.02	.00	.00	.05	.00	.00	A	A	.00	.02	.00	.00	.00	.00	.00
MF2	.02	.00	.00	.00	.00	.00	.02	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	A	A	A	.00	.07	.00	.00	.00	.00	.00	.02	.00
AF3	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00
AF4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	A	.00	.00	A	.02	.00	.00	.00	.00	.00	.00
	ART ACTIVITY																												
MM1	.00	.00	.00	.03	.00	.03	.00	.10	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MM2	.00	.00	.00	A	.00	.00	.00	.00	A	.00	A	.00	.00	A	.00	.00	A	.00	.00	.00	.00	.00	.00	.00	A	A	A	A	A
AM3	.03	.00	.00	.00	.07	.00	.12	.00	.00	.00	.00	.00	.03	.00	.00	.00	.10	.00	.00	.00	.00	.00	.03	.03	.00	.00	.00	.00	.00
AM4	.00	.00	A	.00	A	A	A	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	A	A	.00
MF1	.00	.00	.00	.06	.00	.00	.03	.00	.00	.00	.00	A	.00	.00	.00	.03	.00	.00	.00	.00	A	A	.00	.00	.00	.00	.00	.00	.00
MF2	.00	.03	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	A	A	A	.03	.00	.00	.00	.00	.00	.00	.00	.00
AF3	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06
AF4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.03	.00	.03	.00	A	.03	.00	A	.00	.00	.00	.00	.00	.00	.00

^aFor the first digit of the subject code the letters M and A respectively connote morning and afternoon; for the second digit letters M and F respectively connote male and female.

^bLetter A indicates that the subject was absent.

Appendix Q

Individual Data for Verbal Sharing Among

Subjects in Group VP

Table 20
Individual Data for Verbal Sharing Among Subjects in Group VP

SUBJECT CODE	SESSION TYPE, NUMBER AND PHASE																												
	BASELINE								TREATMENT								BASELINE								FOLLOW-UP				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	FREE PLAY ACTIVITY																												
MM1 ^a	.00	.02	.02	.00	.00	.00	.02	.02	.02	.05	.10	.07	A ^b	A	.10	.05	.00	.07	.00	.00	.02	.00	.05	.00	.00	.00	.00	.00	.00
MM2	.00	.00	.00	.00	.00	A	.00	.00	.05	.05	.10	.02	.07	.12	.14	.02	.00	.05	.00	.02	A	.05	.02	A	.00	.00	.05	.00	.00
AM3	.00	.00	.00	.00	.00	.00	.00	A	A	.00	.02	.07	.02	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AM4	.00	.00	.00	.00	A	.00	.00	.00	.00	.02	.05	.00	.02	.05	.05	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MF1	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02	A	A	.15	.12	.12	.12	.00	.00	.00	.00	.00	.00	.00	.00	A	.00	A	A	A
MF2	.00	.00	.00	.00	.00	.00	.00	.02	.05	.05	.05	.10	.14	.02	.12	.05	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.05
AF3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.05	.07	.00	.07	.00	.00	.00	.00	.02	.00	.00	.00	.00	A	.00	.00	.00
AF4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02	.10	.05	.10	.05	.02	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	A	A
	ART ACTIVITY																												
MM1	.00	.00	.00	.07	.10	.00	.07	.00	.00	.00	.03	.00	A	A	.03	.00	.03	.03	.00	.00	.00	.00	.03	.00	.03	.00	.00	.00	.00
MM2	.00	.00	.03	.00	.00	A	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	A	.00	.00	.00	.03	.00
AM3	.00	.00	.00	.00	.00	.00	.00	A	A	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AM4	.00	.00	.00	.00	A	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MF1	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	A	A	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	A	.00	A	A	A
MF2	.00	.00	.03	.06	.03	.00	.03	.00	.06	.00	.03	.00	.00	.03	.03	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AF3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	A	.00	.00	.00
AF4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	A	A

^aFor the first digit of the subject code the letters M and A respectively connote morning and afternoon; for the second digit letters M and F respectively connote male and female.

^bLetter A indicates that the subject was absent.

Appendix R

Analyses of Variance and Covariance for

Verbal Sharing in Free Play

Table 21
 Analyses of Variance and Covariance^a for
 Verbal Sharing in Free Play

Phase	Test	Factor or interaction ^a	F value	Significance level
Baseline	3-way ANOVA	E	1.60	$p > .050$
		S	.40	$p > .050$
		G×E	1.87	$p > .050$
		E×S	.24	$p > .050$
		G×S	.13	$p > .050$
		G×E×S	.80	$p > .050$
Treatment	3-way ANCOVA	E	14.78	$p < .005$
		S	1.36	$p > .050$
		G×E	6.04	$p < .010$
		E×S	.67	$p > .050$
		G×S	1.18	$p > .050$
		G×E×S	.06	$p > .050$
Baseline	3-way ANCOVA	E	1.00	$p > .050$
		S	.60	$p > .050$
		G×E	3.90	$p < .050$
		E×S	.77	$p > .050$
		G×S	1.41	$p > .050$
		G×E×S	1.59	$p > .050$

Table 21 (Continued)

Phase	Test	Factor or interaction ^a	F value	Significance level
Follow-up	3-way ANCOVA	E	0.00	$p > .050$
		S	0.00	$p > .050$
		G×E	.32	$p > .050$
		E×S	.41	$p > .050$
		G×S	.33	$p > .050$
		G×E×S	.14	$p > .050$

^aAll ANCOVAs used Phase 1 data as the covariate.

^bThe letters E, S, and G connote experimenter, sex, and group, respectively.

Appendix S
Analyses of Variance for
Verbal Sharing in Art

Table 22
 Analyses of Variance for
 Verbal Sharing in Art

Phase	Test	Factor or interaction ^a	F value	Significance level
Baseline	3-way ANOVA	E	.69	$p > .050$
		S	1.92	$p > .050$
		G×E	1.26	$p > .050$
		E×S	.08	$p > .050$
		G×S	.03	$p > .050$
		G×E×S	.54	$p > .050$
Treatment	3-way ANOVA	E	.71	$p > .050$
		S	4.83	$p < .050$
		G×E	4.52	$p < .025$
		E×S	.26	$p > .050$
		G×S	1.32	$p > .050$
		G×E×S	2.39	$p > .050$
Baseline	3-way ANOVA	E	5.54	$p < .050$
		S	1.38	$p > .050$
		G×E	3.59	$p < .050$
		E×S	0.00	$p > .050$
		G×S	.46	$p > .050$
		G×E×S	.51	$p > .050$

Table 22 (Continued)

Phase	Test	Factor or interaction ^a	<u>F</u> value	Significance level
Follow-up	3-way ANOVA	E	.28	$p > .050$
		S	1.80	$p > .050$
		G×E	.23	$p > .050$
		E×S	.29	$p > .050$
		G×S	2.61	$p > .050$
		G×E×S	.23	$p > .050$

^aThe letters E, S, and G connote experimenter, sex, and group, respectively.

VITA

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Place of Birth	Monroe, Michigan	Office Address	Department of Psychology 307 Education Utah State University Logan, Utah 84322
Social Security	382-46-4770	Office Phone	801-752-4100 Ext. 7254
Marital Status	Single		

Education

1972	B.A.	Western Michigan University Kalamazoo, Michigan Major: Psychology
1973	M.A.	Western Michigan University Major: Psychology--Behavior Modifi- cation Advisor: Dr. Jack L. Michael
1977 (expected)	Ph.D.	Utah State University Logan, Utah Major: Psychology--Developmental Advisor: Dr. Frank R. Ascione Dissertation: The Development, Durability, and Generalizability of Sharing in Preschool Children

Affiliations

American Psychological Association
Midwestern Association of Behavior Analysis
Society for Research in Child Development
Society for the Experimental Analysis of Behavior
American Association of University Professors--Elected student
counselor (USU, 1976-1977)

Awards

1973	Graduated with Honors (WMU)
1976	Academic Scholarship (USU, spring quarter)
1976-1977	Research Assistantship (USU, four quarters)
1976-1977	Teaching Assistantship (USU, three quarters)
1977	Academic Fellowship (USU, summer quarter)

Internships

- 1973 Kalamazoo State Hospital, Kalamazoo, Michigan. Conducted therapy with adult male residents of a state institution. This work experience also entailed teaching a sex education class. (winter semester)
- 1973 Kalamazoo Valley Multiply Handicapped Center, Kalamazoo, Michigan. Taught multiply handicapped individuals (2 to 24 years) self-help skills and modified self-injurious behavior. (spring semester)

Employment

- 1973-1975 North Central Michigan Mental Health Center, Cadillac, Michigan. Psychologist. Conducted therapy with children (preschool to 12th grade) who were experiencing problems such as aggression, enuresis, depression, and phobias. This work involved consulting with parents, physicians, school personnel, juvenile court, probate court, and other social service agencies.
- 1975-1976 Behavioral Management Company, Logan, Utah. Consulted with teachers employed by the Utah School for the Deaf. This work also involved direct therapy with hearing-impaired children who displayed behavioral problems.

Teaching Experience

- 1971 Laboratory and course assistant to Dr. David O. Lyons in an upper division undergraduate experimental psychology course. (WMU, winter semester)
- 1974 Instructor, Adult Education, Houghton Lake, Michigan. Taught two 8 week sessions on Parent Effectiveness Training.
- 1976-1977 Graduate teaching assistantship in an undergraduate child development class. Duties included giving lectures, developing tests, formulating answer keys, modifying a PSI teaching format, and supervision of undergraduate proctors. (USU, three quarters)

Research Experience

- 1972-1973 Research assistant to Dr. Jack Michael. Assessment of remedial activities in an instructor-paced college course. (WMU, three semesters)

- 1974-1975 Developed and implemented a program for prekindergarten children to reduce behavioral problems during their subsequent first school year. This research was supported by the COOR Intermediate School District, Roscommon, Michigan.
- 1976 Investigated a technique to develop sharing among hearing impaired kindergarten children. Conducted with Dr. J. Grayson Osborne. (USU, three quarters)
- 1976 Assisted Dr. Sebastian Striefel in the study of biofeedback techniques applied to hyperactive children. (USU, spring quarter)
- 1976-1977 Research assistant to Dr. Richard Powers. Conducted a series of studies concerned with eliminating the procrastination and withdrawal problem associated with the Keller method. (USU, three quarters)
- 1976-1977 Research assistant to Dr. Frank Ascione. Conducted a series of studies that investigated the proctoring component of the Keller plan. (USU, three quarters)
- 1976-1977 Research assistant to Dr. Frank Ascione. Investigated the effect of frequency and contingency on social reinforcer effectiveness. (USU, four quarters)

Grants Written

- 1976 The influence of reinforcer frequency, perceived contingency on the effectiveness of social reinforcement with children. USU Research Council. Written with Dr. Frank Ascione. Funded for \$5,931.
- 1976 Proctoring and the Keller method of college instruction. National Institute of Mental Health. Written with Dr. Frank Ascione.
- 1976 Improving the Keller plan by minimizing student withdrawals in a large introductory college course. Carnegie Corporation of New York. Written with Dr. Richard Powers.

Research in Progress

- A. Collateral effects of treatment programs designed to facilitate sharing among young children.
- B. Further analysis of the importance of proctors in PSI.
- C. Reinforcer satiation effects with young children. Conducted with Dr. Frank Ascione.

Research Interests

- General Developmental psychology with an emphasis on social development and learning.
- Specific The influence of family and school on the social development of the child; parent effectiveness training; development of programs to assist teachers in the facilitation of learning among disadvantaged children; descriptive and experimental studies of prosocial behavior among young children in naturalistic settings; prevention and treatment of childhood and adolescent problems; methods of college instruction.

Paper Presentations

- Barton E. J. Student choice in a PSI course between proctoring and other alternatives. Paper presented at the Midwestern Association of Behavior Analysis, Chicago, May, 1977.
- Barton E. J. The relationship of preschool children's verbalizations and proximity to physical sharing. Paper presented at the meeting of the Rocky Mountain Psychological Association, Albuquerque, May, 1977.
- Barton E. J. and Ascione, F. R. Is proctoring a justifiable expense? How to reduce PSI cost. Paper presented at the meeting of the American Psychological Association, San Francisco, August, 1977.
- Barton, E. J. and Osborne J. G. The development of physical sharing by a classroom teacher through the use of positive practice. Paper presented at the Midwestern Association of Behavior Analysis, Chicago, May, 1977.

Publications

- Barton, E. J. Sharing and correlated behavior among young children in a preschool setting. In preparation.
- Barton, E. J. and Ascione, F. R. The proctoring component of personalized instruction: A help or a hindrance? Manuscript submitted for publication.
- Barton, E. J. and Ascione, F. R. Social reinforcer satiation: An outcome of frequency not ambiguity -- sometimes. Developmental Psychology, in press.
- Barton, E. J. and Osborne, J. G. The development of classroom sharing by a teacher using positive practice. Behavior Modification, in press.

Powers, R. B., Barton, E. J., and Duus, R. Unit size, performance, and procrastination in an introductory PSI course. In preparation.

References

Dr. Frank Ascione
Dr. J. Grayson Osborne
Dr. Richard B. Powers

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