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Children's Interactions with Peers before and after Participating in a Positive and Negative Peer Nomination Technique

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CHILDREN'S INTERACTIONS WITH PEERS BEFORE AND AFTER PARTICIPATING IN A POSITIVE AND NEGATIVE PEER NOMINATION TECHNIQUE

An Abstract of a Thesis

Submitted

In Partial Fulfillment

of the Requirements for the Degree

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Elizabeth Ann Barton

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ABSTRACT

Positive and negative peer nomination techniques are essential to the identification of children with social skills deficits. Some researchers, school administrators, teachers, and parents view the administration of peer nomination techniques as harmful to children. The present investigation examined the effects of positive and negative peer nomination techniques on children's peer interactions and on Unpopular peers; (i.e., Rejected and Neglected) interactions. Fourth graders (n = 54) completed nomination techniques, the children's Loneliness Questionnaire, and the Children's Friendship Questionnaire. The experimental group (n = 26) completed positive and negative peer nomination techniques, and the control group (n = 28) completed positive and negative nominations of school activities. Before and after the administration of nomination techniques, trained observers recorded the affective quality (i.e., positive, negative, or neutral) of subjects' peer interactions using the behavior observation method of momentary time sampling.

Analysis of covariance revealed that there were no statistically significant differences in the rates of positive, negative and neutral peer interactions at post-observation across groups. There also was no statistically significant difference in the rate of negative peer interactions exhibited by Unpopular children following the administration of peer nomination techniques. For all experimental subjects who exhibited negative peer

interactions from pre- to post-observation, there was a statistically significant decrease in the rate. The results of the present study suggest that the risk to fourth grade children who complete sociometrics, provided certain procedural guidelines are followed, is minimal.

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CHAPTER 1

INTRODUCTION AND PROBLEM STATEMENT

Introduction

Peer nomination techniques are used to obtain a child's social status relative to his or her peer group. Positive peer nomination techniques allow the student to nominate peers that he or she likes most in the class. Negative peer nomination techniques allow the student to nominate peers that he or she likes least in the class. Positive and negative peer nomination techniques yield five major categories of social status: Average, Controversial, Neglected, Popular, and Rejected. Children who do not meet the criteria for any of these five categories are labeled Other, although they are sometimes included with Average subjects (Coie, Dodge, & Coppotelli, 1982).

The five major peer status categories differ across a number of important dimensions (Coie et al., 1982) and in the long-term stability of social status assignments (Gresham & Stuart, 1992). For example, children assigned to the peer status category of Rejected are likely to demonstrate problems of aggression, while children of Neglected peer status are likely to demonstrate problems such as withdrawal from others. Furthermore, Rejected children tend to remain in the Rejected category across time, but Neglected and Controversial children tend to shift to the Average category (Gresham & Stuart, 1992).

It is important to use sociometrics as an indicator of a student's social status because peer assessment yields a more valid measure than adult assessment of a child's level of acceptability or rejection in reference to the child's classroom peers (Gresham & Stuart, 1992). Peer assessment provides screening data that is a necessary first step in selecting children for social skills interventions (Gresham & Stuart, 1992). Sociometrics are best used in conjunction with psychometrically adequate social skills rating scales and classroom, playground, and lunch observations to identify children in need of social skills training (Gresham & Stuart, 1992).

Sociometric results can also provide teachers with important information regarding classroom dynamics to be used in developing effective cooperative learning groups and individual behavior management plans. Sociometrics also can be used to identify and define characteristics of clinical populations such as depressed, conduct-disorderd, and anxiety disordered children (Asarnow, 1988; Strauss, Lahey, Frick, Frame, & Hynd, 1988). Finally, sociometrics are important in predicting long-term adjustment problems of children in longitudinal and follow-back research (Cowen, Pederson, Babigan, Izzo, & Trost, 1973; Parker & Asher, 1987).

Statement of the Problem

Positive and negative peer nomination techniques are essential to the identification of children's social status. However, some researchers,

administrators, teachers, and parents view administering peer nomination techniques as risky to children's mental health and, therefore, unethical. There are three main concerns about risk and/or ethics associated with sociometric assessment (Ratiner, Weissberg, & Caplan, 1986). First, negative nominations are believed to implicitly sanction preferred-peers making negative statements toward non-preferred peers. As a result, lower status or Rejected peers may be treated even more negatively. Second, it is believed that unpopular peers may experience an increase in negative emotions (e.g., loneliness) following participation in sociometric research. Finally, asking children to acknowledge whom they like least is contradictory to what most educators and parents teach children to do.

The question this research project was designed to investigate was, "When recommended procedures for administration are employed, do children who complete positive and negative peer nomination techniques exhibit different rates of positive, negative, and neutral peer interactions than children who do not complete positive and negative peer nomination techniques?" The data were analyzed to discern differences between the experimental group who completed peer nomination techniques and the control group who completed nominations of school activities. The second question was, "When recommended procedures for administration are employed, do Unpopular experimental subjects' rates of positive, negative,

and neutral interactions change after completing positive and negative peer nomination techniques?" This study also may provide those who administer sociometrics with additional information about recommended procedures for minimizing risk.

Hypotheses

In this study, the following null hypotheses were tested when positive and negative peer nomination techniques were administered according to procedures to minimize risk of harm:

1. There will be no significant difference in the post-observation rate of positive interactions between the experimental group who completed the peer nominations and the control group who completed nominations of school activities.

2. There will be no significant difference in the post-observation rate of negative interactions between the experimental group who completed the peer nominations and the control group who completed nominations of school activities.

3. There will be no significant difference in the post-observation rate of neutral interactions between the experimental group who completed the peer nominations and the control group who completed nominations of school activities.

4. There will be no significant difference in the rate of positive interactions exhibited by Unpopular experimental peers during the observation periods prior to and following completion of the peer nomination techniques.

5. There will be no significant difference in the rate of negative interactions exhibited by Unpopular experimental peers during the observation periods prior to and following completion of the peer nomination techniques.

6. There will be no significant difference in the rate of neutral interactions exhibited by Unpopular experimental peers during the observation periods prior to and following completion of the peer nomination techniques.

Importance of the Study

The investigation of these hypotheses is of some importance to research review board members, school administrators, teachers, and parents. If there are differences in the rate of negative interactions between the experimental and control groups, this study will be the first to identify significant effects of participation in sociometric assessment.

If the data show that there are no differences in the rate of negative interactions experienced by the experimental peers as compared to the control peers, this study will provide such findings under the best conditions to date

of statistical power to detect differences. Thus, sociometric researchers will have additional empirical support for the use of positive and negative peer nomination techniques under conditions of minimal risk. This study is also of some importance because recommended procedures for sociometric administration were implemented, with the exception of using a group versus individualized administration of sociometrics. In the absence of findings of risk of harm to child participants, additional support for recommended procedures, including group administration, will be obtained.

Assumptions

The assumptions underlying this study include:

1. Peer nomination techniques were administered according to proper procedures in order to minimize risk of harm.

2. Peer nomination techniques provide reliable (up to one year) and valid information regarding a student's social status.

3. Subjects in the experimental group did not have the opportunity to discuss the sociometrics with control subjects.

Limitations

A limitation of this study is that subjects were not randomly assigned to control and experimental groups. To control variance resulting from different classrooms experiences, pretest observation data served as covariates to provide statistical control of variance not possible through randomization.

A second limitation of this study is that subjects included only fourth graders. Preschoolers, kindergartners, first through third graders, and older children may respond to completing peer nomination techniques differently. Thus, the results of this study may not be generalizable to various age and grade groups.

A third limitation of this study is that experimental subjects completed the peer nomination techniques as one of a series of three tasks. The effects of completing peer nomination techniques under other conditions is not known.

Definition of Terms

For consistency of interpretation, the following terms are defined:

Social Status Categories (Peery, 1979).

Average: Those children who were identified to serve as a reference group to compare the more extreme groups such as Controversial, Neglected, Popular, and Rejected.

Controversial: Those children who receive many positive and many negative nominations. Controversial children evidence high social impact and "mixed" social preference.

Neglected: Those children who receive few positive or few negative nominations. Behavior correlates include: exhibiting internalizing behaviors such as fear, anxiety, and social withdrawal (Gresham & Stuart, 1992).

Popular: Those children who receive many positive and few negative sociometric choices. Popular children have high, positive Social Preference scores.

Rejected: Those children who receive many negative and few positive votes. Rejected children have high Social Impact and negative Social Preference scores. Behavior correlates include: aggression, disruption, and non-compliance (Gresham & Stuart, 1992).

Social Impact (SI) (Peery, 1979).

A score derived from the positive and negative peer nomination techniques that is based on the number of children who nominate a given peer. Social Impact is calculated as the number of positive votes (P) plus the number of negative votes (N). The equation is symbolized as the following: $P + N = SI$.

Social Preference (SP) (Peery, 1979).

A score derived from the positive and negative peer nomination techniques that is based on the predominance of either positive or negative responses. Social Preference is calculated as the number of positive votes (P)

minus the number of negative votes (N). The equation is symbolized as the following: P - N = SP. Social Impact and Social Preference scores are used to classify subjects into peer status categories.

Methods of Behavior Observation (Witt, Elliott, Kramer, & Gresham, 1994).

Partial Interval Recording: This behavior observation method involves an observer recording a behavior as occurring once if the behavior occurs at any time during a specified time interval, regardless of how many times the behavior occurs during the interval. Therefore, partial interval recording may underestimate the frequency of behaviors that occur at a high rate.

Whole Interval Recording: This behavior observation method involves an observer recording a behavior if it occurs during the entire observation interval. Whole interval recording may underestimate the actual frequency of the behavior if a long time period is used (e.g., 30 seconds to one minute).

Momentary time sampling: This behavior observation method involves recording a behavior as occurring or not occurring at a specific point during an observation interval. The behavior is recorded at the end of an observation interval. Momentary time sampling is less labor intensive because the observer need only observe at the end of the observation interval as opposed to during the entire interval.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

Research has shown that some children have serious difficulties with peer relations (Parker & Asher, 1987). For example, unpopular children are likely to experience long-term adjustment problems that may be related to their early problems with social interactions (Cowen et al., 1973). Early identification and intervention with children who have poor peer relationships may decrease the likelihood of maladjustment later in life. Early identification has been accomplished using sociometric assessment procedures, particularly peer rating scales and positive and negative peer nomination techniques.

Asher and Hymel (1981) described the two major methods of peer-based sociometric assessment, rating scales and peer nominations. Both were designed to measure children's acceptance and rejection by their peers. For the rating scale measure, children are provided with a list of their classmates and are asked to rate each classmate according to a specified criterion. For example, children are asked to circle a number from one to five that best describes how much they like to play with (or work with) each classmate at school.

Positive and negative peer nomination techniques require a child to designate the classmates (e.g., usually three) that he or she likes the most and

the least. Positive nomination techniques yield a liked most score and serve as one way to determine a child's level of acceptance by peers. Likewise, negative nomination techniques yield a liked least score and provide a measure of the degree to which a child is rejected by his/her peers.

Research on the Importance of Knowing a Child's Peer Status

Cowen et al. (1973) used peer rating scales in a study designed to clarify predictors of adult mental health problems. In this study, 573 first and third graders participated in a prevention-oriented school mental health program between 1958 and 1961. Variables used to predict later psychological adjustment included achievement scores, Otis IQ scores, anxiety scores, teachers' behavior ratings, and peer ratings. It was found that peer ratings, obtained when the participants were eight and nine years old, were the best predictors of psychiatric difficulties fifteen years later. Thus, peer rejection has been identified as a marker, or an indicator of poor prognosis, for psychological adjustment in adults.

Coie, Belding, and Underwood (1988), in a review of the literature on the relationship between peer rejection and aggression, concluded that aggression is strongly related to peer rejection in childhood. Other children tend to shy away from, and exclude, aggressive and Rejected peers. These authors suggest that the magnitude of the relationship between aggression and peer status tends to vary with age and gender of the child, type of sociometric assessment used, and the definition of aggressiveness. When

only positive peer nominations or peer rating scales are administered to children, it is impossible to separate Rejected from Neglected children, and the relationship between aggression and peer status is missed (Coie et al., 1988). In summary, negative peer nomination techniques are necessary to distinguish between peer-rejected and peer-neglected children because these two peer status groups differ on important variables (e.g., aggression).

Investigating the factors that correlate with Neglected peer status compared to Rejected peer status may provide valuable data to clinicians interested in intervention strategies. For example, the finding that Neglected children are not particularly lonely, and Rejected children are lonely, may be important in developing effective interventions (Asher & Wheeler, 1985).

An advantage of using positive and negative peer nomination techniques, especially with children classified as Rejected and Neglected, is that the results may lead to the development of effective interventions to improve these children's social and friendship-making skills. Sociometric assessment provides children's perceptions of the social status of children without relying on subjective clinical judgment to make such determinations. In addition, sociometric measures are easy to administer and score, and they can be given to large groups of children in a brief period of time.

Review of Related Literature

Sociometric Risk

Due to the concerns that some researchers, school administrators, teachers, and parents have about administering peer nomination techniques to minors, it is important to establish guidelines that minimize the risk to child research participants and ease the concerns of adults.

Thompson (1990) outlined the principles underlying research ethics pertaining to children, basing them on the 1983 regulations of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, Department of Health and Human Services (DHHS). "Minimal risk" was established and defined as risk of harm not greater than that "ordinarily encountered in everyday life." Thompson (1990) stated that special consideration should be given to child participants in social and behavioral research. For example, children may not understand their role as a research participant because of their limited cognitive capacities. In addition, children are vulnerable as research participants simply because their assent is the result of parental permission. Therefore, the National Commission recommended that a child's dissent be allowed for whatever reason given by the child, and a risk/benefit analysis should be computed to assure that children are at "minimal risk" as research participants.

Bell-Dolan and Wessler (1994) asked psychological and educational researchers ($N = 145$) studying peer relations about their procedures for

administering sociometrics and for minimizing risk to research participants. The Sociometric Testing Procedures Survey consisted of multiple choice and open-ended questions and addressed the following procedures: (a) consent and assent, (b) administration by familiar versus unfamiliar adults, (c) instructions regarding experimenter and child confidentiality and the effectiveness of these instructions, and (d) researchers' attempts to assess the effects of sociometrics on research participants.

Most respondents reported using positive nominations only due to restrictions placed on their research by university Institutional Review Board (IRB) members, school board members and personnel, or their own personal concerns regarding the impact of negative sociometrics on children. Parent consent procedures were consistent among researchers. However, procedures for child assent were less consistent even though IRB members require children seven years of age or older to give their assent in written form. Oral assent was the most common procedure used for obtaining children's consent. Seventy-five percent of researchers reported giving explicit instructions regarding child confidentiality such as instructing children not to share sociometric responses with anyone or not to share them with peers. When confidentiality breaches occurred, researchers heard or observed them without doing anything about the breachers because peers shared positive peer nomination choices with each other. Fewer than 15% of all respondents reported systematically assessing risk.

Common methods of minimizing negative outcomes that may be due to sociometric testing included: (a) emphasizing the importance of confidentiality, (b) scheduling the sociometrics prior to structured periods, and (c) embedding the sociometrics within a test battery or following up with a salient distractor task (e.g., positive and negative nominations of music or television stars). Infrequently used methods included: (a) allowing an unlimited number of positive nominations, (b) allowing nominations of children outside the classroom if they had no classmate friends, (c) wording negative nominations less negatively (e.g., "least preferred," rather than "disliked"), and (d) not requiring subjects to complete negative nominations.

Bell-Dolan and Wessler (1994) concluded that peer relations researchers are generally sensitive to ethical codes. The main concern was that some researchers do not obtain active parent and child assent. Regarding the issue of confidentiality, the authors suggested that children should not have to hide their feelings. Rather, children should be told a rationale for not talking that emphasized sensitivity to others' feelings and given explicit permission either to share their responses with trusted adults or to keep them private. Following peer nomination procedures, researchers often "debrief" children by stating that if a child is bothered by any of the tests, a researcher will remain to answer any questions, or that children may talk with their teacher about any concerns.

Methods implemented to assess minimal risk to child research

participants have included: observing children's behavior; interviewing children about the effects of testing; and surveying parents, teachers, and children regarding testing. Published studies have used behavior observation methodology to assess minimal risk to children completing positive and negative peer nomination techniques.

Behavior Observation Methodology

Behavior observation is one way to empirically analyze the effects of completing peer nomination techniques on children's behaviors. Behavior observations provide objective information about the ways in which a child behaves in his or her natural setting. There are several methods of recording behavior observations. Choice of recording method depends on the target behavior and the observer's goals. Research has shown that momentary time sampling provides accurate information about the occurrence of behaviors.

Green, McCoy, Burns, and Smith (1982) conducted a study to investigate the accuracy of three recording techniques: whole interval, partial interval, and momentary time sampling. Fifty-four subjects were divided into three groups according to the recording technique used. Subjects observed a videotape of a person who exhibited a notable behavior, namely a hairtwisting tic, and scored the videotape for eight minutes using ten second intervals. Results of a between-methods accuracy, or analysis of variance, revealed that partial interval and whole interval recording tended to overestimate and underestimate the actual frequency of the hairtwisting tic,

respectively. Very little bias was introduced when using momentary time sampling. In addition, when the hairtwisting tic occurred 25%, 50%, and 75% of the time on the video, momentary time sampling was markedly better than the whole interval method in providing the most accurate estimate of the occurrence of the behavior. Results of a within-methods accuracy showed that partial interval recording yielded a lower percentage of agreement among observers than either whole interval or momentary time sampling. Results showed that momentary time sampling accurately estimated the percentage of time the hairtwisting tic occurred. The authors concluded that the degree of overestimation and underestimation was due to the recording technique chosen rather than to the observer's use of the recording technique.

Limitations of these findings included the following. First, behaviors were recorded from a videotape rather than from a real life setting. When recording in a real life setting, extraneous behaviors may interfere with recording the specified behavior. Second, only one behavior was recorded in this study which makes the findings less generalizable to conducting behavior observations of multiple behaviors. Third, the authors did not state the level of training in behavior observations that the raters received. Despite limitations, the findings have important implications for applied behavior researchers who are choosing a behavior observation measure to accurately estimate the percentage of time a behavior occurs.

Murphy and Goodall (1986) presented case histories on eight severely

retarded children who were videotaped exhibiting stereotyped behavior for brief and long periods of time. Four behavior observation recording techniques were evaluated: two partial interval, whole interval, and momentary time sampling. For the momentary time sampling record, subjects' behaviors were recorded for one second at the end of ten second intervals. As predicted, momentary time sampling resulted in consistently fewer errors across all brief and long durations of the behavior than either the partial or whole interval techniques. Consistent with other research findings, partial interval recording overestimated and whole interval recording underestimated the true percentage duration of the subject's behavior.

When evaluating the effects of treatment on the reduction of undesirable behaviors or the increase of desirable behaviors, only momentary time sampling could be relied upon to reflect the effects of treatment (Murphy & Goodall, 1986). For applied behaviorists who are attempting to record several types of behavior simultaneously and who are uncertain how treatment will affect response lengths, these results suggest that momentary time sampling is the method of choice.

Using an adult male observer, Powell, Martindale, Kulp, Martindale, and Bauman (1977) also found that momentary time sampling most accurately estimated the frequency of behaviors occurring during an observation period. An adult male controlled in-seat behavior for three blocks of five sessions: 20%, 50%, and 80% of the sessions. Results showed

that momentary time sampling was superior to interval time sampling in estimating the duration that in-seat behavior occurred. The authors did not provide information regarding the number of recorders. Thus, the reader is left to assume that there were at least two recorders, given the inter-rater reliability coefficient (r = .93). Similar to limitations in aforementioned studies, only one behavior was observed and recorded, thus the results are less generalizable to observing children in their natural setting across a variety of behaviors simultaneously.

Saudargas and Lentz (1986) evaluated a structured observation code procedure for constructing standardized multiple behavior observation systems that provided accurate, reliable data. The authors noted that momentary time sampling should be used to measure both the duration of the behaviors and the frequency of the behaviors. Furthermore, research was cited to show that momentary time sampling, with observation intervals of up to 30 seconds, provided the most accurate estimates of the percentage of occurrence across a wide range of actual frequencies, bout lengths, and response intervals.

Behavior Observation to Assess Risk

To date, there are only three studies that used behavior observations to assess risk (Bell-Dolan, Foster, & Sikora, 1989; Hayvren & Hymel, 1984; Landau & Boyle, 1990). Four studies (Bell-Dolan, Foster, & Christopher, 1992; Iverson, Barton, & Iverson, in press; Iverson, Iverson, & Swalley, 1992;

Ratiner et al., 1986) used other methods to assess the effects of sociometric testing on children's behavior and emotions. The age of subjects, sociometric techniques administered, and the methods of assessing risk have varied across the seven studies.

Hayvren and Hymel (1984) conducted behavior observations using momentary time sampling with preschoolers before and after administering positive and negative peer nomination and rating scale techniques. In this study, sociometric techniques were individually administered to two classes of preschoolers (N = 27) in a private room. Subjects were shown black and white photographs of their classmates and asked to point to the pictures of three classmates with whom they most liked to play, and with whom they did not like to play at school. Then, they were asked to rate on a three-point scale how much they liked to play with each of their classmates. Subjects were observed five weeks prior to and an unspecified number of weeks following the administration of peer nomination techniques during regular and free play periods in the preschool classroom. Every interaction involving the target child was recorded in terms of the following: (a) the names of the participants in the interaction, (b) the child who initiated the interaction, (c) the recipient of the interaction, and (d) the affective quality (positive, negative, or neutral) of both the initiation and the response. High interobserver agreement was obtained (94%). Pre- and post-observations were conducted for each child during a series of two minute periods totalling

thirty minutes of observation time per child. In the first ten minutes following sociometric testing, the children were observed in the classroom.

Results showed that there were no differences in the frequency of negative initiations or responses made to high and low status peers. In addition, children showed significantly more positive and neutral interactions to their most preferred peers. These results suggested that completing sociometric tests led to no obvious, immediate, negative behavior in preschool-aged children.

Hayvren and Hymel's (1984) study was limited in the following ways: (a) small subject sample (n = 27), (b) the sample consisted of preschoolers which limited the generalizability of the findings to older elementary school populations, and (c) the participation rate of subjects was not indicated.

Bell-Dolan et al. (1989) compared the behavior of elementary school children who completed positive and negative nominations of peers to those who completed positive and negative nominations of school activities. Bell-Dolan et al. (1989) examined overall rates of interaction and self-reported loneliness and negative mood. Within classroom and gender, subjects were randomly assigned to either an experimental (n = 11) or a control (n = 12) condition. The experimental fifth graders completed individually administered positive and negative peer nomination techniques, a Mood Questionnaire adapted from Lubin's Depression Adjective Checklist (Lubin, 1965), and the Children's Loneliness Questionnaire (CLQ) (Asher, Hymel, &

Renshaw, 1984) in a private room. The 11 experimental subjects completed positive and negative peer nomination techniques, that included only the names of the 11 experimental subjects, by circling two preferred and two non-preferred peers. Control subjects nominated two preferred and two non-preferred school activities. Behavior observations using momentary time sampling were completed two weeks before and two weeks after administration of the tests. Subjects were observed an average of 54.4 minutes or 3.6 minutes per day at pre-observation. They were observed an average of 55.7 minutes or 4.6 minutes per day at post observation.

Consistent with Hayvren and Hymel's (1984) findings, subjects displayed significantly more positive and neutral interactions with preferred than non-preferred peers. Furthermore, there was an indication that, in the experimental group, less popular peers' negative interactions decreased following sociometric testing. Results suggested that the sociometrics had no effects on experimental children's social interactions or reports of negative mood state or loneliness compared to control subjects. During debriefing, the children reported that they told others who they put down on the peer nomination techniques, enjoyed the sociometric task, and liked the negative peer nomination technique the least.

Limitations of the Bell-Dolan et al. (1989) study included: (a) a low participation rate (55%) indicating that it was less likely that some unpopular peers participated (Iverson et al., 1992), (b) a small sample size ($\underline{n}$ = 23), and

(c) reactive effects of testing. It was likely that experimental subjects discussed the sociometrics with the control subjects because both experimental and control subjects were in the same classroom. Discussion could potentially impact control subjects' affective interactions even without direct participation in the sociometric procedures.

Landau and Boyle (1990) used an unspecified behavior observation procedure to assess risk following a sociometric rating procedure that was not a positive and negative peer nomination technique. They established social status by asking teachers in two second and two fourth grade classrooms at a university laboratory school to rank separate male and female class lists in terms of "how much other children most like to play with them." The two lowest ranked children on each list served as experimental subjects ($\underline{n}$ = 12). Twelve additional unpopular children served as control subjects. The authors did not clarify the procedures for selecting the control children. All subjects completed pre-and post-measures of loneliness and anxiety. The 12 experimental subjects completed an item-by-peer sociometric matrix procedure (not further described) and then went to recess. Subjects' social behaviors were directly observed during free play activities for five days prior to and immediately following the completion of sociometric, social loneliness, and social anxiety measures. Observations were conducted to determine the percentage of time the children were engaged in solitary play, parallel play, positive interactions, receiving positive interactions, negative

interactions, receiving negative interactions, and adult-only interactions.

No difference was found between unpopular and popular children's social behavior during solitary play, parallel play, positive interactions, receiving positive interactions, and adult-only interactions across pre- and post-observations. All unpopular children were less negative in their playground behavior at the time of post-testing (including receiving negative interactions). Results showed that unpopular children were not found to experience increased levels of social anxiety compared to popular children. Thus, the results did not support the contention that unpopular children may be the targets of more negative interactions from their peers following sociometric testing.

The limitations of this study were: (a) small sample size, (b) unknown participation rate, and (c) unknown control group selection procedures. The sample was unlike that of previous studies since it consisted only of unpopular peers who were selected by the teacher.

Surveys and Interviews to Assess Risk

The following four studies evaluated the effects of completing sociometrics on children's behaviors based on outcome measures other than behavior observation. Bell-Dolan et al. (1992) conducted an assessment of the potential negative effects of using positive and negative peer nomination techniques. In this study, 232 third, fourth, and fifth grade females completed positive and negative peer nomination techniques (50% participation rate).

Subsequently, 175 of these subjects (38% participation rate) completed a questionnaire addressing: (a) their reactions to the study, (b) their behavior changes after participating, and (c) the extent of discussion with others (e.g., family members or classmates) about the sociometric measures. Subjects came from 13 elementary schools which served primarily lower to lower-middle income families living in rural and semi-rural areas.

Overall, subjects felt "okay" to "good"about completing the measures. The majority of the children reported that they enjoyed participating in the research study. However, 23% indicated that they felt "bad" or "very bad" about completing the measures. No differences were found among children of different peer status groups with regard to how much they liked or disliked the nomination techniques and being research participants.

The results of the 146 parent and 206 teacher questionnaires suggested that there were no changes in negative behaviors. The percentages of parents and teachers who reported that subjects disliked the study were the highest for the neglected children (16.7%).

Although this study had the largest subject pool of any of the seven studies analyzing risk of harm to children participating in sociometrics, methodological concerns included: (a) questionable social validity of the peer nomination technique results because only 50% of the population participated; consequently, students labeled as low status may not have been the truly low status peers in their classrooms (Iverson et al., 1992), (b) gender

specific findings not clearly generalizable to males, and (c) lack of control for children's ability to read and complete the written questionnaire independently and a mere 38% participation rate.

Ratiner et al. (1986) group administered a peer rating scale (i.e., peers rated their liking of classmates on a scale of 1 to 5 in which 1 was "do not like the person" and 5 was "like the person very much, as much as a best friend"), the Perceived Competence Scale for Children, and the Children's Action Tendency to four classes of sixth grade children. The participation rate was not stated and neither were the demographics of the subject sample. The resulting scores yielded measures of popular and unpopular peers. Thus, Controversial children were not separated from Popular children (popular peers) and Neglected children were not separated from Rejected children (unpopular peers). Based on same-sex rating by peers, two popular and two unpopular boys and girls from each class, for a total of 32, participated two months later in follow-up interviews about their reactions. Subjects were asked about: (a) the degree to which they liked and/or disliked the measures, (b) the reasons for their preferences, (c) the extent of post-testing discussion among their classmates, and (d) the extent to which they or their classmates were bothered by the peer rating scales.

Results showed that 21 children liked the sociometric rating assessment the most. Furthermore, the results showed that unpopular classmates were no different in their ratings of liking the measures than

popular classmates. Some children reported disliking the sociometric measures because they thought that giving low ratings was not a "nice" thing to do. Most of the children indicated that they did talk to peers about the ratings. Children did not reveal that more negative statements were said about non-preferred peers after completing the peer rating scales.

An important issue in assessing risk is whether negative nominations have differential effects on unpopular children. None of the studies evaluated thus far indicated the number of Rejected and Neglected children. Based on low participation rates, it is likely that Rejected and Neglected subjects were underrepresented (Iverson et al., 1992). Therefore, it may still be unknown whether the reactions of Rejected and Neglected children are similar to those of popular children. Studies by Iverson et al. (1992) and Iverson et al. (in press) had high participation rates (94% and 98%, respectively). Thus, both studies were more likely to have representative samples of all peer status groups: Average, Controversial, Neglected, Popular, Rejected, and Other.

Iverson et al. (1992) administered nomination techniques, the CLQ, and the Children's Friendship Questionnaire (CFQ) to 82 sixth graders (94% participation rate). Four months later, 45 of these children were interviewed to assess their event memory, as well as affective and behavior responses associated with completing the tests. Although a salient experience, (e.g., children remembered it), adults' perceptions of risk were not confirmed.

Results showed that all measures were liked significantly better than the negative nomination technique. On a five-point rating scale (i.e., "1" = did not like at all to "5" = liked very much), the mean response for how much the children liked the negative nomination technique was 2.4. One Popular, one Rejected, and two Other subjects thought it would be potentially harmful if someone saw his/her paper. The three Rejected subjects reported liking the overall testing experience. Results were consistent with previous findings (Bell-Dolan et al., 1989; Hayvren & Hymel, 1984; Landau & Boyle, 1990; Ratiner et al., 1986) that children do not evidence obvious harm following sociometric testing. However, a subset of children were aware that if their answers about who they liked the least were revealed, others' feelings may have been hurt.

Iverson et al. (in press) interviewed 119 fourth and fifth graders (55 males and 64 females) regarding their reactions to completing group-administered, positive and negative peer nomination techniques. Children were asked open-ended questions about whether they liked or disliked the measures, and then were asked specific questions to detect harm (e.g., who was teased?, who had hurt feelings?) two to three days after completing the sociometrics. Subjects were classified according to peer status groups: Average, Controversial, Neglected, Popular, Rejected, and Other. The second author and a research assistant, both of whom were blind to the peer status of subjects, coded the transcripts. Interrater agreement on the coding of

students' responses was 96%.

Results of chi square analyses showed no significant differences between the number of females and males who discussed the sociometrics. All subjects, except one reported positive feelings associated with completing the sociometrics. Results also showed that low status (Neglected and Rejected) and high status (Popular and Average) peers were equally likely to discuss their feelings about participating in the peer nomination technique. Furthermore, there were no significant differences between the number of females and males who talked about their feelings. The affective quality of the talk was primarily neutral and centered around liking the project.

Analyses also were completed for the three questions that directly assessed subjects' perceptions of benefit and risk. Seventeen percent of subjects reported that they or their peers were complimented. High status peers were significantly more likely to receive compliments than low status peers. Seven subjects reported knowledge of peers being made fun of or teased behind their back. Children from all social status groups appeared equally likely to be aware of teasing behaviors. Subjects reported that peers who were the targets of teasing comments (i.e., one Neglected, five Rejected) did not actually find out about the negative comments. Results showed that subjects who were teased were more likely to be from low status groups. No subject reported knowledge of hurt feelings. However, nine subjects reported believing that others could potentially have hurt feelings. Seven of these

nine subjects stated that they were uncomfortable about how others (mainly the Rejected peers) might feel if they knew who was named on the negative nomination technique. Only one Other subject reported that she "felt bad" because other children were talked about negatively.

Subjects were then asked how their discussions were resolved. Compliments were resolved positively or neutrally, and teasing was resolved neutrally (i.e., subjects who were the targets of teasing comments did not find out). For Neglected and Rejected subjects in this study, the sociometric experience was best interpreted as neutral since no subjects disclosed that they felt bad about the experience.

Summary

This review of the literature has shown that preschoolers through sixth graders have not evidenced risk on a variety of outcome measures (e.g., behavior observation, loneliness, mood state, surveys, and interviews). Although studies to date have not reported risk, they cannot be considered definitive due to methodological limitations. For example, areas of concern were the small sample sizes and low rates of participation reported in previous studies. Therefore, further research that overcomes methodological limitations is needed to establish the condition of minimal risk of harm when completing positive and negative peer nomination techniques.

CHAPTER 3

METHOD

Design of the Study

The present study was designed to extend the findings of Bell-Dolan et al. (1989) in order to increase the research base of the effects of sociometrics on children's social interactions. The methodology differed from Bell-Dolan et al.'s (1989) in that a group versus individual administration of the sociometrics was employed as more cost effective.

The research designs were also different. Bell-Dolan et al. (1989) randomly assigned children within classes to either a control or an experimental group. This was a potential problem because experimental children could easily talk to control children in their class about the sociometric experience even though subjects were told to keep their responses private.

Past research (Iverson et al., in press) showed that over 70% of subjects discussed the sociometric experience. In Bell-Dolan et al.'s (1989) study, experimental and control subjects were in the same class; and, thus, experimental subjects could potentially talk to control subjects about the sociometrics. Control subjects' knowledge of the sociometrics could potentially influence the affective quality of their subsequent peer interactions. Therefore, it may be important to keep the experimental and control subjects in separate classrooms.

The present investigation used a quasi-experimental pretest-posttest control group design in which intact classes were assigned to either the experimental or control condition. This design was selected in order to minimize the opportunities that experimental children would have to discuss the sociometrics with control children.

Subjects

This study was part of an in-progress project on the effects of cooperative learning. In the in-progress study, 376 fourth, fifth, and sixth grade subjects (92% participation rate) from an elementary school in mid-Missouri participated. This elementary school was unique in that the majority of administrators and teachers in the school building were trained in cooperative learning and conflict resolution strategies.

Two classes of fourth graders (n = 54; 98% participation rate) were randomly selected to participate in an analysis of risk. The experimental (n = 26) and the control classes (n = 27) consisted of 22 males (40%) and 32 females (60%). The ethnic breakdown of the children was as follows: 37 (68%) Caucasian, 16 (30%) African-American, and 1 (2%) other (e.g., Asian, Native American, and Hispanic). Socioeconomic status of children enrolled at the school was lower middle to middle class, as estimated by the school principal.

Instruments

A major finding of the Bell-Dolan and Wessler (1994) study was that including peer nomination techniques in a battery of tests may safeguard

against negative effects. Students have a variety of measures to talk about and not only the nomination techniques.

Assessment instruments included the behavior observation technique of momentary time sampling and a battery of tests that included the positive and negative peer nomination technique, the Children's Loneliness Questionnaire (CLQ), and the Children's Friendship Questionnaire (CFQ). The first two instruments are described in detail in the following sections. The CLQ and the CFQ were administered to fulfill recommended procedures (i.e., embedding the peer nomination technique in a battery). CLQ and CFQ data are not presented here. Descriptions of these latter two measures are in Appendix A.

Momentary Time Sampling

Momentary time sampling was the behavior observation technique employed in the present study. This behavior observation method yields the number of times the behavior was observed to occur at pre-specified sampling points in time (e.g., at the end of every 10-second period or at the end of every 15 minute period) (Alessi & Kaye, 1983). Momentary time sampling involves observing the student momentarily and only at the pre-specified times, such as at the very end of the observation interval. As such, one disadvantage of time sampling is that a much smaller sample of observation time is recorded. On the other hand, the advantage is that the observer is able to complete other activities between recordings. A second

advantage of momentary time sampling is that it is easy to use. To begin behavior observations, the observer sets up a recording sheet and then selects a sample time frame (e.g., the length of time between observation samples) that is as short as feasible for the observed behaviors.

Time sampling procedures are to be used with behaviors that occur at moderate but steady rates. Time sampling also is preferred when: (a) several students must be observed in the same session, or (b) the observer must perform other tasks between the recording of data. The reliability and validity of the technique were presented in detail in Chapter Two.

Peer Nomination Technique

A positive and negative peer nomination technique was used as a peer report measure of children's social status. On a roster of classroom peers, a subject circles a specified number of names to indicate whom she or he likes most. On a duplicate roster, a subject circles a specified number of names to indicate whom she or he likes least.

Coie et al. (1982) developed a scoring system used to calculate social statuses based on the positive and negative peer nomination technique. This scoring system is widely used by sociometric researchers. A variation of this scoring system was developed by Asher and Wheeler (1985). Specifically, the two scoring systems differ in the cutting scores used to classify subjects as Neglected.

Asher and Wheeler (1985) found that Coie et al.'s (1982) system did not yield a sufficient number of Neglected subjects. Although the explanation for this phenomenon is unknown, variations in the numbers of Neglected subjects identified by the two systems may be attributed to regional population differences. Coie et al.'s (1982) research recruited subjects from the East coast. Asher and Wheeler (1985) enlisted subjects from the Midwest. Since the sample of subjects who participated in the present study were from the Midwest, Asher and Wheeler's (1985) scoring system was used.

Selection to a social status group is made independently of a child's gender and race. The raw nominations for the liked most (LM) and liked least (LL) categories are tallied and standardized ($\underline{z} = X - \underline{M}/\underline{SD}$) based on a child's score relative to others in the same class. An example of calculating social status is presented in Appendix B. The transformations of these two sets of raw scores (i.e., LM and LL) into $\underline{z}$ scores are used to calculate two indices of peer social adjustment: (a) Social Preference (SP), or relative peer likability, "is the number of positive votes minus the number of negative votes" (i.e., LM $\underline{z}$ score minus the LL $\underline{z}$ score); and (b) Social Impact (SI), or relative social visibility, "the absolute number of positive votes plus the absolute number of negative votes" (i.e., LM $\underline{z}$ score plus the LL $\underline{z}$ score) (Peery, 1979, p. 1232). These two scores (social preference and social impact) are considered two dimensions as shown in Figure 1. (See Appendix B.) These two axes are labeled in terms of $\underline{z}$-scores.

These four scores (LM, LL, SP, SI) are used to classify children into the six social status groups: Average, Controversial, Neglected, Other, Popular, and Rejected (see Coie et al., 1982, pp 562-564). In this study, the purpose for classifying subjects into peer status categories was to investigate the quality of Unpopular (i.e., Rejected and Neglected) subjects' peer interactions. Unpopular peers comprise the group believed to be most at risk of harm when participating insociometric assessment. The scoring system used for this classification is described in Appendix B.

For the present study, subjects' social statuses are presented in Appendix C. It contains the raw nominations for liked most (LM), the raw nominations for liked least (LL), their respective $\underline{z}$ scores, the social preference and social impact raw scores and their respective $\underline{z}$ scores. The social status group to which the subject was classified is also shown.

In order to compare the distribution across peer status categories of subjects in this study to a larger distribution of subjects, the social status distribution of Neucomb and Bukowski (1984) is presented. Using Coie et al.'s (1982) scoring system, Neucomb and Bukowski (1984) investigated a sample of 334 preadolescents. They administered sociometrics to this sample every 6 months for 2 years (i.e., at 1 month, 6 months, 12 months, 18 months, and 24 months) to yield mean percentages of peer status. Popular and Neglected groups each contained approximately 10% of the sample. Approximately 13% were classified as Neglected. Six percent of the children

were classified as Controversial. Everyone else (60%) was classified as Average. Note in Table 1 that the distribution in this study is comparable to the distribution of Neucomb and Bukowski (1984). Therefore, the present sample is reasonably representative of children in the nation and enhances the generalizability of the findings.

Table 1

Percentage of Subjects in Social Status Categories of Neucomb and Bukowski (1984) Compared to the Present Study

	Peer Status Categories				
	A & O	C	N	P	R
N & B (1984)	60%	6%	12%	9%	13%
Present study	53%	4%	17%	13%	13%

Peer Status Categories: A & O = Average and Other; C = Controversial; N = Neglected; P = Popular; R = Rejected

Reliability and validity of peer nomination techniques. Psychometric studies show that peer nominations provide reasonably reliable and valid data regarding peers' social status (Busk, Ford, & Schulman, 1973; Coie & Kupersmidt, 1983; Kalfus & Berler, 1985; Roff, Sells, & Golden, 1972). The nomination sociometric technique yields nomination scores that tend to be stable over time for elementary school children. Busk et al. (1973) reported 8 week coefficients of r = .84 for sixth grade students based on positive nomination scores. Roff et al. (1972) presented test-retest reliability estimates for positive and negative peer nomination scores received by elementary school-age children in Texas and Minnesota. Stability coefficients for positive nomination techniques were r = .52 for a one-year time interval and r = .42 over a three-year period. Reliability coefficients for negative nominations were r = .38 for a one-year time span, and r = .34 over a three-year time period. From these results, it appears that positive and negative nomination scores are moderately stable over substantial periods of time. Kalfus and Berler (1985) investigated the temporal stability of sociometric nominations with second (n = 39), fifth (n = 45), seventh (n = 60), and ninth graders (n = 51) over four week and five month intervals. Peer nomination formats were found to have test-retest reliability coefficients greater than or equal to r = .60 at least 80% of the time. Sample protocols of positive and negative peer nomination techniques are in Appendix D.

Pre-Treatment Procedures

Consent

A trained graduate research assistant, who did not participate in any other part of the study, recruited children by making announcements in individual classrooms. Both guardian(s) and children signed informed consents to participate in the study. (See Appendix E.) On Monday, children were given consent forms and asked to return them the following day. On Wednesday of the same week, she sent consent forms home a second time with children who had not returned them. Mail and phone call reminders to non-returning parents were used to obtain consent the second week. Home visits to non-returning parents were completed the third week (Iverson & Cook, 1994).

Observer Training

Graduate students (n = 8) received approximately five hours of training in behavior observation using momentary time sampling methodology. First, student observers memorized and discussed the observation code (categories of positive, negative, and neutral), instructions for recording behaviors, and six decision rules. (See Appendix F.) Second, observers viewed a videotape of fifth graders interacting in a classroom, coded observations, and checked their codes using a master scoring key. Inconsistencies in scoring were resolved through retraining. Training ended when interrater reliability coefficients reached or exceeded .80.

Third, the eight trained observers were randomly assigned to one of the two classes. Observers were blind to subjects' treatment conditions and social statuses and only conducted behavior observation training in their assigned class. Fourth, the trained observers learned the names and faces of actual subjects by using flashcards with a photo of the subject on the front and his or her name on the back of the card. Fifth, observers learned the subjects' faces in their assigned classroom only until 100% accuracy was achieved. Sixth, paired observers practiced conducting reliable observations during the first day in an actual classroom until inter-observer reliability coefficients reached or exceeded .80.

Pre-Treatment Data Collection

Observers used the behavior observation technique of momentary time sampling with ten second consecutive intervals and recorded: (a) the affective quality of peer interactions as positive, negative, or neutral; (b) whether it was a peer interaction; and, if so, (c) who was involved (i.e., a specific child participating in the study identified by name, a child not in the study identified as "other", or a group of more than two people). Typically, two observers sat unobtrusively in the back of the classroom, began observing on opposite corners of the room, and systematically observed subjects in a clockwise direction.

For the eight days prior to sociometric testing, peer interactions were observed and recorded using momentary time sampling. Subjects were

observed during lunch, physical education, library, art and other class periods (e.g., math and social studies). Recess time was not included because approximately 100 children were on the playground at one time. Although recess is a valuable time period when many peer interactions are occurring, it was unlikely that observations could be conducted reliably.

Each subject was observed for a block of 100 seconds, and then observation was switched to another subject. Each interaction was recorded on an observer recording form. (See Appendix G.) Peer interactions were recorded according to six specific instructions, or decision rules. (See Appendix F.) First, observers recorded the target subject's name. At the end of the ten second interval, the observer looked up and scanned for the affective quality of the peer interaction and recorded it as: + (positive), - (negative), or 0 (neutral). Category definitions were based on Furman, Rahe, and Hartup's (1979) system. (See Appendix F.)

If the target child was engaged in a peer interaction, then a "PI" and the peer's initials were marked on the observer recording form. After one week of observation, the amount of time each subject was observed was calculated to ensure that subjects were observed comparable amounts of time. Positive, negative, and neutral interactions were calculated as percentages of total time observed. Observers were made aware of subjects who were observed minimal amounts of time and were instructed to observe them more frequently during the second week.

To minimize observer drift, observer pairs changed frequently and agreement was calculated throughout the weeks of observation. Interobserver reliability was assessed on 20% of the data for accuracy in coding the affective quality of peer interactions. The median kappa was .94 for interrater agreement: positive ($\underline{K}$ = .84), negative ($\underline{K}$ = 1.00), and neutral ($\underline{K}$ = .94) interactions (Siegel & Castellan, 1988).

Treatment Procedures

For children whose parent or guardian gave informed consent (all but one student), questionnaires were group-administered to each of the two classes by the supervising professor after eight days of observation data were collected. Procedures that may minimize risk of harm to children participating in sociometric testing were used (Bell-Dolan & Wessler, 1994). These procedures included the following: (a) subjects were instructed not to discuss their answers with other children and were tested during a period that was followed by structured classroom activities; (b) positive and negative nomination techniques were embedded in a battery of tests (i.e., CLQ and CFQ); (c) the negative nomination technique was worded less negatively (i.e., "like the least" rather than "dislike); (d) subjects were allowed to omit any portion of the techniques if they so chose and; and (e) subjects were instructed that they could withdraw at any time and not complete the procedures. No subject omitted any portion of the techniques, nor did any subject withdraw.

Both classes completed a nomination training task, a nomination task, the CLQ, and the CFQ. Subjects first were trained to complete nominations by circling three foods on a list. For the positive nomination task, experimental and control subjects were asked to circle three foods on the list that they liked the most. Then they were given an identical list of foods and asked to circle three foods that they liked the least. When experimental and control subjects understood the concepts of liked most and liked least, they completed the appropriate nomination task for their condition and the CLQ and CFQ. Administration and scoring procedures for the CLQ and the CFQ are in Appendix A.

The experimental group completed group administered positive and negative peer nomination techniques. The control group completed group administered positive and negative nominations of school activities. For the positive peer nomination sociometric, a list of the children in the classroom (whose parents had given them permission to participate) was distributed, and each subject was asked to circle the names of three children that he or she liked the most. For the negative peer nomination sociometric, an identical list was distributed and each subject was asked to circle the names of three children that he or she liked the least. Experimental subjects could write in the name of the missing classmate on either list if they initiated it.

For the control group, the same procedures were used for administering the positive and negative nominations of school activities.

For the positive school activities nomination sociometric, a list of school activities was distributed, and each subject was asked to circle three school activities that he or she liked the most. For the negative school activities nomination sociometric, an identical list was distributed, and each subject was asked to circle three school activities that he or she liked the least.

Post-Treatment Procedures

Using pre-treatment data collection procedures, post-treatment (i.e., behavior observation) data were collected for five days immediately after the administration of nomination techniques. Subjects in both the experimental and control group were observed for the affective quality of their peer interactions.

Analyses

Data were analyzed using analysis of covariance (ANCOVA) procedures. Pre-treatment observation data served as covariates. There were three separate pre-treatment covariates: pre-positive, pre-negative, and pre-neutral rates of peer interactions. Likewise, there were three separate post-treatment variables: post-positive, post-negative, and post-neutral rates of peer interactions. For each ANCOVA analysis, the appropriate pre-treatment covariate was used. Three separate ANCOVA analyses were conducted to determine whether the experimental and control groups differed on the rates of positive, negative, and neutral peer interactions following the experimental procedure. Given that risk of harm has focused on harm to

Unpopular peers, a separate analysis of the Unpopular peer group was conducted. To determine changes in Unpopular experimental subjects' rates of positive, negative, and neutral peer interactions pre- and post-treatment, a paired t-test comparison was computed.

Alpha rates were set at .10 to increase power in discerning risk to subjects for the following reasons. First, ethical standards dictate that risk to minors must be carefully assessed and monitored. Second, the small sample (n = 27 per group) is related to less power (i.e., failure to reject a false null hypothesis). One way to increase statistical power and reduce the probability of making a Type II error when the sample size is small is to increase the alpha level. For example, a two-sample t-test with n = 27 set at an alpha level of .05 has a .19 probability of detecting a small effect size, a .58 probability of detecting a medium effect size, and a .95 probability of detecting a large effect size (Cohen, 1977). On the other hand, a two-sample t-test with n = 27 set at an alpha level of .10 has a .29 probability of detecting a small effect size, a .70 probability of detecting a medium effect size, and a .98 probability of detecting a large effect size.

Each Rejected experimental subject's negative interactions during pre- and post-observation periods are reported in detail to provide more information about potential risk to the group of children who are of most concern to researchers, school personnel and parents. Since there were five

Rejected subjects, valid statistical analysis could not have been obtained on such a small sample.

CHAPTER 4

RESULTS AND ANALYSES

Results were obtained by completing quantitative analyses of the rates that peers were observed in positive, negative, and neutral interactions. In the quantitative section of this study, analysis of covariance and t-test results were computed. In addition to this, a descriptive account of negative interactions exhibited by the five Rejected subjects in the experimental group was presented.

During the 8 days of pre-observation, subjects (n = 54) in this study were observed an average of 36 minutes or 4.5 minutes per day. During the five days of post-observation, subjects were observed an average of 25.5 minutes or 5.1 minutes per day. The number of minutes per day of observation time was greater than the number of minutes per day in the Bell-Dolan et al. (1989) study.

Analysis of Interaction Rates

Means, standard deviations, and pre-post effect sizes (Pre-post Effect Size = (post M - pre M)/pre SD)) for the experimental and control groups' rates of positive, negative, and neutral interactions at pre- and post-observation are shown in Table 2.

Table 2

Descriptive Statistics for Pre- and Post-Observation Rates of Positive, Negative, and Neutral Peer Interactions

	Experimental (n = 27)		Control (n = 27)	
	Pre	Post	Pre	Post
Rate of Positive Interactions				
M	.088	.064	.081	.066
SD	.061	.046	.057	.050
Pre-post Effect Size		.393		.263
Rate of Negative Interactions				
M	.011	.004	.010	.005
SD	.011	.006	.016	.008
Pre-post Effect Size		.636		.313
Rate of Neutral Interactions				
M	.901	.933	.908	.930
SD	.061	.046	.066	.049
Pre-post Effect Size		-.525		-.333

For the rates of positive interactions for experimental and control groups at post-observation, ANCOVA results (see Table 3) showed no statistically significant difference. (As explained in Chapter 3, the alpha level was set at .10.) The experimental group's rate of positive interactions was comparable to the rate of the control group. This finding was consistent with the first hypothesis that there was no difference between the groups in the rate of positive interactions from pre- to post-observation.

Table 3

Analysis of Covariance Results for Positive Peer Interactions Using Pre-Positive Rates of Interactions as the Covariate

Source	df	MS	F	p
Between	1	.000	.01	.91
Covariate	1	.008	3.80	.06
Within	51	.002		
Total	53	.010		

For the rates of negative interactions across groups at post-observation, the means were similar (see Table 2), and the ANCOVA analysis yielded nonsignificant results (p = .66). In other words, the rate of negative interactions did not vary significantly by group at post-observation; subjects in experimental and control groups were equally likely to exhibit negative interactions (p = .34).

For the rates of neutral interactions across experimental and control groups at post-observation, ANCOVA results indicated no statistically significant difference between the groups (p = .83). This finding was consistent with the third hypothesis that there was no difference between the groups in the rate of neutral peer interactions from pre- to post-observation.

Summary

Three separate ANCOVAs were conducted to discern group differences in the rates of positive, negative, and neutral peer interactions at post-observation. All three ANCOVAs were statistically nonsignificant. These nonsignificant findings can be a result of no treatment effects or a lack of statistical power to discern group differences. To examine statistical power for these tests, it was found that with an alpha level of .10 and n = 27, there was a .29 probability of detecting a small effect size, a .70 probability of detecting a medium effect size, and a .98 probability of detecting a large effect size. These tests had sufficient power to discern important differences in the rates of peer interactions across groups. Although small effects likely would not have

been detected, it was concluded that medium to large effects in the rates of positive, negative, and neutral interactions did not exist.

Analysis of Unpopular Experimental Subjects' Peer Interaction Rates

Hypotheses four, five, and six were tested using paired comparison t-tests to detect differences in the rates of positive, negative, and neutral interactions from pre- to post-observation exhibited by Unpopular subjects in the experimental group. For this analysis, Rejected ($n = 5$) and Neglected subjects ($n = 5$) were collapsed into a category labeled Unpopular for the following reasons: (a) a larger cell size was needed for statistical analysis and (b) university review board members, school administrators, and parents are concerned about the risk of harm to Unpopular subjects (i.e., Rejected and Neglected).

The observed mean difference from pre- to post-observation for Unpopular experimental subjects' rate of positive peer interactions was .005. For negative peer interactions, it was .002; and, for neutral peer interactions, it was -.008. Results of paired t-tests, comparing pre-observation to post-observation rates of positive; negative; and neutral peer interactions, revealed no statistically significant differences, nor did results approach significance.

Analyses of a Critical Subsample

An additional paired t-test was conducted to detect a pre-post-observation difference in the rates of negative interactions for all

experimental subjects who exhibited negative interactions. These subjects were in the following peer status groups: Average, Other, Popular, and Rejected. Results indicated a statistically significant decrease in the rates of negative interactions from pre- to post-observation that was in the large effect size range (Cohen, 1977). (See Table 4.) A paired comparison t-test of control subjects who exhibited negative interactions from pre- to post-observation yielded nonsignificant results (p = .12).

Table 4

t-test Comparison of Experimental and Control Subjects' Negative Peer Interactions

	(Pre)		(Post)				
	M	SD	M	SD	ES	t	p
Group							
Experimental (n = 19)	.016	.010	.006	.006	1.00	3.63	.002
Control (n = 15)	.019	.017	.009	.008		1.65	.121

Descriptive Analysis of Negative Peer Interactions of Rejected Subjects

The negative interactions exhibited by Rejected children are described in detail for the experimental group. Each of the five Rejected subjects' negative interactions are reported. Rejected subjects are referred to as Subjects A, B, C, D, or E. The descriptive analysis is presented in a case study format where each target peer's negative interactions were analyzed by reporting: (a) the observation period of the negative interaction (pre- or post-administration of sociometrics), (b) the peer status of the subject with whom the target peer was interacting, (c) whether the target peer nominated the subject on the sociometrics as liked most or liked least, and (d) whether the subject with whom the target peer interacted nominated the target peer on the sociometrics as liked most or liked least.

The majority of negative interactions (i.e., 20 of 24) occurred during the observation period prior to completing peer nomination techniques. Four negative interactions occurred during the observation period following the completion of peer nomination techniques.

Subject A was a Caucasian female. She exhibited two negative interactions during pre-observation: one with a Rejected peer and one with a group of peers. Subject A and the Rejected peer did not nominate each other as liked most or liked least on the peer nomination techniques. During the post-observation period, Subject A had one negative interaction with a Popular peer whom Subject A nominated as liked most on the sociometrics.

This Popular peer did not nominate Subject A as liked most or liked least on the sociometrics.

Subject B was a Caucasian female. At pre-observation, she exhibited one negative interaction with a Popular peer whom Subject B nominated as liked most during the sociometric assessment procedures. Subject B also exhibited one negative interaction during the post-observation period with an Other subject whom Subject B nominated as liked most. This Other subject did not nominate Subject B on either the positive or negative peer nomination techniques.

Subject C was an African-American female. Throughout the pre-observation period, she exhibited eight negative interactions. Six negative interactions occurred with two of her Rejected peers, and two negative interactions occurred with two Other peers. Subject C did not nominate any of these four subjects as liked most or liked least on the peer nomination techniques. One of the Rejected peers and one of the Other peers nominated Subject C as a liked least peer. The remaining Rejected peer and the Other peer did not nominate Subject C on either the positive or the negative peer nomination techniques. During the post-observation period, Subject C exhibited two negative interactions with a Popular subject, and neither nominated each other as liked most or liked least.

Subject D was a Caucasian male. He exhibited nine negative interactions during the pre-observation period. Four interactions occurred

with an Other peer whom Subject D nominated as a liked most peer. This Other peer did not nominate Subject D on the sociometrics. One interaction occurred with a Rejected peer whom Subject D nominated as a liked least peer. This Rejected peer did not nominate Subject D on the peer nomination techniques. Four interactions occurred with an Other peer whom Subject D did not nominate on the sociometrics. However, this Other subject nominated Subject D as a liked least peer. At post-observation, Subject D had no negative interactions.

Subject E was an African American male. He exhibited no negative interactions during the pre- and post-observation periods.

In summary, Rejected subjects in the experimental group exhibited 20 negative interactions at pre-observation and four at post-observation. Eight of the 20 negative interactions at pre-observation were with Rejected peers, 10 were with Other peers, one was with a Popular peer, and one was with a group of peers. The four negative interactions at post-observation had the following pattern: (a) the peer with whom the Rejected subject interacted negatively was either a Popular peer or nominated as liked most by the Rejected subject, and (b) the peer with whom the Rejected subject interacted negatively did not nominate the Rejected subject as liked most or liked least.

Rejected subjects in the experimental group exhibited negative interactions in the range of zero to nine (rate = .000 to .040) at pre-observation and in the range of zero to two (rate = .000 to .010) at post-observation. No

Rejected subject increased the rate of negative interactions as a result of the sociometric experience. Two Rejected subjects decreased the occurrence of negative interactions from eight to two (rate = .03 to .01) and from nine to none (rate = .07 to .00), respectively. Table 5 shows each Rejected experimental subject's frequency of negative interactions and whether: (a) the Rejected subject nominated the peer as liked most (LM), (b) liked least (LL), (c) non-nominated (N), or (d) the peer interaction occurred as a group (G).

Table 5

Descriptive Statistics of Rejected Experimental Subjects' Negative Peer Interactions

	Pre-observation period					Post-observation period				
Subject	f	LM	LL	N	G	f	LM	LL	N	G
A	2			1	1	1	1			
B	1	1				1	1			
C	8			8		2			2	
D	9	4	1	4		0				
E	0					0				

Summary

ANCOVA results showed that the experimental group's rate of positive, negative, and neutral interactions was not significantly different from the control group's rate during the post-observation period. Paired *t*-test results showed no significant differences in the rate of positive, negative, and neutral interactions exhibited by Unpopular experimental subjects from pre-observation to post-observation. For the 19 experimental subjects who exhibited negative interactions, a paired *t*-test showed a significant decrease in the rate of negative interactions from pre- to post-observation. For the 15 control subjects who exhibited negative interactions from pre- to post-observation, a paired *t*-test yielded nonsignificant results.

The descriptive report of experimental Rejected subjects revealed few occurrences of negative interactions at post-observation, an overall decrease from pre-observation. The pattern of these interactions indicated that Rejected peers interacted negatively with peers that they nominated as liked most or with Popular peers.

CHAPTER 5

DISCUSSION

Some researchers, school personnel, and parents have refused to allow minors to participate in sociometric assessment procedures. Concerned parties have suggested that sociometric testing: (a) implicitly provides children with adult sanctions to increase negative interactions, particularly with unpopular children, (b) increases children's feelings of unhappiness and loneliness, and (c) asks children to acknowledge whom they like most and like least and is contradictory to what most educators and parents teach children to do.

Researchers have investigated whether sociometric procedures place children at risk for treating their peers more negatively and none have found that children are at risk after participating in peer nomination techniques. These studies were criticized for methodological limitations such as low participation rates, small sample sizes, and lack of statistical power to discern actual differences between experimental and control groups.

The present study found that a positive and negative peer nomination sociometric procedure had no negative effects on fourth graders' social interactions with same-age peers provided certain administration procedures were used to minimize risk of harm. The experimental group showed no differences in the rates of positive, negative, and neutral interactions compared to the rates exhibited by the control group. The majority of peer

interactions were neutral. Positive peer interactions occurred at a low rate, and negative peer interactions occurred at an even lower rate. Very low rates of negative peer interactions were not a surprising finding because school personnel typically do not allow negative behaviors to occur.

A comparison of pre- and post-rates of experimental subjects who had negative peer interactions indicated a large decrease in their rate of negative interactions. This is considered a large decrease for the following reason. The average number of negative peer interactions at pre-observation was 1.6 per 100 peer interactions (see Table 4). Hypothetically, 500 peer interactions in a school day would include eight negative peer interactions. Negative peer interactions occurring at this rate typically are experienced by teachers as disruptive. A decrease to a rate of .6 negative peer interactions at post-observation represents three negative peer interactions per 500 or a decline of five negative peer interactions in a given school day. Because school staff have a low tolerance for negative peer interactions, even a drop from eight to three per 500 negative peer interactions would be noted favorably. In contrast, control subjects who had negative peer interactions exhibited no significant decrease in the rate of negative interactions from pre- to post-observation.

The decline in experimental subjects' negative interactions could be attributed to the passage of time or to teacher factors (e.g., teacher effectiveness, changes implemented in the classroom). However, eight days

of baseline data were considered sufficient to establish typical patterns of the quality of students' peer interactions. The treatment was not intended to effect long-term change in the rate of negative peer interactions; and, therefore, long-term effects were not investigated. However, the short-term decline in the rate of negative peer interactions was conjectured to be a benefit of participating in a sociometric experience, believed by some to be harmful to children.

The description of Rejected experimental subjects' negative peer interactions provided additional support for the findings of no risk of harm. For example, two of the five Rejected experimental subjects exhibited markedly fewer negative peer interactions after participating in a positive and negative peer nomination technique. None of the experimental Rejected peers increased the frequency of their negative peer interactions after participating in a positive and negative peer nomination technique. Two possible explanations are offered here.

First, non-Rejected subjects may have become sensitive to the feelings of Rejected peers, and therefore, modified their behavior in a more positive or neutral way. Second, at post-observation, Rejected subjects interacted negatively with peers that they nominated as liked most on the sociometrics or with Popular peers. Rejected subjects may have told their liked most peers about the positive nomination. If the Rejected subject believed or confirmed that he or she was not positively nominated by the respective peer

nominated as liked most, the outcome could have been a negative interaction. This scenario is merely speculation, but it is reasonable to conclude that it may have occurred.

Consistent results across the present and past studies occurred despite methodological differences: (a) age and grade of subject population, (b) length of observed time, (c) method of sociometric administration, and (d) sample size. The findings of this study in combination with prior findings (Bell-Dolan et al., 1989; Hayvren & Hymel, 1984; Landau & Boyle, 1990) support the generalizability of the findings that participation in peer nomination techniques poses minimal risk of harm to children.

Hayvren and Hymel (1984) found no difference in the rates of negative interactions. Bell-Dolan et al. (1989) found a decrease in negative peer interactions for both experimental and control groups following sociometric procedures. The most notable differences between the results of Bell-Dolan et al. (1989) and the present study are that the present study: (a) found no difference in the rates of positive, negative, and neutral interactions across groups, (b) found a significant decrease from pre- to post-observation in the rate of negative interactions for those experimental subjects who exhibited negative interactions, and (c) found that experimental Rejected subjects had fewer negative interactions at post-observation.

Strengths and Limitations of the Present Study

The present study attempted to improve upon past methodological limitations. First, subjects were selected on the basis of parental consent and child assent, and 98% of subjects in the two classrooms participated. The high participation rate was an improvement over the participation rate of 55% obtained in Bell-Dolan et al.'s (1989) study. Therefore, subjects' assignments to peer status groups were considered to be socially valid. Additional methodological improvements are presented as counterpoints in the limitations listed below.

The most serious limitation of this study is in its implicit assumption of accepting the null hypothesis and concluding that there were no differences in negative social behavior between the experimental and control groups when differences actually occurred (i.e., Type II error). However, this study attempted to increase statistical power and reduce the chances of making a Type II error by: (a) increasing the sample size from 11 (Bell-Dolan et al., 1989) to 27, (b) increasing the alpha level from .05 (Bell-Dolan et al., 1989) to .10, and (c) using ANCOVA to control sample population variance.

A second limitation was that observers may not have detected subtle changes in peer interactions following the administration of peer nomination techniques. Furthermore, negative interactions occurred infrequently and some instances of negative interactions may not have occurred during the prespecified time sampling points. The best method to

observe an infrequently occurring behavior is event recording, (i.e., continual observation that results in recording the behavior each time it occurs). However, event recording was not cost-effective; momentary time sampling with a short time interval (i.e., 10 seconds) was the best alternative method.

Third, in the quasi-experimental design, subjects were not randomly assigned to experimental and control groups. However, analysis of covariance was employed.

A fourth limitation involved the generalizability of the findings. Nomination techniques were embedded in an array of instruments (i.e., the CLQ and the CFQ). The effects of completing the CLQ and CFQ were not controlled and it is unknown what the effects of completing these instruments had on both experimental and control subjects' rates of peer interactions. Another aspect that affected generalizability was the type of school from which the sample was drawn. Fourth grade subjects from a cooperative learning school that used peer conflict resolution strategies participated and the findings may not apply to fourth grade students who are enrolled in more traditional elementary schools.

Future Directions

Sociometric risk researchers may find it fruitful to assess risk of harm to children participating in sociometric assessment by using other methods. These include: (a) interviewing subjects, their teachers, and their parents both pre- and post-treatment, (b) assessing negative emotions and reactions

via paper and pencil measures, and (c) examining the effects of different consent and sociometric administration procedures. All of these methods would allow researchers to more easily increase sample sizes, thereby increasing power to discern risk of harm.

Sociometric researchers have outlined specific administration procedures that are believed to minimize the risk of negative effects (Bell-Dolan et al., 1989; Coie et al., 1982). These procedures involve administering the sociometrics immediately before a structured classroom period, informing subjects of confidentiality, embedding the sociometrics in a battery of tests, and presenting sociometric questions in a neutral tone. The impact of sociometric measures may be further reduced by allowing students to discuss concerns with their teacher or with one of the researchers at a designated time. Based on the present findings of no harm from participating in group-administered sociometrics, it is further recommended that the more cost-effective method of group administration be considered by future researchers. All of these guidelines could be systematically assessed for their contributions to decreased risk of harm.

Lastly, for individuals who oppose the use of sociometrics based on moral grounds, alternatives to negative nominations are discussed in Asher and Dodge (1986). These alternatives also merit investigations of risk of harm.

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Appendix A

Loneliness Questionnaire.

Read each item below and decide how true the statement is about you.

Circle 1, 2, 3, 4, 5 to indicate your choice. Circle one number and only one.

1 = not true at all
2 = hardly ever true
3 = true sometimes
4 = true most of the time
5 = always true

1)	1	2	3	4	5	It's easy for me to make new friends at school.
2)	1	2	3	4	5	I like to read.
3)	1	2	3	4	5	I have nobody to talk to in class.
4)	1	2	3	4	5	I'm god at working with other children in my class.
5)	1	2	3	4	5	I watch TV a lot.
6)	1	2	3	4	5	It's hard for me to make friends at school.
7)	1	2	3	4	5	I like school.
8)	1	2	3	4	5	I have lots of friends in my class.
9)	1	2	3	4	5	I feel alone at school.
10)	1	2	3	4	5	I can find a friend in my class when I need one.
11)	1	2	3	4	5	I play sports a lot.
12)	1	2	3	4	5	It's hard to get kids in school to like me.
13)	1	2	3	4	5	I like science.
14)	1	2	3	4	5	I don't have anyone to play with at school.
15)	1	2	3	4	5	I like music.
16)	1	2	3	4	5	I get along with my classmates.
17)	1	2	3	4	5	I feel left out of things at school.
18)	1	2	3	4	5	There are no other kids I can go to when I need help in school.
19)	1	2	3	4	5	I like to paint and draw.
20)	1	2	3	4	5	I don't get along with other children in school.
21)	1	2	3	4	5	I'm lonely at school.
22)	1	2	3	4	5	I am well-liked by the kids in my class.
23)	1	2	3	4	5	I like playing board games a lot.
24)	1	2	3	4	5	I don't have any friends in class.

The Children's Loneliness Questionnaire

The revised CLQ (Asher & Wheeler, 1985) consists of 16 primary items with a consistent school focus on children's feelings of loneliness and eight other filler items focusing on children's hobbies or preferred activities. Children respond to each item on a 5-point scale in terms of how true each statement is about them. These items are scored such that a rating of 5 is always indicative of greater loneliness or social dissatisfaction. Responses for each of the 16 items are summed to create a total loneliness score for each child ranging from 16 (low loneliness) to 80 (high loneliness). Factor analysis (quartimax rotation) resulted in one primary factor that included all 16 of the loneliness and social dissatisfaction items. None of the hobby or interest items loaded significantly on this factor. The resulting 16-item scale has been found to be internally consistent (Cronbach's alpha = .90) A sample protocol is included in Appendix C. Scores from the CLQ were not analyzed for this study, rather the CLQ was given as part of the larger project on the effectiveness of cooperative learning.

Name_____

A friend is someone you like to spend time with or talk to. In the places below, you are to list your friends. For each friend you list, circle the number that shows how satisfied you are with the friendship.

1 = not satisfied at all
2 = hardly ever satisfied
3 = sometimes satisfied
4 = satisfied most of the time
5 = always satisfied

Friends in This Class

_____	1 2 3 4 5
_____	1 2 3 4 5
_____	1 2 3 4 5
_____	1 2 3 4 5
_____	1 2 3 4 5
_____	1 2 3 4 5
_____	1 2 3 4 5

Friends in a Different Class **Grade**

_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5

Family, Relatives, or Others **Title**
(not in this school)

_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5
_____	_____	1 2 3 4 5

Children's Friendship Questionnaire

The CFQ Form 1 was devised to elicit student perceptions of their network of social support outside of the classroom. The questionnaire consists of an item requesting the child to indicate the number of their friends given choices of 0, 1, 2, 3, 4, 5, 6, and 7 or more. Subjects then list friends by name up to a total of nine and boxes are checked to indicate whether the friend is in their classroom, in another classroom, or outside of school.

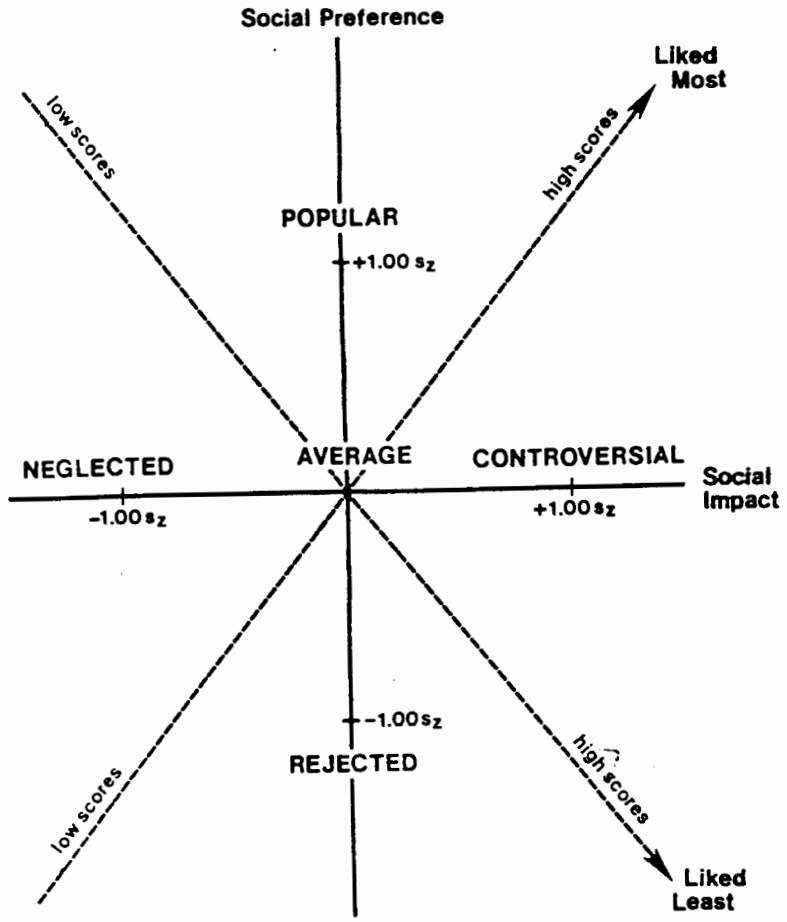
Quantity friendship scores were calculated by totalling the number of self-reported friends in each category and summing across categories for the Total Friendship scores. Quality friendship scores represented averages which were calculated by dividing the number of friends in each category by the sum of the quality ratings in each category.

A pilot study (Iverson, 1990) was conducted using the CFQ in which students could indicate none to three friends. Test-retest reliability for the number of friends was $\underline{r} = .81$ and for friend by setting was $\underline{r} = .78, .72$, and .65 (this classroom, another classroom, and outside of school, respectively) over a one-week interval as completed by 19 fifth- and 20 sixth-graders in an independent sample. A sample protocol is in Appendix C. Scores from the CFQ were not analyzed for this study, rather the CFQ was given as part of the larger project on the effectiveness of cooperative learning.

Eichler, Nyre, and Iverson (1993) conducted a study with 75 third-sixth graders on the reliability and usability of three forms of the Children's Friendship Questionnaire. Test retest reliability with a seven-week interval was assessed using three forms of the CFQ : Form A provided three spaces to list friends, Form B provided seven spaces, and Form C provided unlimited space. The CFQ was analyzed for the quantity and quality of friendships over the seven-week period for each setting considered (in class, in another class, and outside of school). Results showed that Form B showed the highest test-retest reliabilty coefficients compared to Forms A and C across all settings ($r = .49$ for quantity). In addition, the three forms were equivalent when identifying chumpships (i.e., children who reciprocated one another on both administrations). The authors recommend that future research should investigate the psychmetric properties of the CFQ using larger samples of same-age or same-grade children.

Appendix B

Figure 1. The relationships between positive and negative peer nominations, the dimensions of social preference and social impact, and five types of social status (Coie et al., 1982, p. 563).



s_z = standard deviation for standardized scores

The Average group consists of those children who receive a SP score that is greater than -.5 and less than .5. Children assigned to the Average group must have LM and LL z scores that are approximately equal and relatively small.

The Controversial group consists of those children who receive an SI score of greater than 1.0 and who receive LM and LL z scores that are each greater than 0. Thus, members of the Controversial group are all above their class mean for both positive and negative sociometric nominations.

The Neglected group consists of all of those children who receive an SI score of less than -1.0 and an absolute LM score of zero (Coie et al., 1982). Asher and Wheeler's (1985) system uses less stringent criteria than Coie et al. (1982) in selecting Neglected status subjects: an SI score less than -1.0, a LM z score less than 0, and a LL z score less than 0. The Asher and Wheeler (1985) scoring system was used for this study. The Neglected children, therefore, have no children identifying them as among the three people they like most or among the three people they like least.

The Popular group consists of all of those children who receive a SP score greater than 1.0, a LM z score greater than 0, and a LL z score less than 0. As would be expected, Popular children receive many liked most nominations and zero to few liked least nominations.

The Rejected group consists of all of those children who receive a SP score of less than -1.0, aLL z score of greater than 0, and a LM z score of less than 0. Rejected children differ from Neglected children in that the Rejected children receive many nominations as liked least.

Children not fitting any of the five categories according to these criteria are placed in a category labeled Other. These children are not significant outliers on the dimensions of LM, LL, SP, and SI.

Asher and Wheeler (1985) separated a smaller sample of Average children from the large category of Average children by using the following cutting scores: SP > -.5 and < .5. The subjects who did not meet those cutting scores comprise an additional category of peer status labeled Other. It is unknown if this discrimination procedure has been helpful to researchers. However, it is a prevalent procedure in recent literature and is used in this study. No comparable study has been conducted of the distribution using Asher and Wheeler's (1985) scoring system.

Example of calculating a child's social status

In order to calculate peer status, the following statistics must be completed, (a) raw score for positive and negative nominations, (b) separate means based on the raw scores for positive and negative nominations, and (c) separate standard deviations based on the raw scores for positive and negative nominations.

The following scores represent hypothetical data from a hypothetical subject in the present study: (a) Liked Most (LM) was 4, (b) mean for Liked Most scores for the distribution in the present study was 3, (c) standard deviation for Liked Most scores for the present distribution was 2, (d) Liked Least (LL) was 1, (e) mean for Liked Least scores for the distribution in the

present study was 2, (f) standard deviation for Liked Least scores for the present distribution was 1.

There are four main steps to calculating a subject's social status:

1) Transform the raw nomination scores of LM and LL to z scores according to the respective means and standard deviations. For example, the Liked Most z score would be calculated as follows:

LM z = (4 - 3)/2 = .5

the Liked Least z score would be calculated as follows:

LL z = (1-3)/1 = -2

2) Calculate the subject's Social Preference (SP) by taking the Liked Least z score and subtracting it from the Liked Most z score.

SP = LM z - LL z = .5 - (-2) = 2.5

3) Calculate the subject's Social Impact (SI) by adding the Liked Most z score with the Liked Least z score.

SI = LM z + LL z = .5 + (-2) = -1.5

4) Calculate the mean and standard deviation for SP. For this example, the mean for SP was 3 and the standard deviation for SP was 1.

5) Calculate the mean and standard deviation for SI. For this example, the mean for SI was 2 and the standard deviation for SI was 1.

6) Transform the subject's Social Preference and Social Impact scores into z scores using to their respective means and standard deviations.

SP z = (SP - X)/ SD = (2.5-3)/1 = -.5

SI z = (SI - X))/ SD = (1.5-2)/1 = -.5

The subject's Social Preference and Social Impact z scores are used to determine social status. For further reading on the criteria for classification into peer status groups, see Coie et al. (1982).

Appendix C

Social status Data

Control Group

Subject	Group	LM	LL	LM z	LL z	SP	SI	SP z	SI z	Social Status
1	c	4	2	0.57	-0.36	0.93	0.21	0.59	0.18	Other
2	c	2	11	-0.57	2.9	-3.47	2.33	-2.27	1.84	Rejected
3	c	3	5	0	0.72	-0.72	0.72	-0.49	0.59	Other
4	c	4	1	0.57	-0.72	1.29	-0.16	0.82	-0.1	Other
5	c	3	3	0	0	0	0	-0.02	0.02	Average
6	c	2	4	-0.57	0.36	-0.93	-0.21	-0.62	-0.14	Other
7	c	2	0	-0.57	-1.09	0.52	-1.66	0.32	-1.27	Neglected
8	c	5	6	1.14	1.09	0.05	2.22	0.02	1.76	Controversial
9	c	2	5	-0.57	0.72	-1.29	0.16	-0.86	0.14	Other
10	c	2	5	-0.57	0.72	-1.29	0.16	-0.86	0.14	Other
11	c	5	2	1.14	-0.36	1.5	0.77	0.96	0.63	Other
12	c	0	2	-1.7	-0.36	-1.34	-2.07	-0.89	-1.59	Neglected
13	c	5	3	1.14	0	1.14	1.14	0.72	0.91	Other
14	c	3	9	0	2.17	-2.17	2.17	-1.43	1.72	Other
15	c	0	3	-1.7	0	-1.7	-1.7	-1.12	-1.31	Other
16	c	3	2	0	-0.36	0.36	-0.36	0.22	-0.26	Average
17	c	7	0	2.27	-1.09	3.36	1.19	2.16	0.95	Popular
18	c	0	1	-1.7	-0.72	-0.98	-2.43	-0.65	-1.88	Neglected
19	c	5	2	1.14	-0.36	1.5	0.77	0.96	0.63	Other
20	c	2	1	-0.57	-0.72	0.16	-1.29	0.08	-0.99	Other
21	c	1	6	-1.14	1.09	-2.22	-0.05	-1.46	-0.02	Rejected
22	c	5	0	1.14	-1.09	2.22	0.05	1.43	0.06	Popular
23	c	3	2	0	-0.36	0.36	-0.36	0.22	-0.26	Average
24	c	3	0	0	-1.09	1.09	-1.09	0.69	-0.83	Other
25	c	1	1	-1.14	-0.72	-0.41	-1.86	-0.28	-1.43	Neglected
26	c	4	5	0.57	0.72	-0.16	1.29	-0.12	1.03	Controversial

Experimental Group

Subject	Group	LM	LL	LM z	LL z	SP	SI	SP z	SI z	Social Status
1	c	4	2	0.57	-0.36	0.93	0.21	0.59	0.18	Other
2	c	2	11	-0.57	2.9	-3.47	2.33	-2.27	1.84	Rejected
3	c	3	5	0	0.72	-0.72	0.72	-0.49	0.59	Other
4	c	4	1	0.57	-0.72	1.29	-0.16	0.82	-0.1	Other
5	c	3	3	0	0	0	0	-0.02	0.02	Average
6	c	2	4	-0.57	0.36	-0.93	-0.21	-0.62	-0.14	Other
7	c	2	0	-0.57	-1.09	0.52	-1.66	0.32	-1.27	Neglected
8	c	5	6	1.14	1.09	0.05	2.22	0.02	1.76	Controversial
9	c	2	5	-0.57	0.72	-1.29	0.16	-0.86	0.14	Other
10	c	2	5	-0.57	0.72	-1.29	0.16	-0.86	0.14	Other
11	c	5	2	1.14	-0.36	1.5	0.77	0.96	0.63	Other
12	c	0	2	-1.7	-0.36	-1.34	-2.07	-0.89	-1.59	Neglected
13	c	5	3	1.14	0	1.14	1.14	0.72	0.91	Other
14	c	3	9	0	2.17	-2.17	2.17	-1.43	1.72	Other
15	c	0	3	-1.7	0	-1.7	-1.7	-1.12	-1.31	Other
16	c	3	2	0	-0.36	0.36	-0.36	0.22	-0.26	Average
17	c	7	0	2.27	-1.09	3.36	1.19	2.16	0.95	Popular
18	c	0	1	-1.7	-0.72	-0.98	-2.43	-0.65	-1.88	Neglected
19	c	5	2	1.14	-0.36	1.5	0.77	0.96	0.63	Other
20	c	2	1	-0.57	-0.72	0.16	-1.29	0.08	-0.99	Other
21	c	1	6	-1.14	1.09	-2.22	-0.05	-1.46	-0.02	Rejected
22	c	5	0	1.14	-1.09	2.22	0.05	1.43	0.06	Popular
23	c	3	2	0	-0.36	0.36	-0.36	0.22	-0.26	Average
24	c	3	0	0	-1.09	1.09	-1.09	0.69	-0.83	Other
25	c	1	1	-1.14	-0.72	-0.41	-1.86	-0.28	-1.43	Neglected
26	c	4	5	0.57	0.72	-0.16	1.29	-0.12	1.03	Controversial

Appendix D

Positive Peer Nomination Technique.

Circle three classmates that you prefer the most:

Johnson, Suzy

Walsh, John

Brown, Mark

White, Mary

Hoyne, Margaret

Yang, Kelsy

Smith, Brook

Hanson, Ryan

Schulz, Cindy

Leisen, Dalton

Nyre, John

Eichen, Joan

Adams, Lori

Briggs, Joshua

Camelot, Victoria

King, Arthur

Olson, Julia

Lancelot, Richard

Negative Peer Nomination Technique.

Circle three classmates that you prefer the least:

Johnson, Suzy
Walsh, John
Brown, Mark
White, Mary
Hoyne, Margaret
Yang, Kelsy
Smith, Brook
Hanson, Ryan
Schulz, Cindy
Leisen, Dalton
Nyre, John
Eichen, Joan
Adams, Lori
Briggs, Joshua
Camelot, Victoria
King, Arthur
Olson, Julia
Lancelot, Richard

Appendix E

PARKADE ELEMENTARY SCHOOL
PERMISSION SLIP - please return immediately

The Parkade Elementary teachers in grades 3, 4, 5, and 6 are starting a new cooperative learning project with the help of Dr. Annette Iverson, University of Missouri. The purpose is to see if teachers can make changes in the classroom to help all students. The more children that participate, the more meaningful the findings will be. Your child's involvement is encouraged and your permission is greatly appreciated.

Children will work in a group and report on their social skills, how happy they are in the classroom, ability to cooperate with other students, friendships, and the likeability of peers. Each children will do his/her own work. Worksheets will be identified with code numbers, not names. Each teacher will receive general feedback on what changes to make but will not see the responses of individual children. Dr. Iverson will briefly interview some children about 1) how they felt about participating in the cooperative learning project or 2) why they think children do nice things for each other. Grades, test scores, and speech and language records will be obtained from your child's file but will remain confidential.

Your child's participation is requested, but is voluntary, and will not affect the benefits to which she/he is entitled in school. Do not hesitate to call Dr. Iverson listed below to ask any questions about the project. **Be assured that your name or your child's name will not be associated with the project findings in any way.**

X_____ X_____

Signature of student Signature of guardian

Check one of the following: _____ will participate
_____ will not participate

Annette M. Iverson, Principal Investigator
University of Missouri
314-882-5088 (office)
314-445-3195 (home)

Appendix F

Observation Code for Peer Interaction Behaviors.

A. Peer Interactions - Include an initiation or response by the target child to another child or group of children which involves physical contact and/or verbal or nonverbal communication and may be recognized by the target child looking at and/ or using the name of the peer(s) or, in the case or response, may also involve ignoring the initiation of a peer.

B. Positive Peer Interactions

1. help giving/guidance showing or telling another child how to do something that he or she was trying to do or express a desire to do. Cues to differentiate this from bossiness include a pleasant tone of voice, pleasant facial expression, positive response from peer (smile, "thanks").

2. praise - giving compliments about a peer's appearance or performance/behavior.

3. affection can be physical or verbal, such as calling a peer by a nickname, patting, holding hands, hugging, or kissing. Cues to differentiate peers from teasing include a pleasant tone of voice, pleasant facial expression, positive response from a peer (smile, return of affection).

4. reassurance - comforting a peer when he or she was afraid, has made a mistake, has been picked on or teased by another child, etc. Reassurance can involve telling the peer that things are okay, patting or putting an arm around the peer.

5. protection - telling others not to pick on or tease a peer, removing a peer from a situation in which he or she was fighting, etc. Protection is only coded positive if it was not accompanied by a negative interaction such as threats, insults, or physical attacks.

6. gift-giving - offering something to a peer without getting anything in return. Gift-giving does not involve mutual use of an object or materials as does sharing.

7. compliance - doing something a peer asks the other child to do, or not doing something the peer asks the other child not to do. Compliance is only coded positively, if it does not involve a request for a negative interaction (e.g., hitting another child, etc.).

8. acceptance of direction and gifts - following advice or guidance of a peer (may or may not be accompanied by an expression of thanks, smile) accepting a material gift, show of affection, smiling, saying "thank you", reciprocating.

9. warm greetings - waving to a peer, saying "hello" with a smile, pleasant tone of voice, etc., hugging, shaking hands, etc.

10. smiling and laughing upward turn of the mouth (smile) with or without audible laughter. Coded as positive only if smiling and laughing is not accompanied by negative interaction behaviors (e.g., teasing, insults, etc.).

11. invitation to participate asking peers to join in some activity, such as team sports, group projects, or any activity where at least two people are involved.

12. permission-giving - allowing a peer to join in soe activity, use materials, share space, etc. Permissiongiving can involve verbal permission giving or gestures (waving a peer to come over, patting his or her seat, holding out materials to indicate a desire to play a game with a peer, etc.).

13. giving status nominating a peer as a leader of some activity, complimenting a peer on intelligence, looks, friendship ("you are the best/smartest/prettiest kid in the whole school", "you are the best friend anyone could have"), etc.

14. sharing offering to let a peer use materials, offering part of a seat, taking turns. Sharing involves mutual use of materials.

15. promises of a reward promising some object or behavior to a peer contingent upon a specific peer behavior (e.g., "I will give you a cookie if you give me some potato chips", "if you let me swing for a while, I will push you on the swing later"). Do not code interaction as positive

if contingent behavior is a negative interaction (directed toward anyone), such as "I will give you my eraser if you call Johnny a name.").

16. cooperative play actively engaging in a team sport (throwing or catching a ball, running, etc.) or game (jumping rope with peers, see-sawing), playing with the same equipment or toy, working on the same project where the participation of one child in the game or task depends on the participation of the other (e.g., one child puts one piece in a puzzle and another peer puts another in, one child throws a ball and another peer catches it). Do not code if the interaction is parallel play (see Neutral Interactions) or if the child is not actively involved (e.g., standing in the outfield).

Negative Peer Interactions

1. noncompliance refusing to do what another child asks or refusing to go along with the rules of a game (amy be standard rules or set by participants). The interaction is not coded negatively if noncompliance is with a request for negative interaction (hitting another child, etc.).

2. disapproval indicating to another child by words, facial expression, negative tone of voice etc., that a target child thinks the peer's behavior is bad, wrong, stupid, etc.

3. rejection actively rebuffing another child by using words, pushing away. Rejection does not include merely ignoring another peer.

4. blaming telling another child that something was his or her fault.

5. teasing making fun of another child, tempting him or her with a toy, but not sharing, etc. Cues include laughing and pointing, making faces, tone of voice, and negative response of the peer.

6. insults telling another child that he or she is ugly, dumb etc., making faces, searing, using obscene gestures, etc.

7. quarreling disagreeing with another child(ren) and using a loud and/or negative tone of voice. Quarrelling may involve physical aggression, insults.

8. ignoring positive/neutral interaction ignoring, or not responding to, a nonnegative interaction (initiation) from another child. Do not code interaction if it is obvious that the target child was not aware of the peer's interaction behavior (e.g., peer made a face at the target child's back).

9. taking or damaging property taking an item that another child was using or had in his or her possession, breaking or tearing another child's toy, project, assignment, etc.

10. physical aggression hitting, kicking, shoving, biting, pinching another child with enough force to hurt the child (assessed according to the response of another child crying, running away, etc.). Do not code the interaction if a behavior was accidental (e.g., someone pushes

the target child, who falls into another child) or if part of a game and does not appear to be hurt.

11. threats verbal threats of physical harm, telling the teacher, not liking anymore, etc., threatening gestures such as raising fist, getting ready to tear up child's paper, etc.

12. bossiness telling another child what to do when the child has not asked for help or is not trying to do it. Bossiness involves using a negative tone of voice and possibly a negative response from a peer.

Neutral Peer Interactions

All interaction behaviors not coded as positive or negative. Includes:

1. parallel play - engaging in the same or a similar activity as another peer but both acting independently (e.g., working on two different puzzles, both throwing basketballs at a hoop).

2. conversation - about anything not involving a peer interaction or not involving nonverbal cues to indicate positive or negative interaction (laughing, crying, hitting, excited, tone of voice, etc.).

Noninteraction behaviors - interactions with a teacher or other nonpeer, behavior directed toward inanimate objects, self, or no one in particular (e.g., empty space).

Positive behaviors - laughing, smiling, singing, pleasant facial expressions, cleaning up room or toys without being asked, etc., not directed toward peers or part of a peer interaction.

Negative behaviors crying, negative statements to self, kinking objects, or destroying objects that do not belong to the target peer or while another peer is not present, etc. Behavior is not directed toward peers and is not part of a peer interaction.

Neutral behaviors conversation with a nonpeer that does not involve non-verbal or context cues to indicate positive or negative affect, watching others, staring into space, working on school tasks without nonverbal affect cues, etc. Behavior is not directed toward peer or is part of a peer interaction.

Instructions for recording behaviors.

1. Record your name, date, and period (i.e., recess, lunch).
2. Record target child's name.
3. Every six seconds, on the beep, record:
    a. affective quality of the behavior (+ = positive, - = negative, 0 = neutral).
    b. check if the behavior was a peer interaction
    c. peer's initials if one peer was involved in the interaction, or "gp" if more than one peer was involved in the interaction.
    d. if the target child was interacting with more than one child at once, record information on the second child on the same line after the double line.

Six Decision Rules

1. If you can hear what the children are saying, use these verbal cues to record the affective quality of the peer interaction.

2. If you cannot hear what the children are saying, use nonverbal cues, such as:

   a. facial expression (i.e., smile)

   b. tone of voice

   c. laughter or crying

3. During instances where the affective quality is ambiguous (e.g., the situation could be interpreted as bossiness or help-giving), use the response of the peer as a cue.

4. If the affective quality of the peer interaction still cannot be determined using the response of the peer, code the interaction as neutral.

5. If the target child in interacting positively with one child and negatively with another child at the same time, record both interaction on separate lines.

6. If the target child is interacting both positively and negatively with one peer at the same time, code the interaction as negative (e.g., compliance accompanied with insults).

Appendix G

Observer Recording Form

OBSERVER RECORDING FORM

observer_____ period_____ date_____

AQ	PI	Peer(s)	AQ	PI	Peer(s)

AQ	PI	Peer(s)	AQ	PI	Peer(s)