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THE RELATIONSHIPS OF LOCUS OF CONTROL AND PERCEIVED  
CONTINGENCY OF TEACHER REWARDS AND PUNISHMENTS  
TO ACADEMIC PERFORMANCE

THESIS

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THE RELATIONSHIPS OF LOCUS OF CONTROL AND PERCEIVED  
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The effectiveness of rewards or punishments is in part dependent upon whether or not the individual perceives a relationship between his behavior and the reinforcement. Rewards or punishments can be said to be contingent to the extent that a relationship is established between the occurrence of a particular response and the reward or punishment. That is, if the probability of reward granting the occurrence of a given response is greater than the probability of reward granting the nonoccurrence of that response, that reward is contingent upon that particular response. The same holds true with regard to contingent punishment; if the probability of punishment is greater with the occurrence of a particular response than with the non-occurrence of that response, punishment of that response can be said to be contingent.

Rotter (1954) proposed a social learning theory in which he introduced the concept of internal versus external control of reinforcement. Persons who perceive reinforcements as being contingent upon their own behavior are referred to as internalizers and view themselves as in

control of what happens to them. One who perceives positive or negative events as being unrelated to his own actions is called an externalizer and tends to credit or blame fate, luck or powerful others for what happens to him. The distinction is not absolute, but exists along a continuum from belief in internal control to belief in external control of reinforcement.

The Rotter formulation can be applied to the elementary classroom situation. One might expect that an internalizing child would display greater achievement striving because he believes that his rewards (grades, teacher approval, etc.) are based on his performance. For the externalizing child, on the other hand, achievement efforts have no meaning since he believes his evaluation is based on factors beyond his control. Several investigations have revealed a positive relationship between internality and various achievement measures with school children. Messer (1972) found that internalizing fourth-graders made higher grades than externalizers even when I.Q. and cognitive impulsivity were controlled for. Highly significant correlations between a measure of internality and I.Q., reading skills, arithmetic performance, and spelling test scores were reported by Chance (1965). In addition, Bailer (1961) found a significant trend towards internality with increasing mental age.

The relationship is not a simple one, and varying results have been reported as a function of sex differences. Nowicki & Roundtree (1971) found the internal-external dimension to be significantly related to school achievement for twelfth-grade males, but not for females. The relationships between internality and performance on spelling, vocabulary and math tests for fourth-, fifth-, and sixth-graders were determined by Clifford & Cleary (1972). For boys, the significant positive correlations between internality and test scores were higher than the correlation between I.Q. and performance. For girls, I.Q. was more strongly related to performance than internality. In studying primary school children, Crandall, Katkovsky, & Preston (1962) reported significant relationships between internality and four achievement-related activities for boys, but not for girls. Highly internal boys spent more time in intellectual free-play activities, demonstrated a higher degree of striving in these activities, scored higher on intelligence tests, and performed better on reading and arithmetic achievement tests.

Further differentiation of results occurs in relation to whether the situation in question involves a success or a failure. The Intellectual Achievement Responsibility (IAR) questionnaire was constructed by Crandall, Katkovsky & Crandall (1965) as a measure of internality and provides separate scores for positive (IAR+) and negative (IAR-)

situations as well as a total score (IAR Total). In comparing various scales used to assess locus of control, Reimanis (1973) maintained that the IAR questionnaire was the best locus of control predictor of academic achievement and the best measure of internality with respect to school activities. He found significant positive correlations between IAR+ and achievement for third- and fifth-grade girls and for fourth-grade boys. However, a significant negative relationship was indicated between IAR- and achievement for fifth-grade girls. Reimanis offers an explanation for the differing results between IAR+ and IAR-, stating that possibly high achieving students have less opportunity for assuming responsibility for academic failures than low achievers.

In one study by McGhee & Crandall (1968) of elementary, junior high, and high school students, both boys and girls scoring high on the IAR scales had significantly higher report card grade averages than low-scoring pupils, regardless of grade level or sex. With respect to achievement for students in grades three through five, the relationship between high internality and high scores was consistently significant for girls; however, IAR+ and IAR- were not equally predictive of achievement test scores for boys. The boys' acceptance of responsibility for failures (IAR-) was more frequently related to achievement test scores than their beliefs with respect to academic successes (IAR+).

Therefore, the significant correlation between the total IAR score and achievement for boys is related to the fact that boys who assumed responsibility for their own failures performed better on the achievement tests than boys who blamed external forces. No significant relationships between the IAR scales and achievement test scores were found for sixth-, eighth-, and twelfth-grade students. In a second study with a reduced sample size, the relationship between internality and grade average for third-, seventh-, and tenth-grade students did not reach significance for girls, although the differences were consistently in the expected direction. For boys, high IAR Total scores were predictive of higher grade averages at all grade levels tested, and high IAR- scores predicted higher grades for seventh- and tenth-grade boys.

Research by Messer (1972) resulted in contradictory findings. In this investigation with fourth-graders, IAR- was a better predictor of school grades for girls, with IAR+ the better predictor for boys. The same relationships also held for achievement test scores. The apparent contradiction between results of these studies may be a function of differences in the samples, achievement measures, or other factors. The need for further research is clearly evident.

Besides internality versus externality, another variable which might be relevant to academic achievement

is the child's perception of the contingency with which rewards and punishments are dispensed by the teacher. In studying the effectiveness of positive versus negative comments relative to learning in primary and intermediate classes for the educable mentally retarded, Paris & Cairns (1972) found that negative comments to wrong responses produced more correct responses in a two-choice discrimination task than positive comments to right responses. That is to say, "the traditional negative social reinforcer 'wrong' is more effective in the control of performance on this task than the positive reinforcer 'good'" (Paris & Cairns, 1972, p. 724). In a second study, observations were made of actual classroom interactions. A behavioral analysis focusing on the teachers' comments and the events immediately preceding these comments revealed that teachers' positive comments were dispensed more frequently and were less contingent upon the children's behavior than negative comments. For example, a teacher's negative comments to objectively incorrect pupil responses ("No, that's wrong") typically were delivered following a specific response by the student. Positive comments were less often contingently delivered. The teachers frequently used a positive expression to signal a change in activities; such as, "All right, class, open your workbooks." Comments of this nature were not based on particular actions by the pupils. If the students were misbehaving, the teacher was usually certain



to reprimand them; however, if the students were not misbehaving or were exhibiting appropriate behaviors, the teacher was not as likely to make certain that rewards were delivered.

Evidence for the possible benefit of contingency over noncontingency is provided by studies of token reinforcement systems. First, it should be noted that tokens must be made contingent upon the appropriate behavior in order to be effective. If this contingency is not established, the desired behavior deteriorates (Burchard, 1967). Tyler & Brown (1968) obtained higher academic performance scores for teenage boys under contingent than under noncontingent conditions of reinforcement for both between subject and within subject comparisons, leading to the conclusion that contingent token reinforcement strengthens academic productivity. A study by Rickard, Clements, & Willis (1970) produced similar results. Boys aged nine through thirteen were exposed to a token incentive program during math instruction. Classroom performance was greater when tokens were dispensed on a noncontingent basis. The effect of contingent versus noncontingent reward on the study behavior of preschool children with above average intelligence was evaluated by Bushell, Wrobel, & Michaelis (1968). Indications were that contingent reinforcement was more effective than noncontingent reinforcement in maintaining study behavior. Experiments with token reinforcement by Wolf,

Giles, & Hall (1968) with fifth- and sixth-grade remedial classrooms also provides evidence of greater achievement gains for children under contingent token systems than for children not exposed to these programs.

Programs involving response cost procedures (loss of tokens, point loss, fines) have been effective in reducing undesirable behaviors which compete for classroom time with appropriate study behaviors. However, the effectiveness of these "punishments" have not been compared with the efficacy of positive reinforcements in the classroom setting (O'Leary & Drabman, 1971, p. 390).

The purpose of the present investigation was to assess the relationships among the contingency of teachers' reactions as perceived by the pupils, the pupils' academic performance, and internality. One might expect that children who perceive their teacher as contingently rewarding and punishing would achieve higher grades and test scores than those who view their teachers' reactions as unrelated to their behavior. It is believed that children's perceptions of the contingencies of their teachers' responses may be more highly related to achievement behavior than the teacher's actual distribution of rewards and punishments. Perceived contingency of punishments and rewards may be important determiners of achievement. The perception of punishments as noncontingent is likely to be negatively related to achievement; however, the same may not be true

of noncontingent reward. Indiscriminate dispersion of rewards could have a motivating effect or, as one might infer from Paris & Cairns (1972), no effect at all. Internality and achievement are expected to be positively related, perhaps more so for boys than for girls, as the trend of previous evidence suggests. Because of conflicting reports, no firm expectation can be formulated with regard to sex differences and the effectiveness of IAR+ versus IAR- scores.

#### Method

##### Subjects

Seventy-six sixth-grade students (48 boys, 28 girls) from three classrooms at a public school in Denton, Texas served as subjects. Chronological ages ranged from 10 years and 11 months to 13 years and 5 months. The students were typically above average in academic achievement. The sample was almost exclusively white.

##### Instruments

Measures of academic achievement included report card grades for the first six weeks of the current semester (Fall, 1973) and scores on the Iowa Test of Basic Skills (1956) administered the previous semester (Spring, 1973) by the school system. School grades given by the current teacher were obtained for all academic courses including

reading, english, spelling, writing, mathematics, and social studies. Letter grades were assigned numerical values (A-4, B-3, C-2, D-1, F-0) and then averaged across all academic courses for each student, yielding one grade score. For the purposes of this study, achievement test percentile scores for the following subtests of the Iowa Test of Basic Skills were employed: Language Skills Total, Reading Comprehension, Arithmetic Skills Total, and Composite.

The measure of internality employed was the Intellectual Achievement Responsibility (IAR) questionnaire (Crandall, Katkovsky, & Crandall, 1965), reproduced by permission of the Society for Research in Child Development, Inc. This instrument was developed specifically to assess internal-external locus of control of reinforcement in academic situations. It is composed of thirty-four forced-choice items depicting a variety of academic successes and failures with two alternatives, one internal and one external in nature. Half of the items describe positive events providing an indication of whether the student accepts responsibility for successes (IAR+). For example:

If a teacher passes you to the next grade, would it probably be

- a. because she liked you, or  
IAR+ b. because of the work you did?

The remaining items were concerned with negative events and

the student's acceptance of responsibility for failures (IAR-), such as in the following item:

When you don't do well on a test at school is it  
       a. because the test was especially hard, or  
IAR- b. because you didn't study for it?

The IAR questionnaire scales are scored in an internal direction.

In order to measure the subjects' perceptions of whether their teachers' rewards and punishments were contingent or noncontingent on their behavior, a Teacher-Child Interaction (TCI) questionnaire was constructed. Four common classroom situations were each described in items worded to portray the reactions of the teacher as contingently rewarding (CR), noncontingently rewarding (NR), contingently punishing (CP), and noncontingently punishing (NP). Contingent reward was defined as any comment or action of a positive nature delivered in response to a specific action by the child. For example:

My teacher usually smiles when a boy is paying attention, but she almost never smiles when he is not paying attention.

Noncontingent reward, on the other hand, refers to any positive comment or action not delivered in response to a specific action by the child, such as portrayed in the following item:

My teacher usually gives a good grade if a girl turns in her homework, but she also frequently gives good grades when the girl does not turn it in.

Comments or actions of a negative or aversive nature

delivered in response to a specific action by the child were classified as contingent punishment. For example:

My teacher usually scolds a boy who makes trouble in class, but she almost never scolds boys who do not make trouble.

Negative or aversive comments or actions not delivered in response to a specific action by the child were considered noncontingent punishment, as described in the following item:

My teacher usually gives a bad grade when a girl answers incorrectly, but she also often gives bad grades when a girl answers correctly.

Items were then further refined so that for each situation and each contingency, one item consisted of the teacher's responses to girls and one consisted of the teacher's responses to boys. Thirty-two items make up the questionnaire (see Appendix). It should be noted that this questionnaire measures perceptions of the teacher's administration of rewards and punishments. The degree to which these perceptions are related to the teacher's actual behavior was not studied in the present research.

#### Procedure

The IAR questionnaire was administered in written form to groups of students. For each student, IAR+ and IAR- responses were totaled separately and then the two were summed (IAR Total) for a general indicator of achievement responsibility for both positive and negative academic events.

The students were provided a copy of the TCI questionnaire, and the items were read orally by the experimenter to each of the three classes involved in the study. Subjects were instructed to decide how truly each statement described their current teacher's responses, with answers ranging from Very True to Very Untrue on a five-point continuum. The students recorded their answers by marking the appropriate column on a printed answer sheet. For scoring purposes, the answer Very True was assigned the numerical value 5, and Very Untrue was recorded as 1, with the intermediate alternatives given appropriate values along the continuum, i.e. 4, 3, or 2. Twelve scores were recorded for each subject. Items representing each of the four contingency categories were totaled separately for statements about boys and those concerning girls, then a total was obtained for each contingency. The result was three scores for the perception of the teacher as contingently rewarding (CR--girl, boy, total) and three scores each (girl, boy, total) for the perceptions of the teacher as noncontingently rewarding (NR), contingently punitive (CP), and noncontingently punitive (NP).

### Results

Table 1 presents the means and standard deviations (SD) of all the variables for the male subjects and the female subjects separately. With regard to the TCI questionnaire, the students generally viewed their teachers as more

Table 1  
Means and Standard Deviations of Variables

Variable	Males		Females	
	Mean	SD	Mean	SD
1. Grades	2.91	.67	3.40	.59
2. Language	57.67	26.43	69.14	22.44
3. Reading	53.35	28.95	62.00	25.50
4. Math	61.19	28.98	67.04	23.57
5. Composite	57.17	28.34	66.18	23.67
6. IAR+	13.19	2.52	13.75	2.17
7. IAR-	12.56	2.27	12.75	1.86
8. IAR T	25.75	4.09	26.50	3.02
9. CR Girls	15.17	3.82	13.29	2.92
10. CR Boys	15.23	3.05	15.14	3.02
11. CR Total	30.19	6.34	28.43	5.06
12. NR Girls	8.83	3.22	10.82	3.63
13. NR Boys	9.83	4.15	10.18	3.50
14. NR Total	18.67	6.66	21.00	6.25
15. CP Girls	16.40	3.34	15.50	2.70
16. CP Boys	16.63	2.76	16.89	2.13
17. CP Total	33.02	4.93	32.39	3.99
18. NP Girls	7.50	3.92	7.50	3.94
19. NP Boys	8.94	3.92	8.75	3.88
20. NP Total	16.44	7.20	16.25	7.34



contingent than noncontingent in their administration of rewards and punishments. The girls tended to perceive their teacher as more noncontingently rewarding and less contingently rewarding than the boys. The boys had nearly the same perceptions as the girls with respect to contingent and noncontingent punishments, i.e. teachers are perceived as more contingent than noncontingent in their administration of punishments. Scores on the IAR scales generally correspond with the Crandall et al. (1965) findings in that there is a tendency toward greater internality than externality. Concerning grade averages and achievement test percentile scores, the girls generally obtained higher scores than the boys.

#### Intercorrelations among the IAR Scales

Intercorrelations among IAR+, IAR- and IAR Total scores reveal a positive relationship of IAR+ to IAR Total (.87,  $p < .001$ ) and of IAR- to IAR Total (.84,  $p < .001$ ) for the male sample. Corresponding positive relationships between IAR+ and IAR Total (.79,  $p < .001$ ) and between IAR- and IAR Total (.70,  $p < .001$ ) exist for the female sample. Results for boys show a positive relationship between IAR+ and IAR- (.46,  $p < .01$ ). This relationship did not reach significance for girls, but was in the positive direction (.12, nonsignificant).

### Intercorrelations among the TCI Scales

Intercorrelations among the various contingency scales are presented in Table 2 and Table 3 for females and males, respectively. Because of the small size of the female sample, many relationships did not approach significance.

For boys, perception of the teacher as contingently rewarding (CR-total) positively relates to the perception of the teacher as contingently punitive (CP-girls, boys, and total) (all  $p$ 's  $< .01$ ). This relationship is also evident with respect to the girls, with the exception of the correlation between CR-total and CP-boys which did not reach significance. All CR scores correlate negatively with all noncontingent reward (NR) scores (all  $p$ 's  $< .01$ ), and correlations between CR and noncontingent punishment (NP) are also in the negative direction at varying levels of significance. Girls' perceptions are generally related in the same way, some significantly, with the exception of nonsignificant, though positive, relationships between the CR-boys scores and all NP scores. Conversely, perceptions of the teacher as noncontingently rewarding (NR) correlates positively with the perception of her as noncontingently punishing (NP) for both male and female samples (all  $p$ 's  $< .01$ ), and both NR and NP are negatively related to CR and CP at varying levels of significance. Thus, boys and girls at this age level perceive a distinction between contingent and noncontingent rewards and punishments. A teacher perceived as contingently

Table 2

Intercorrelations Among the TCI Contingency Scales  
for Female Subjects

Variable	2	3	4	5	6	7	8	9	10	11	12
1. CR-girls	.45+	.85*	-.49*	-.39+	-.50*	.57*	.11	.44+	-.24	-.13	-.20
2. CR-boys		.86*	-.11	-.39+	-.28	.48*	.43+	.56*	.19	.06	.14
3. CR-total			-.35	-.46+	-.46+	.62*	.32	.59*	-.02	-.04	-.03
4. NR-girls				.54*	.88*	-.12	-.08	-.12	.61*	.56*	.62*
5. NR-boys					.87*	-.25	-.37	-.36	.48*	.61*	.58*
6. NR-total						-.21	-.25	-.27	.62*	.67*	.69*
7. CP-girls							.36	.87*	-.02	-.04	-.04
8. CP-boys								.78*	-.21	-.22	-.23
9. CP-total									-.13	-.15	-.15
10. NP-girls										.76*	.94*
11. NP-boys											.94*
12. NP-total											

+p&lt;.05      \*p&lt;.01

Table 3

Intercorrelations Among the TCI Contingency Scales  
for Male Subjects

Variable	2	3	4	5	6	7	8	9	10	11	12
1. CR-girls	.60*	.88*	-.47*	-.50*	-.54*	.46*	.48*	.58*	-.43*	-.38*	-.44*
2. CR-boys		.86*	-.40*	-.46*	-.48*	.28	.40*	.41*	-.30+	-.27	-.31+
3. CR-total			-.47*	-.52*	-.56*	.41*	.54*	.58*	-.43*	-.35+	-.42*
4. NR-girls				.62*	.87*	-.18	-.26	-.27	.56*	.46*	.55*
5. NR-boys					.93*	-.36+	-.26	-.39*	.60*	.68*	.70*
6. NR-total						-.32+	-.29+	-.38*	.65*	.65*	.71*
7. CP-girls							.30+	.85*	-.44*	-.45*	-.49*
8. CP-boys								.76*	-.38*	-.25	-.34+
9. CP-total									-.51*	-.44*	-.52*
10. NP-girls										.68*	.92*
11. NP-boys											.92*
12. NP-total											

+p&lt;.05 \*p&lt;.01

rewarding is typically also viewed as contingently punishing. Likewise, perceptions of the teacher as noncontingently rewarding are related to perceptions of the teacher as noncontingently punitive.

#### The IAR Scales and Achievement

Intercorrelations between the IAR scales (IAR+, IAR-, and IAR Total) and the academic achievement measures are presented in Tables 4 and 5 for girls and boys, respectively. No significant relationships were found for girls. Several significantly positive relationships were observed for the male subjects. The only achievement scores significantly relating to the IAR+ for the boys are reading and the composite score (both  $p's < .05$ ). The IAR- and IAR Total scores correlate positively with grades, language skills, reading, and the composite score (all  $p's < .01$ ). IAR Total is also significantly and positively related to math skills ( $p < .05$ ).

#### The TCI Scales and Achievement

Intercorrelations between the TCI contingency scales and various achievement measures are presented in Table 4 and Table 5 for girls and boys, respectively. No significant correlations resulted for the female sample; however, a number are present for the male sample. The most significant relationships involve the perception of the teacher as noncontingently punishing (NP). Perceived noncontingent punishment of boys and NP-total negatively correlate with

Table 4

Intercorrelations of the TCI Contingency Scales and the IAR Scales with Achievement Measures for Female Subjects

Variable	Grades	Language	Reading	Math	Composite
1. IAR+	-.14	-.07	-.22	-.15	-.10
2. IAR-	-.07	-.01	.11	.17	.05
3. IAR T	-.14	-.06	-.09	-.00	-.04
4. CR-girls	-.12	.07	-.23	-.23	-.12
5. CR-boys	.10	.16	-.16	.08	.06
6. CR-total	-.01	.13	-.23	-.09	-.04
7. NR-girls	.12	.07	.12	.01	.04
8. NR-boys	-.10	-.21	.06	-.02	-.13
9. NR-total	.01	-.08	.11	-.00	-.05
10. CP-girls	.23	.28	.11	.13	.19
11. CP-boys	-.03	-.14	-.11	-.10	-.08
12. CP-total	.14	.12	.02	.04	.09
13. NP-girls	.13	.06	.02	.10	.03
14. NP-boys	.03	-.01	-.08	.10	-.06
15. NP-total	.09	.00	-.03	.11	-.02

+p&lt;.05

\*p&lt;.01

Table 5

Intercorrelations of the TCI Contingency Scales and the IAR Scales with Achievement Measures for Male Subjects

Variable	Grades	Language	Reading	Math	Composite
1. IAR+	.26	.28	.33+	.26	.34+
2. IAR-	.42*	.39*	.45*	.28	.43*
3. IAR T	.39*	.39*	.46*	.32*	.45*
4. CR-girls	-.17	.02	-.13	.03	-.05
5. CR-boys	-.13	-.00	-.09	-.09	-.11
6. CR-total	-.21	-.00	-.11	-.04	-.08
7. NR-girls	.07	-.08	-.00	-.04	-.02
8. NR-boys	-.12	-.27	-.25	-.21	-.22
9. NR-total	-.04	-.21	-.16	-.15	-.15
10. CP-girls	-.04	-.09	.00	.08	-.02
11. CP-boys	.10	.32+	.26	.26	.29+
12. CP-total	.03	.12	.15	.20	.15
13. NP-girls	-.12	-.23	-.24	-.25	-.27
14. NP-boys	-.17	-.25	-.33+	-.32+	-.29+
15. NP-total	-.16	-.26	-.31+	-.31+	-.30+

+p&lt;.05

\*p&lt;.01

reading, math, and composite achievement scores (all  $p$ 's < .05). The boys' perceptions of their teachers as contingently punishing to boys positively relate to language and composite achievement test scores (both  $p$ 's < .05). Although no firm statements can be made with regard to the female sample, it should be noted that the relationships of CP-boys to all achievement measures is in the negative direction (nonsignificant). Interestingly, perceptions of the teacher as contingently punishing of girls relates to achievement in the positive direction for the female sample (nonsignificant), and CP-girls relates in the negative direction to grades, language skills, and composite scores for the male sample (nonsignificant).

Several directional trends were observed with regard to contingent and noncontingent rewards although no significant correlations were obtained. Total CR is negatively related to most of the achievement measures for both the male and female samples (nonsignificant). Within the male sample, the noncontingent reward scales negatively relate to most of the achievement scores (nonsignificant). The scores for girls indicate a relationship in the positive direction between NR-girls and the achievement measures, and a relationship in the negative direction for NR-boys to most of the academic scales (nonsignificant).



### Discussion

On the basis of the obtained results, it can be concluded that children at the sixth-grade level are capable of perceiving a distinction between contingency versus non-contingency of rewards and punishments. It can further be concluded that perceptions of the teacher as contingent or noncontingent in her administration of punishments are related to academic achievement, at least for boys. With some revisions, an instrument such as the Teacher-Child Interaction (TCI) questionnaire may be useful in investigations of factors which affect children's performance in school.

Perceptions with regard to the contingency of punishments appear to be more frequently related to academic achievement than perceptions of contingency of reward. Apparently, the child's perception of the teacher as contingently versus noncontingently rewarding bears little relationship to academic achievement, and the negative direction of the intercorrelations for these variables casts some doubt on the possibility of any motivating effect. The findings of Paris and Cairns (1972) that teachers' positive comments occurred eight times more often than negative comments and were dispensed less contingently suggest that these positive comments may convey less information to the child. Conversely, negative comments were more often based on actions by the child,

providing a concrete informative connection between behavior and consequence. Perhaps a child who is rewarded indiscriminately learns that rewards convey little information as to what is expected of him, while contingent punishment informs him of what he is expected not to do and acts as an informative cue to try another mode of approach.

Over a period of time, a cue which frequently contributes little information to the child is likely to be ignored. The students would then be concentrating their attention on the cue offering the most information, i.e. punishments or negative responses by the teacher. In this case, whether the teacher is contingently rewarding or not, would not likely be noticed because the students' attentions are focused elsewhere. If a student wishes to know what is expected of him, he pays attention to information-giving punishments (negative comments or gestures, criticisms, loss of points). This would account for the greater relationship between perceived contingent and noncontingent punishment and academic achievement than between perceived contingency of reward and achievement, as found in the present study. The ineffectiveness of rewards in controlling academic performance may be a result of the inattention to rewards, which are indiscriminately distributed and thus relate little information to the student.

Of relevance here is a study with second-graders by Warren and Cairns (1972) concerning contingent versus

noncontingent rewards. Two levels of frequency (high and low) of the social reinforcer "right" and two levels of reliability (discriminative and ambiguous) were investigated for a two-choice discrimination task. Frequency alone showed no significant effect; however, higher levels of frequency had opposite outcomes as a function of levels of reliability (contingency). Extended use of "right" as a discriminative (contingent) event served to enhance the effectiveness of the reinforcer, while frequent ambivalent use reduced its effectiveness. These findings suggest that if teachers were to deliver rewards on a contingent basis over a period of time, the effectiveness of the rewards would be increased. This conjecture is supported by the findings in studies of token reinforcement systems, indicating an improvement in academic achievement under the condition of contingently delivered rewards (tokens).

The diminished effectiveness of rewards may be related in part to the indiscriminate administration of rewards outside the classroom and the reinforcement histories of the students. It would be interesting to investigate the correspondence between children's perceptions of their parents with regard to contingency of rewards and punishments and their perceptions of the contingency of their teachers' responses. Perceptions of the current teacher may be affected by the degree of contingency established by previous school teachers. If last year's teacher

was considered highly contingent in her dispersion of rewards and punishments, the current teacher may be perceived as noncontingent simply because she is somewhat less contingently rewarding or punishing than the previous teacher.

Another relevant variable with respect to the inefficiency of rewards could be the amount of stimuli competing for the child's attention. Distractions would tend to reduce the effectiveness of any teacher's response, positive or negative, and may make it difficult for the student to perceive the existence of a contingency. However, since evidence suggests that punishment is typically delivered in response to a specific action, the course of which is abruptly stopped, the likelihood of interferring distractions is reduced. The same would not be true with respect to rewards which frequently occur during the course of appropriate behavior and increase the probability that this behavior will continue, the behavior, in turn, demanding the child's attention.

Teachers dispense rewards and punishments to the class as a whole as well as to individuals. How does a response to the group affect the perception of contingency between the teacher's response and the behavior of a particular child, and vice versa? Using reinforcement contingencies to develop social cooperation among members of small groups of children (ages five through ten), Mithaug & Burgess (1968) found that the highest group response rate was

obtained when individual children were positively reinforced, contingent upon the appropriate cooperative act. This would imply that teachers responding positively to individual students on a contingent basis would tend to increase group as well as individual productivity. However, it seems likely that teachers dispense rewards more frequently to the class as a whole and that punishments are delivered on a more individual basis. This factor may contribute to the superior effectiveness of contingent punishments with regard to achievement behavior. Delivering punishments contingently on an individual basis appears to be more effective in controlling classroom behaviors than the indiscriminate use of rewards.

Relative to achievement, this study tends to confirm previous indications of a positive relationship between high internality and academic performance, at least for male subjects. Boys who believe themselves to be the controllers of what happens to them perform better academically than boys who feel that some external force is in control. Although no definite statement can be made about the small female sample, the relationships between IAR+ and all five academic measures are in the negative direction, and the relationships between IAR- and three of the five academic measures are positive in direction. If these relationships are true rather than chance relationships, they would indicate that high achieving girls tend not to accept credit for their

successes, but do accept the blame for their academic failures. Low achieving girls would tend to blame others for their failures.

Present data concerning the IAR scales indicate a significant positive relationship between IAR+ and IAR- scores for the boys. This finding contradicts the original finding of Crandall et al. (1965) that the two subscales were independent. Results of the present research further indicate that IAR- is a better predictor of boy's academic achievement than IAR+, supporting findings reported by McGhee & Crandall (1968) and contradicting those of Messer (1972). For boys, acceptance of responsibility for failures is more often significantly related to higher achievement scores than the acceptance of responsibility for successes. It is possible that failure situations and poor performance receive a greater amount of attention than successful academic performance. If this were the case, an internalizer would likely be more concerned with avoiding failures than with attaining successes. Perceiving himself in control of this situation, the more highly internal boy is capable of escape and/or avoidance behavior, while the externalizer would see no means of escaping his "fate."

An interesting parallel exists in the relationships of the subscales on the two questionnaires (TCI and IAR) to the academic achievement of boys. In both cases, the subscales dealing with negative consequences (IAR-, CP, NP) are the

better predictors of achievement. A student's perception of his teacher as contingently punishing and his belief in his own control of failures are both positively related to his performance. These perceptions may be established on some common basis. The higher achieving boy views negative responses from his teacher as contingent upon poor performance, and believes himself capable of controlling punishments (failures).

In order to better assess children's perceptions of contingency relationships between their behavior and the teacher's responses, revision of the TCI questionnaire is in order. During administration of the questionnaire, it was apparent that the students had some difficulty distinguishing exactly what the items were describing. Thus, some simplification of the wording of the items seems to be in order. Organization of classroom procedures vary from teacher to teacher, and more specific, concrete descriptions of various academic situations are perhaps needed. The students also demonstrated some awkwardness in managing the five-choice answer sheet in relation to the truthfulness of the statements. A forced-choice format for the items would probably make the items easier to understand and also eliminate the need to orally administer the instrument. Each stem question about a reward or a punishment situation could offer two alternatives, one indicating contingency and one indicating noncontingency.

The probability of obtaining more significant correlations between the contingency scales and achievement may be increased by combining scores measuring perceptions of contingent reward with contingent punishment scores (CR + CP) and perceived noncontingent reward scores with noncontingent punishment scores (NR + NP) since these scales are related on the basis of contingency. The separate scores should not be eliminated, however, since differential results were obtained for the reward and punishment situations.

An analysis of the items may reveal a difference in the effectiveness of the items on the basis of the various classroom situations described. For example, the effectiveness of an item dealing with performance on homework assignments may not equal that of an item concerning behavior in the classroom. Homework performance may relate more highly to perceptions of parent rather than teacher contingencies of reinforcement.

In conclusion, the present research findings indicate a relationship between punishment subscales on the TCI and academic achievement, at least for boys. Perceptions of the contingency or noncontingency with which punishments are delivered by the teacher apparently contribute to the degree of achievement-striving behavior exhibited by boys. A revision of the TCI questionnaire, which more reliably measures these perceptions, may be useful in future investigations of factors affecting the school performance of young children.



## Appendix

### TCI Questionnaire

Below are a number of statements which describe different ways that teachers act toward their pupils. Read each statement carefully and think how well it describes how your teacher acts toward the pupils in your class.

On a separate answer sheet there are five columns with blank spaces below in which to check your answer. Each column is labelled either VERY TRUE; TENDS to be TRUE; TENDS to be neither TRUE nor UNTRUE; TENDS to be UNTRUE; VERY UNTRUE. Check the blank beneath the heading that indicates how true you think each statement is. Use a check mark to indicate your answer.

For example, if your teacher usually scolds a boy who is misbehaving, but never scolds him when he is good; you would mark the item as follows:

My teacher

(1) usually scolds a boy who is misbehaving, but often scolds him even when he is good.

VERY TRUE	TENDS to be TRUE	TENDS to be neither TRUE nor UNTRUE	TENDS to be UNTRUE	VERY UNTRUE
_____	_____	_____	_____	_____✓

Mrs. Smith

1. usually gives a good grade when a boy answers correctly, but she almost never gives good grades when a boy answers incorrectly. (CR)
2. usually gives a bad grade if a girl does not turn in her homework, but she also frequently gives bad grades when a girl does turn it in. (NP)
3. usually frowns when a boy is not paying attention, but she almost never frowns when he is paying attention. (CP)
4. usually smiles at a girl who makes no trouble in class, but she also frequently smiles at girls who make trouble. (NR)
5. usually gives a bad grade when a girl answers incorrectly, but she also often gives bad grades when a girl answers correctly. (NP)
6. usually gives a bad grade if a boy does not turn in his homework, but she almost never gives bad grades if a boy does turn it in. (CP)
7. usually smiles when a girl is paying attention, but she also frequently smiles when the girl is not paying attention. (NR)
8. usually smiles at a boy who makes no trouble in class, but she almost never smiles at boys who make trouble. (CR)
9. usually gives a bad grade when a boy answers incorrectly, but she almost never gives bad grades when a boy answers correctly. (CP)
10. usually gives a good grade if a girl turns in her homework, but she also frequently gives good grades when a girl does not turn it in. (NR)
11. usually smiles when a boy is paying attention, but she almost never smiles when he is not paying attention. (CR)
12. usually scolds a girl who makes trouble in class, but she also frequently scolds girls who do not make trouble. (NP)

Mrs. Smith

13. usually gives a good grade when a girl answers correctly, but she also often gives good grades when a girl answers incorrectly. (NR)
14. usually gives a good grade if a boy turns in his homework, but she almost never gives good grades if he does not turn it in. (CR)
15. usually frowns when a girl is not paying attention, but she also frequently frowns when the girl is paying attention. (NP)
16. usually scolds a boy who makes trouble in class, but she almost never scolds boys who do not make trouble. (CP)
17. usually gives a good grade when a girl answers correctly, but she almost never gives good grades when a girl answers incorrectly. (CR)
18. usually gives a bad grade if a boy does not turn in his homework, but she also frequently gives bad grades when a boy does turn it in. (NP)
19. usually frowns when a girl is not paying attention, but she almost never frowns when the girl is paying attention. (CP)
20. usually smiles at a boy who makes no trouble in class, but she also frequently smiles at boys who make trouble. (NR)
21. usually gives a bad grade when a boy answers incorrectly, but she also often gives bad grades when a boy answers correctly. (NP)
22. usually gives a bad grade if a girl does not turn in her homework, but she almost never gives bad grades if a girl does turn it in. (CP)
23. usually smiles when a boy is paying attention, but she also frequently smiles when he is not paying attention. (NR)
24. usually smiles at a girl who makes no trouble in class, but she almost never smiles at girls who make trouble. (CR)

Mrs. Smith

25. usually gives a bad grade when a girl answers incorrectly, but she almost never gives bad grades when a girl answers correctly. (CP)
26. usually gives a good grade if a boy turns in his homework, but she also frequently gives good grades when a boy does not turn it in. (NR)
27. usually smiles when a girl is paying attention, but she almost never smiles when the girl is not paying attention. (CR)
28. usually scolds a boy who makes trouble in class, but she also frequently scolds boys who do not make trouble. (NP)
29. usually gives a good grade when a boy answers correctly, but she also often gives good grades when a boy answers incorrectly. (NR)
30. usually gives a good grade if a girl turns in her homework, but she almost never gives good grades if a girl does not turn it in. (CR)
31. usually frowns when a boy is not paying attention, but she also frequently frowns when he is paying attention. (NP)
32. usually scolds a girl who makes trouble in class, but she almost never scolds girls who do not make trouble. (CP)

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