Locus of Control in Nondisabled Versus Congenitally Physically Disabled Adolescents

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Locus of control in 13 nondisabled and 8 congenitally physically disabled adolescents was examined with the use of the Nowicki-Strickland Locus of Control Scale for Children (Nowicki & Strickland, 1973a). All subjects with disabilities had IQs within normal limits, used wheelchairs, and could communicate verbally. The two groups were matched in IQ, age, sex, race, and socioeconomic status. It was hypothesized that the locus of control scores for the disabled group would evidence significantly more externality than the scores for the nondisabled group. A Mann Whitney U test was done to analyze the data gathered, and the results were found to be statistically nonsignificant (U = 58.50, p = .635). Adjunct analyses were conducted to explore the percentage of internal and external answers between the two groups. Race was the only variable correlating significantly with locus of control scores (r = .54, p = .05). The study's results suggest that disability is not a significant predictor of externality in adolescents. Persons with an internal locus of control are more assertive and better able to cope with their environment; occupational therapists can offer many therapeutic strategies to persons with an external locus of control for improved function and quality of life.

The Locus of Control Concept

Researchers who have repeatedly concerned themselves with people's ability to control their personal environment have used such concepts as competence, helplessness, hopelessness, mastery, and alienation to describe the degree to which persons are able to control the important events occurring in their lives (Lefcourt, 1966). However, the internal-external locus of control construct differs from the above-mentioned concepts in that it is an integral unit of an elaborated theory. Rotter's social learning theory (Rotter, 1954, 1955, 1960) provided the general theoretical background for this construct. Rotter (1966) defined locus of control as follows:

When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, or under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control. (p. 1)

Rotter (1966) noted that the effect of reinforcement "is not a simple stamping in process but depends on whether or not the person perceives a causal relationship between his own behavior and the reward" (p. 1). This perception may vary in degree from person to person as well as within the same person over time and situations (Nowicki & Strickland, 1973b). These characteristic differences in viewing behavior-reinforcement contingencies could be measured in children and adults with reasonably high intercorrelations between different scales of

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measurement and could be predictive of behavior in a variety of circumstances (Rotter, 1966).

Locus of Control Continuum: Internality-Externality

The locus of control continuum implies that a person has both internal and external beliefs regarding the consequences of various life events. What characterizes a person as internal or external, however, is his or her current predominant locus of control perspective. To successfully cope in society, most people need a locus of control in the midrange (Rotter, 1966).

Numerous studies (Lefcourt, 1967; Phares, Ritchie, & Davis, 1968; Rotter & Mulry, 1965; Strickland, 1970) strongly support the hypotheses that persons with an internal locus of control “(a) [are] more alert to those aspects of the environment which provide useful information for their future behavior, (b) take steps to improve their environmental condition, (c) place greater value on skill or achievement reinforcements and [are] generally more concerned with their ability, particularly their failures, and (d) [are] resistive to subtle attempts to influence them” (Rotter, 1966, p. 25). According to Seeman and Evans (1962), persons with an internal locus of control, or what they termed low alienation, seemed to acquire more knowledge about their situation or problems or, as stated by Davis and Phares (1967), the task before them. Consequently, they seemed in a much better position to cope with their problems.

Opposing the above-mentioned findings, Janzen and Beeken (1973) wrote that some research studies (Ducette & Wolk, 1972; Gurin, Gurin, Lao, & Beattie, 1969) provide a different perspective of studies that assume that internal beliefs represent positive affirmations and that have used words such as alienated, powerless, apathetic, passive, and complacent with reference to persons with an external locus of control. These studies argue that an external locus of control has positive aspects, such as a more liberating attitude to interpersonal and other relationships, a greater tolerance of chaotic and unpredictable situations, a more realistic appraisal of the nature of what influences us, and a less overt desire for power (Janzen & Beeken, 1973). These findings, however, were not adequately supported by research and therefore were not considered to be the prevailing opinion.

Many theorists, such as Piaget (1926/1975), Bilier (1961), Penk (1969), Lefcourt (1972), and Nowicki and Strickland (1973b), have suggested that locus of control can be influenced by life experiences. Persons with an internal locus of control, as previously mentioned, attempt to take action and confront situations in order to control the outcome. When told that they have personality deficiencies, persons with an internal orientation appeared more open to remedial programs (Miller, 1970; Phares et al., 1968). Persons with an external locus of control, as shown by Dua’s (1970) research, can move along the internal-external continuum toward internality when taught new behaviors for dealing with situations of interpersonal anxiety. Other studies by Masters (1970) and Nowicki and Barnes (1973) demonstrated the altering of a person’s perception of control in the direction of internality. Increased internality was achieved in the former study by therapy; in the latter study, by effectance training during a summer camp for children.

Health professionals as well as educators need to be concerned with the findings that persons with an external locus of control do not seem to try to better themselves because they do not believe that taking action will alter things.

Potential Influences on Locus of Control

A number of complicating variables need to be taken into consideration when investigating children’s locus of control, including age, sex, race, and socioeconomic status (Nowicki & Strickland, 1973b). Nonetheless, the dimension of locus of control appears to be a variable of significant impact in relation to children’s behaviors, and the Nowicki-Strickland Locus of Control Scale for Children (Nowicki & Strickland, 1975a) appeared to be an appropriate instrument for assessing this particular variable. The literature contains a variety of studies that examined the potential interference of these demographic variables to a person’s locus of control (Gilmor, 1978).

The locus of control body of research reviewed for this study elicited the following conclusions concerning the influence on locus of control of the age, sex, IQ, race, and socioeconomic status variables: (a) a well-established relationship of locus of control with socioeconomic status (Gilmor, 1978; Stephens & Delys, 1973) and age (Baldo, Harris, & Brandall, 1975; Eggland, 1973) was demonstrated; (b) few investigations with the racial variable have controlled socioeconomic status, therefore the inconsistent reports of racial differences in locus of control scores need to be expanded upon (Zytkoskee, Strickland, & Watson, 1971); (c) IQ was not found to correlate with locus of control when the Nowicki-Strickland Locus of Control Scale for Children was used but does correlate with the use of the Intellectual Achievement Responsibility questionnaire (Nowicki & Roundtree, 1971); (d) sex (Stipek & Weisz, 1981; Coady & Bastien, 1985), and parental antecedents of internal-external attitudes (Wichern & Nowicki, 1976) require further investigation and are therefore considered as variables that can influence a person’s locus of control in either direction (Gilmor, 1978).

Of the few studies that examined locus of control with young people with disabilities, children with such physical disabilities as blindness (Land & Vineberg, 1965) or deafness (Koele, 1971; Koele & Convey, 1982; MacDonald, 1972) were found to be more external than chil-
children without such disabilities. Of the few studies that examined locus of control in children with congenital physical disabilities, three involved children with cerebral palsy. Lee and Lieh Mak (1984) of the University of Hong Kong experimentally demonstrated the usefulness of the construct of locus of control in increasing understanding of the adjustment and task performance of physically disabled children with cerebral palsy and polio. Their study investigated the construct of locus of control in terms of its relationship to teachers' ratings of academic ability and social adjustment as well as the task performance of physically disabled children. Their data suggested that "externals tend to overgeneralize their disabilities more than internals" (p. 132). Eggland (1975) tested the locus of control of subjects with cerebral palsy and compared their scores to those of a nondisabled group. She hypothesized that first- and fourth-grade students (n = 20) with cerebral palsy would obtain more external scores on the Nowicki-Strickland Locus of Control Scale for Children than their nondisabled peers (n = 82). The results showed the children with cerebral palsy to be more externally controlled than their nondisabled peers.

Obtaining different results, Center and Ward (1986) of Australia measured the locus of control of children with mild forms of cerebral palsy who had been integrated into general education school. These researchers tested the hypothesis that these subjects, who had possible academic difficulties, display more external locus of control than their unimpaired peers. The results indicated that the locus of control instruments used (i.e., the Nowicki-Strickland Locus of Control Scale for Children or the Pre-school/Primary Internal-External Control Scale [Nowicki & Duke, 1974]) did not differentiate between mildly disabled children with cerebral palsy who had been integrated into general education schools and their nondisabled peers.

I based the hypothesis in the present study on the literature on locus of control in general, the above-mentioned studies, and my clinical experience and judgment. The research hypothesis was that a significant difference in the Nowicki-Strickland Locus of Control Scale for Children's scores between adolescents with congenital physical disabilities and their nondisabled counterparts would be found. Specifically, I hypothesized that the scores for the disabled group would evidence more externality than the scores for the nondisabled group.

Method

Subjects

The sample for this study consisted of school-age adolescents from western New York State. The subjects in the nondisabled group were selected from two participating general education public schools. The subjects with congenital physical disabilities were selected from a public school dedicated to the education of disabled children and adolescents. Their conditions were diagnosed as arthrogryposis, nemaline myopathy, severe juvenile rheumatoid arthritis, and various types of cerebral palsy and muscular dystrophy. All subjects with disabilities had IQs within normal limits. They all used wheelchairs, were able to communicate verbally, and were without any major visual or hearing impairment. The latter criterion was operationally defined for this study as the ability to hear or read the questions of the scale.

A list of criteria for each of the two groups on medical status and diagnosis, IQ, sex, socioeconomic status, age, and race was given to the school principals, who then used school records to select or match the potential subjects. This was done to conform to the school system's regulations regarding confidentiality of student-related information and to make possible the mailing of consent forms to parents of the selected students. Written consent was then obtained from all of the subjects' parents and was also obtained from each subject before he or she was given the scale.

The total available sample consisted of 21 subjects, with an equal number of disabled and nondisabled matched subjects (n = 8) and an extra 5 nonmatched nondisabled subjects. To limit the effect of maturation, the age range was restricted. The average age of the subjects was 12.9 years (range = 10.10 to 14.10 years). The Stanford-Binet Intelligence Scale (Spruill, 1987), Wechsler Intelligence Scale for Children—Revised (Vernon, 1984), and Cognitive Skills Index (part of the Test of Cognitive Skills [Troy, 1985]), which all have comparable scoring, were the intelligence scales used. Full-scale IQ scores were not available for all subjects, therefore, in some cases, either the performance or verbal IQ was used. Six nondisabled subjects had no IQ scores in their school records but were considered within the norm based on class placement by the teacher's or principal's assessment. I determined the subjects' socioeconomic score by adapting Hollingshead's (1975) Four Factor Index of Social Status into a short questionnaire about parents' marital status, sex, education, and occupation. This information was found in the school records and through interviews with the subjects. A score was compiled from the questionnaire; the higher the score, the better the socioeconomic status, with possible scores ranging from 8 to 66. One- versus two-parent households was another factor considered in the matching of the two groups by socioeconomic status.

Instrument

The Nowicki-Strickland Locus of Control Scale for Children is a 40-item paper-and-pencil measure with a yes-no response choice to be marked on the scale next to each question. The questions inquire as to how the subject views a variety of everyday life situations concerning dependency, achievement, and relationships, for example,
"Do you believe that you can stop yourself from catching a cold?" “Most of the time do you feel that getting good grades means a great deal to you?” and “Most of the time do you find it hard to change a friend’s opinion?” The score is determined by the number of external answers out of 40 questions. Therefore, the higher the participant’s score, the more external is his or her locus of control.

Over 700 studies have been completed with the Nowicki-Strickland Locus of Control Scale for Children since its development (Strickland, 1989). The test-retest reliabilities sampled at three grade levels (sample size not reported), 6 weeks apart, were reported to be .63 for the 3rd graders, .66 for the 7th graders, and .71 for the 10th graders (Nowicki & Strickland, 1973a). According to Strickland (1989), this scale has exhibited good internal consistency and test-retest reliability and was not related to social desirability, intelligence measures, or sex. Research studies with this scale revealed good construct validity with internal scores related to children’s adaptive behaviors and academic success (Gilmor, 1978; Nowicki & Duke, 1983).

Procedure

The research approach used in this study is referred to by Rosenthal and Rosnow (1984) as a sample-difference design. Subjects completed the Nowicki-Strickland Locus of Control Scale for Children individually in a quiet room in their school in the morning or early afternoon. Each question was read by an assistant to all subjects to prevent experimenter bias, and explanations were given when necessary. Although no specific time frame for answering was set, the average time that it took to fill out the questionnaire was 15 minutes. Only one disabled subject accepted the assistance offered in marking answers on the paper. The questionnaire was given to all subjects within a 2-week period for each school, except for one student who was out sick and was tested upon return.

Results

A preliminary data analysis revealed no statistically significant differences between the original matched subjects without disabilities (n = 8) and the five additional non-disabled subjects (n = 5). Therefore, the data from all the non-disabled subjects were collapsed and compared with the data from the students with disabilities. The total sample size for all subsequent analyses was N = 21. The summary data on the subjects’ characteristics are shown in Table 1.

The Mann Whitney U test was used to analyze the data based on the recommendations provided by Royeen and Seaver (1986). The results were expected to show that the congenitally physically disabled group would have a significantly higher external score than the nondisabled group. The Mann Whitney U test (U = 58.50, p = .635), however, did not indicate a statistically significant difference between the two groups.

Keeping in mind that the scoring of this scale indicates the number of external answers, the non-disabled group’s (n = 13) locus of control scores ranged between 5 and 21 (m = 12), and the disabled group’s (n = 8) scores ranged between 7 and 20 (m = 14). Adjunct analyses were conducted to find the percentage of internal and external answers that the non-disabled and disabled subjects gave for each question (see Figures 1 and 2).

Spearman correlation coefficients were generated to investigate the influence of a number of demographic variables on the subjects’ locus of control. It was found that only the variable of race correlated significantly with both disabled and non-disabled subjects’ locus of control scores (r = .54, p = .05). The mean locus of control score (external) for white subjects (n = 18) was 12 (SD = 4); for black subjects (n = 3), it was 20 (SD = .8).

Discussion

The results did not support the research hypothesis. There was no statistically significant difference found in the scores of adolescents with congenital physical disabilities and their non-disabled peers on the Nowicki-Strickland Locus of Control Scale for Children. That is, the scores of the group of subjects with disabilities did not reveal significantly more externality than the scores of the non-disabled group.

Despite the statistically nonsignificant results, a
number of interesting issues were uncovered in the percentage of external or internal answers given by the two subject samples for sets of questions addressing a similar topic. Two questions comparing the subject's strength to that of adolescents his or her age showed a large difference in scores. One question had 63% of the disabled subjects compared with 31% of the nondisabled subjects answering externally. The other question had 50% of the disabled subjects compared with 23% of the nondisabled subjects answering externally. However, all adolescents with disabilities used wheelchairs, and most had suffered some degree of loss of strength and endurance due to their disability. Therefore, the subjects' answers may reflect reality rather than external beliefs. Conversely, a percentage of disabled subjects (37% on one question, 50% on the other) answered in an internal way, which may indicate their higher level of physical ability or that the questions were viewed only in the disabled adolescents' personal context, comparing themselves in strength with their disabled peers only. When asked, "Are some kids just born lucky?" and if they ever had a good luck charm, 63% of the students with disabilities answered yes (external) to both questions, compared with 31% of the nondisabled students. When asked if they believed they could change what might happen tomorrow by what they do today, 75% of the disabled subjects answered externally (no), compared with 31% of the nondisabled subjects. However, all (100%) of the nondisabled subjects and 75% of the subjects with disabilities thought that good things happen because of hard work. All questions concerning the importance of doing homework, of good grades, and of being smart rather than lucky received a high percentage (75% to 100%) of internal responses from both groups.

Concerning the correlational results, the literature has shown inconsistent findings regarding the race and locus of control variables, whereas the socioeconomic status and locus of control relationship is constantly the strongest. Therefore speculate that, because black subjects included in this study were also in the lower socioeconomic status and from one-parent households, the socioeconomic status—race locus of control interaction may cover up the more significant socioeconomic status locus of control interaction. These correlational results reflect exploratory findings and should be viewed with caution, because there were few black students in both samples. Other variables, such as age, sex, IQ, and one- versus two-parent households, did not show significant correlations with the subjects' locus of control scores.
This study is considered exploratory. It tested two groups at one point in time in the field (school) and made a simple comparison of the two groups' locus of control scores. The results have limited generalizability because of the small preselected sample. The variable of primary interest, that is, locus of control, could not be manipulated. Another possible limitation is the sensitivity of the measuring instrument. The Nowicki-Strickland Locus of Control Scale for Children has been shown to be sensitive in previous research but has not been used extensively with the population of persons with disabilities.

As noted above, the selection and number of subjects were areas of limitation due to the impossibility of randomly assigning the condition (congenital physical disability) as well as the limited number of congenitally disabled subjects with normal intellect. Matching was used to help equate the groups and reduce the effect of extraneous variables.

It is important to note that the subjects with disabilities were selected from a school where the education and the environment are tailored to their needs. Therefore, they may have read the questions in relation to their own school's context, thus comparing themselves with their disabled peers instead of the adolescent population at large. Being surrounded exclusively by disabled peers may give these students a false sense of coping ability, but it also can be a stepping stone for a transition to a more integrated educational or work setting. The study results did not address the issue of mainstreaming and integration of persons with disabilities. However, in future investigations, locus of control would be an important variable to look at when studying the appropriateness of a setting or the adequate timing for mainstreaming and integration of persons with disabilities into schools and communities. Additionally, because this study's results stem from the fact that the sample of subjects with disabilities was selected from a school for students with disabilities, future research should compare the locus of control of disabled adolescents from such an environment with that of those integrated into general education settings. There are many different levels of integration. The lowest level consists of a segregated classroom in a general education school building. The middle level is a partial integration into a general educational curriculum and activities. The highest level consists of full integration into a general educational curriculum and activities. Locus of control can be influenced differently at each of these levels depending on the environment, interaction with the environment, or the personality of the individual. Therefore, investigations and comparisons of the locus of control of
persons with disabilities at each level would be of great interest for therapeutic and educational planning.

The result that disabled and nondisabled adolescents, considered as separate groups, have similar proportions of externality and internality responses is viewed as a positive finding. The study's overall findings appear to show that individual adolescents, physically disabled or not, may develop an external or an internal outlook on life and behave accordingly. This may be due to their nature (personality), which is also influenced by their life circumstances, including social and familial influences, and may or may not involve disability. Considering that the locus of control personality construct is defined as a continuum, whatever the individual situation, some adolescents will develop their external beliefs, whereas others will weather adversity, which will develop and strengthen their internal beliefs.

Implications and Conclusion

Abrahamson et al. (1979) mentioned the considerable effect that the dependence of persons with disabilities has on the social structure of our society and the economic institutions that support it. In an attempt to help disabled persons live productive and satisfying lives, we need to explore different aspects of their present way of living. The importance of personal characteristics in the success of persons with disabilities should be considered. To achieve economic or social self-sufficiency, our disabled persons need identification of their personal abilities and limitations as well as their personality characteristics. This should be followed by specific training to increase social acceptability and the ability to cope in everyday situations so as to enable them to reach their maximum level of function.

I hope that the present study will encourage occupational therapists to consider assessment of locus of control as part of their evaluation routine with disabled youth. Rather than the therapists’ own subjective interpretations and value judgments of their clients’ behaviors, attitudes, and beliefs, the data gathered from individual locus of control assessments will increase therapists’ own awareness of each young person’s way of perceiving his or her ability to control the environment. Therefore, information on the locus of control orientation of a young person would help the therapist and parents to further understand the young person’s reaction to different situations or obstacles. Consequently, different therapeutic and parental strategies would be useful to the development of a more internal belief system in the child or adolescent.

Occupational therapists have many therapeutic strategies to offer to the disabled population with external beliefs to help them develop a more internal locus of control, to gain self-confidence and coping skills to become more functional, and to enjoy an improved quality of life as their limitations are overcome. These goals can be achieved through the use of the occupational behavior model of practice (Reed, 1984). Occupational behavior is defined as “that aspect of growth and development represented by the developmental continuum of play and work as they support competence, achievement and occupational role” (Reed, 1984, p. 99). The assessment of locus of control is part of a set of evaluations to be done when used with the occupational behavior model. These evaluations reveal information concerning the person’s life history, including family and other relationships, work and leisure time, perception of life, decision-making and problem-solving abilities, and physical abilities. It is with this knowledge of the disabled person and the family that the therapist can assist with goal setting. Then, through adaptation of tools, of activities, and of the environment, the occupational therapist contributes to a transdisciplinary, or at least interdisciplinary, team approach, working with the young person and his or her family to reach their goals.

MacDonald (1971) wrote,

Attempts to raise expectancy levels would seem to be a worthwhile endeavor for both the researcher and the practitioner. Perhaps, if we are successful in raising the expectancy levels of the disabled we may experience the happy by-product of raising our own. (p. 115)

Our willingness to develop this knowledge may give us hope that we, as health professionals, can mindfully have a positive effect on human personality and potential (Strickland, 1989).

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