

**Title: The Relationship between Locus of Control and Academic Level and Sex of Secondary School Students**

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The relationships among locus of control, academic program, and sex of grade 9 secondary school students were investigated. Two hundred sixty-seven high school students from advanced, general, and basic level programs were administered the modified forms of the Nowicki-Strickland Locus of Control Scale for Children and the Intellectual Achievement Responsibility Questionnaire. As hypothesized, students in the advanced level program were more internally controlled than either general or basic level students. As well, advanced level students were more internally responsible for their intellectual-academic failures than general level students. Sex differences as they relate to specific expectancies in intellectual achievement situations are also discussed.

The purpose of this study was to determine whether academic level and sex of grade 9 secondary school students are related to generalized expectancies for locus of control of reinforcements. In addition the relationship of academic level and sex to specific expectancies in intellectual achievement situations was explored.

Locus of control is defined (Rotter, 1966) as a generalized expectancy of the extent to which a person perceives that events in one's life are consequences of one's behavior. People, described as "internal", believe that they exercise more control over events and outcomes affecting them. In contrast, "externals" tend to believe that they have little control over what happens to them. These expectancies are perceived to be the result of many past experiences.

Lefcourt (1980) suggests that some expectancies are very general, relating to most life events; other expectancies are quite specific and are related to very specific life events. Most instruments used to measure locus of control provide measures of a generalized expectancy. The Intellectual Achievement Responsibility Questionnaire (IARQ) (Crandall, Katkovsky, & Crandall, 1965) does provide a measure of specific expectancies of responsibility for academic success and failure. The scale gives a score for internalized success (I+) and one for internalized failure.

In a literature review of the relationship between locus of control (generalized and specific expectancies) and achievement, Bar-Tal and Bar-Zohar (1977) stated that 31 of 36 studies reviewed indicated a significant relationship between locus of control and academic achievement with internals having higher achievement than externals. McGhee and Crandall (1968) investigated specific expectancies and reported I+ as a predictor of male achievement and I- as a predictor of female achievement.

Nowicki and Strickland (1973) found that particularly for males an internal score on the Nowicki-Strickland Scale is related to academic competence and to social maturity and appears to be a correlate of independent, striving, and self-motivated behaviors.

Dweck and Licht (1980) maintain that girls and boys have different characteristic ways of coping with positive and negative outcomes. The two sexes interpret their successes and failures differently and have different views of the implications for their abilities. They differ in the persistence of their attempts to solve a difficult problem, in the quality of their performance after failure, and in their task choices after they encounter

difficulty.

Lochel (1983) reviewed sex differences in achievement. She suggests that females are more inclined to take responsibility for failure. She views females as lacking in confidence in their abilities and not being prepared to cope with failure.

As Parsons (1981) has recently pointed out, the conclusion that males tend to attribute their failures to external or unstable causes while females tend to attribute their failures to internal causes appears to be an oversimplification. In a review of the attributional literature she cites several examples. Using the IARQ, Dweck and Reppucci (1973) reported no sex difference in general internality for failure but found boys to be slightly more likely to attribute their failures to lack of effort than girls. In contrast, Crandall et al. (1965) found girls to be more internal for their failures; Beck (1977) found no sex differences in either internality or lack of effort attributions; Diener and Dweck (1978) did not report a significant sex difference on either lack of effort or internality for failure; and Nicholls (1975) found no main effect sex difference in attributions of failure due to lack of effort. Similarly, inconsistent patterns emerge for the measures of attributions of failure to external causes (Dweck & Repucci, 1973; Nicholls, 1975; Parsons, 1978).

Ontario secondary school students take courses at one of three levels: advanced, general, and basic. Advanced level students are expected to continue their education at a university. General level students are prepared to continue education by taking technical or professional courses related to specific occupations or they may not continue studies. Basic level students follow vocational courses at high school and are generally not considered to be capable of succeeding at the general or advanced levels.

Students enrolling in basic level vocational programs are directed to these programs by elementary school staff. Typically, these students have a record of low achievement and many have specific learning problems. They have likely received special help throughout their elementary school experience.

Students with the advice of both elementary and secondary school staff choose to study either general or advanced level academic courses (biology, chemistry, English, geography, history, mathematics, physics). In making this choice past achievement is more likely a great determinant than aptitude. However, both achievement and aptitude would undoubtedly be lower for general level students.

Because of these past experiences which cause students to select or to be counselled into specific levels, it was hypothesized that advanced level students would be most internal and basic level students least internal for both generalized and specific locus of control measures.

On the basis of the literature reviewed, it was also hypothesized that females would take more responsibility for failure than males.

## METHOD

### Research Subjects

The research subjects were 267 grade 9 students from three secondary schools located in an affluent suburban community. One of the schools was a vocational school serving students from the entire district and included basic level students only. The other two schools (academic) had students at general and advanced levels and were considered to have students representative of those within the district. If students were taking two or more academic courses at the general level they were classified as general.

### Measuring Instruments

The Nowicki-Strickland Locus of Control Scale for Children (NS) was used to measure generalized expectancies and the IARQ was used to measure specific expectancies (I+ and I-). Because of limited testing time a 21-item version of the NS (Nowicki & Strickland, 1973) for grades 7-12 and a 20-item version of the IARQ (Crandall, 1968) for grades 6-12 were used. Crandall (1968) reported correlations of .89 for I+ and .88 for I- between the short form (grades 6-12) and the long form of the IARQ.

### Data Collection

The measuring instruments were administered to students in grade 9 English classes by their teachers during a regular class period. Prior to test administration, a researcher met with the teachers or vice-principal to review administration procedures. Testing at two schools (the vocational school and one of the academic schools) was completed in December 1985. Data were collected from the other academic school in April 1986.

## RESULTS

Reliabilities of the three measures were estimated using the  $\alpha$  coefficient. They were .70 for the NS, .43 for I+, and .46 for I-. The reliabilities for I+ and I- were quite low; this could have increased the probability of type II error when data were analyzed.

Prior to testing the hypotheses, analyses of variance were used to test for differences between the two academic schools. No significant differences were found between schools.

To determine whether differences were as hypothesized, analyses of variance were used with level and sex as independent variables and NS, I+ and I- scores as dependent variables. Results are shown in Table 1.

Since sample sizes were not equal an unweighted means analysis was used. Significant differences were found only for level on both the Nowicki-Strickland and I-. Post hoc, the Tukey-Kramer modification of Tukey's WSD procedure was used to determine which groups differed significantly. For the NS, advanced level students were significantly more internal than either general or basic level students (See Table 2 for means).

These results were as expected. For I-, advanced level students were significantly more internal than general level students; basic level students did not differ significantly from either advanced or general level students.

Sex differences were not found for any of the dependent variables. It had been predicted

that females would have I- scores higher than those of males. Although not significant, the opposite was found. Males had an I- mean higher than that of females. Their mean for I+ minus I-, was used as a dependent variable. A significant sex difference was found. For males, the difference between I+ and I- scores was less ( $M = .32$ ) than that for females ( $M = .88$ ). To further explore, correlated t tests were used to determine whether males or females scored significantly higher on I+ as compared to I-. Females did score significantly higher on I+ than on I- ( $t = 3.35$ ); there was no significant difference for males ( $t = 1.68$ ). The results for sex were not consistent with what had been suggested in the literature. In examining the means for sex by groups it would appear that the sex differences are attributable to basic and general level students. At the advanced level the mean differences between I+ and I- were .46 for males and .31 for females, while at the general level differences were .26 for males and 1.43 for females; at the basic level males differed by .14 and females by 1.27. Thus for basic and general levels, females scored substantially more internal for academic success than for academic failure. It would be of interest to explore these relationships in future studies.

## DISCUSSION

The results suggest that the generalized expectancy of reinforcement is related to level of academic program of Ontario grade 9 secondary school students. The student in the advanced level program is more internally controlled than either the general or basic level student. It is assumed that advanced level students achieve more than general level and basic level students. Although the relationship between locus of control and academic achievement has been found before, its occurrence in the present study further emphasizes the importance of a generalized expectancy of reinforcement in determining academic performance. The results of this investigation support the belief that the more internal the individual's orientation, the higher the individual's achievement.

The specific expectancies were also found to be related to the type of academic program of secondary school students. Advanced level students were more internally responsible for their intellectual-academic failures than general level students. Surprisingly, neither general nor advanced level students were more internally responsible for their intellectual-academic failures than the basic level students. It may well be that students in vocational schools function better as a separate student body rather than in an integrative stream. Students in a vocational school may have a culture and a set of beliefs about responsibility for academic school. Isolated from the advanced and general level students, the basic level student may feel more accepted and more likely to persist in the face of temporary failure. General level students educated in the same environment as the advanced level students undoubtedly receive messages from the environment which suggest that they are not as capable of determining their own reinforcements. As suggested above, this may also be a function of performing at lower levels throughout elementary school. In a further investigation with the three groups of students, the relationships of responsibility for intellectual-academic successes and failures to various personal factors and to different classroom instructional methods may be considered.

The results of the study also raise the issue of attribution retraining for low achievement students. As Dweck and Licht (1980) point out, the cognitions of mastery-oriented students (a motivational orientation) reflect their tendency to look toward the future, to emphasize the positive, and to invest their energies in actively pursuing solution-relevant strategies (p. 201). Given this, does it not seem like a reasonable strategy to teach helpless students to attribute their failures to variable factors such as personal effort? According to Dweck and Licht (1980) it would appear to be necessary to rid seriously helpless individuals of their maladaptive attributions by such a direct method before they can effectively employ the more adaptive self-instructions and self-monitoring of the mastery-oriented student.

This study also supports the notion that although locus of control seems related to academic level its relationship to sex is not consistent. The hypothesis regarding sex was not supported. However, females were more apt to take responsibility for success and less apt to accept responsibility for failure. The differences between I+ and I- scores showed that males ( $M = .33$ ) had a difference significantly smaller than that of females ( $M = .88$ ). In addition, females were significantly more internal for success than for failure. These differences seemed to be a result of a rather large difference between I+ and I- for basic and general level female students. These results are in contrast to those of Lochel (1983) who suggested that females are more inclined to take responsibility for failure than for success. Could it be that basic and general level female students have a greater need to take responsibility for success and to deny behavior, low achieving boys tend to receive much negative reinforcement. In addition, they receive negative

reinforcement for academic behaviors. Thus, they may not be as threatened by taking responsibility for failures since they may not differentiate between negative reinforcements for social behaviors and those for academic achievement.

The sex differences found in this study are interesting; however, it is recommended that additional research be completed to explore these relationships.

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