

PATTERNS OF DIFFERENTIAL FEEDBACK

AT THE KINDERGARTEN LEVEL

by

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ABSTRACT

This study was designed to investigate whether there are any quantitative and/or qualitative differences in the verbal feedback delivered to male and female kindergarten students by their teachers. More specifically, the study was designed to determine whether any evidence of the patterns of differential feedback reported by Dweck, Davidson, Nelson and Enna (1978) in their analysis of teacher feedback directed to fourth and fifth grade students would appear at the kindergarten level.

The subjects were one hundred kindergarten children in five classes in School District 65, and their five teachers. The subjects were observed over a six week period for a total of 75 hours. All instances of evaluative teacher feedback (verbal only) directed to individual students were classified, coded and recorded on a tally sheet.

Feedback was categorized according to the sex of the student who received it, whether it was positive or negative, whether it was conduct or work related, and if work-related, whether it referred to the 'form' or 'substance' of the work. The context in which the feedback occurred was also recorded. Data were tallied and totalled for each observational session, totalled and averaged for each school, and totalled and averaged for all

25 observational sessions. Differences found between the distribution of the various categories of feedback to either boys or girls, and between the differences in the allocation of the same types of feedback to both boys and girls, were tested by chi-square analysis.

The data reveal that boys received a greater proportion of the teacher feedback than did girls. The boys received more negative than positive feedback while the opposite was true for girls. Both boys and girls received more work-related than conduct-related feedback, but the girls received a significantly higher proportion of work-related feedback than did the boys. Both boys and girls received significantly more positive feedback for work-related matters rather than for conduct, and significantly more negative feedback for conduct-related matters than for work-related ones. Both boys and girls received significantly more positive feedback for 'substance'-related matters rather than for those related to 'form'. Approximately equivalent proportions of negative 'substance' related and negative 'form'-related feedback were received by both the boys and the girls. Boys and girls were not responded to differently by their teachers with regard to these two feedback categories. The findings from this study, therefore, are not consistent with those reported by Dweck et al. (1978).

Context was found to be significantly related to the amount and kind of feedback received by the students.

The educational implications of the findings were briefly discussed and suggestions were made for further research.

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To my mother and father.

CHAPTER 1

Statement of the Problem

The purpose of this study is to determine whether there are any quantitative and/or qualitative differences in the verbal feedback delivered by kindergarten teachers to male students as compared to that delivered to female students during regular classroom sessions. Also, the possible relationship between the type of activity the class or student is engaged in and the amount and kind of feedback delivered is investigated.

Background of the Study

Despite growing teacher awareness of the more blatant forms of sex-role stereotyping, a great deal is still to be learned about subtle interactional patterns within the classroom which might serve to reinforce these very stereotypes. From this perspective, teacher feedback is one area that is receiving increasing attention (Bank, Biddle & Good, 1980; Bossert, 1981; Brophy, 1981; Brophy & Good, 1970; 1973; 1974; Cooper & Baron, 1977; Galejs & Hegland, 1982; Good, Cooper & Blakey, 1980; Good, Sikes & Brophy, 1973; Leinhardt, Seewald & Engel, 1979; Sears & Feldman, 1966; Stockard, 1980).

Many studies have reported that boys and girls behave

differently and are treated differently in schools. The research on sex differences, and their implications for education, is extensive (Bentzen, 1966; Bossert, 1981; Maccoby & Jacklin, 1974; Minuchin, 1966; Prawat & Jarvis, 1980; Stockard, 1980). Although no significant differences in the measured general intelligence of boys and girls have been found (Leinhardt, Seewald & Engel, 1979), achievement and performance differences have been reported in a variety of subject areas (Armstrong, 1981; Bank, Biddle & Good, 1980; Stockard, 1980). In North America, differences have been noted in reading achievement and verbal skills, with girls being shown to consistently outperform boys in these areas throughout grade school (Bank, Biddle & Good, 1980; Downing, 1973; Laffey & Morgan, 1980). Boys are more frequently referred for remedial reading and they are more frequently diagnosed as having learning disabilities (Bentzen, 1966; Laffey & Morgan, 1980; Stockard, 1980).

In mathematics, while "there are no sex-related differences evident in elementary school years" (Fennema, 1977, p. 85), achievement differences frequently appear at about the seventh grade level, and these differences have consistently been found to be "in the males' favor, particularly on tasks involving higher level cognitive skills" (p. 85).

Even though there are no significant sex differences in intelligence, girls generally receive better grades than boys (Brophy & Good, 1974; Stockard, 1980). There is some

evidence that teachers give boys lower grades than their actual achievement warrants (Brophy & Good, 1974; Prawat & Jarvis, 1980), and that "girls are given higher grades than boys despite the fact that boys achieve at least as well as girls and, in some cases, better" (Sears & Feldman, 1966, p. 33).

Research has reported that boys tend to have more behavior and social problems in school than girls, and more difficulties in classroom adjustment (Bentzen, 1966; Silvern, 1978; Stockard, 1980). Marked differences in attitude towards school have been recorded with girls, almost without exception, reporting a greater liking for school than do boys (Gregerson & Travers, 1968; Minuchin, 1966; Whaley-Klahn, Loney, Weissenburger & Prinz, 1976). Boys have been found to be more resistant to the authority of the teacher (Gregerson & Travers, 1968; Minuchin, 1966), and to break classroom rules far more frequently than girls (Brophy & Good, 1974).

Many sex differences in academic achievement, classroom behavior, and attitude towards school have been documented. While many of these differences have been widely recognized, they have not yet been fully explained, nor are they fully understood. The question which emerges, and which remains largely unanswered, is whether different behavior is the cause or the consequence of differential treatment by parents, teachers, and other adults.

Recent research in the area of teacher feedback has attempted to discover whether there are quantitative and/or qualitative differences in the feedback directed towards girls when compared with that directed towards boys. Quantitative differences are the more readily measured. In their survey of student-teacher interaction Brophy and Good (1974) reported that:

data from many different studies and many different educational levels agree in showing...the primary difference is quantitative; boys tend to have more interactions of all kinds with their teachers than girls. (p. 229)



Findings as to qualitative differences in teacher feedback are frequently contradictory, however (Dunkin & Biddle, 1974). A considerable number of studies have found that boys receive more teacher disapproval and criticism than girls (Brophy & Good, 1970; 1973; 1974; Good, Sikes & Brophy, 1973; Jackson & Lahaderne, 1967; Leinhardt, Seewald & Engel, 1979; Lippitt & Gold, 1959; Meyer & Thompson, 1956; Sears & Feldman, 1966; Whaley-Klahn et al., 1976). Some studies reported that boys also receive more praise than girls (Brophy & Good, 1974; Good, Sikes & Brophy, 1973; Meyer & Thompson, 1956), although other studies have found that girls receive more praise than boys (Fagot & Patterson, 1969; Galejs & Hegland, 1982; Lippitt & Gold, 1959; Sikes, 1971). Some studies reported that boys have more academic contacts with their teachers than do girls (Galejs & Hegland, 1982; Good, Brophy & Sikes, 1973; Spaulding, 1963). A study

by Biber, Miller & Dyer (1972), however, reported that girls received more instructional contacts than boys.

Leinhardt, Seewald and Engel (1979) found that the subject taught was an important mediating factor in the allocation of feedback. They observed that girls received more academic contacts and teacher time during reading instruction, but that boys received more teacher time and attention during mathematics.

It has been reported that whereas boys receive the greater proportion of disciplinary feedback, girls get more criticism for lack of knowledge or skill (Spaulding, 1963). In a study of teacher expectancy effects, of all students observed, "low-expectation females were found to receive the most criticism per incorrect answer" (Cooper & Baron, 1977, p. 416). Other differences have been discovered. For example, it has been noted that boys are scolded more often than girls for minor classroom infractions (Etaugh & Harlow, 1975), that boys are scolded more often than their behavior warrants (Bossert, 1981), that teachers are more likely to use a harsh or angry tone when criticizing boys (Serbin, O'Leary, Kent & Tonick, 1973; Spaulding, 1963), and that 'feminine' behaviors are more heavily reinforced by teachers than 'masculine' behaviors (Fagot & Patterson, 1969; Silvern, 1978). In summary, it seems that boys and girls tend to be the recipients of quite different amounts and types of teacher feedback,

and that "the sex of the student and his behavioral characteristics [are] important predictors of teacher-student interaction patterns" (Brophy & Good, 1974, p. viii).

One of the most relevant and interesting studies of the qualitative differences in teacher feedback delivered to boys and girls is that of Dweck, Davidson, Nelson and Enna (1978). Their work was spurred by the apparent paradox that, although girls receive higher grades and less negative feedback in school, they consistently exhibit less confidence in their abilities than boys (Nicholls, 1975; Sears & Feldman, 1966), express lower expectations for success than boys (Crandall, 1969), and display less persistence when confronted with failure than do boys (Dweck & Respucci, 1973). Dweck et al. (1978) designed an observational study which:

was concerned with the particular contingencies of evaluative feedback in the classroom that might promote the tendency toward helplessness in girls, despite the favorability of the feedback they receive, and the tendency toward the more confidence-maintaining patterns in boys, despite the generally more negative feedback they receive. (p. 269)

They observed classes at the grade four and five level and reported subtle, but striking, differences. In general, girls were praised for matters of form and criticized for matters of intellectual substance; boys were praised for the intellectual quality of their work and criticized for

matters of form.

The possible long-term consequences and implications of these differential feedback patterns are convincingly argued in terms of attribution theory. Dweck and her colleagues concluded that, as a result of the feedback received, boys would tend to attribute their failures to lack of effort or to view them as a consequence of non-compliance with the required format. Girls, as a result of the feedback they receive, would have little choice but to attribute their failures to lack of ability. The implications are apparent: ability is something over which one has very little control, whereas effort and presentation can be adjusted readily.

Recent research confirms the importance of the attributions that one makes for success or failure (Canino, 1981; Dweck, Goetz & Strauss, 1980; Grimes, 1981; Wolleat, Pedro, Becker & Fennema, 1980). Studies at a variety of different educational levels have "demonstrated that one's attributions or beliefs about the causes of success and failure are important mediators of performance in achievement settings" (Frieze & Snyder, 1980, p. 186), and that "so-called helpless or ineffective learners [are those who attribute] failure to inadequate ability rather than to poor effort" (Canino, 1981, p. 475). There is evidence that this pattern of attribution is more characteristic of girls than boys (Nicholls, 1975), and there is reason to

believe "that attributional patterns that develop in the early school years may be powerful determinants of long-term achievement" (Dweck, Goetz & Strauss, 1980, p. 452).

The results reported by Dweck et al. (1978) were not supported in a study by Blumenfeld, Hamilton and Bossert (1979), nor in a study by Cooper, Burger and Good (1979). A pilot study involving 96 children in 5 kindergarten classes, observed over a 5 week period, also failed to confirm their findings.

Significance of the Study

The whole area of differential teacher feedback merits thorough investigation and study because the possible effects and consequences of differential feedback upon the recipients of that feedback are not yet well understood. Further research is needed because the results of the studies undertaken to date are frequently contradictory. The implications of the findings of Dweck et al. (1978) are serious enough to warrant thorough investigation at different grade levels and in different educational situations.

For most children, kindergarten represents their first encounter with the formal public educational system. At this level (teacher feedback is the child's main source of information about his or her school performance.) Consequently, the teacher's evaluations may possibly play a

more critical role in the shaping of the child's view of "himself as an achiever whose behavior will please the teacher, or a non-achiever, whose behavior will not" (Finn, 1972, p. 396) than at any future point in his or her school career. It is therefore essential that the nature, the impact, and the effects of teacher feedback be better understood. After surveying the research on learned helplessness Grimes (1981) stated that "educators should take a closer look at the effects of teacher feedback on children's attributional processes" (p. 98). A necessary first step is understanding if, and how, teachers respond differently to different children.

The purpose of this study is to determine whether any of the differential feedback patterns noted by Dweck and her colleagues (1978) can be found at the kindergarten level. Specifically, the question asked is whether teachers respond differently to boys than they do to girls. A criticism levelled at much educational research is that too often it is conducted in "situations quite different from the ordinary elementary or secondary classroom" (Brophy & Good, 1974, p. vii). Consequently, this study involves the observation of teacher-student interactions and the recording of teacher feedback delivered to individual students during the course of their regular classroom activities. ①

Bossert (1981) has suggested that many of the anomalies

in current feedback studies could be resolved "by sampling behavior during different curriculum subjects and by separating global ratings into appropriate activity and lesson units" (p. 262). Therefore, in this study, information about the type of activity the child or class is engaged in when feedback is delivered is recorded along with the classification of the feedback itself. Thus, another goal of this study is to investigate whether any relationship exists between the type of activity engaged in and the amount, or kind, of feedback received.

Hypotheses

The hypotheses of this study are presented in three sections. Hypotheses 1 through 7 refer to the total feedback received; hypotheses 8 through 13 refer to positive feedback; hypotheses 14 through 18 refer to negative feedback (cf. definitions in Chapter 3). All but the first are written in the null form; all but the first will be tested at the .05 level of significance.

Total Feedback

In terms of the total feedback delivered, it is hypothesized that:

1. Boys will receive a higher proportion of the teacher feedback than will girls.
2. There will be no significant difference between the amount of positive and the amount of negative teacher feedback directed to the boys.

3. There will be no significant difference between the amount of positive and the amount of negative teacher feedback directed to the girls.
4. There will be no significant difference between the distribution of positive and negative feedback directed to the boys compared with that directed to the girls.
5. There will be no significant difference between the amount of conduct-related and the amount of work-related feedback directed to the boys.
6. There will be no significant difference between the amount of conduct-related and the amount of work-related feedback directed to the girls.
7. There will be no significant difference between the distribution of conduct-related and work-related feedback directed to the boys compared with that directed to the girls.

Positive Feedback

In terms of the positive feedback delivered, it is hypothesized that:

8. There will be no significant difference between the amount of positive work-related feedback and positive conduct-related feedback directed to the boys.
9. There will be no significant difference between the amount of positive work-related feedback and positive conduct-related feedback directed to the girls.
10. There will be no significant difference between the distribution of positive work-related and positive conduct-

related feedback directed to the boys compared with that directed to the girls.

11. There will be no significant difference between the amount of positive work-related 'substance' feedback and positive work-related 'form' feedback directed to the boys.
12. There will be no significant difference between the amount of positive work-related 'substance' feedback and positive work-related 'form' feedback directed to the girls.
13. There will be no significant difference between the distribution of positive work-related 'substance' and positive work-related 'form' feedback directed to the boys compared with that directed to the girls.

Negative Feedback

In terms of the negative feedback delivered, it is hypothesized that:

14. There will be no significant difference between the amount of negative conduct-related and negative work-related feedback directed to the boys.
15. There will be no significant difference between the amount of negative conduct-related and negative work-related feedback directed to the girls.
16. There will be no significant difference between the distribution of negative conduct-related and negative work-related feedback directed to the boys compared with that directed to the girls.

17. There will be no significant difference between the amount of negative work-related 'form' feedback and negative work-related 'substance' feedback directed to the boys.
18. There will be no significant difference between the amount of negative work-related 'form' feedback and negative work-related 'substance' feedback directed to the girls.
19. There will be no significant difference between the distribution of negative work-related 'form' and negative work-related 'substance' feedback directed to the boys compared with that directed to the girls.

Limitations of the Study

One limitation of this study is that the classrooms observed were not randomly selected. For practical considerations, and because it was judged important that the classes be as equivalent as possible in terms of school population served, teacher experience, and program philosophy, the classes that participated in this study were selected by the Primary Consultant of School District 65. The teachers consented to be part of this study; they were not randomly selected.

Another limitation is that data was collected by one observer using a coding instrument which, although it achieved an inter-coder agreement of 95%, represents

nevertheless a subjective measurement tool.

The 100 students involved in this study represent a Caucasian, middle-class population, from a semi-rural area. The results may not generalize therefore to classrooms serving children from different SES levels, different racial or ethnic backgrounds, or from urban or isolated areas. As all five teachers were female, results may not generalize to classes taught by male teachers or teachers with different experience and backgrounds. Likewise, results may not generalize to classes at different grade levels.

Although it is recognized that teachers have been found to hold differential expectations for students based on knowledge of their ability (Cooper & Baron, 1977), socio-economic background (Rist, 1970), and peer status (Lippitt & Gold, 1959), and that these differential expectations have been found to influence the type of feedback directed at their students, in this study the teacher expectancy variable was not controlled.

Organization of the Study

This report is organized into five chapters. Chapter 1 includes the statement of the problem, a brief discussion of the theoretical background of the study, the hypotheses and the limitations. In Chapter 2 the literature on teacher-student interactions and teacher feedback is reviewed. In Chapter 3 the population, sample, coding

instrument and observation method and schedule are described. The data and the results of the statistical analyses are reported in Chapter 4. Results are interpreted in terms of the stated hypotheses. In the last chapter the results are summarized and discussed as are the educational implications of the findings. Suggestions are made for future research.

CHAPTER 2

REVIEW OF THE LITERATURE

The first section of this review will focus upon the findings from observational studies of teacher-student interactions. Sex differences in the distribution of criticism, praise, and instructional contacts will be reported. Sex differences in student attitude and behavior will also be discussed. In the second section, the results of a number of experimental studies of manipulated feedback will be presented. The implications and possible long-term effects of differential feedback will be discussed in terms of attribution theory.

Observational Studies

One of the first observational studies to investigate the relative amounts of positive and negative verbal evaluations distributed by teachers to their male and female students was conducted by Meyer and Thompson in 1956. Using a time-sampling procedure they observed 30 hours of teacher-pupil interactions in three sixth-grade classrooms and recorded 'praise' and 'blame' contacts. A "modification of the 'Guess Who?' technique" (Meyer & Thompson, 1956, p. 385) was employed to determine if the children themselves were aware of any sex differences in their teachers' approval and disapproval evaluations.

In all three schools observed "the boys received reliably more disapproval from their teachers than the girls" (p. 394), and analysis of the results of the 'Guess Who?' nominations revealed that both the boys and the girls were aware that boys were the recipients of a higher incidence of teacher disapproval. The boys received more praise than the girls. However, responses to the 'Guess Who?' measure revealed that this difference was not perceived by the girls for they reported that they received more praise. In the discussion of their findings, Meyer and Thompson stated that "these data lend indirect support to the notion that ✓ 'masculine' behavior is not tolerated by the typical teacher who in turn attempts to inhibit such behavior by means of punishment" (p. 391). They expressed concern about the possible effects of "the daily punishment received by the boy for behavior he really does not consider 'bad'" (p. 392), and concluded that, in view of the levels of criticism received, "the fact that boys dislike school more than girls is understandable" (p. 392).

In 1959 Lippitt and Gold examined teacher-student interactions in relation to the social power structure of the groups observed. Thirty-nine elementary classrooms participated in the study. All children "rated all their classmates on a four point scale, indicating the degree to which the ratee was perceived as able to get the others to do what he wanted them to do" (p. 41). The resulting stratification was taken to represent the social power

structure of the classroom. High and low status boys and girls were selected for a total of 318 hours of observation by two different observers. Clear sex differences were noted. Low status boys were found to have received "more criticism than their high status boy classmates; but low status girls receive[d] more support" (p. 48). Teachers were found to be "friendly slightly more often toward low status girls than other girls, but more often neutral or unfriendly toward low status boys" (p. 48). When data on the children's approaches to their teachers were examined it was found that:

low status girls are actively affectionate in their approaches....warm in their relations with their teachers, but...relatively passive and withdrawing, while low status boys are more aggressive and troublesome than their higher status classmates. (p. 48)

While acknowledging that "differences in children's behavior probably evoke these different responses from teachers" (p. 48), Lippitt and Gold concluded that, for low status boys, classroom interactions are "generally critical and rejecting" (p. 48).

Spaulding (1963) distinguished between four major categories of teaching behavior in his investigation of teacher-pupil exchanges. His study involved 21 fourth and sixth grade classes taught by both male and female teachers. Observed interactions were classified as either (a) approval, (b) instruction, (c) listening to the child, or (d) disapproval. Spaulding found that for all four categories,

teachers interacted more with boys than with girls, and that boys generally received more of the teacher's active attention. Teacher disapproval was classified further in terms of whether the behavior disapproved of belonged in one of the following seven categories: violation of rules, personal qualities of child, thoughtlessness, task mechanics, lack of knowledge or skill, lack of attention, and poor housekeeping. Lack of attention was the most frequent cause of disapproval; 40 percent of the negative feedback directed to both the boys and the girls was for inattention. Girls, however, received 14 percent more disapproval for lack of knowledge or skill than did the boys. Significant differences were found for violation of rules. Boys considerably exceeded girls in the proportion of disapproval received for this category. Another difference was the tone of voice used to express disapproval. When criticizing boys, it was found that teachers were more likely to use a harsh or angry tone; criticism of girls was more likely to be conveyed in a normal voice. On the whole, the classroom was found to be a generally more negative environment for boys than for girls.

In a similar study, Jackson and Lahaderne (1967) observed two male and two female teachers interact with their sixth grade students. They recorded whether the teacher or the student initiated the exchange and whether "the content of the message was primarily instructional, managerial, or prohibitory" (p. 205). They reported "a

marked sex difference in teacher-pupil interaction" (p. 207). Boys were found to have "noticeably more than their share" (p. 208) of managerial interchanges and to be the recipients of almost all of the prohibitory messages. The researchers stated that their data "dramatically confirm the popular notion that boys are the major source of classroom misbehavior" (p. 207). Although the direction of the difference was acknowledged as predictable, the researchers stated that "the actual percentages are impressively large" (p. 208) and offered as an example the finding that of approximately 120 prohibitory messages delivered in one classroom during one school day by one teacher, 108 were directed to boys. Jackson and Lahaderne concluded that:

the findings support the commonly held belief that boys have a more difficult time in school than do girls. If control messages are treated as crude measures of that difficulty, these sixth-grade boys, as a group, have eight or ten times more trouble than do their female classmates. (p. 211)

Somewhat different results were presented by Davis and Slobodian (1967). They investigated teacher behavior towards boys and girls during first grade reading instruction. Over 200 grade one students and their ten teachers took part in the study. Children were rated by their teachers as to their motivation and readiness for reading and then they were individually interviewed by the researchers. They were asked to respond to descriptions of 'typical' teacher behaviors in reading groups (e.g., praising a child

for reading well, criticizing another for failing to follow the text, choosing a child to read aloud to the group) by nominating who in their class might be likely to be the recipient of such feedback. In addition, each class was observed during reading for four different days by one of five experienced reading teachers who had been trained as observers.

Teachers were found to have assessed more boys than girls as "less motivated and ready" (Davis & Slobodian, 1967, p. 265). Classroom observations, however, failed to support the "hypothesis that female first grade teachers discriminate against boys and favor girls in reading instruction" (p. 266). Teachers were not found to call on girls more frequently than boys, or to direct more negative comments towards boys during instruction. Rather, "teachers were observed as giving boys and girls essentially equal opportunity to read and/or respond" (p. 267). Although boys interrupted more often than girls, teachers were not seen to react negatively to this behavior. No differences were noted in the way teachers responded to answers offered by either boys or girls.

Despite this, analysis of the data gathered from the interviews with the children revealed that "boys were perceived as receiving more negative comments from the teacher ...as having little opportunity to read...and as being poor readers" (p. 264). The authors speculated that perhaps this

finding was a result of other disciplinary contacts or negative exchanges influencing or colouring the children's perception of the instructional relationship in reading.

Meyer and Thompson's (1956) conclusion that "'masculine' behavior is not tolerated by the typical teacher" (p. 391) is indirectly supported by the findings of a study of the reinforcement of sex-role behaviors that was undertaken by Fagot and Patterson (1969). Three-year-old boys and girls and their four female teachers were observed in free play situations at their nursery schools. Reinforcement was considered to have occurred if the teacher commented favorably on the child's behavior, initiated it, or joined in with it. The researchers predicted that the teachers "would reinforce 'feminine' behaviors more heavily than 'masculine' behaviors...[and] that they would reinforce boys, but not girls, for cross-sex behaviors" (p. 566).

They found that "feminine-preferred behaviors constituted 83% of the sex-preferred behaviors that received positive teacher reinforcement" (p. 566), and that both sexes were reinforced for the same 'feminine' behaviors. Analysis of the data revealed that:

teachers reinforced boys a total of 232 times on sex-preferred behaviors; of these reinforcements, 199 were for feminine behaviors. Teachers reinforced girls a total of 363 times on sex-preferred behaviors, and 353 of these behaviors were feminine. (p. 566)

Criticism was rare and no significant sex differences in the

amounts received were reported.

Despite the continual reinforcement of 'feminine' behaviors by their teachers, boys did not appear to become in any way more feminine. This is perhaps partially explained by the finding that peers reinforced same-sex behaviors: the girls reinforced feminine behaviors, while the boys reinforced masculine behaviors. Fagot and Patterson commented that "evidently the peer reinforcement of masculine behaviors overrides the teacher reinforcement of feminine behaviors for the boys so that masculine behaviors are maintained" (p. 567).

A relevant study of the processes by which teachers communicate differential performance expectations to different children was undertaken by Brophy and Good (1970). Teachers of four grade one classrooms were asked to rate their students on their potential for school success. Six 'high-expectancy' and six 'low-expectancy' students were then selected from each class and their interactions with their teachers were monitored by two observers for an entire morning or afternoon on four separate days.

Results showed that "the measures of teacher-initiated interactions were much more closely related to sex than to expectancy" (p. 369). Boys scored higher than girls:

on all measures of teacher-initiated contacts, significantly so for work-related interaction, behavioral criticisms and total teacher-afforded response opportunities. When teacher-child dyadic contacts of all types are totalled, a

clear difference favoring boys is evident; there is no difference between expectancy groups. Differences between the highs and the lows are in quality rather than quantity of interaction with the teacher. (p. 369)

Boys were found to receive more direct questions from the teacher than girls, to be praised more frequently for correct answers, and to receive slightly more criticism for incorrect answers or failures to respond. The figures for the distribution of criticism revealed that:

for the boys in the low group, teacher criticism was present in 32.50% of their dyadic contacts with the teacher. The corresponding figure for the high boys is 13.25%; for the low girls, 16.17%; and for the high girls, 8.25%. (p. 370)

As is apparent, boys received almost twice as much criticism as girls, but much of this difference was accounted for by "behavioral criticism and disciplinary contacts rather than criticism of academic performance in work-related contacts" (p. 373). Brophy and Good concluded that:

the difference appears attributable to more frequent disruptive behavior among boys which brings criticism upon themselves rather than to a consistent teacher set or bias toward being more critical toward boys than girls in equivalent situations. (p. 373)

Cooper and Baron (1977) attempted to replicate and refine the Brophy and Good (1970) investigation of the relationship between the expectations teachers have for their students and the nature of the feedback they direct towards them. In order to avoid the possible contamination of the data that could result from alerting the teachers to

the focus of the study, Cooper and Baron obtained low, middle and high expectancy ratings on the students in eight grade one and two classrooms without consulting the teachers that were to be observed. They used school records and enlisted the aid of the schools' learning assistance teachers. Selected students in each class were observed for a total of five hours. After the observations were completed the teachers were asked to rate their students. When the data were analyzed, the classroom teacher ratings were the ones used if there were any discrepancies between the rating assigned by the researchers, and the ones reported by the teachers.

Confirming previous findings, the results showed that:

students for whom teachers held high-performance expectations were praised a significantly greater proportion of the time than were average- or low- expectation students, while low-expectation students tended to be criticized a greater proportion of the time than high expectation students. (p. 416)

Of relevance to this thesis is the finding that the sex of the student played a role in feedback dispensation. Cooper and Baron reported that "high-expectation females were found to receive the most praise per correct answer, whereas low expectation females were found to receive the most criticism per incorrect answer" (p. 416).

Good, Sikes and Brophy (1973) carried out a study designed to investigate whether "male and female teachers interact differently with male and female students" (p. 75).

Research was conducted at the secondary level "since practically none of the available elementary teachers were male" (p. 75). Sixteen seventh and eighth grade classrooms in four urban junior high schools participated in the project. Eight male and eight female teachers were observed.

The data on interaction between teacher sex and student sex provided "no support for the idea that teachers favor students of their own sex or that female teachers are biased against male students" (p. 78). Findings for sex differences in teacher-pupil interactions are strikingly similar to those presented by Brophy and Good (1970), even though the grade levels of the two studies are six years apart. With a single exception, Good, Sikes and Brophy (1973) found that "boys received more of all types of interactions than girls" (p. 79). Examination of the data revealed that teachers:

provided boys with more response opportunities...more direct questions, open questions, self-reference questions, procedure questions, process questions and product questions...[and] interestingly...both more positive and more negative affect. (p. 79)

Student achievement was shown to be an important mediating variable influencing the amount and kind of teacher feedback. High-achievement students obtained more teacher contacts and received more positive teacher feedback than low-achievement students. The low students received "much more criticism" (p. 81). The researchers noted an interesting sex difference in the range of "the quality of class-

room life" (p. 81) for high and low boys compared with that for high and low girls. As a group, the boys experienced more variance. Good, Sikes and Brophy reported that:

the quality of classroom life for high boys is vastly different from the experience that low boys have. Although high girls have more and better teacher contacts than low girls, the difference here is much less than the difference between high and low boys. (p. 81)

Good and his colleagues continued that "the data forcefully indicate that high boys in this sample receive the best of everything in the classroom, and that low boys, relative to other students, receive the worst" (p. 82). This conclusion differs from that of Cooper and Baron (1977) who found that high girls received the most praise and low girls the most criticism.

Good, Sikes and Brophy found that teachers interacted less frequently with low girls on many variables than with low boys, but that low girls were spared the heavy rates of criticism that were directed at low boys. The researchers noted, however, "that low girls do receive high rates of criticism in academic situations" (p. 83).

Examination of student behavior also revealed marked sex differences. Boys "initiated more questions and contact with teachers, called out more answers, and guessed more frequently...than girls" (p. 79). Low girls were found to be "markedly low in initiating contacts with the teacher" (p. 83) and the researchers remarked that "the passive role that low girls play in the classroom is excessive and needs

modification" (p. 84) because it makes "it easy for teachers to ignore them" (p. 84).

Good, Sikes and Brophy summarized their findings by stating that their data showed "boys to be more salient in the classroom than girls, and to receive more frequent teacher feedback and more intense teacher affect" (p. 84).

A study by Serbin, O'Leary, Kent and Tonick (1973) of teacher response behavior in 15 preschool classes resulted in almost the same conclusions. The goal of the study was:

to examine teacher response to two classes of behavior, disruption and dependency, to investigate the hypothesis that teachers respond differently to these behaviors as a function of the sex of the child involved.
(p. 797)

Disruptive behaviors referred to such things as ignoring teacher directions, destroying materials, or engaging in physical or verbal aggression toward others. Dependent behaviors referred to crying, remaining within arm's reach of the teacher, or soliciting teacher attention. A second purpose of the study was to "describe and compare the distribution of various forms of positive and instructional attention to boys and girls participating appropriately in ongoing class activities" (p. 797). Using a time sampling technique, five naive observers recorded child-teacher interactions for an average of 4.2 hours per class.

Boys were found to have been more aggressive than girls, and to have received "three times as many loud reprimands per behavior as girls" (p. 800). As well, boys received

more praise than girls and "hugging was also given at higher rates to males" (p. 801). There were no significant sex differences in the rates of solicitation or crying, but teachers were found not only to be "more likely to respond to boys when they solicited attention" (p. 801) but to respond "differently to boys and girls by giving disproportional amounts of instruction to boys" (p. 801).

All 15 teachers:

responded at significantly higher rates to boys than to girls for participating in class activities...The probability of a teacher responding to a participating boy was more than 1.5 times the probability of a response to a girl. (p. 801)

It was found, too, that girls received more teacher attention when near the teacher while boys in the classroom received a fairly constant rate of teacher attention regardless of where they were. Of particular relevance is the finding of:

striking sex differences...in three instructional forms of teacher attention ...Brief directions were given more often to males by all 15 teachers...Extended conversation...was given more than 2.5 times as often to boys as to girls... Finally, males received over twice as much extended direction, detailed instruction in how to do things "for oneself", as females. (p. 801)

In a thoughtful discussion of the possible reasons for, and consequences of, these differential responses, Serbin et al. (1973) stated that the detailed direction and training in 'how to do something for yourself' that was emphasized with the boys appeared to "encourage exploration and manipulation of the environment and simultaneously to provide

a model for step-by-step problem solving" (p. 803). They suggested that the existence of differences in the average amount of this sort of training given to boys and girls might well be partially responsible for the development of sex differences in cognitive abilities that are reported in the literature, particularly those "in analytic and spatial reasoning ability" (p. 803).

Serbin et al. (1973) acknowledged that the reason why teachers give more detailed direction and other forms of instruction to boys is not immediately apparent, but they suggested that it was perhaps because boys may "require more detailed directions to acquire skill the girls already possess" (p. 803). They pointed out, as well, that "it may reflect a belief that boys require more training in problem solving and manipulative skills than girls to fulfill their prescribed sex role" (p. 803).

Echoing the conclusion of Good, Sikes and Brophy (1973) that boys appear "to be more salient in the classroom than girls" (p. 84), Serbin et al. (1973) summarized their findings by stating:

it does appear that all activities of boys, appropriate or inappropriate, are more likely to attract teacher attention. Girls are more likely to be ignored except when directly beside the teacher. (p. 803)

A postobservational questionnaire revealed that although the teachers realized they gave a greater number of loud reprimands to boys, they were not aware "of responding differentially to boys or girls, or of giving different amounts of positive or instructional attention to either sex"

(p. 802).

In summary, in the majority of the studies surveyed the authors have suggested that although teachers may respond differently to boys and girls, this reaction may to a large degree be explained by the fact that they can be shown to be responding to very different behaviors. However, after observing teacher-student interactions at the fifth and sixth grade levels, Etaugh and Harlow (1975) stated that teachers, both male and female, "were shown to have negative biases in their treatment of boys" (p. 169) and that the teachers' responses to the boys could not be explained solely in terms of the boys' behavior.

In this study, two male and two female teachers and their 87 students were observed over a three month period by two observers. All students in the study were instructed daily by all four of the teachers. One observer recorded teacher behaviors while the other simultaneously recorded pupil behaviors. The students completed an attitude scale which measured their attitude toward school and towards their various teachers.

Predictably, Etaugh and Harlow found that boys "were scolded proportionately more than were girls by both male and female teachers" (p. 168). Female teachers were found to praise boys proportionately more than girls, while "male teachers dispensed praise equally to the two sexes" (p. 168). Consistent with the findings of many previous studies, female teachers were reported to "interact more with boys

than with girls, in both positive and negative ways" (p. 169). However, Etaugh and Harlow reported that "although boys were as well behaved as girls, they were scolded more often by both male and female teachers" (p. 169). The researchers claimed that "teachers expect boys to be more disobedient than girls" (p. 169) and they maintained that male students are the victims of negative biases. Evidence of student perception of this bias was not reflected, however, in the results of the attitude questionnaire. Although boys expressed a clear preference for male teachers and girls preferred female teachers, "boys and girls did not differ in overall attitudes toward school" (p. 163).

Some support for Etaugh and Harlow's contention that teachers hold negative biases against male students is found in a study by Silvern (1978) of the reactions of teachers to "more masculine versus more feminine children" (p. 932). Sixty four fourth and fifth graders were assessed as to their sex-role identifications and behaviors, and then were observed interacting with their teachers. It was found that "women teachers judged relatively more masculine boys to be inferior in academic ability and social adjustment and more in need of mental health assistance" (p. 943). Silvern reported that "relative masculinity was associated with a distinctive pattern of classroom behavior" (p. 929) that included less frequent task involvement, more disruptive behavior, and more interactions with peers, and that this

pattern "statistically accounted for women teachers' negative evaluation of the more masculine boys" (p. 929). 'Relative femininity', on the other hand, "was associated with infrequent seeking of adult attention...frequent task involvement" (p. 944) and academic ability. These findings appear to support Meyer and Thompson's (1956) contention that teachers have "a lack of appreciation" (p. 392) for 'masculine' behavior in their classrooms.

Silvern (1978) suggested that there is evidence that sex-role expectations, rather than actual sex differences in behavior, colour teacher perceptions of student behavior. She found that the superior ratings given to girls for total adjustment "were not accounted for by behavioral differences from boys" (p. 946). Silvern stated that her results are consistent with Maccoby and Jacklin's (1974) conclusion that adults direct more discipline toward boys than girls, even when both behave similarly, and respond more harshly to boys because they consider them to be more in need of control.

Evidence that teachers respond more harshly to boys than to girls is provided by the results of an investigation by Cherry (1975) into "qualitative differences in teacher-child dyadic verbal interaction" (p. 175). Sixteen hours of tape recordings were made of four female preschool teachers talking with their 38 students during "juice" and free playtime. The data revealed that "teachers' speech to boys in verbal interaction was more controlling

and attention-getting as compared with teachers' speech to girls" (p. 179). This is consistent with the findings of Spaulding (1963) and Serbin et al. (1973) that boys are criticized in a harsher tone and louder voice than that used with girls. Also of interest is Cherry's (1975) finding that "there were no significant differences in either the length or the reciprocity of teacher-girl and teacher-boy dyadic verbal interactions" (p. 178).

In one of the few studies to examine the influence of context upon the patterns of interaction between teachers and students, Leinhardt, Seewald and Engel (1979) investigated:

the variation in frequency and percentage of academic and management contacts made by teachers with girls or boys depending upon the subject being taught. (p. 434)

They used videotapes to record 33 teachers instructing 726 students in mathematics and reading. The amount of instructional time spent with individual students was measured, as were differences in initial and end-of-year performance between boys and girls in both subjects.

They found that "in reading, girls are given more academic contacts, have a higher percentage of contacts that are academic, and receive more instructional time than boys [but that] the reverse is true in math" (Leinhardt, et al., 1979, p. 435). Not surprisingly, they reported that "boys always receive more management contacts than girls" (p. 435). They concluded with the statement that "there are specific,

identifiable teacher behaviors that are differentially applied depending on the sex of the student and the subject being taught" (p. 437). They suggested that the cause of the different teacher responses may be rooted in teacher expectations that boys will be more capable in mathematics and girls more able in reading.

One last observational study of teacher-student interactions that merits mention is that of Galejs and Hegland (1982). They examined "the relationships among children's locus of control tendencies, children's behaviors, and teacher-child interactions" (p. 293). The study involved 51 preschool children between the ages of 3 and 5, and their four female teachers. The Stephens-Delys Reinforcement Contingency Interview was used to assess the locus of control orientation (i.e., internal, external) of the children. Eight 'internal' (4 boys, 4 girls), and eight 'external' (4 boys, 4 girls) children were selected for observation.

No differences were found between internal and external children "in the relative amount of time spent alone or in interaction with peers, teachers or materials" (p. 299). However, statistically significant sex differences were noted. Boys were found to be more likely to elicit responses to questions than were girls, and also more likely to be involved with the teacher than were girls. Girls were found to be more likely to elicit favorable comments from teachers than were boys.

In the following sections the findings from the studies just reviewed, as well as from other studies that have produced results relevant to the focus of this study, will be summarized as they pertain to criticism, praise, instructional contacts, and student and teacher attitudes towards school and towards each other.

Findings for Criticism

A consistent finding in the literature is that boys receive more criticism and negative feedback than girls. A large proportion of this feedback appears to be related to behavioral rather than academic matters. While there is some evidence that boys are reprimanded more often than their behavior warrants, and responded to more negatively than girls even when their behavior does not substantially differ from that of girls (Etaugh & Harlow, 1975), there is considerable evidence that the higher rates of criticism delivered to boys are:

attributable to more frequent disruptive behavior among boys which brings criticism upon themselves rather than to a consistent teacher set or bias toward being more critical toward boys than girls in equivalent situations. (Brophy & Good, 1970, p. 373)

Teachers have been found to use a harsher tone (Spaulding, 1963), a louder voice (Serbin et al., 1973), and more controlling and attention-getting language with boys than with girls (Cherry, 1975).

A number of studies have reported that more criticism

is directed towards low-ability rather than high-ability students (Brophy & Good, 1974). Cooper and Baron (1977) found that female students for whom the teacher had low expectations received "the most criticism per incorrect answer" (p. 416) of all students in the class. Spaulding (1963) reported that girls received a higher percentage of criticism for lack of knowledge or skill than did boys. There is considerable support for the contention that the classroom experience of low ability boys is likely to be "generally critical and rejecting" (Lippitt & Gold, 1959, p. 48).

Findings for Praise

Findings for praise are contradictory. While there is general agreement that rates of praise are comparatively low (Brophy, 1981), there is very little consensus as to whether boys or girls are the more likely to be the recipients of positive feedback from the teacher. Five of the studies surveyed in this review reported that boys received more praise than girls (Brophy & Good, 1970; Etaugh & Harlow, 1975; Good, Sikes & Brophy, 1973; Meyer & Thompson, 1959; Serbin et al., 1973). However, Gilejs and Hegland (1982), Lippitt and Gold (1959), and Sikes (1971) all found that girls received more praise than boys. In terms of frequency, girls often receive less praise than boys; however, examination of the data presented by a number of these studies reveals that a higher proportion of the feedback directed to girls, compared with that directed to

boys, is likely to be positive.

High-achieving students have been found to be more likely to be praised than low-achieving ones. Cooper and Baron (1977) found that the most praise per correct answer was directed to "high-expectation females". Brophy (1981) reported that "teachers are more likely to praise good answers or good work...than to praise good conduct" (p. 10), but added that "the typical teacher seldom praises good answers or good work, and rarely praises good conduct" (p. 10).

Serbin et al. (1973) found that boys received more hugs from their teachers than girls, but Perdue and Connor (1978), after studying patterns of touching between pre-school children and their teachers, concluded that "girls are touched more frequently than boys in preschool classrooms" (p. 1261). In general, it appears that teachers who praise more often tend to be better liked than teachers who praise less often (Dunkin & Biddle, 1974).

Findings for Instructional Contacts

On the whole, boys appear to have more interactions of all types with their teachers than do girls. The majority of the studies surveyed found that boys received more instructional contacts and feedback than girls (Brophy & Good, 1970; Galejs & Hegland, 1982; Good, Sikes & Brophy, 1973; Meyer & Thompson, 1956; Serbin et al., 1973; Sikes, 1971; Spaulding, 1963). A study by Biber, Miller and Dwyer

24 (1972) found that girls received more instructional contacts than boys, and Leinhardt et al. (1979) reported that, compared with boys, a greater percentage of the teachers' contacts with girls were academically oriented. Two studies reported no sex differences in instructional contacts (Cherry, 1975; Davis & Slobodian, 1967). Leinhardt et al. (1979) found that the subject taught influenced the distribution of teacher feedback; in their study, girls were shown to receive more academic contacts and instructional time in reading whereas boys were found to receive more in mathematics. High-achievement students appeared to be given more opportunities to respond and had more questions directed towards them than low-achievement students (Good, Sikes & Brophy, 1973).

There is evidence that boys are more initiatory and active in the classroom than girls and "more forceful in asserting themselves and gaining their teacher's attention" (Brophy & Good, 1974, p. 229). Sears and Feldman (1966) pointed out that boys in the upper elementary grades have been observed to "participate more than girls do in classroom discussion, making more statements and asking more questions" (p. 31). Sikes (1971) found that, when unsure of themselves, boys were likely to make some kind of response, even though it might be wrong, while girls were more likely to remain silent. Good, Brophy and Sikes (1973) found that boys created more response opportunities for themselves because they "initiated more questions and contacts with

teachers, called out more answers, and guessed more frequently...than girls" (p. 79). However, the findings reported by Good, Cooper and Blakey (1980) contradict this pattern. They investigated the relationship between teacher expectations and classroom interactions and found that "high achievers have more favorable interactions with teachers than do low achievers" (p. 384) and that "girls initiated significantly more interactions with teachers" (p. 383) than did boys.

Awareness of Differential Feedback

Students appear to be aware that boys generally receive more negative feedback from their teachers than girls, and that girls receive more teacher approval (Herrmann, 1972; Meyer & Thompson, 1956; Whaley-Klahn et al., 1976). In a study of teacher-student interactions during reading instruction, Davis and Slobodian (1967) found that although no differences were observed in teacher response to boys and girls, boys were perceived by the students as receiving more negative feedback. Good, Cooper and Blakey (1980) observed, however, that "students appear to perceive more difference in teacher behavior toward high and low achievers than toward boys and girls" (p. 384).

Teachers, on the other hand, did not appear to be aware of their differential responses. Serbin et al. (1973) found that while teachers knew that they directed more loud reprimands to boys "they were not aware of responding differentially to boys and girls, or of giving different

amounts of positive or instructional attention to either sex" (p. 802). Brophy and Good (1970) also reported that "teachers are frequently unaware of the subtle differences in their behavior" (p. 374) towards boys and girls.

Sex Differences in Student Attitude Towards School

Many studies confirm the finding that girls have a more favorable attitude towards school than do boys (Brophy & Good, 1974) and report liking it more (Minuchin, 1966; Murray, 1977; Whaley-Klahn et al., 1976). Boys have been found to be less concerned than girls about achievement (Minuchin, 1966), more rejecting of the teacher (Gregersen & Travers, 1968) and "less ready than girls to comply with adults" (Silvern, 1978, p. 930). Girls "have been shown to be more sensitive to adult approval" (Stipek & Hoffman, 1980, p. 865), and, compared to boys, "to perceive adults as more nurturant and benevolent" (Minuchin, 1966, p. 47). In general, there is evidence to support the conclusion that girls are more apt than boys "to find the entire experience of school life comfortable, pleasant and meaningful" (Minuchin, 1966, p. 47).

Whaley-Klahn et al. (1976) suggested that because teachers respond to and "treat boys and girls differently" (p. 289) and because this differential treatment is perceived by the students, it may possibly "produce sex differences in children's attitudes toward school" (p. 289).

Sex of Student and Teacher Attitude

As teachers' attitudes towards their students may influence the way they respond to them, the research on teacher attitude is relevant to a discussion of student-teacher interactions.

There is general agreement in the literature that teachers tend to view girls more favorably than they view boys (Bank, Biddle & Good, 1980; Brophy & Good, 1974; Dweck & Bush, 1976; Etaugh & Harlow, 1975; Meyer & Thompson, 1956; Prawat & Jarvis, 1980). Girls are generally regarded by teachers as being better 'students' than boys. It has been reported that "teachers tend to overestimate the achievement potential and intelligence of girls and underestimate that of boys" (Brophy & Good, 1974, p. 231). When presented with boys and girls of equal ability, teachers have been found to hold lower expectations for academic success for the boys than for the girls (Brophy & Good, 1974). This is partially explained by the well-documented differences in the classroom behavior of boys and girls. Dweck and Bush (1976) have reported that teachers have been found to:

consistently evaluate boys less positively on conduct, nonintellectual personal qualities (e.g., aggression, negativism, sociability) and motivation. (p. 148)

Related to this is the finding that "preservice teachers prefer passive, orderly students to more assertive or independent ones" (Good, Sikes & Brophy, 1973, p. 86).

8 This being so, it is unfortunate for the boys that they are consistently rated by their teachers as being more assertive, independent and aggressive than girls (Prawat & Jarvis, 1980).

In many ways the role of student is more closely allied with feminine sex-role behavior than with masculine sex-role behavior (Stockard, 1980). The good student generally displays "behaviors that are sex-typed as feminine in this society" (Stockard, 1980, p. 63); the study by Fagot and Patterson (1969) clearly demonstrated that 'feminine' behaviors are the ones that teachers reinforce. In a discussion of this point, Bank, Biddle and Good (1980) stated that:

studies of pupil role behaviors in American classrooms have stressed that 'good' pupils should listen; watch, sit quietly; read, write and recite on command; spend little time talking with other pupils; be good group members; and be unlikely to challenge teachers' ideas.
(p. 121)

Such behaviors, probably as a result of different socialization experiences from infancy, appear to be more difficult for boys to execute than girls (Brophy & Good, 1974). As a result:

it seems likely that boys will have more difficulty being good pupils than will girls in the eyes of their teachers....and teachers are more likely to perceive boys as "problem pupils" (Bank, Biddle & Good, 1980, p. 121)

The findings for criticism already cited appear to support this conclusion.

The results of a study by Benz, Pfeiffer and Newman (1981), however, suggested that even though the role of 'good student' may be a feminine one, the role of 'achiever' is definitely masculine. This study, which was designed to investigate the sex role expectations of classroom teachers of grades one through twelve, analyzed the responses of 70 teachers to the "Teacher Sex Role Perception Inventory". The researchers found that "high achievers were more likely to be classified as masculine than were low achievers" (p. 295) and that "high achievement is negatively related to teachers' feminine sex role expectations" (p. 296). As these results did "not vary significantly over grade level or between male and female teachers" (p. 297), Benz, Pfeiffer and Newman concluded that the stereotypes were pervasive, and that "a successful achiever role is defined as a masculine sex role" (p. 298). The corollary is that "to fit the feminine role is not to achieve" (p. 297). The researchers suggested that such role expectations could possibly account for the finding that, relative to boys, "achievement declines the longer females are in school" (p. 298).

This suggestion echoes that of Brophy and Good (1974) who argued that the finding that "despite girls' early advantage over boys in the early grades of school, they progressively fall further behind as they get older" (p. 233) could most likely be accounted for by the way our society defines the sex roles. They stressed that the advantage

girls seem to enjoy in the early grades is only an apparent advantage for it does "not hold up over time" (p. 233).

Experimental Studies: Manipulated Feedback

In this next section the results of a number of experimental studies in which feedback was controlled and manipulated will be reported along with the findings from some investigations into students' achievement-related expectancies. These studies have relevance for this thesis because they shed some light on the possible consequences of differential feedback for the recipients of that feedback. In general, the focus of these studies is upon how students respond to and interpret the evaluative feedback they receive from their teachers and other adults.

In 1969 Crandall reported her findings from four studies in which she investigated sex differences in the expectancy estimates given by students of their future academic performance. In Study A, 17 boys and 24 girls between the ages of 7 and 12 were given six different kinds of novel intellectual tasks to perform, but first asked to estimate how they thought they would do on them. Although I.Q. was controlled, the females "approached these new intellectual tasks with a significantly lower assessment of their intellectual skills than the males" (p. 22). Reasoning that because the students were of equal ability they would therefore have received similar reinforcements

in past intellectual situations, Crandall speculated that perhaps "the children of the two sexes had used their similar past feedback very differently in forming their expectancies" (p. 23). She suggested as well that the two sexes may be differentially sensitive to positive and negative reinforcements.

Study B therefore was designed to investigate the possibility that males and females may assimilate the same past reinforcements or feedback evaluations differently in forming their expectancies. Upon entrance to college, and at each subsequent quarter's registration, 380 students were asked to list the courses for which they were registering and the grades they expected to obtain in each. Data were collected over a five year period. The expected grades were then compared with the actual grades received. Crandall was able to compare the expectancies of male and female students who had received the same grades. It was found that the estimates of the males were initially and consistently higher than those of the females, and that even:

at the end of their academic careers
more girls actually estimated lower
than their last grades would warrant
while more boys continued to estimate
higher than their preceding grades. (p. 29)

In Study C, Crandall manipulated the feedback delivered to the subjects. The experiment was set up in order to determine whether the two sexes would assimilate the

reinforcement received differently if the reinforcements given to both males and females during the task were exactly the same. Eighteen females and twenty-three males between the ages of 18 and 26 years were given the task of recreating briefly exposed geometrical patterns with a set of cut-out cards. The tasks were sufficiently complex that reinforcements could be manipulated to adhere to a designated schedule without alerting the subject to the fact that the feedback received did not relate to the performance given. Although they received precisely the same feedback, it again was found that the expectancy estimates of the females were significantly lower than those of the males.

In the fourth study, Crandall attempted to determine whether boys and girls respond differently to contradictory or inconsistent feedback which, she argued, is more representative of the type of feedback received in 'real life'. The feedback delivered to 204 eighth grade students engaged in a digit/symbol substitution task was "controlled so that it contained different percentages of inconsistency or contradiction" (p. 32). It was found that when feedback was neutral or inconsistent and contradictory, the two sexes resolved the conflict in opposite ways: "the girls seem[ed] to focus on the negative aspects of the situation, the boys on the positive" (p. 42).

In the discussion of the implications of her findings, Crandall expressed concern that these lower expectations of

girls might eventually, if not immediately, result in poorer intellectual performance. She suggested too, that while the findings may have reflected a genuinely more confident outlook by the boys, it was also possible that "achievement pressures have forced them to defend by over-stating" (p. 44) and that boys' relatively poorer performance "has forced them to be defensive about it" (p. 44).

Nicholls (1975) investigated the causal attributions made by 96 fourth graders as a result of the manipulated feedback they received. The children were asked to participate in an angle-matching task. Although told that a machine scored their answers, the "experimenters provided the feedback according to a preassigned schedule" (p. 381). The children were told how they did "compared to the other kids" and then were asked to adjust the sections of a pie graph in order to explain either their success or failure. After success, the different sections on the pie graph read "The test was easy", "I tried hard", "I had good luck" and "I am smart at this"; after failure the graph sections read "The test was hard", "I didn't try hard", "I had bad luck" and "I am not smart at this" (p. 382). Children were told to adjust the various sections to show the relative importance of each of these factors.

Nicholls (1975) found that:

girls, but not boys, attributed failure to poor ability more than success to good ability...That is, girls showed a significant self-derogatory bias which was not evident for boys. (p. 383)

The boys were more likely than girls to attribute their failures to bad luck. Nicholls interpreted this to mean that "boys showed a defensive bias in luck attributions while girls did not" (p. 385). Nicholls stated that the long-term implications of these findings for girls' intellectual and achievement development "are hardly favorable" (p. 388) as the "girls' bias was evident for the stable personal dimension of ability" (p. 388). Although Nicholls acknowledged that concern should also be expressed because of the boys' defensive attributional bias, he claimed it was not as serious as it "occurred only for the unstable external factor of luck" (p. 388). It appears, then, that even when the same feedback is delivered, boys and girls do not interpret it in the same ways.

In a subsequent study in New Zealand, Nicholls (1979) asked 540 children between the ages of 6 and 12 to rate themselves and indicate why they thought they achieved the way they did. The children were also rated by their teachers. Again it was found that "girls were more inclined to attribute failure to poor ability than were boys" (p. 97) in spite of the fact that they were rated more highly by their teachers and expressed higher self-perceptions than the boys. Nicholls (1979) attempted to explain this apparent contradiction by suggesting that perhaps girls were overly sensitive to teacher feedback

about their conduct or the non-intellectual aspects of their school work and relied on this feedback to infer ability rather than upon the more objective evidence provided by the actual results of their work and task outcomes.

Stipek and Hoffman (1980) investigated the relationship between children's achievement-related expectancies and their past histories of academic success. The children, from grades one and three, were asked to solve an impossible anagram task at which they could only fail, and then to attribute their failure to either lack of effort or lack of ability. They reported that:

the girls' expectations for success were in the opposite direction of the findings for the boys. High-achieving girls actually claimed to have lower expectations for success than the average- or low-achieving girls. (p. 864)

In the discussion of their results, Stipek and Hoffman pointed out that girls have been found to be more anxious than boys in academic settings and more sensitive to adult approval. Consequently, they suggested that:

high-achieving girls may react to their anxiety and desire for adult approval by setting low enough standards (i.e., claiming to have low expectations) to assure success (and consequent adult approval). (p. 865)

Further research is required in order to establish whether or not this explanation for the girls' overly 'modest' expectations is valid. However, Stipek and Hoffman concluded by stating that "it is remarkable that sex-

differences in achievement-related expectancies emerge as early as first grade" (p. 865).

Of particular relevance to this thesis is the research of Dweck and her colleagues (Dweck & Bush, 1976; Dweck, Davidson, Nelson & Enna, 1978; Dweck, Goetz & Strauss, 1980) into the nature of the feedback delivered to students and into sex differences in the attributional interpretations made as a consequence of that feedback.

Dweck and Bush (1976) designed two experiments to examine "the nature and degree of agent specificity of reactions to failure" (p. 149). They were interested in learning whether boys and girls responded differently if failure evaluations were delivered by adults or by peers. The subjects in the first experiment were 108 fifth grade children. They worked on a series of eight digit-letter substitution problems and received evaluative feedback from one of four agents, either a male or female adult, or a peer. The first four of the eight trials were programmed so that all children failed to complete the number of problems required to succeed, and the children were informed of their failures. After the third trial the children were asked to attribute their failures "either to the unfairness of the agent, to lack of effort, or to lack of ability" (p. 150). All children successfully completed the remaining four trials and were praised for doing so.

Dweck and Bush found that "girls and boys showed opposing patterns of performance change with peer and adult

agents and with male and female agents" (p. 152). When the evaluator was adult or female, girls were found to be less likely to show improvement over trials; however, when the evaluators were peers or males, immediate and sustained improvement was noted. The "results for the boys were essentially the opposite of those for the girls" (p. 152).

In the second experiment, 108 fourth and fifth grade children responded to a questionnaire describing a situation similar to that in the first experiment. The questionnaires were identical, but the four agents of evaluation differed. As in the first experiment, children answered the questions, were informed they had failed, and were asked to attribute their failure to either the unfairness of the agent, lack of effort or lack of ability. The results reflected the same pattern reported for the first experiment and revealed that girls tended to attribute their failures to lack of ability with adult agents and not peers, while boys tended to do so with peer agents and not adults. Girls were found to be most likely to attribute their failures to lack of ability when evaluated by a female adult. As most elementary school teachers are female, Dweck and Bush expressed some concern about the implications of this finding for the academic performance of girls as the experiments also showed that girls who made this attribution "displayed poorer performance, and chose not to persevere at the task" (p. 155). In other words, they displayed some of the symptoms of learned helplessness.

Dweck and Bush concluded:

that children of each sex are responsive to feedback from different agents in different ways, both in terms of how they interpret the feedback and how it affects their performance. (p. 154)

In two studies, one observational the other experimental, Dweck, Davidson, Nelson and Enna (1978) investigated:

the particular contingencies of evaluative feedback in the classroom that might promote the tendency toward helplessness in girls, despite the favorability of the feedback they receive, and the tendency toward the more confidence-maintaining patterns in boys, despite the generally more negative feedback they receive. (p. 269)

This research was prompted by the apparent paradox created by the findings that despite receiving consistently higher grades, higher teacher ratings, and less negative feedback in schools, girls, compared with boys, nevertheless tend to express lower expectations for success, display less confidence in their abilities, and less persistence in the face of negative evaluations or failure. Dweck et al. (1978) hypothesized that these sex differences could possibly be partially explained by exposure to differential patterns of evaluative feedback.

Seventy-nine grade four and five students were observed during academic classroom activities over a five week period. Every instance of evaluative feedback to individual students was coded and analyzed. Striking sex differences were noted in the percentage distributions of feedback that concerned the intellectual aspects of the students' work.

Boys were found to have received significantly more praise than the girls for intellectual competence, and considerably less work-related criticism than girls for intellectual inadequacy. A high proportion of the negative work-related feedback received by the boys was concerned with their "failure to obey the rules of form" (p. 272); very little criticism of this type was directed to the girls.

In the second study, 60 male and female students from the fifth grade were randomly assigned to three experimental conditions in which the feedback received was controlled by the experimenters. Dweck et al. (1978) defined the three conditions on the basis of their findings from the observational study. Two were described as "teacher-girl" conditions and the students assigned to these two conditions received "failure feedback that was based only on the correctness of their answers (like girls in the classroom)" (p. 272). In the third condition, described as the "teacher-boy" condition, children received "a mixture of solution-relevant and solution-irrelevant feedback (like boys in the classroom)" (p. 272). The subjects were required to attempt to solve anagram tasks and then to attribute their manipulated failures to either lack of effort, lack of ability, or a "fussy" evaluator.

Dweck and her colleagues found that students, both male and female, in the teacher-boy condition "did not view failure feedback on the dependent task as reflecting

lack of ability" (p. 273) but instead were more inclined to attribute their failure to lack of effort. However, the students in the two teacher-girl conditions "overwhelmingly interpreted the failure feedback as indicating a lack of ability" (p. 274). Putting the results of the two studies together, Dweck et al. (1978) concluded that:

the pattern of evaluative feedback given to boys and girls in the classroom can result directly in girls' greater tendency to view failure feedback as indicative of their level of ability. (p. 274)

Because boys were observed to have received more criticism from their teachers than did the girls, and because a high proportion of the negative feedback concerning their work was unrelated to its intellectual quality, but was related instead to neatness and matters of 'form', Dweck et al. (1978) argued that the boys were able to "view negative feedback as irrelevant to the intellectual quality of their performance" (p. 274). As a result of the feedback they received, boys could attribute their successes to ability and their failures to lack of effort, or carelessness, or their neglect of the required form. In contrast, because teachers were observed to have been largely positive in their assessments of the girls, and because they "used negative feedback in a highly specific manner for girls' intellectual failures" (p. 274), girls would have little choice but to interpret the feedback they received as indicative of their ability, or lack of it.

Effort can easily be adjusted but ability is more or less fixed. Consequently, Dweck et al. (1978) stressed that the different feedback delivered to boys and to girls, and the different interpretations about their abilities and intellectual competence made by them on the basis of that feedback, could have serious long-term implications for the academic achievement and performance of girls.

The findings from an experiment by Dweck, Goetz and Strauss (1980) involving the manipulation of feedback were consistent with those reported by Dweck et al. (1978), Nicholls (1975) and Crandall (1969). In this study, 24 fifth graders were given a task at which they couldn't succeed. During the experiment the first teacher was deliberately called away and replaced by another who asked the subjects to explain why they hadn't done very well. Marked sex differences in attributions were noted. Of the 12 boys, 2 attributed their poor performance to lack of ability, 5 chose effort and 5 blamed the evaluator. Of the 12 girls, "8 blamed their ability, 4 chose effort, and none blamed the evaluator" (p. 444). Dweck, Goetz and Strauss (1980) also found that "girls tend to be more pessimistic than boys about their future performance" (p. 451) and that girls tend to "give less weight to positive evidence and more to negative evidence from the past when they enter a new situation" (p. 451).

Summary of the Chapter

In summary, the studies reviewed have shown that there are both quantitative and qualitative differences in the feedback delivered to boys compared to that delivered to girls. In addition, there is evidence that boys and girls respond to and interpret the feedback they receive in very different ways. There is evidence, too, that the attributions students make, based on their interpretations of the feedback they receive, may have serious implications for their academic performance and potential achievement.

CHAPTER 3

DESIGN AND PROCEDURES

Introduction

This study was designed to investigate whether there are any quantitative and/or qualitative differences in the verbal teacher feedback directed towards boys as compared to that directed towards girls. Data collection involved classroom observations of the morning sessions of five different kindergarten classes in the Cowichan School District over a six week period. All instances of verbal feedback from the teacher to individual students were analyzed, coded and recorded by an observer, according to the criteria described in the study by Dweck, Davidson, Nelson and Enna (1978). Data were then analyzed to discover whether any of the patterns noted by Dweck et al. (1978) could be found in these kindergartens. Differences noted between the feedback delivered to boys as compared to that delivered to girls were then tested by the Chi Square method to determine whether they were statistically significant.

Subjects

The subjects were 100 kindergarten students and their teachers in five morning classes from five different schools

in School District 65 (Cowichan). School District 65 is located in the Cowichan Valley, on Vancouver Island, British Columbia. It encompasses the city of Duncan (population 4500), seven small communities, and a fairly extensive rural population (estimated by the School District at approximately 35,000). The economic base is derived primarily from the lumber industry, small business, and agriculture.

It was considered desirable that the classes selected for this study not differ radically from each other in terms of SES level, racial composition, proportion of ESL students, placement of mainstreamed students, or teacher experience. Consequently, the Primary Consultant of School District 65 was asked to provide a list of those kindergartens which could be considered approximately equivalent in terms of the socio-economic status of the school population, teacher experience and program philosophy. French immersion, Native Indian orientation, and Distar programs were not included in the sample. Kindergartens with team teaching arrangements or with mainstreamed physically or mentally handicapped students also were not included. As the study was to involve fifteen hours of observation in each classroom it was suggested that the classes selected be taught by teachers who would feel comfortable with an observer in their room.

Five classes were selected by the Primary Consultant. Although the original intention had been to randomly choose

five classes from the list offered, as only five classes were suggested, all were used in this study.

All five schools are located in rural settings. They vary in size from four to ten classrooms, and all but one serve kindergarten through grade seven students. The exception is a primary school which does not have classes above the grade two level. Four of the five schools have one kindergarten class that is conducted in the morning. One of the schools has two kindergarten classes, one in the morning, one in the afternoon, both taught by the same teacher. Morning sessions were the only ones observed in this study.

Information on class size and boy/girl ratios was collected for each of the twenty-five observational sessions. This information is presented in Table 1. As can be seen, class size varied from session to session due to student absenteeism and the presence, on one occasion, of preschool visitors. Table 2 presents the mean class sizes for each school and for the entire sample, as well as the mean proportion of boys and girls in each class and for the entire sample. Class size varied from an average of 15 students to an average of 22 students. The smallest class session observed contained 14 students, the largest 25. Examination of Table 2 reveals that the mean ratio of boys to girls is 5:4, and that boys outnumber girls in three of the five classes, that girls outnumber boys in

Table 1
Class Size and Boy/Girl Ratios for Each Observational Session

School Session		Class Size	Number of Boys	% of class	Number of Girls	% of class
A	1	19	12	63	7	37
	2	20	14	70	6	30
	3	25*	18	72	7	28
	4	22	13	59	9	41
	5	19	13	68	6	32
B	1	22	13	59	9	41
	2	23	13	57	10	43
	3	21	12	57	9	43
	4	22	12	55	10	45
	5	22	12	55	10	45
C	1	14	6	43	8	57
	2	16	6	37	10	63
	3	15	6	40	9	60
	4	14	5	36	9	64
	5	15	6	40	9	60
D	1	18	11	61	7	39
	2	17	11	65	6	35
	3	17	12	71	5	29
	4	18	11	61	7	39
	5	18	11	61	7	39
E	1	17	9	53	8	47
	2	18	9	50	9	50
	3	18	9	50	9	50
	4	18	9	50	9	50
	5	16	7	44	9	56

*total includes 3 preschool visitors

one class, and that in the fifth class there are an equal number of children of each sex.

Table 2
Mean Class Size and Boy/Girl Ratios

School	Mean Class Size	Number of Boys	% of Class	Number of Girls	% of Class
A	21.0	14.0	67	7.0	33
B	22.0	12.0	56	10.0	44
C	15.0	6.0	40	9.0	60
D	17.6	11.2	64	6.4	36
E	17.4	8.6	49	8.8	51
Mean for all schools	18.6	10.4	56	8.2	44

Table 3 presents the mean ages of the boys and girls in each class, and for the whole sample. On average, boys were less than one month older than the girls.

Table 3
 Mean Ages of Students as of September, 1981

School	Mean Age of Boys (in months)	Mean Age of Girls (in months)
A	62.5	61.0
B	62.6	64.5
C	60.4	61.4
D	62.0	60.8
E	64.7	60.6
Mean for all schools	62.4	61.7

All children in the sample were Caucasian, from middle class homes, and all but one, a boy in Class E visiting from Europe, could speak English. With the exception of one boy with a mild form of cerebral palsy, who was described by his teacher as not posing any problems at all, no physically handicapped children were enrolled in any of the five classes observed. Classes A and B each had one student, one a boy, the other a girl, who had been diagnosed as having severe behavior problems. Both classes had been provided with part-time aides in order to assist with this situation. The teacher in Class B included parent helpers in her classroom; the other four did not.

During informal interviews at the end of the observational sessions, each teacher was asked to briefly characterize her class. Class A was described as a bright, able group which represented a great range of personality types. The teacher stressed that she thought the children handled themselves very well in the various activities, the classroom routines, and their interactions with each other. Two boys were described as "somewhat aggressive" and in need of careful handling. Class B was also described as bright and able, but the teacher added that they were an extremely active and energetic group that required constant monitoring. Two girls were singled out as needing a lot of teacher attention and reassurance. Class C was characterized as a "good" group which was very mature, and on the whole "ready for grade one". Two boys were pointed out as minor problems, one because he was "domineering" and had difficulty getting along with others, and the other because he was "very bright but never listens". Class D was described as a "delight". The teacher reported that her group was well behaved and eager and willing to learn. She stated that some of the boys had the potential to be disruptive and "silly" but that they were responsive to her suggestions about classroom behavior, and posed no problems. Class E was described as an average to low group. The boys were reported to be "rambunctious" and in need of "drill on manners". The teacher stated that the boys were aggressive and tended to fight with each other. The girls were described as quiet,

and one as very immature. One boy had a speech problem and was being attended to by the school district speech pathologist. Neither the immature girl nor the boy with the speech impediment were described as behavior problems by the teacher.

The Teachers

All five teachers were female. Their ages ranged from the mid-thirties to the late-forties. All but one taught half-time; the teacher of Class D taught both a morning and an afternoon class. All but one had taught kindergarten for a number of years; the teacher of Class C had not taught kindergarten before being assigned to her present class, although she had taught grade one for many years and had requested a kindergarten placement. The teacher of Class E had taken a three month pregnancy leave during the middle of the year. All teachers reported enjoying teaching at this level.

Instrumentation

This study is an observational investigation of evaluative teacher feedback, verbal only, delivered by the teacher to the students during the regular classroom sessions. Every instance of evaluative feedback directed to an individual student was recorded in code by an observer along with a noting of the type of activity that the student had been engaged in when the feedback had been delivered (see Appendix A for sample coding sheet).

The purpose of this study was to discover whether any evidence of the patterns of differential teacher feedback found by Dweck and her colleagues could be found at the kindergarten level. Consequently, as far as was possible, the frame of reference employed in that study was employed in this one. Evaluative feedback was therefore analyzed and coded in relation to (a) the sex of the child it was directed to, (b) whether it was positive or negative, and (c) categorized according to the type of behavior (conduct or work-related) upon which it was contingent. Work-related feedback was analyzed further in terms of whether it was contingent upon the intellectual aspects of the task (i.e., competence or correctness - 'substance'), or upon the non-intellectual aspects of the task (i.e., neatness, instruction following, speaking clearly - 'form').

Definition of Terms

Feedback is defined by Webster's New Collegiate Dictionary as "the return to a point of origin of evaluative or corrective information about an action or process". Blond's Encyclopaedia of Education (1969) states that the term "is now often used to describe the knowledge of results a learner should have if he is to form effective learning patterns" (p. 268). In this study any comment made by the teacher and directed towards a specific child which conveyed information about the teacher's response to the child's behavior was considered "feedback". Non-verbal feedback was not recorded.

Positive Feedback: Any comments which expressed approval or acceptance of the child's ideas or behavior, or affirmation of correctness, were coded as positive feedback. For example, phrases such as "Good for you!", or "You're right, Donovan", or "Well done, Anne - you got the message" would all have been classed as positive.

Negative Feedback: Any comments that indicated that a response was incorrect or incomplete or that behavior was inappropriate or unacceptable, and any instances of criticism or disapproval, were coded as negative feedback. For example, remarks such as "Just settle down please, Bobby", or "Oh, you should have waited - you rushed and now you've spoiled it", and "No, Andrea, you're not helping" would all have been coded as negative.

Feedback was further described as being either work-related or conduct-related.

Conduct-related Feedback: Comments that referred to how children conducted themselves in the class - how they treated the other children and the materials, how they "behaved" - were coded as conduct-related. For example, comments about pushing in line-ups, playing when expected to be on-task, calling out, helping a classmate tie his shoes, would be considered to be conduct-related. To illustrate, the remark "Robert, if you can't sit quietly we'll have to move you" would be coded as negative conduct-related feedback; the remark "John, that was good of you to help Brian put away those blocks" would be coded as positive conduct-related feedback.

Work-related Feedback: Work-related feedback covered such things as the skills involved in various class tasks, activities and discussions - those aspects of behavior which were related to, or required by, the actual, formal, academic curriculum of the kindergarten program.

Work-related feedback was categorized further according to a 'form'/'substance' dichotomy.

Work-related 'Form' Feedback: 'Form' feedback referred to non-intellectual aspects of the task, to such things as neatness, following directions, colouring within the lines, speaking clearly when addressing the class, etc. For example, if a girl showed her completed art project to the teacher, and the teacher remarked "Good for you, that has been neatly done", the remark would have been coded as positive work-related form feedback. If a child was painting but dragging the edges of his paper over the side of the table so that it was getting all crumpled up, and the teacher commented "You're sort of wrecking it", the feedback would have been coded as negative work-related form feedback. A remark such as "Look how carefully Peter is colouring" would have been coded as positive work-related form feedback.

Work-related 'Substance' Feedback: 'Substance' feedback referred to the intellectual aspects of the task - the merit or quality of the idea presented, the correctness of the answer given. For example, remarks such as "Good

thinking Susan", or "That was excellent, you remembered all the words", or "No, but can you think of another word that might rhyme with 'feather'?" would all have been classified as work-related substance feedback.

The context in which the feedback was delivered was classified as belonging in one of four categories: (a) Quiet Whole Group, (b) Active Whole Group, (c) Quiet Individual Choice, and (d) Active Individual Choice. Quiet whole group activities referred to such things as storytime, show and tell, listening to directions for a project, answering questions and discussing the content of a lesson. Active whole group activities included such things as physical education sessions, circle games, walking field-trips. Whole group activities, either active or quiet, involved the whole group at the same time in the same activity; for example, the whole class might have been running and skipping in the gym, or tracing alphabet letters on their chalkboards. Quiet individual choice activities referred to such things as working with jigsaw puzzles, painting a picture, looking at books, building with the small construction sets, playing lotto games, or listening to the tape recorder. Active individual choice activities referred to such things as playing with the big trucks, building with large blocks, dramatic play in the playhouse, climbing on the large apparatus, or walking down the balance beam. Individual choice activities could involve other children, but the important thing was that the child had

been free to choose with whom and what he wished to play.

Procedures

Permission to undertake this study was sought from, and granted by, the Superintendent of School District 65 (See Appendix B). The Primary Consultant was contacted and the proposed study was explained and outlined. Her assistance in selecting the classes to be observed was requested. She drew up a list of five classes that, in her judgment, based on the information she had available to her, and upon her frequent classroom visits, were approximately equivalent in terms of the socio-economic status of the school population, teacher experience and program philosophy.

The principals of the five schools which contained the selected classes were telephoned. The proposed study was explained in general terms and permission to observe in their schools, and to contact the teachers of the kindergarten classes was requested. Permission was granted in all cases. When contacted, all of the teachers agreed to permit observation of their classes.

The Superintendent and the Primary Consultant were informed of the precise focus of the proposed study. In order to protect the validity of the data, the necessity of not revealing explicitly the exact nature of the study to the teachers who would be observed was explained. Consequently, the principals and teachers were told only

that the observations were intended to provide information about language interaction patterns in the classroom. Teachers were assured that neither schools, teachers, nor children would be identified in the final study, that participation in the study was voluntary and that observations could be terminated at their request at any time. They were also informed that they could be provided with copies of the final results of the study once it was completed.

The data from a pilot study of teacher feedback (involving 96 children in 5 kindergarten classes, observed over a 5 week period) provided examples of the different types of feedback delivered and the contexts in which it occurred. In order to test the validity of the coding definitions used, twenty examples of teacher feedback, representing a selection from each of the various categories (i.e., conduct-related, work-related 'form', work-related 'substance') were chosen and coded (See Appendix C). The coding definitions were then explained, on an individual basis, to seven primary teachers. They were presented with the feedback examples and asked to code each according to the categories described. An inter-coder agreement of 95% was obtained.

The five classes were observed five times each over a six week period that began on April 26, 1982 and continued until June 4, 1982. Each class was observed for one full morning session each week, for five weeks, for an approx-

imate total of fifteen hours per class. These observations were scheduled so that each class was observed once on each of the five school days. This was to eliminate the possibility that one class might have been observed perhaps only on Mondays, while another might have been observed only on Fridays. Observations were interrupted by the Teachers' Professional Day, by the Victoria Day holiday, and by a Parents' Visiting Day, and so they were extended over a six, rather than a five, week period.

The observer took no part in the classroom activities and attempted to be as unobtrusive as possible. Students and teachers were observed while they engaged in the full range of activities that made up the kindergarten program. The observer accompanied the classes to the gym, to the park, to the school library, and on fieldtrips to the Post Office and a local garden nursery. All instances of evaluative feedback from teacher to student were analyzed and recorded in code on a tally sheet. The context in which the feedback was delivered was also recorded. Non-verbal feedback was not recorded but it was taken into account by the observer when categorizing the verbal comments if it assisted in clarifying the meaning of the teacher's response. For example, the remark "You finished that very quickly" delivered by a smiling teacher to a child who had just completed a jigsaw puzzle would be coded differently from the same remark delivered by a

frowning teacher to a student who had rushed through a printing task. Feedback to the children from parent helpers and classroom aides was not recorded. Feedback was not recorded during recess breaks. At the end of the five observational sessions the teachers were informally interviewed and asked to briefly characterize their classes. The children's birthdates were recorded.

Organization of the Data

Data from each observational session were organized in terms of the sex of the child to whom it was directed, the type of feedback it represented, and the context in which the feedback occurred. Totals were obtained for each sex, for each category of feedback, in every context in which it was recorded. For example, the number of instances of negative conduct-related feedback directed to boys during whole group quiet activities was tallied and totalled.

For each hypothesis, appropriate data from each observational session were tallied. As the numbers of students varied with each class and each observational session, in order to make comparisons possible, totals were converted to percentages. Data from all five sessions from each school were totalled and averaged. Next, data from all twenty-five observational sessions, from all five schools, were totalled and averaged. Therefore, data are reported (a) for each observational session, (b) averaged for each school, and (c) averaged for all twenty-five observations.

Feedback was classified as either conduct-related or work-related and the percentage of feedback that occurred in each category was computed for the whole sample, and for each sex.

In order to determine how the feedback was distributed over the various context categories (for example, whether more was delivered during whole group quiet activities than during whole group active sessions), the number of feedback exchanges that occurred in each of the four context categories was computed. This was done for each observational session. Then the average for all five sessions from each school was computed. Finally, an average from all sessions from all schools was obtained.

In order to discover the existence of any possible relationships between the type of activity engage in and the proportion of feedback distributed among the major feedback categories (specifically conduct-related, work-related 'form', and work-related 'substance') the context categories were combined to create two context distinctions, quiet and active, and the number of feedback comments delivered in each of these two contexts was computed. Data were analyzed to determine whether there were any differences in the distribution of the various types of feedback between these two contexts.

Method of Analysis

The data, which were intended to be descriptive, were reported in terms of raw scores, percentages and

averages. The data were measured on a nominal scale. Consequently, the statistical significance ($p \leq .05$) of any differences found were tested by the Chi-square method.

Summary

Five kindergarten classes from School District 65 were observed over a six week period for a total of 75 hours. All instances of evaluative feedback from the teachers to individual students were classified, coded and recorded. Feedback was categorized according to the sex of the child who received it, whether it was positive or negative, whether it was conduct or work related, and if work related, whether it referred to the 'form' or the 'substance' of the work. The context in which the feedback occurred was also recorded. Data were tallied and totalled for each observational session, totalled and averaged for each school, and totalled and averaged for all twenty-five observational sessions, in order to determine whether or not each of the nineteen hypotheses could be accepted. Chi-square analysis was used to test the statistical significance of differences found.

CHAPTER 4

DATA ANALYSIS AND RESULTS

In reporting the findings for this study the following procedure will be used: the appropriate data for each hypothesis will be presented in tabular form. Raw frequency scores and percentages will be reported (a) for each observational session, (b) as an average for each school, and (c) as an average for all sessions. Any patterns noted that may have relevance for the focus of this study will be pointed out. Differences found were tested by chi-square analysis (Popham & Sirotnik, 1967). The level of significance used throughout was $p \leq .05$. The results of these tests will be reported and related to the pertinent hypothesis. Where appropriate, the findings will be related to the various studies surveyed in the literature review.

Total Feedback

A total of 1753 feedback exchanges were coded and analyzed for this study.

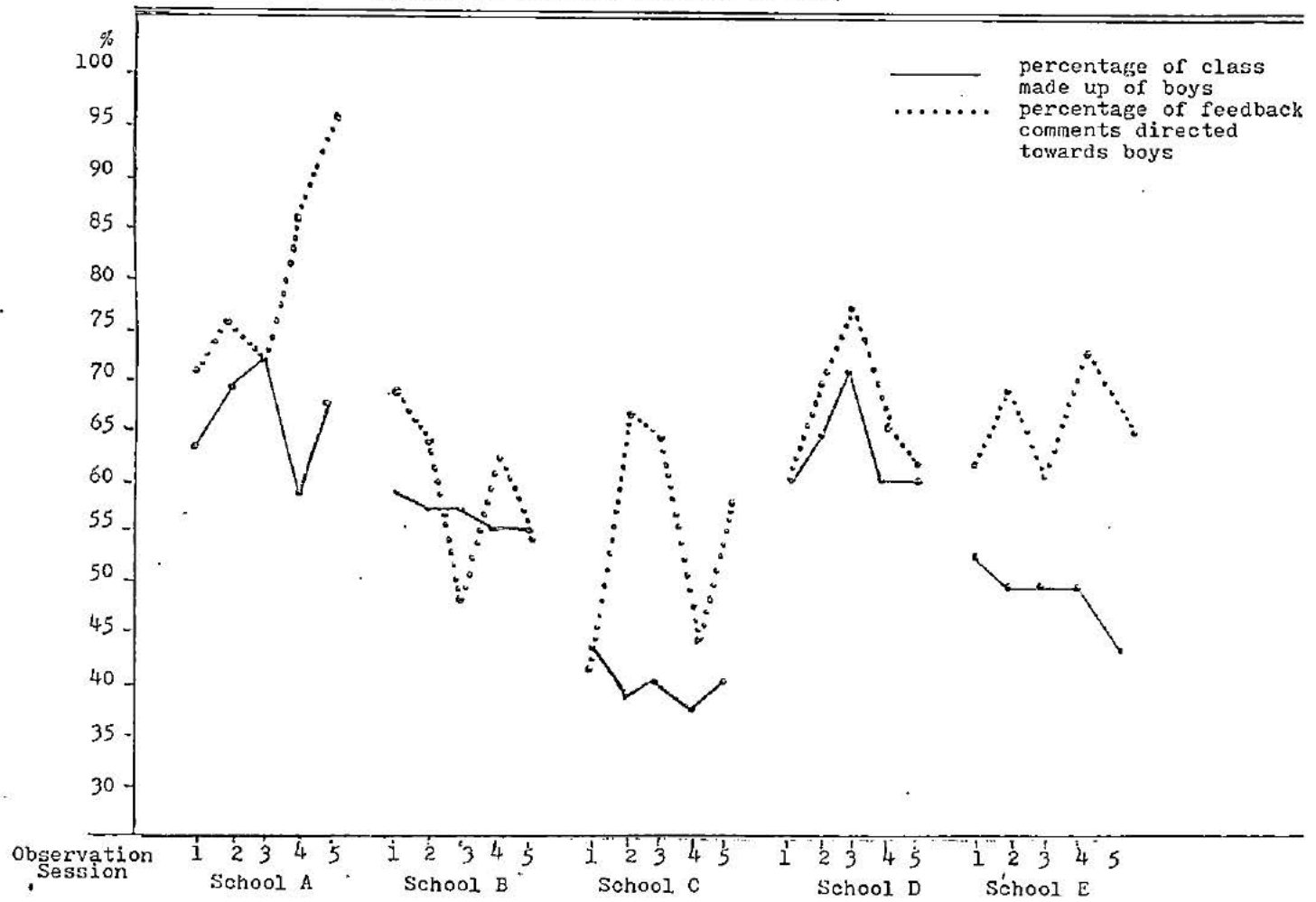
Hypothesis 1

Boys will receive a higher proportion of the teacher feedback than will girls.

Results are presented in Figure 1 (see Appendix D for raw data). Examination of the graph reveals a consistent

Figure 1

Comparison of Proportion of Boys in Each Class and Proportion of Teacher Feedback Directed to Them



pattern: boys received an average of nine percent more of the teacher feedback than their numbers would warrant. The hypothesis is accepted.

Boys received 'more than their share' of teacher feedback in 20 of the 25 observational sessions, and school averages show the finding to be true for all schools. In only three sessions did the boys receive less feedback than would be expected. Two of these sessions involved Class B and the departure from the pattern may possibly be accounted for by the presence in that class of a girl with behavior problems. Results are consistent with those presented by Brophy and Good (1974), and Good, Sikes and Brophy (1973).

Hypothesis 2

There will be no significant difference between the amount of positive and the amount of negative teacher feedback directed to the boys.

The distribution of positive and negative feedback to the boys is presented in Table 4. The difference found between the two categories, for the total sample, obtained a χ^2 value of 11.08 with $p < .001$. The hypothesis therefore is rejected. The results of chi-square analysis of the difference found between the two categories at each school are presented in Table 5.

Examination of Table 4 reveals that boys received an average of 10% more negative than positive feedback. In three of the five schools observed (Schools A, B and C) the boys received significantly more negative than positive

Table 4

Distribution of Positive and Negative Feedback Directed to Boys

School	Session	Total Number of Feedback Comments	Positive Feedback		Negative Feedback	
			Raw Score	% of Total	Raw Score	% of Total
A	1	41	22	54	19	46
	2	38	19	50	19	50
	3	46	14	30	32	70
	4	24	10	42	14	58
	5	26	8	31	18	69
School Average		175	73/175	42	102/175	58
B	1	93	52	56	41	44
	2	59	28	47	31	53
	3	34	9	26	25	74
	4	22	7	32	15	68
	5	33	4	12	29	88
School Average		241	100/241	41	141/241	59
C	1	33	8	24	25	76
	2	22	2	9	20	91
	3	51	15	29	36	71
	4	33	9	27	24	73
	5	26	13	50	13	50
School Average		165	47/165	28	118/165	72
D	1	73	35	48	38	52
	2	60	34	57	26	43
	3	109	62	57	47	43
	4	38	23	61	15	39
	5	35	16	46	19	54
School Average		315	170/315	54	145/315	46
E	1	76	34	45	42	55
	2	44	25	57	19	43
	3	47	24	51	23	49
	4	25	13	52	12	48
	5	45	24	53	21	47
School Average		237	120/237	51	117/237	49
Sample Average		1133	510/1133	45	623/1133	55

-5
 feedback. If findings for these three schools are averaged, results show that boys received 38% positive and 62% negative feedback, which represents a difference of 24% and a definite negative emphasis. The picture is balanced by Schools D and E, however, where in seven of the ten observational sessions, the boys were found to receive slightly more positive than negative feedback. Distribution differences between the two categories proved to be non-significant for those two schools. These results are consistent with the findings reported by Brophy and Good (1970; 1973; 1974), Jackson and Lahaderne (1967), and Meyer and Thompson (1956).

Table 5

Results of chi-square analysis of the difference between the amounts of positive and negative feedback directed to the boys at each of the five schools.

School	χ^2 Value Obtained	Level of Significance
A	4.48	p < .05
B	6.64	p < .01
C	29.70	p < .001
D	1.83	p < .20
E	.02	p < .90
Total Sample	11.08	p < .001

Hypothesis 3

There will be no significant difference between the amount of positive and the amount of negative teacher feedback directed to the girls.

The distribution of positive and negative feedback to the girls is presented in Table 6. For the total sample, the difference found between the two categories obtained an χ^2 value of 32.98 with $p < .001$. The hypothesis is therefore rejected. The results of the chi-square analysis of the difference found for each school are presented in Table 7.

The data in Table 6 show that girls received an average of 24% more positive than negative feedback. The pattern is very consistent; in 19 of the 25 observational sessions girls received more positive than negative feedback. In School B the girls received an average of 10% more negative than positive feedback. This departure from the pattern may perhaps be partially accounted for by the presence of the girl with the behavior problems as she did tend to receive a fair number of 'reminders'.

The finding that girls received more positive than negative feedback is consistent with the results reported by Sikes (1971).

Table 6
Distribution of Positive and Negative Feedback Directed to Girls

School	Session	Total Number of Feedback Comments	Positive Feedback		Negative Feedback	
			Raw Score	% of Total	Raw Score	% of Total
A	1	17	16	94	1	6
	2	12	8	67	4	33
	3	18	8	44	10	56
	4	4	3	75	1	25
	5	1	0	0	1	100
School Average		52	35/52	67	17/52	33
B	1	43	28	65	15	35
	2	32	22	69	10	31
	3	36	9	25	27	75
	4	13	7	54	6	46
	5	28	3	11	25	89
School Average		152	69/152	45	83/152	55
C	1	48	37	77	11	23
	2	11	8	73	3	27
	3	28	13	46	15	54
	4	41	26	63	15	37
	5	18	11	61	7	39
School Average		146	95/146	65	51/146	35
D	1	47	32	68	15	32
	2	25	18	72	7	28
	3	32	24	75	8	25
	4	20	13	65	7	35
	5	21	13	62	8	38
School Average		145	100/145	69	45/145	31
E	1	44	26	59	18	41
	2	19	14	74	5	26
	3	30	24	80	6	20
	4	9	9	100	0	0
	5	23	10	43	13	57
School Average		125	83/125	66	42/125	34
Sample Average		620	382/620	62	238/620	38

Table 7

Results of chi-square analysis of the difference between the amounts of positive and negative feedback directed to the girls at each of the five schools.

School	χ^2 Value Obtained	Level of Significance
A	5.56	$p < .02$
B	1.12	$p < .30$
C	12.66	$p < .001$
D	20.10	$p < .001$
E	12.80	$p < .001$
Total Sample	32.98	$p < .001$

Hypothesis 4

There will be no significant difference between the distribution of positive and negative feedback directed to the boys compared with that directed to the girls.

Data presented in Tables 4 and 6 were compared to test this hypothesis. For the total sample, the difference found between the two distributions obtained a χ^2 value of 43.52 with $p < .001$. The hypothesis is therefore rejected. The results of the chi-square analysis of the difference obtained for each of the five schools are presented in Table 8.

Table 8

Results of chi-square analysis of the difference between the distribution of positive and negative feedback directed to boys and to girls.

School	χ^2 Value Obtained	Level of Significance
A	9.52	$p < .01$
B	.43	$p < .70$
C	40.31	$p < .001$
D	8.60	$p < .01$
E	7.63	$p < .01$
Total Sample	43.52	$p < .001$

Significant differences were found between the amounts of negative and positive feedback directed to the boys as compared with the girls in four of the five schools. In general, boys received more negative than positive feedback, while girls received more positive. Again, School B departs from the pattern. Sex of student does not appear to have been a factor in the distribution of positive and negative feedback in that classroom.

Hypothesis 5

There will be no significant difference between the amount of conduct-related feedback and the amount of work-related feedback directed to the boys.

The distribution of conduct-related and work-related

Table 9

Distribution of Conduct-Related and Work-Related Feedback
Directed to Boys

School	Session	Total Number of Feedback Comments	Conduct-Related		Work-Related	
			Raw Score	% of Total	Raw Score	% of Total
A	1	41	14	34	27	66
	2	38	21	55	17	45
	3	46	30	65	16	35
	4	24	12	50	12	50
	5	26	17	65	9	35
School Average		175	94/175	54	81/175	46
B	1	93	35	38	58	62
	2	59	26	44	33	56
	3	34	21	62	13	38
	4	22	16	73	6	27
	5	33	21	64	12	36
School Average		241	119/241	49	122/241	51
C	1	33	18	55	15	45
	2	22	19	86	3	14
	3	51	27	53	24	47
	4	33	16	48	17	52
	5	26	9	35	17	65
School Average		165	89/165	54	76/165	46
D	1	73	15	21	58	79
	2	60	13	22	47	78
	3	109	24	22	85	78
	4	38	10	26	28	74
	5	35	11	31	24	69
School Average		315	73/315	23	242/315	77
E	1	76	42	55	34	45
	2	44	19	43	25	57
	3	47	24	51	23	49
	4	25	16	64	9	36
	5	45	21	47	24	53
School Average		237	122/237	51	115/237	49
Sample Average		1133	497/1133	44	636/1133	56

feedback directed to boys is presented in Table 9. For the total sample, the difference found obtained a χ^2 value of 16.8 with $p < .001$. The hypothesis is therefore rejected. The results of chi-square analysis of the difference found between the two categories for each of the five schools are presented in Table 10.

Table 10

Results of chi-square analysis of the difference between the amount of conduct-related and work-related feedback directed to boys.

School	Value Obtained	Level of Significance
A	.82	$p < .50$
B	.02	$p < .90$
C	.88	$p < .50$
D	89.60	$p < .001$
E	.15	$p < .70$
Total Sample	16.80	$p < .001$

Of the total feedback directed to the boys, an average of 12% more is work-related rather than conduct-related. Examination of Tables 9 and 10, however, will show that in four of the five classes the feedback is fairly evenly divided between the two categories. Any differences that existed were found not to be significant. In School D the

balance markedly favors the work-related category: 54% more of the feedback delivered in that classroom was contingent upon work rather than behavior.

Hypothesis 6

There will be no significant difference between the amount of conduct-related and work-related feedback directed to the girls.

The distribution of conduct-related and work-related feedback directed to girls is presented in Table 11. For the total sample, the difference between the two feedback categories obtained a χ^2 value of 83.1 with $p < .001$. The hypothesis therefore is rejected. The results of chi-square analysis of the difference found between the two categories for each school are presented in Table 12.

Examination of Table 11 shows that of the total feedback directed to the girls, an average of 36% more is work- rather than conduct-related. In four of the five schools, the data reflect a consistent pattern and a similar ratio of one category to the other. In School B the girls received slightly more conduct-related feedback than work-related, although the difference between the two categories was not found to be significant.

Table 11
 Distribution of Conduct-Related and Work-Related Feedback
 Directed to Girls

School	Session	Total Number of Feedback Comments	Conduct-Related		Work-Related	
			Raw Score	% of Total	Raw Score	% of Total
A	1	17	0	0	17	100
	2	12	2	17	10	83
	3	18	10	56	8	44
	4	4	0	0	4	100
	5	1	1	100	0	0
School Average		52	13/52	25	39/52	75
B	1	43	15	35	28	65
	2	32	9	28	23	72
	3	36	28	78	8	22
	4	13	7	54	6	46
	5	28	22	79	6	21
School Average		152	81/152	53	71/152	47
C	1	48	10	21	38	79
	2	11	2	18	9	82
	3	28	8	29	20	71
	4	41	5	12	36	88
	5	18	7	39	11	61
School Average		146	32/146	22	114/146	78
D	1	47	10	21	37	79
	2	25	5	20	20	80
	3	32	5	16	27	84
	4	20	5	25	15	75
	5	21	2	10	19	90
School Average		145	27/145	19	118/145	81
E	1	44	18	41	26	59
	2	19	5	26	14	74
	3	30	8	27	22	73
	4	9	6	67	3	33
	5	23	6	26	17	74
School Average		125	43/125	34	82/125	66
Sample Average		620	196/620	32	424/620	68

Table 12

Results of chi-square analysis of the difference between the amounts of conduct-related and work-related feedback directed to girls.

School	χ^2 Value Obtained	Level of Significance
A	12.02	$p < .001$
B	.53	$p < .50$
C	44.94	$p < .001$
D	55.86	$p < .001$
E	11.56	$p < .001$
Total Sample	83.10	$p < .001$

Hypothesis 7

There will be no significant difference between the distribution of conduct-related and work-related feedback directed to the boys compared with that directed to the girls.

Data from Tables 9 and 11 were compared to test this hypothesis. For the total sample, the difference found between the two distributions obtained a χ^2 value of 25.17 with $p < .001$. The hypothesis therefore is rejected. The results of the chi-square analysis of the difference obtained for each of the five schools are presented in Table 13.

Table 13

Results of chi-square analysis of the difference between the distribution of conduct-related and work-related feedback directed to boys and to girls.

School	χ^2 Value Obtained	Level of Significance
A	12.14	$p < .001$
B	.42	$p < .70$
C	32.10	$p < .001$
D	.96	$p < .50$
E	8.97	$p < .01$
Total Sample	25.17	$p < .001$

Examination of Tables 9, 11 and 13 reveals that there are significant differences in the distribution of conduct- and work-related feedback to boys compared with girls. On the whole, girls received a higher proportion of work-related comments from the teacher than did boys. The difference is significant in three schools. No significant difference in the treatment of boys and girls was found in Schools B and D, but the differences between those two schools is worth noting. In School B, both boys and girls received approximately equal proportions of each type of feedback; in School D, for both boys and girls, the feedback emphasis was notably work-related.

Positive FeedbackHypothesis 8

There will be no significant difference between the amount of positive work-related feedback and positive conduct-related feedback directed to the boys.

The distribution of positive work-related and positive conduct-related feedback directed to boys is presented in Table 14. The difference found between the two categories for the total sample obtained a χ^2 value of 374.44 with $p < .001$. The hypothesis therefore is rejected. The results of the chi-square analysis of the difference found for each of the five schools is presented in Table 15.

Examination of Tables 14 and 15 reveals that of the positive feedback directed to the boys significantly more was work- rather than conduct-related, and this was true for all schools. The actual percentages are striking: for the total sample an average of 7% of the positive feedback is conduct-related while 93% is work-related. The pattern is consistent across 23 of the 25 observational sessions. In two sessions, equal amounts of both types of feedback were delivered. The results confirm Brophy's (1981) observation that "praise of good conduct [is] rare" (p. 10). They also confirm the finding reported by Dweck et al. (1978) that praise directed to boys is likely to be contingent upon their work.

Table 14
 Distribution of Positive Work-Related and Positive Conduct-Related
 Feedback Directed to Boys

School	Session	Total Number of Positive Comments	Conduct-Related		Work-Related	
			Raw Score	% of Total	Raw Score	% of Total
A	1	22	2	9	20	91
	2	19	3	16	16	84
	3	14	1	7	13	93
	4	10	0	0	10	100
	5	8	2	25	6	75
School Average		73	8/73	11	65/73	89
B	1	52	4	8	48	92
	2	28	2	7	26	93
	3	9	0	0	9	100
	4	7	2	29	5	71
	5	4	2	50	2	50
School Average		100	10/100	10	90/100	90
C	1	8	1	12	7	88
	2	2	1	50	1	50
	3	15	0	0	15	100
	4	9	0	0	9	100
	5	13	1	8	12	92
School Average		47	3/47	6	44/47	94
D	1	35	0	0	35	100
	2	34	1	3	33	97
	3	62	1	2	61	98
	4	23	0	0	23	100
	5	16	1	6	15	94
School Average		170	3/170	2	167/170	98
E	1	34	2	6	32	94
	2	25	1	4	24	96
	3	24	2	8	22	92
	4	13	5	38	8	62
	5	24	2	8	22	92
School Average		120	12/120	10	108/120	90
Sample Average		510	36/510	7	474/510	93

Table 15

Results of chi-square analysis of the difference between the amount of positive work-related and positive conduct-related feedback directed to the boys.

School	χ^2 Value Obtained	Level of Significance
A	42.96	$p < .001$
B	62.40	$p < .001$
C	34.04	$p < .001$
D	156.28	$p < .001$
E	75.20	$p < .001$
Total Sample	374.44	$p < .001$

Hypothesis 9

There will be no significant difference between the amount of positive work-related feedback and positive conduct-related feedback directed to the girls.

The distribution of positive work-related and positive conduct-related feedback directed to the girls is presented in Table 16. The difference between the two categories, for the total sample, obtained a χ^2 value of 233.08 with $p < .001$. The hypothesis is therefore rejected. The results of chi-square analysis of the difference found between the two categories for each of the five schools is presented in Table 17.

Table 16

Distribution of Positive Work-Related and Positive Conduct-Related
Feedback Directed to Girls

School	Session	Total Number of Positive Comments	Conduct-Related		Work-Related	
			Raw Score	% of Total	Raw Score	% of Total
A	1	16	0	0	16	100
	2	8	0	0	8	100
	3	8	0	0	8	100
	4	3	0	0	3	0
	5	0	0	0	0	0
School Average		35	0	0	35/35	100
B	1	28	5	18	23	82
	2	22	3	14	19	86
	3	9	3	33	6	67
	4	7	3	43	4	57
	5	3	2	67	1	33
School Average		69	16/69	23	53/69	77
C	1	37	5	14	32	86
	2	8	0	0	8	100
	3	13	3	23	10	77
	4	26	2	8	24	92
	5	11	1	9	10	91
School Average		95	11/95	12	84/95	88
D	1	32	2	6	30	94
	2	18	1	6	17	94
	3	24	0	0	24	100
	4	13	0	0	13	100
	5	13	0	0	13	100
School Average		100	3/100	3	97/100	97
E	1	26	2	8	24	92
	2	14	1	7	13	93
	3	24	2	8	22	92
	4	8	6	75	2	25
	5	10	0	0	10	100
School Average		82	11/82	13	71/82	87
Sample Average		381	41/381	11	340/381	89

Table 17

Results of chi-square analysis of the difference between the amount of positive work-related and positive conduct-related feedback directed to the girls.

School	χ^2 Value Obtained	Level of Significance
A	33.02	$p < .001$
B	18.78	$p < .001$
C	54.56	$p < .001$
D	86.48	$p < .001$
E	42.46	$p < .001$
Total Sample	223.08	$p < .001$

Examination of Table 16 reveals that significantly more of the positive feedback directed to girls was contingent upon their work rather than their behavior. This pattern is consistent for 23 of the 25 observational sessions, and for the averages of all five schools. Again, it is apparent that "praise of good conduct [is] rare" (Brophy, 1981, p. 10).

Hypothesis 10

There will be no significant difference between the distribution of positive work-related and positive conduct-related feedback directed to the boys compared with that directed to the girls.

Data from Tables 14 and 16 were compared to test this

hypothesis. For the total sample, the difference found between the two distributions obtained a χ^2 value of 3.34 which is not significant at the .05 level. The hypothesis therefore is accepted. The sex of the student does not appear to have been a factor in the distribution of positive work-related and positive conduct-related feedback.

Hypothesis 11

There will be no significant difference between the amount of positive work-related 'substance' feedback and positive work-related 'form' feedback directed to the boys.

The distribution of positive 'form' and 'substance' feedback directed to the boys is presented in Table 18. For the total sample, the difference found between the two categories obtained a χ^2 value of 43.14 with $p < .001$. The hypothesis therefore is rejected. The results of the chi-square analysis of the difference obtained for each of the five schools are presented in Table 19.

Examination of Tables 18 and 19 reveals that significantly more of the positive work-related feedback directed to boys was related to matters of 'substance' rather than 'form'. The pattern is fairly consistent for all five schools although in Schools A, C and E the difference between the two feedback categories did not reach statistical significance. The greatest positive emphasis on matters of 'substance' occurred in School D. These results are consistent with the finding reported by Dweck et al. (1978) that boys are more likely to be reinforced for the

Table 18
 Distribution of Positive Work-Related 'Form' and 'Substance'
 Feedback Directed to Boys

School	Session	Number of Positive Work- Related Comments	Positive 'Form'		Positive 'Substance'	
			Raw Score	% of Total	Raw Score	% of Total
A	1	20	7	35	13	65
	2	16	9	56	7	44
	3	13	4	31	9	69
	4	10	4	40	6	60
	5	6	2	33	4	67
School Average		65	26/65	40	39/65	60
B	1	48	11	23	37	77
	2	26	11	42	15	58
	3	9	7	78	2	22
	4	5	1	20	4	80
	5	2	0	0	2	100
School Average		90	30/90	33	60/90	67
C	1	7	4	57	3	43
	2	1	0	0	1	100
	3	15	7	47	8	53
	4	9	6	67	3	33
	5	12	3	25	9	75
School Average		44	20/44	45	24/44	55
D	1	35	7	20	28	80
	2	33	2	6	31	94
	3	61	28	46	33	54
	4	23	5	22	18	78
	5	15	0	0	15	100
School Average		167	42/167	25	125/167	75
E	1	32	9	28	23	72
	2	24	12	50	12	50
	3	22	11	50	11	50
	4	8	1	12	7	88
	5	22	14	64	8	36
School Average		108	47/108	44	61/108	56
Sample Average		474	165/474	35	309/474	65

intellectual aspects of their work than for matters of form.

Table 19

Results of the chi-square analysis of the difference between the amount of positive work-related 'substance' and positive work-related 'form' feedback directed to the boys.

School	χ^2 Value Obtained	Level of Significance
A	2.22	$p < .10$
B	9.34	$p < .01$
C	.20	$p < .70$
D	40.26	$p < .001$
E	1.56	$p < .30$
Total Sample	43.14	$p < .001$

Hypothesis 12

There will be no significant difference between the amount of positive work-related 'substance' feedback and positive work-related 'form' feedback directed to the girls.

The distribution of positive work-related 'form' and 'substance' feedback directed to the girls is presented in Table 20. For the total sample, the difference found between the two categories obtained a χ^2 value of 24.36 with $p < .001$. The hypothesis is therefore rejected. The results of the chi-square analysis of the difference

Table 20

Distribution of Positive Work-Related 'Form' and 'Substance'
Feedback Directed to Girls

School	Session	Number of Positive Work- Related Comments	Positive 'Form'		Positive 'Substance'	
			Raw Score	% of Total	Raw Score	% of Total
A	1	16	0	0	16	100
	2	8	3	37	5	63
	3	8	3	37	5	63
	4	3	2	67	1	33
	5	0	0	0	0	0
School Average		35	8/35	23	27/35	77
B	1	23	6	26	17	74
	2	19	9	47	10	53
	3	6	4	67	2	33
	4	4	0	0	4	100
	5	1	0	0	1	100
School Average		53	19/53	36	34/53	64
C	1	31	16	52	15	48
	2	8	3	37	5	63
	3	10	6	60	4	40
	4	24	11	46	13	54
	5	10	2	20	8	80
School Average		83	38/83	46	45/83	54
D	1	30	8	27	22	73
	2	17	1	6	16	94
	3	24	12	50	12	50
	4	13	2	15	11	85
	5	13	1	8	12	92
School Average		97	24/97	25	73/97	75
E	1	24	4	17	20	83
	2	13	9	69	4	31
	3	22	11	50	11	50
	4	3	1	33	2	67
	5	10	10	100	0	0
School Average		72	35/72	49	37/72	51
Sample Average		340	124/340	36	216/340	64

obtained for each of the five schools are presented in Table 21.

Table 21

Results of the chi-square analysis of the difference between the amount of positive work-related 'substance' and positive work-related 'form' feedback directed to the girls.

School	χ^2 Value Obtained	Level of Significance
A	9.26	$p < .01$
B	3.70	$p < .10$
C	.43	$p < .70$
D	23.76	$p < .001$
E	.01	$p < .95$
Total Sample	24.36	$p < .01$

Examination of Tables 20 and 21 reveals that of the positive work-related feedback directed to the total sample of girls, significantly more was related to matters of substance rather than form. The pattern is fairly consistent, but it must be noted that the differences obtained in three of the schools are not statistically significant. School D stands out as one in which matters of substance received considerable reinforcement and comment. These results are not supportive of the finding reported by Dweck et al.

(1978) that girls are more likely to be praised for matters of form than for matters of intellectual substance.

Hypothesis 13

There will be no significant difference between the distribution of positive work-related 'substance' and positive work-related 'form' feedback directed to the boys compared with that directed to the girls.

Data from Tables 18 and 20 were compared to test this hypothesis. For the total sample, the difference found between the two distributions obtained a χ^2 value of .17 which is not significant at the .05 level. The hypothesis therefore is accepted. Sex of student does not appear to have been a factor in the distribution of positive work-related 'substance' and positive work-related 'form' feedback. These results are not consistent with those reported by Dweck et al. (1978).

Negative Feedback

Hypothesis 14

There will be no significant difference between the amount of negative conduct-related and negative work-related feedback directed to the boys.

The distribution of negative conduct-related and work-related feedback directed to boys is presented in Table 22. For the total sample, the difference between the two categories obtained a χ^2 value of 142.54 with $p < .001$. The hypothesis therefore is rejected. The results of the

Table 22

Distribution of Negative Conduct-Related and Negative Work-Related
Feedback Directed to Boys

School	Session	Number of Negative Comments	Conduct-Related		Work-Related	
			Raw Score	% of Total	Raw Score	% of Total
A	1	19	12	63	7	37
	2	19	18	95	1	5
	3	32	29	91	3	9
	4	14	12	86	2	14
	5	18	15	83	3	17
School Average		102	86/102	84	16/102	16
B	1	41	31	76	10	24
	2	31	24	77	7	23
	3	25	21	84	4	16
	4	15	14	93	1	7
	5	29	19	66	10	34
School Average		141	109/141	77	32/141	23
C	1	25	17	68	8	32
	2	20	18	90	2	10
	3	36	27	75	9	25
	4	24	16	67	8	33
	5	13	8	62	5	38
School Average		118	86/118	73	32/118	27
D	1	38	15	39	23	61
	2	26	12	46	14	54
	3	47	23	49	24	51
	4	15	10	67	5	33
	5	19	10	53	9	47
School Average		145	70/145	48	75/145	52
E	1	42	40	95	2	5
	2	19	18	95	1	5
	3	23	22	96	1	4
	4	12	11	92	1	8
	5	21	19	90	2	10
School Average		117	110/117	94	7/117	6
Sample Average		623	461/623	74	162/623	26

chi-square analysis of the difference found for each of the five schools are presented in Table 23.

Table 23

Results of the chi-square analysis of the difference between the amount of negative conduct-related and negative work-related feedback directed to the boys.

School	χ^2 Value Obtained	Level of Significance
A	46.68	$p < .001$
B	40.96	$p < .001$
C	23.80	$p < .001$
D	.11	$p < .80$
E	88.92	$p < .001$
Total Sample	142.54	$p < .001$

Examination of Tables 22 and 23 reveals that, of the negative feedback boys received, a higher proportion was related to conduct rather than to their work. The difference is significant for four of the five schools. School D is the exception once again; in that classroom, almost equivalent amounts of each type of feedback were received. In School E, 94% of the negative comments directed to the boys concerned their behavior. These results are consistent with the findings reported by Brophy and Good (1970), Jackson and Lahaderne (1967), Meyer and Thompson (1959) and Spaulding (1963).

Hypothesis 15

There will be no significant difference between the amount of negative conduct-related and negative work-related feedback directed to the girls.

The distribution of negative conduct-related and work-related feedback directed to the girls is presented in Table 24. For the total sample, the difference found between the two categories obtained a χ^2 value of 21.18 with $p < .001$. The hypothesis therefore is rejected. The results of the chi-square analysis of the difference found for each of the five schools are presented in Table 25.

Examination of Tables 24 and 25 reveals that, of the negative feedback directed to the total sample of girls, a significantly higher proportion (an average of 30% more) was related to conduct rather than to work. In Schools A, B and E this pattern is consistent; conduct received the heavier negative emphasis. In School C, 18% more of the negative feedback was work- rather than conduct-related, although this difference was not found to be statistically significant. In School D approximately equivalent proportions of conduct-related and work-related negative feedback was directed to the girls.

Table 24

Distribution of Negative Conduct-Related and Negative Work-Related
Feedback Directed to Girls

School	Session	Number of Negative Comments	Conduct-Related		Work-Related	
			Raw Score	% of Total	Raw Score	% of Total
A	1	1	0	0	1	100
	2	4	2	50	2	50
	3	10	10	100	0	0
	4	1	0	0	1	100
	5	1	1	100	0	0
School Average		17	13/17	76	4/17	24
B	1	15	10	67	5	33
	2	10	6	60	4	40
	3	27	25	93	2	7
	4	6	4	67	2	33
	5	25	20	80	5	20
School Average		83	65/83	78	18/83	22
C	1	11	5	45	6	55
	2	3	2	67	1	33
	3	15	5	33	10	67
	4	15	3	20	12	80
	5	7	6	86	1	14
School Average		51	21/51	41	30/51	59
D	1	15	8	53	7	47
	2	7	4	57	3	43
	3	8	5	63	3	37
	4	7	5	71	2	29
	5	8	2	25	6	75
School Average		45	24/45	53	21/45	47
E	1	18	16	89	2	11
	2	5	4	80	1	20
	3	6	6	100	0	0
	4	0	0	0	0	0
	5	13	6	46	7	54
School Average		42	32/42	76	10/42	24
Sample Average		238	155/238	65	83/238	35

Table 25

Results of the chi-square analysis of the difference between the amount of negative conduct-related and negative work-related feedback directed to girls.

School	χ^2 Value Obtained	Level of Significance
A	3.76	$p < .10$
B	25.48	$p < .001$
C	1.25	$p < .30$
D	.08	$p < .80$
E	10.50	$p < .01$
Total Sample	21.18	$p < .001$

Hypothesis 16

There will be no significant difference between the distribution of negative conduct-related and negative work-related feedback directed to the boys compared with that directed to the girls.

Data from Tables 22 and 24 were compared to test this hypothesis. For the total sample, the difference between the two distributions obtained a χ^2 value of 3.03 which is not significant at the .05 level. The hypothesis therefore is accepted. Both boys and girls received proportionately more negative conduct-related feedback than negative feedback about their work. Perhaps worth

noting, however, is the finding that girls received less negative feedback for conduct than boys did, and more negative comment for work-related matters.

Hypothesis 17

There will be no significant difference between the amount of negative work-related 'form' feedback and negative work-related 'substance' feedback directed to the boys.

The distribution of negative work-related 'form' and 'substance' feedback directed to the boys is presented in Table 26. The difference found between the two categories, for the total sample, obtained a χ^2 value of 1.04 which is not significant at the .05 level. The hypothesis therefore is accepted.

Hypothesis 18

There will be no significant difference between the amount of negative work-related 'form' feedback and negative work-related 'substance' feedback directed to the girls.

The relevant data are presented in Table 27. For the total sample, the difference found obtained a χ^2 value of .192 which is not significant at the .05 level. The hypothesis therefore is accepted. Examination of Table 27 shows that results are mixed and that no patterns or consistencies can be detected.

Hypothesis 19

There will be no significant difference between the distribution of negative work-related 'form' and negative work-related 'substance' feedback directed to the boys

Table 26

Distribution of Negative Work-Related 'Form' and 'Substance'
Feedback Directed to Boys

School	Session	Number of Negative Work- Related Comments	Negative 'Form'		Negative 'Substance'	
			Raw Score	% of Total	Raw Score	% of Total
A	1	7	4	57	3	43
	2	1	1	100	0	0
	3	3	3	100	0	0
	4	2	2	100	0	0
	5	3	3	100	0	0
School Average		16	13/16	81	3/16	19
B	1	10	5	50	5	50
	2	7	3	43	4	57
	3	4	2	50	2	50
	4	1	1	100	0	0
	5	10	10	100	0	0
School Average		32	21/32	66	11/32	34
C	1	8	3	38	5	62
	2	2	1	50	1	50
	3	9	3	33	6	67
	4	8	6	75	2	25
	5	5	4	80	1	20
School Average		32	17/32	53	15/32	47
D	1	23	10	43	13	57
	2	14	3	21	11	79
	3	24	16	67	8	33
	4	5	3	60	2	40
	5	9	3	33	6	67
School Average		75	35/75	47	40/75	53
E	1	2	0	0	2	100
	2	1	0	0	1	100
	3	1	0	0	1	100
	4	1	1	100	0	0
	5	2	1	50	1	50
School Average		7	2/7	29	5/7	71
Sample Average		162	88/162	54	74/162	46

Table 27

Distribution of Negative Work-Related 'Form' and 'Substance'
Feedback Directed to Girls

School	Session	Number of Negative Work- Related Comments	Negative 'Form'		Negative 'Substance'	
			Raw Score	% of Total	Raw Score	% of Total
A	1	1	0	0	1	100
	2	2	2	100	0	0
	3	0	0	0	0	0
	4	1	0	0	1	100
	5	0	0	0	0	0
School Average		4	2/4	50	2/4	50
B	1	5	2	40	3	60
	2	4	4	100	0	0
	3	2	2	100	0	0
	4	2	2	100	0	0
	5	5	5	100	0	0
School Average		18	15	83	3	17
C	1	6	2	33	4	67
	2	1	0	0	1	100
	3	10	5	50	5	50
	4	12	1	8	11	92
	5	1	0	0	1	100
School Average		30	8	27	22	73
D	1	7	3	43	4	57
	2	3	0	0	3	100
	3	3	3	100	0	0
	4	2	1	50	1	50
	5	6	1	17	5	83
School Average		21	8	38	13	62
E	1	2	1	50	1	50
	2	1	0	0	1	100
	3	0	0	0	0	0
	4	0	0	0	0	0
	5	7	5	71	2	29
School Average		10	6/10	60	4/10	40
Sample Average		83	39/83	47	44/83	53

compared with that directed to the girls.

Data from Tables 26 and 27 were compared to test this hypothesis. The difference found between the two distributions, for the total sample, obtained a χ^2 value of .904 which is not significant at the .05 level. The hypothesis therefore is accepted. The sex of the student does not appear to have been a factor in the distribution of negative 'form' and 'substance' feedback. These results are not consistent with those presented by Dweck et al. (1978).

Distribution of Positive and Negative Feedback to Whole Class

The distribution of positive and negative feedback to the class as a whole, for each of the five schools observed, is presented in Table 28. The results of chi-square analysis of the difference between the two categories found for each school is presented in Table 29. Examination of Tables 28 and 29 reveals that, in terms of the total sample and all 25 observations, there was no significant difference between the amount of positive and negative feedback delivered by the teachers. It appears that the teachers spent as much time praising their students as they did criticizing them. Examination of the results for each school, however, shows that there are differences among schools. In Schools A and C approximately equivalent amounts of positive and negative feedback were delivered. In School B, significantly more negative feedback was received by the students; in Schools D and E, significantly more positive feedback was

Table 28
 Distribution of Positive and Negative Feedback
 to Class as a Whole

School	Total Number of Feedback Comments	Positive Feedback		Negative Feedback	
		Raw Score	% of Total	Raw Score	% of Total
A	227	108	48	119	52
B	393	169	43	224	57
C	311	142	46	169	54
D	460	270	59	190	41
E	362	203	56	159	44
Total Sample	1753	892	51	861	49

Table 29
 Results of Chi-square Analysis of the Difference Between
 the Amount of Positive and Negative Feedback
 Delivered at Each School

School	χ^2 Value Obtained	Level of Significance
A	.44	$p < .70$
B	7.42	$p < .01$
C	2.18	$p < .50$
D	13.56	$p < .001$
E	5.10	$p < .05$
Total Sample	.52	$p < .50$

received.

Distribution of Conduct- and Work-Related Feedback to Class
as a Whole

Table 30 presents the distribution of conduct- and work-related feedback to the class as a whole, for each of the five schools. Table 31 presents the results of the chi-square analysis of the difference between the two categories found for each school.

As a group, the teachers delivered 20 percent more work-related feedback than feedback concerned with behavior. Examination of Tables 30 and 31, however, reveals differences among the classes. In Schools A, B and E approximately equivalent proportions of conduct- and work-related feedback were received. In Schools C and D significantly more of the feedback was related to the work the children were doing, rather than to their classroom conduct.

Distribution of Feedback in Different Contexts

In order to investigate whether any relationship exists between the type of activity engaged in and the amount, or kind, of feedback received, the context in which the feedback occurred was recorded along with the coding of feedback type. Table 32 presents the percentage distribution of the feedback delivered in the four context categories used in this study (cf. Chapter 3 for descriptions).

Examination of Table 32 reveals that most feedback was delivered to students during quiet activities in which the

Table 30
 Distribution of Conduct-Related and Work-Related Feedback
 to Class as a Whole

School	Total Number of Feedback Comments	Conduct-Related		Work-Related	
		Raw Score	% of Total	Raw Score	% of Total
A	227	107	47	120	53
B	393	200	51	193	49
C	311	121	39	190	61
D	460	100	22	360	78
E	362	165	46	197	54
Total Sample	1753	693	40	1060	60

Table 31
 Results of Chi-square Analysis of the Difference Between
 the Amount of Conduct-Related and Work-Related
 Feedback Delivered at Each School

School	χ^2 Value Obtained	Level of Significance
A	.634	$p < .50$
B	.092	$p < .80$
C	14.860	$p < .001$
D	145.800	$p < .001$
E	2.660	$p < .20$
Total Sample	76.4	$p < .001$

Table 32

Percentage

Distribution of Feedback According to Context Categories

School	Percentage of Feedback Delivered			
	Quiet Whole Group	Active Whole Group	Quiet Individual Choice	Active Individual Choice
A	45	23	27	5
B	83	12	2	3
C	71	28	0	1
D	81	17	2	0
E	87	6	0	7
Total Sample	76	16	5	3

whole class was involved. Ninety-two percent of all feedback was delivered during whole-class activities; only eight percent was delivered during individual-choice activities. This imbalance is striking. The pattern of distribution of teacher feedback is very similar in four of the five classes. Only in School A was teacher feedback somewhat more evenly distributed among the various categories, and even in that school 68 percent of the feedback was delivered in whole-group activities.

The whole-group and individual-choice distinctions were collapsed to create two context categories: active and quiet. Table 33 presents a comparison of the distribution of the conduct-related, work-related 'form' and work-related 'substance' feedback in those two contexts. Chi-square analysis of the difference between the two distributions obtained a χ^2 value of 123.2 with $p < .001$. Context, therefore, was significantly related to the type of feedback received. Examination of Table 33 shows that an average of 22 percent more of the feedback delivered in active contexts was conduct-related. More emphasis is placed on 'form' in active contexts. Predictably, considerably more emphasis is placed on 'substance' during quiet activities.

Table 33

Comparison of the Distribution of Conduct-Related, 'Form'-Related and
'Substance'-Related Feedback in Active and Quiet Contexts

		Quiet					
School	Total Number of Feedback Comments	Conduct-Related		Work-Related 'Form'		Work-Related 'Substance'	
		Raw Score	% of Total	Raw Score	% of Total	Raw Score	% of Total
A	163	55	34	40	24	68	42
B	334	157	47	69	21	108	32
C	222	88	40	46	20	88	40
D	384	75	19	65	17	244	64
E	315	127	40	88	28	100	32
Total Sample	1418	502	35	308	22	608	43
		Active					
A	64	53	83	8	12	3	5
B	59	43	73	16	27	0	0
C	89	33	37	38	43	18	20
D	76	25	33	44	58	7	9
E	47	38	81	2	4	7	15
Total Sample	335	192	57	108	32	35	11

Summary of Findings

In summary, the data reveal that boys received a greater proportion of the teacher feedback than did girls. The boys received more negative than positive feedback while the opposite was true for the girls. Both boys and girls received more work-related than conduct-related feedback, but the girls received a significantly higher proportion of work-related feedback than did the boys. Both boys and girls received significantly more positive feedback for work-related matters rather than for conduct, and significantly more negative feedback for conduct-related matters than for work-related ones. Although the differences were not found to be statistically significant, boys tended to receive more negative conduct-related feedback than girls, while girls tended to receive more negative feedback related to their work.

When work-related feedback was analyzed in terms of whether it was contingent upon matters of 'form' or 'substance' it was found that both boys and girls received significantly more positive feedback for 'substance'-related matters. Of the negative work-related feedback delivered, approximately equivalent proportions of 'substance'-related and 'form'-related feedback were received by both the boys and the girls. Boys and girls were not responded to differently by their teachers with regard to these two feedback categories. These findings, therefore, are not consistent with those reported by Dweck et al. (1978).

When the proportions of positive and negative feedback delivered by the teachers to all students were calculated it was found that no significant difference existed between the amounts of praise and criticism delivered. Teachers were found to respond positively to their students as frequently as they responded negatively. Significant differences among schools were noted, however.

When the proportions of conduct-related and work-related feedback delivered by the teachers to all students were calculated it was found that, in general, teachers responded to work-related matters more often than conduct-related ones. Again, significant differences among schools were noted.

The distribution of feedback according to four context categories was calculated. Most of the feedback was delivered to students during quiet activities in which the whole class was involved. Ninety-two percent of all feedback was delivered during whole-class activities while only eight percent was delivered during individual choice activities. Context was found to be significantly related to the amount and kind of feedback received. Significantly more conduct-related feedback was received in active contexts, more emphasis was placed on 'form' in active contexts, and considerably more emphasis was placed on 'substance' during quiet ones.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Review of the Background

This study was designed to investigate whether there are any quantitative and/or qualitative differences in the verbal feedback delivered to male and female kindergarten students by their teachers. More specifically, the study was designed to determine whether any evidence of the patterns of differential feedback reported by Dweck, Davidson, Nelson and Enna (1978) in their analysis of teacher feedback directed to fourth and fifth grade students would appear at the kindergarten level.

Dweck and her colleagues found subtle but striking differences in the ways teachers responded to the girls as compared to the boys they observed. They found that boys were more likely to be praised for the intellectual aspects of their work than for matters of 'form', and more likely to be criticized for matters of 'form' than for matters relating to the 'substance' or intellectual aspects of their work. For girls, this pattern was found to be reversed. Dweck et al. (1978) reported that girls were more likely to be praised for matters of 'form', but criticized for matters concerning the content or correctness of their work. The possible long-term consequences of these differential responses were argued in terms of

attribution theory. Dweck et al. (1978) expressed concern that, as a result of the feedback they received, boys could attribute their failures to lack of effort or carelessness, and their successes to ability. Girls, on the other hand, as a result of the feedback they received, would have little choice but to attribute their failures to lack of ability and their successes to good luck or the benevolent disposition of the teacher. Luck can change and effort can be adjusted but ability, or the lack of it, is more or less fixed. Consequently, Dweck et al. (1978) argued that such different attributions could possibly explain why boys seem better able than girls to persist in the face of academic failure, why girls consistently express lower expectations for success than boys, and why girls are more likely than boys to display symptoms of learned helplessness.

The possible consequences of differential feedback are not yet well understood. Before consequences can be considered, however, it is necessary first to establish that such differential patterns in fact exist. The present study was designed to investigate this question at the kindergarten level. A second goal of this study was to determine whether the type of activity the student engages in is in any way related to the amount or kind of feedback received.

Research studies concerning student-teacher interactions

and teacher feedback were surveyed. In general, the studies reviewed found that boys received a higher proportion of the teacher's attention and verbal feedback than did girls. Boys tended to receive more criticism than girls, but a number of studies also reported that they received more praise as well. Although girls were found to have fewer contacts with their teachers than boys, and to receive less feedback from them, the feedback that was directed towards them was found more likely to be positive than negative.

Research findings for differences in the distribution of praise and instructional time to boys and girls are contradictory. Some studies have reported that boys received more of each, others that girls did, and still others have reported that the sex of a student is not a factor in teacher response behavior. A number of studies have found that students are aware that boys tend to receive more negative teacher feedback than girls, and that girls tend to receive more praise. It has been reported, too, that although teachers may realize that they tend to verbally discipline boys more frequently than girls, they do not appear to be aware that they may be responding differentially to boys and girls in regard to the distribution of positive feedback or instructional attention.

Summary of Design and Analysis

One hundred kindergarten children in five classes in School District 65 were observed over a six week period for a total of 75 hours. All instances of evaluative verbal feedback from the teachers to individual students were classified, coded and recorded on a tally sheet. It was thought that the recording of all feedback comments delivered by the teacher during the full range of activities that the kindergarten classes engage in would provide a more comprehensive and accurate reflection of the evaluative situation actually encountered by the students than that which could be provided by time-sampling techniques.

Feedback was categorized according to the sex of the child who received it, whether it was positive or negative, whether it was conduct or work related, and if work related, whether it referred to the 'form' or 'substance' of the work. The context in which the feedback occurred was also recorded.

Data were tallied and totalled for each observational session, totalled and averaged for each school, and totalled and averaged for all 25 observational sessions, in order to determine whether or not each of the nineteen hypotheses could be accepted. Differences found between the distribution of the various categories of feedback to either boys or girls, and between the differences in the allocation of the same types of feedback to both boys and

girls, were tested by chi-square analysis. The distribution of positive and negative feedback, and conduct-related and work-related feedback was calculated for the total sample of students. As well, the distribution of feedback according to four context categories was calculated. Patterns of feedback distribution in quiet and active contexts were then compared. All differences found were tested by the chi-square method to determine statistical significance at the .05 level.

Conclusions

The findings from this study are not consistent with, nor do they offer support for, those reported by Dweck, Davidson, Nelson and Enna (1978). Although no evidence of the specific patterns noted by Dweck and her colleagues was found, a number of other significant differences in the amount and kind of teacher feedback delivered to boys as compared to girls appeared.

Analysis of the data revealed that boys consistently received a higher proportion of the teacher feedback than their numbers entitled them to. It was reasoned that if a class was comprised of 50 percent boys and 50 percent girls, then boys were entitled to 50 percent of the feedback delivered by the teacher. On the basis of this logic, it was found that the difference between the amount of

feedback expected and the amount actually received by the boys averaged 9 percent more than their numbers warranted. Consequently, the girls received an average of 9 percent less teacher feedback than they were entitled to. The figure becomes more impressive when stated as an 18 percent difference.

In reporting their findings of the differences between the amounts of feedback delivered to boys and girls in three categories (i.e., instructional, managerial, and prohibitory), Jackson and Lahaderne (1967) stressed the cumulative significance of even small differences. When projected into yearly totals, or years-of-schooling totals, then such differential treatment might quite possibly have a substantial impact. Although it can be demonstrated that a fair proportion of the feedback delivered to boys is likely to be negative, and that boys probably receive more feedback because their behavior demands more teacher intervention and verbal monitoring, an 18% difference between the amount of feedback received by the boys compared to that received by the girls should be a matter of some concern. There appears to be some grounds for the claim that "girls are more likely to be ignored" (Serbin et al., 1973, p. 80) in the classroom than boys. These findings are consistent with those reported by Good, Sikes and Brophy (1973), Serbin et al. (1973) and Spaulding (1963).

Boys received an average of ten percent more negative than positive feedback. This difference proved significant,

and consistent across schools. This finding supports those reported by Meyer and Thompson (1956), Jackson and Lahaderne (1967) and Brophy and Good (1970). In contrast, girls received an average of 24 percent more positive than negative feedback. Only one school, School B, failed to display this pattern; girls there received ten percent more negative feedback and consequently were treated no differently from the boys in that classroom in terms of distribution of praise and criticism. For the other four schools, the difference between the distribution of positive and negative feedback to boys as compared to girls proved to be statistically significant. In general, boys were found to have received more negative than positive feedback, while the opposite proved true for the girls.

When the distribution of conduct-related and work-related feedback was examined, it was found that both boys and girls received more work-related than conduct-related feedback but significant differences were noted in the proportions received by boys compared with girls. Boys received an average of 12 percent more work-related feedback than comments on their behavior; girls, however, received an average of 36 percent more work-related feedback. It is worth noting that in four of the five schools, the difference between the amount of conduct-related and work-related feedback directed to the boys was not statistically significant. In School D, boys received considerably more (i.e., 54 percent more) work-related

than conduct-related feedback, and this one school accounts for the difference found between the two categories for the total sample of boys.

When these two feedback categories were analyzed in terms of the distribution of positive and negative comments received in each, significant differences were found in the distribution of the feedback, but not in the treatment of boys and girls in terms of each other. In all five schools, both boys and girls received significantly more praise and positive teacher feedback for work-related matters. Ninety-three percent of the positive feedback delivered to boys, and eighty-nine percent of that delivered to girls was contingent upon their work. Praise of good conduct was rare.

Both boys and girls received significantly more negative feedback for conduct-related matters than for work-related concerns. Boys, however, averaged nine percent more negative conduct-related feedback than girls, and nine percent less work-related feedback than girls. These differences did not reach significance at the .05 level, however.

Work-related feedback was categorized as either being contingent upon matters of 'form' or matters of 'substance'. On the basis of the findings reported by Dweck et al. (1978), the question investigated by this study concerned whether boys and girls would be responded to differently in terms

of these two types of feedback.

The findings for positive work-related feedback revealed that both boys and girls received significantly more 'substance'-related feedback than 'form'-related feedback. There were no significant differences found between the proportions allocated to each category for each sex. In fact, there was only a one percent difference noted between the amounts delivered to the boys (i.e., 35% for 'form' and 65% for 'substance') and to the girls (i.e., 36% for 'form' and 64% for 'substance').

The findings for negative work-related feedback revealed that both boys and girls received approximately equivalent proportions of 'form' and 'substance' feedback. No significant differences were found between the amounts allocated to each category for each sex. No consistent patterns could be discerned from examining the data from the various sessions or from comparison of one school with another. Therefore, the results of this study are not consistent with those reported by Dweck et al. (1978), and they do not specifically or directly support her arguments about the potential impact of teacher feedback on the attributional interpretations made by boys and girls.

Further analysis of the data was carried out that excluded the sex variable. The distribution of positive and negative feedback delivered to all students was calculated. Results showed that in terms of the total sample and all observations, no significant differences existed

between the rates of praise and criticism delivered. Teachers were as likely to respond to their students positively as negatively. When the results for individual schools were examined, however, significant differences were found. In two schools, approximately equivalent amounts of positive and negative feedback were delivered; in one school the students received significantly more negative feedback; in the remaining two schools the students received significantly more positive feedback. Interestingly, in the classroom that was subjectively judged by the observer as having one of the most generally "positive learning environments" it was found that 18% more positive than negative feedback was delivered by the teacher. However, the classroom that was subjectively judged as having one of the least "positive learning environments" was found to be the one other class in which a higher proportion of positive feedback (i.e., 12% more) was delivered to the students. At first glance this would seem to indicate that subjective evaluations are indeed suspect. However, closer examination of the types of negative feedback delivered to this particular classroom revealed that an extremely high proportion of the negative feedback that was delivered to the boys (i.e., 94%) was conduct-related. Seventy-six percent of the negative feedback delivered to the girls was conduct-related. When compared with the proportions of negative conduct-related feedback distributed at the other schools, the figure for

the boys is found to be 20% above the sample average, and the figure for the girls 11% above the sample average. This perhaps accounts for the subjective assessment by the observer that the general atmosphere in this classroom was not as supportive or positive as in the other four.

The distribution of conduct-related and work-related feedback to all students was calculated. As a group, the teachers delivered 20% more work-related feedback. However, differences among schools were again noted. In three of the schools approximately equivalent proportions of each feedback type were delivered, while in two schools significantly more emphasis was placed on work-related matters.

As has been previously pointed out (see Tables 14 and 16) very little of the positive feedback received by either boys or girls was related to conduct. Therefore, most of the conduct-related feedback received was negative feedback. When one considers that these observations occurred towards the end of the school year when routines were well established and children familiar with what was expected of them, the fact that almost half of all the feedback from the teachers concerned negative aspects of student behavior is a revealing figure. Even at the kindergarten level, where one would perhaps expect greater emphasis on student 'behavior' than at higher grade levels, this proportion appears to be somewhat high.

Analysis of the distribution of feedback according to the four context categories (i.e., whole-group quiet and

active, individual-choice quiet and active) showed that an average of 76% of the total feedback was delivered to students during quiet whole-group activities, and 16% was delivered in whole-group active contexts. Only 8% of the feedback was delivered during individual-choice activities, either quiet or active. It must be stressed that these figures represent only the distribution of feedback during the different contexts. They do not represent the proportion of classroom time that was allocated to the various different types of activities. However, it was noted by the observer that whole-group activities dominated the programs observed, and by far the greatest proportion of time was allocated to quiet activities in which the whole class participated together.

On comparatively few occasions were children observed to be free to select activities for themselves, and most of those occurred in one school, School A. Examination of the tally sheets revealed that in 11 of the 25 observational sessions no feedback at all was recorded during individual-choice contexts, and in 13 of the other sessions only one of the two individual-choice categories (i.e., quiet or active) was represented. In only one observational session was feedback recorded in all four context categories. This would seem to suggest a decided imbalance in the proportions of class time allocated to the various different types of activities in the kindergartens observed, and a rather restricted range of activities engaged in. Further research

investigation into the area of time allocations in kindergarten programs to whole-group and individual-choice activities, and to quiet and active ones, might prove informative.

The distribution of conduct-related, work-related 'form', and work-related 'substance' feedback in active and quiet contexts was compared. It was found that significantly more conduct-related feedback was delivered in active as compared to quiet contexts, that more emphasis was placed on 'form' in active contexts, and that more emphasis was placed on 'substance' in quiet ones. It is possible that one of the reasons teachers do not allocate more class-time to the more active games and activities might be related to the heavier negative feedback rates that have been noted in the active context categories. Perhaps the children find it more difficult to 'remain within bounds' when engaged in active games and pursuits and consequently they may require more teacher monitoring and supervision. Children may be more easily 'controlled' in quiet, structured activities. It is possible, too, that this marked emphasis on quiet activities reflects the feeling expressed by almost all of the teachers observed that their job required that the "get their students ready for grade one". This was found to mean able to sit quietly and concentrate on the teacher's instructions for a reasonable period of time.

An interesting difference among classes was noted from the data analysis. Class B repeatedly proved to be the exception to almost all of the patterns found. When asked to characterize her class, the teacher indicated that the group was energetic and active and that two girls required extra teacher attention and careful handling. Observation confirmed this. Class B was the only one of those visited in which the girls were seen to be as active and initiatory as the boys. Examination of the data revealed that in this class boys and girls received equivalent proportions of (a) the total teacher feedback, (b) of negative and positive feedback, (c) of conduct- and work-related feedback, and (d) of 'form' and 'substance' feedback. In this one class boys and girls did not receive any differential treatment in terms of teacher feedback.

This serves to illustrate a point that has been addressed by, among others, Brophy and Good (1974), Bank, Biddle and Good (1980), Prawat and Jarvis (1980) and Stockard (1980). Most of the research studies surveyed in the literature review, and the data from this particular study, do not support the charge that is sometimes made of deliberate "discrimination against boys by female teachers" (Brophy & Good, 1974, p. 229). Although the teachers observed in many instances responded differently to the boys in their classes as compared to the girls, they nearly always were clearly responding to the different behaviors of the two sexes. In the one class where the girls played

a more active role and carried a higher profile, no differences in the treatment of girls and boys were noted.

Educational Implications

The findings and conclusions of this study have several implications for the classroom teacher.

1. One point of concern is the finding that boys appear to be the recipients of proportionately more teacher feedback than girls. While this may in most cases reflect the more active and initiatory behavior of boys compared with girls, it is nevertheless true that girls appear to be more easily ignored in the classroom than boys. If teachers are made aware of the fact that girls have frequently been found to receive less than their share of teacher feedback and attention, then they can perhaps take steps to redress any imbalance that might occur in their own classes.
2. Boys received more negative than positive feedback, and proportionately more negative feedback than the girls. When the negative conduct-related feedback category was examined by itself it was found that boys received three times as much negative feedback related to their behavior as the girls did. While much of this negative feedback can be directly attributed to boys' more active and assertive classroom behavior (Maccoby & Jacklin, 1974) and "to the more frequent breaking of classroom rules by boys" (Brophy & Good, 1974, p. 229) a question remains as to whether the

activities selected for students in many kindergarten classrooms are as appropriate for boys as they might be, or for children of this age. Brophy and Good (1974) stated:

it does appear that boys have more difficulty than girls in maintaining the physical inactivity and the sustained attention to verbal instruction that school requires. (p. 200)

In view of the finding that a considerable proportion of the kindergarten programs observed involved quiet, large-group activities, it is perhaps worth considering whether a program which offered a more balanced selection of different activities, and more opportunities for children to choose what they wanted to do, might result in less negative feedback being directed to the boys. It is entirely likely that the girls would benefit from a more balanced program as well.

The finding that, in some ways at least, the kindergarten experience may be a more negative one for boys than for girls should be of concern to the classroom teacher. Meyer and Thompson (1956) have suggested that the higher proportion of teacher criticism received by boys, often "for behavior [they] really [do] not consider 'bad' must certainly be anxiety producing" (p. 392) and perhaps might account for the finding that boys report disliking school more than girls. Sears and Feldman (1966) have suggested that the way teachers respond to boys may result in "a cumulative increase in independent, autonomous behavior"

(p. 31), while Serbin, O'Leary, Kent & Tonick (1973) have argued that the generally more negative response of teachers to boys may achieve the opposite of what is intended and "differentially maintain or even strengthen existing levels of disruptive behavior in boys" (p. 802). ✓

It is important that kindergarten teachers be aware of just how much negative feedback is being delivered to the boys in their classrooms and of the possible consequences of an overly negative teacher response upon boys' sense of self-esteem, behavior, and attitude towards school. Although it is acknowledged that, in most cases, teachers have been found to be reacting to the 'unacceptable' behavior of the boys, and not to be discriminating against them, program modifications could possibly prevent problems before they arise by placing children, boys and girls, in learning situations that are more suitable to their ages and developmental levels than many of those that are currently found in kindergarten programs. ✓

3. Although the difference was not found to be significant at the .05 level, girls received proportionately more negative feedback related to their work than did the boys. Considering what is now understood about the tendency of girls to interpret academic criticism as a reflection of their ability, or lack of it (Dweck, Goetz & Strauss, 1980; Nicholls, 1975; 1979), further research is warranted to investigate this trend in the data. Teachers should

exercise some care in the phrasing of their responses to their students' answers and efforts so that the children are not forced to conclude that the difficulties they may be having are not surmountable through effort and ap-
plication. It is important that teachers be aware of the ways that children can interpret the feedback they receive. ★

4. One particular type of praise technique was observed quite often and it merits mention. This technique, which Brophy (1981) has referred to as "attempted vicarious reinforcement", involves praising a student with the intention of motivating other students to behave the same way. ★

The praised student becomes a means to an end. An example of this from one of the observation sessions was the comment addressed to one boy after a song: "I really appreciate how nicely you sing". This was repeated twice, then followed with "but I didn't hear _____, _____, _____, _____" (four other boys were named). It is claimed that this is a positive way of encouraging the desired behavior. While this is probably quite true, it is also true that this type of praise has a manipulative purpose that even a young child can detect. Observations of the reactions of the children who received this type of praise support the caution that "unless the students singled out for such 'praise' are very immature and teacher dependent, they are likely to feel manipulated or punished rather than rewarded by it" (Brophy, 1981, p. 17). This } ★

appears to be a technique which should be discouraged.

5. It might be a worthwhile exercise for individual teachers to run a personal check on the feedback they deliver to their students. Teachers could easily tape-record themselves working with a group of children, and then tally the frequencies of positive and negative feedback, or conduct-related and work-related feedback that had been directed to the class as a whole, or to the boys as compared to the girls. It would be easy to determine whether the boys received 'more than their share' of feedback, or whether they were responded to negatively more often than positively. Such an exercise, periodically executed, could be a valuable tool to encourage teacher awareness of differential response patterns.

Suggestions for Further Research

1. Although the findings from this study are not consistent with those reported by Dweck et al. (1978), the implications of their work are such that further investigation of the area of differential feedback patterns is warranted at different grade levels, and in a variety of educational settings.

Even though the patterns noted by Dweck et al. failed to show at the kindergarten level, it is possible that observations of a more structured and academically focused environment, such as a grade two or three classroom, might

produce very different findings. It is possible, too, that comparisons of the feedback delivered by teachers operating different types of early-childhood programs (i.e., a kindergarten run on the British infant school model compared with a Montessori-based program) might also yield relevant results.

2. It might be worthwhile to compare the distribution of various types of feedback at different grade levels. For example, it would be of interest to know whether the rather heavy emphasis on conduct-related feedback noted in this study occurs at other grade levels, or whether it instead reflects the socialization function of the kindergarten experience. In view of the findings reported by Crandall (1969) and Nicholls (1975; 1979) that girls are more likely than boys to interpret negative feedback as a reflection of their ability, it might be informative to compare the distribution of negative work-related criticism received by boys and girls at various grade levels, and in different subject areas.

3. As student ability and achievement have been found to influence the quantity and quality of teacher feedback received (Good, Cooper & Blakey, 1980), it would be useful to compare the feedback delivered to 'low' ability children with that delivered to 'high' ability children. It might also be useful to compare the quantity and quality of the feedback directed to 'high' ability boys with that directed

to 'high' ability girls. Similarly, the feedback directed to 'low' ability boys could be compared with that directed to 'low' ability girls. It could be interesting, as well, to compare the feedback delivered to students perceived by their teachers as being of 'high' ability with that delivered to students who have achieved high scores on standardized achievement tests but who are not regarded by their teachers as being of 'high' ability.

4. Very little research has as yet investigated teacher awareness of differential response patterns. It would be of interest to learn whether kindergarten teachers perceive any differences in the ways they respond to the boys as compared to the girls that they teach. Should it turn out that teachers are aware of responding differently, it would be interesting to investigate what they perceive to be the reasons for their different responses.

5. Student response to, and interpretation of, the feedback they receive from their teachers is an area that merits further study. As yet, not a great deal is known about the possible impact or effects of the feedback delivered by teachers upon the students that receive it. Investigation of this area could quite possibly shed some light on the potential consequences of patterns of differential feedback.

6. The relationship between the type of activity students are engaged in and the amount and kind of feedback received warrants further study. It might be informative to compare the feedback directed to boys with that directed to girls

in various different activities and subject areas, at various grade levels. It is possible that such an investigation might provide relevant information about the process by which sex role expectations are communicated in schools.

7. A longitudinal study designed to record and compare the feedback directed to selected students as they progressed from preschool, to kindergarten and through the elementary grades, could prove most valuable. It would perhaps be possible to determine whether certain children are responded to in a similar fashion by all of their teachers, or whether the feedback received by an individual child differs markedly from teacher to teacher. In such a study the relationship between the feedback received by the child, and that child's attitude towards school, his teacher and his perception of his school performance could be investigated.

8. The development of a recording instrument that could register qualitative differences in the tone and intensity of the teacher feedback delivered, and which could easily and unobtrusively be used, would be of value.

9. Focused observations of teacher- student interactions at various grade levels, and in different educational settings, have a great deal to offer both the teacher-in-training and the teacher-in-the-field. Such observations should be a regular part of teacher-training and professional development programs.

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APPENDIX A

SAMPLE CODING SHEET

School A. Observation 1.
Thursday

19 children
7 girls 12 boys.

Circle Time - Whole Group Quiet
 BN WR form [Calendar -
 BN CDT Talking Time]
 GP WR cnt
 GP WR cnt
 BP WR cnt
 BP WR cnt
 BP WR cnt
 GP WR cnt
 BN WR cnt
 GP WR cnt
 BP WR cnt
 GP WR cnt
GP WR cnt

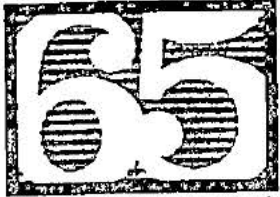
Group Activities (Centers)
 Individual - Quiet
 BP CDT BP WR form
 BN CDT BP WR form
 BN CDT
 GP WR cnt
 GN WR cnt
 GP WR form
 BP WR form
 BN CDT
 BP WR form

Gym -
 Whole
 Group
 Active
 BN CDT
 BN CDT
 BN CDT
 BN CDT

APPENDIX B

LETTER OF PERMISSION TO CONDUCT RESEARCH

SCHOOL
DISTRICT



(COWICHAN)

CENTRAL ADMINISTRATION OFFICE

2557 Beverly Street,
Duncan, B.C. V9L 2X3
Telephone: (604) 748-0321

1982 03 12


Dr. M. Mayfield
Communications and Social Foundations
Faculty of Education
University of Victoria
Box 1700
VICTORIA, B. C.
V8W 2Y2

Dear Dr. Mayfield:

Re: Mrs. Allison Preece, Graduate Student

Mrs. Preece has approached me with a general description of her research project. She has our approval to proceed, given that teacher participation is voluntary.

Yours truly


W. F. Marshall
Superintendent of Schools

WFM/jan
cc: Mrs. V. MacCarthy
Mrs. A. Preece

APPENDIX C

EXAMPLES OF CODED FEEDBACK

EXAMPLES OF CODING DEFINITIONS

1. A boy correctly identifies a number held up on a flash-card. The teacher responds "Good for you!"

BOY POSITIVE WORK-RELATED CONTENT

2. During the calendar activity one boy is deliberately and continuously banging his foot on the floor. The teacher says "D____, sit quietly, cross your legs, and stop disturbing the class."

BOY NEGATIVE CONDUCT-RELATED

3. A girl brings up a completed art project - a mask - to show to the teacher. The teacher says "Good for you, that has been neatly done."

GIRL POSITIVE WORK-RELATED FORM

4. To a boy who is making a funny (and quite loud) noise during inside free play activity: "Could you be a little quieter, please, and make that noise outside?"

BOY NEGATIVE CONDUCT-RELATED

5. To a girl who can't find something: "You know why you can't find it - you usually don't put it away".

GIRL NEGATIVE CONDUCT-RELATED

6. Children are doing a tallying activity on the black-board. A boy counts up the marks and announces "25". The teacher says: "..and one more makes?" The boy answers "26". Teacher responds: "Tremendous!"

BOY POSITIVE WORK-RELATED CONTENT

APPENDIX D

RAW DATA: HYPOTHESIS 1

Table 34
Percentage Distribution of Feedback to Boys

School	Session	Number of Boys in Class	% of Class	Total Feedback Comments To Class	Number of Feedback Comments To Boys	% of Total Feedback Delivered	% Difference
A	1	12	63	58	41	71	+08
	2	14	70	50	38	76	+06
	3	18	72	64	46	72	--
	4	13	59	28	24	86	+27
	5	13	68	27	26	96	+28
School Average		70/105	67	227	175	77	+10
B	1	13	59	136	93	68	+09
	2	13	57	91	59	65	+08
	3	12	57	70	34	49	-08
	4	12	55	35	22	63	+08
	5	12	55	61	33	54	-01
School Average		62/110	56	393	241	61	+05
C	1	6	43	81	33	41	-02
	2	6	37	33	22	67	+30
	3	6	40	79	51	65	+25
	4	5	36	74	33	45	+09
	5	6	40	44	26	59	+19
School Average		29/74	39	311	165	53	+14
D	1	11	61	120	73	61	--
	2	11	65	85	60	71	+06
	3	12	71	141	109	77	+06
	4	11	61	58	38	66	+05
	5	11	61	56	35	63	+02
School Average		56/88	64	460	315	68	+04
E	1	9	53	120	76	63	+10
	2	9	50	63	44	70	+20
	3	9	50	77	47	61	+11
	4	9	50	34	25	74	+24
	5	7	44	68	45	66	+22
School Average		43/87	49	362	237	65	+16
Sample Average		260/464	56	1753	1133	65	+09

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PATTERNS OF DIFFERENTIAL FEEDBACK
AT THE KINDERGARTEN LEVEL

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