

Reliability Analysis of Self-efficacy and Locus of
Control Scales for Students with Mild Disabilities

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Abstract

Students with mild disabilities struggle with transition from high school to adulthood. Self-efficacy Scales (General, Social) from Sherer et al. (1982) and Nowicki-Strickland Locus of Control (Nowicki & Strickland, 1973) are widely-used personality measures that influence transition behavior but have not been validated for special education populations. This paper reports reliability for these instruments from a STEP Pilot testing transition intervention strategies for students with mild disabilities. Fifty students had available data; the authors examined Cronbach's coefficient alpha for the two self-efficacy subscales and locus of control. (Sample size did not support factor analysis, but underlying scale structure was supported by extensive previous research.)

For Self-efficacy (General-17 items), alpha was .640; removing one item increased alpha to .719, above the .7 threshold recommended by Nunnally and Bernstein (1994). For Self-efficacy (Social-6 items), one question was also removed (from alpha = .461 to .589), just below the minimally acceptable .6 standard for exploratory research. For the 40-item LoC, alpha was .719. These results dictate caution for educators utilizing scales that have not been validated with target populations. Even with slight modifications, two of three scales tested were barely acceptable. Educators cannot assume without checking that instruments or scales normed on regular populations work as anticipated for at-risk or special needs groups.

Introduction

Students with disabilities need experiences for career choices, but also need practice in using self-determination skills to learn how to control their own lives. Many times, society and families make choices for the person instead of teaching them how to do this for themselves. Teachers and parents need to help the student with disabilities learn to express their needs, wishes, and desires in order to take charge and work toward accomplishing their personal goals. Learning to participate in the IEP process is a good step in this process toward independence. Understanding social concepts and personal abilities as well as disabilities is a critical step in the process toward independence. Essential to student progress is the understanding of personality variables like self-efficacy and locus of control. Constructs such as these are important in psychological development and affect how people face choices and demands of life.

Within this context, the Steps Toward Educational Progress (STEP) Grant (1996-2000) was a pilot project to assist students with disabilities in preparing for postsecondary education or competitive employment following high school (Simmons, 1996). It was funded through an Office of Special Education and Rehabilitation (OSERS) federal grant to the University of Louisville and implemented with Jefferson County Public Schools (JCPS) in Louisville, KY. The intent of the project was to improve high school transition services for students with specific learning disabilities (LD), emotional or behavior disabilities (EBD), and mild mental disabilities (MMD). Six participating schools were identified by the school district Exceptional Child Education staff as being in need of improved transition support services. Each school had large numbers of mildly disabled students who were at risk of dropping out of school and/or being unsuccessful at transitioning into employment and/or postsecondary education identified by the school staff.

One hundred and nine (109) students were given assistance in learning about their personal disability and support structures needed to become successful in postsecondary training and education. An elective class was provided at the six schools (with 12 different teachers participating). Some of these supports included note taking, tape recording, concept organizing strategies, and study skills. In addition, the two personality assessments that are the focus of this paper were administered to students during the elective class: The Self-efficacy Scale (Sherer, et al., 1982); and The Nowicki-Strickland Locus of Control (NSLC) (Nowicki & Strickland, 1973). A one-year extension provided follow-up services for transition to employment or post-secondary. This study group is comprised of only those fifty (50) students who participated in the follow-up study and whose parents gave permission for their participation.

The STEP Grant contains three types of data that represent Independent Variables: demographic, information on the intervention, and mediating factors (student Self-efficacy and Locus of Control). The transition outcomes represent the Dependent Variables: employment, postsecondary education, and independent living. The larger study from which this work is taken (Niemann, 2007) constitutes a partial program evaluation of the STEP Grant and encompasses extensive investigation of all of these variables.

This paper, however, is limited to psychometric analysis of the three personality scales. Although the effects of personality development on a variety of populations and content areas have been well documented, researchers have not typically extended those findings to special education. Yet despite the lack of studies on students with disabilities, it is commonplace in the field of special education to refer to these students as having lower self-efficacy and lessened locus of control. Specifically, there has been no validation of two tests that are routinely used in literature with special education students: Self-efficacy (General and Social) (Sherer, et al., 1982) and Locus of Control (Nowicki & Strickland, 1973). This paper provides psychometric evidence on these scales. If predictors of success can be identified (based on scales appropriate to the population), educators could focus attention on improvements to help students with disabilities develop more resilient personalities and transition more successfully.

Economic earning ability directly affects ability to live independently and overall personality development, e.g., self-esteem and locus of control. Additional improvements are necessary to ensure students in the MMD, EBD, and LD categories become successful adults. Living independently as an adult depends on economic earning power, seeking additional training/education, successful application of community skills, self-concept improvement, and hard work. These are not easy objectives for students with disabilities to reach.

Definitions of Terms

The following terms are common to the literature in this field.

Locus of control--A belief that the power to effect change comes from within oneself (Steere, Rose, & Cavauiolo, 2007, p. 32). Internal locus of control represents the belief that individuals can control how issues affect them. External locus of control suggests the belief that external forces control one's life.

Problem-solving and decision-making skills--“determining reasonable courses of action when presented with challenges” (Steere et al., 2007, p. 32).

Self-advocacy--“Speaking up on one’s own behalf, stating needs and preferences” (Steere et al., 2007, p. 32).

Self-confidence--“A belief in one’s own abilities, determination to make things happen for one’s self” (Steere et al., 2007, p. 32).

Self-determination--“Ability to take greater control over one’s own life and decision making” (Steere et al., 2007, p. 31). Also, “[a] combination of skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior” (Field, Martin, Miller, Ward, & Wehmeyer, 1998, p. 115).

Self-efficacy--“A belief that one’s actions will have an impact and will positively affect one’s own future” (Steere et al., 2007, p. 32).

Self-management--“skills related to setting goals for oneself, monitoring progress toward those goals, and taking action to achieve goals” (Steere et al., 2007, p. 32).

Literature Review

This research utilizes existing data from a transition intervention project in six high schools in a central U.S. metropolitan school district. In that regard, the larger study (Niemann, 2007) fits into the category of program evaluation. But the limited data collected for the STEP Grant precluded a full-program review; accordingly, this could best be considered a partial program evaluation. Critical information regarding the history of transition outcomes and research in best practices for the transition period was reviewed with respect to the research participants. Among other areas, effects of personality development on self-determination and self-advocacy were explored to determine effects, if any, upon the transition intervention for special needs students. The following review focuses primarily on the self-efficacy and locus of control instruments..

Transition for Students with Mild Disabilities

Outcomes of transition have been a major research topic for the past 15 years. Current literature for four of the major outcomes for transition was reviewed: Employment, Postsecondary Education, Independent Living, and Self-Determination, which includes Self-Improvement (Personal Insight and Future Planning ability), Self-efficacy, and Locus of Control. The focus of this paper falls within the area of Self-Determination, specifically, reliability of Self-Efficacy and Locus of Control tests used with students with mild disabilities.

Hasazi, Furney, and DeStephano (1999) compiled a cross-case analysis of transition programs in three states and suggested that six practices were common in model transition projects and were recommended to improve outcomes at every level of transition: (a) Promote self-determination through instruction and self-centered planning, (b) Develop sensitive approaches to interagency collaboration, (c) Develop and systematically monitor professional development opportunities, (d) Maximize transition outcomes by fixing roles and responsibilities, (e) Expand

school and post school options for specific populations of students, (f) Promote integrated approaches to educational reform. Halpern (1993) suggested that outcomes might be used to form and evaluate transition programs. He established the following three Quality of Life areas for adult life: The first area, Physical and Material Well-being, included Physical and mental health; Food, clothing, lodging and financial considerations; and Security and safety from harm. A second area was Performance of Adult Roles and included Access to the community; Vocation, career, or employment; Leisure, recreation activities, personal relationships, and social networks; and Educational attainment, spiritual fulfillment, citizenship (e.g., voting), and social responsibility (e.g., doesn't break laws). The final area Personal Fulfillment included happiness, satisfaction, and sense of general well being.

According to Blackorby and Wagner (1996) many mildly disabled students change jobs frequently and spend a significant portion of their adult life unemployed. These circumstances often lead to a diminished quality of life and lowered self-esteem for the adult with disabilities. Research has shown that students who are self-determined are more independent and more likely to be employed for pay (Wehmeyer & Gragoudas, 2004; Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1998). "Employment and quality of life are intertwined; it is difficult to have one without the other" (Repetto, 2003, p. 79).

Psychological Insights

Some of the connection identified by Blackorby and Wagner (1996) and other researchers (between employment and self-determination) seemed to be personality based. As the clients worked through their situations, they gained personal insight and increased capabilities to handle stressors. With understanding came increased personal control (Bramston & Cummins, 1998). Wilson (1998) explained the connection between self-determination, choices, and control. She explained self-determination as "the individual's ability to express preferences and desires, make decisions, and initiate actions based on these decisions" (p. 3). The concept of control expands the principle of self-determination to focus on the extent to which individuals are "independent, self-sufficient, and capable of gaining access to the resources necessary to freely act on their choices and decisions" (Wilson, 1998, p. 3; see also Kregel, 1992). These three concepts directly affect quality of life for individuals with disabilities and relate to mandates in IDEA legislation. R. I. Brown, Bayer, and MacFarlane (1988) stated that quality of life can be viewed as the degree to which an individual has control over his or her environment (pp. 111-112). Halpern (1993) examined student and family characteristics, school programs, and school outcomes to see if there were predictors for quality of life indicators (p. 496). He found predictor variables were significant in areas of behavior, primary disability category, gender, proportion of classes in relevant areas that were passed, and student satisfaction with the high school experience. Giordano and D'Alonzo (1994) explored the connection between transition and independent living and decided that the "transition to social integration, community participation, employment, and independent living by persons with disabilities can be a life-long process" (p. 4). They defined success as being employed and thereby "securing maximum quality of life as empowered citizens" (p. 4).

Sitlington and Frank (1990, 1993) found that 49% of their sample lived independently three years after leaving school. Major needs for students with learning disabilities were academic, social, personal, and vocational. The two most critical needs for adults with learning disabilities were vocational training and the ability to acquire a positive self-concept, self-understanding, and

self-acceptance (Hoffman et al., 1987). Major cognitive, affective, and motivational characteristics of individuals with LD included “the poor sense of self, often stemming from failure in school and the creation of mal-adaptive defensive behaviors that are unacceptable in society” (Sitlington & Frank, 1993, p. 5). The concept of poor visual imagery prevented many LD adults from envisioning themselves as competent, self-sufficient adults, while learned helplessness caused “passivity in learning and a crippling lack of independence” (Sitlington & Frank, 1993, p. 7).

Brickman and Deyo (1991) reviewed the history of literature that connects psychological factors with supported programs for independent living. During the 70s and 80s, the work on child and adolescent development paralleled the supported living programs development (Brickman & Deyo; Masterson, 1985; D. Miller, 1983). Youths with impaired self-esteem tend to see their connections to Supervised Independent Living (SIL) programs as just another step in their isolation and failure. They had many fears about moving away from the family support to real independence; the developmental deficits experienced by these youths early in their lives compromised their capacity to reach independence (Brinkman & Deyo). The Huron program in Ann Arbor, MI, allowed the clients to maximize their support as needed, coupled with as much independence as they were able to manage. It was organized to assist movement into less structured phases as the client matured and was able to manage more efficiently the feelings of loneliness, incompetence, hopelessness, facing the job market, and intensified peer pressures. The support provided the scaffolding for the client to form healthy attachments, increase self esteem, and build resiliency.

As independent living has been explored, many aspects of personality were identified as critical for the student with disabilities to become an independently functioning adult. The next section explores how critical personality traits directly affect the transition from high school to adult life.

Personality Development

To understand personality development and how it effects transition planning, the components that lead to self-determination and self-advocacy are explained. Students with disabilities have many stresses on basic personality development as they mature. Before individuals can become self-determined or advocate for themselves, they need to develop positive outlooks with respect to personality traits such as self-concept, self-esteem, self-acceptance, self-efficacy, and locus of control, among others. These concepts are part of the person’s personality and affect how the person plans for the future and meets the stressors of life.

The concept of self-advocacy is related to self-determination, but extends the concept to include “advocating for one’s rights and the rights of other individuals with disabilities” (Westling & Fox, 2000, p. 508). Before persons can become self-determined, advocate for themselves, and make successful life choices, it is important to understand how individuals view themselves. “Variables such as self-esteem, locus of control, and achievement motivation may play an important role for educators in understanding how to help students develop the problem-solving and higher-order thinking skills necessary for survival in the 21st Century” (Tyler & Vasu, 1995, p. 2).

Personality differences have been shown to affect both employment aspects as well as postsecondary education. Fourqorean and LaCourt (1990) identified affective issues (e.g., poor self-esteem, a lack of self-acceptance, vocational success, and personal independence) in a follow-up study on employment and postsecondary education. The most common problem identified by subjects was the “ability to establish and maintain appropriate social relations with co-workers and job supervisors” (Fourqorean & LaCourt, p. 19). Students were asked what would have helped them develop these skills earlier. They identified the need to develop a more positive image in high school, including issues such as overcoming shyness, increasing social skills, and improving self-concept. Several parents and students mentioned the negative stigma of being assigned to special education classes. Comments centered on lack of understanding of learning disabilities, lower self-confidence, and lower self-esteem. “Above all, the terms self-concept or self-esteem emerged as the key words most frequently used in describing the long-term effect of the student’s handicapping condition” (Fourqorean & LaCourt, p. 21).

Self efficacy

Self-efficacy is a basic element of an individual’s personality development. Self-efficacy is the perception of the person that their actions can positively affect their future (Steere et al., 2007). In Bandura (1977) the social cognitive theory was initiated and Self-efficacy was described as the inner ability to pursue goals and tasks and work toward the completion of those tasks. Smith, Kass, Rotunda, and Schneider (2006) described Self-efficacy as the way persons look at their own ability to work toward a goal or take action required to attain a level of performance. A strong sense of Self-efficacy allows the individual to be resilient when faced with multiple roadblocks in pursuit of a goal. Individuals with strong Self-efficacy possess internal attitudes to think they have the ability to achieve and to improve the situation when faced with the possibility of failure. A high sense of Self-efficacy allows the person to solve problems more readily (Smith et al.). Bandura (1989) described persons with high Self-efficacy as “viewing themselves successfully executing a task” which provided positive guides for performance while those persons with low Self-efficacy “viewed themselves as failing on a task and focused on events going astray” (as cited in S. Smith et al., p. 172).

Strausser and Berven (2006) devised a Self-efficacy job-seeking scale based on Bandura’s work. When applied to job-seeking skills, Self-efficacy refers “to an individual’s confidence in his or her ability to successfully execute job-seeking behaviors” (p. 206). The psychological factors in the job search are the target for their Self-efficacy job seeking scale, e.g., “work personality, self-concept, adjustment to disability, Self-efficacy, and outcome expectancies that are important in a successful job search” (p. 207). Self-efficacy and self-concept are different ways of looking at oneself (Pajares & Schunk, 2001). While Self-efficacy centers on how the person judges confidence in his/her abilities to execute goals, self concept provides perceived evaluation of self-worth. Self-efficacy beliefs are more closely related to academic achievement than self-concept (Lackaye, Margalit, Ziv, & Ziman, 2006; Marsh & Hau, 2004; Pajares & Schunk (2001); Pietsch, Walker & Chapman, 2003).

Three types of Self-efficacy have been identified: academic, social, and emotional (Bandura, Barbaranelli, Capara, & Pastorelli, 2001; Bandura, Capara, Barbaranelli, Pastorelli, & Regalia, 2001; Bandura, Pastorelli, Barbaranelli, & Capara, 1999; Muris, 2001). In Jones and Jolly’s (2003) study, the relationship between family and adolescent Self-efficacy was explored.

They found no support for negative effects based on family structure, but did find significant correlates in race, academic performance, income, and parental support. Demographics, along with Self-efficacy, are considered in this present research.

Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, and Rogers (1982) authored The Self-efficacy Scale that was used to gather Self-efficacy General and Self-efficacy Social test scores for the current study. Their scale is based on the premise that past experiences and attribution of success to skill or chance results in two different levels of Self-efficacy. One score is for a Generalized Self-efficacy expectation, while the other score is for a Social Self-efficacy subscale. They tested their theory against Locus of Control, Personal Control, Social Desirability, Ego Strength, Interpersonal Competence, and Self-esteem measures to provide construct validity. The Self-efficacy Scale has a positive relationship with vocational, educational, and military successes in testing use over the years. When individuals believe they can accomplish an outcome, they undergo a behavior change which differentiates the process of attaining the goal different in three ways: (a) The individual is more likely to try to perform the behavior initially, (b) The individual gives more effort to trying to attain the goal, (c) The individual applies more persistence in the face of adversity (Sherer et al.). Their research confirmed that the test was not tied to a specific behavior or situation. It has been widely used and is available on the web for use without copyright fee. High Self-efficacy was associated with “internal orientation as measured by the I-E Scale [Internal-External] and its Personal Control subscale” (Sherer et al., p. 669). It should be recognized that scores on the Sherer et al. Self-efficacy Scale should not be interpreted in isolation from real-life experience and context. The goal is not a high score on the scale, per se; rather, it is the person’s sense that he/she actually possesses these attributes of self-control and self-completion, i.e., the underlying construct. A high score alone is not enough unless the person has had some success experiences on which to build. Positive outcomes build a circle of success with the individual experiencing more success and subsequently attempting more and persisting longer in the attainment of a specific goal.

The discussion on the limitations of a generalized Self-efficacy measure is illustrated by various applications of the Sherer et al. (1982) scale. Sherer et al. themselves note that, “The Self-efficacy scores were associated with the ability to keep a job, but not with success in education or with military rank” (p. 670).

Empirical research studies were supplied by Mark Sherer, author of the Self-efficacy Scale, in 2000, in response to a request to include his test in this project. The following topics were the target for these research projects: the elderly (Bosscher & Smit, 1998); Spanish adults (Caballo, 1993); relationship between parental autonomy and children (Erford, 1995); vulnerability markers and protective factors for prevention of schizophrenia in children and adolescents (Godoy, Muela, Sanchez-Barrera, & Sanchez-Huete, 1995); hospitalized mentally ill patients (Hays & Buckle, 1992); medical and psychosocial aspects of epilepsy (Helgeson, Mittan, Tan, & Chayasirisobhon, 1990); hospital social workers (Holden, Cuzzi, Rutter, Chernack, & Rosenberg, 1997); adult attachment styles (Jang, 1997); language differences (Keane & Morgan, 1991); five ways of operationalizing Self-efficacy (Lee & Bobko, 1994); attachment bonds with parents (Mallinckrodt, Coble, & Gantt, 1995); attachment patterns in psychotherapy relationship (Mallinckrodt, Gantt, & Coble, 1995); Hindi translation and factor structure (Mattoo & Malhotra, 1998); comparison of Likert scale and traditional measures (Maurer & Pierce, 1998); personality characteristics and family environments of short term counseling clients (May & Sowa, 1994); Japanese version of

generalized Self-efficacy Scale from the life span perspective (Narita, Shimonaka, Nakazato, Kawai, Sato, & Osada, 1995); factor structure and convergent validity of the Italian version (Pierro, 1997); comparison of Self-efficacy with self-esteem (Stanley & Murphy, 1997); out-of-body experience and personality functioning (Tobacyk, Wells, & Miller, 1998); health locus of control and Self-efficacy beliefs in a healthy elderly sample (Waller & Bates, 1992); effects of cognitive and experiential group therapy on Self-efficacy and perceptions of employability of chemically dependent women (Washington, 1999); and task, domain, and general efficacy development (Woodruff & Cashman, 1993).

Klassen (2002) identified 22 studies that included Self-efficacy with students with LD. He noted that in the past 20 years a considerable amount of research was done with the construct of “self” and learning disabilities, but no comprehensive review of academic functioning in this regard (p. 89). The purpose of Klassen’s research was to “examine how students with LD (with poor task analysis and metacognitive skills) calibrate their efficacy beliefs with criterial tasks (p. 90). Metacognitive refers to “the awareness of one’s cognitive processes, cognitive strengths and weaknesses, and self-regulation” (Flavell, as cited in Klassen, p. 89). Calibration has to do with the “degree of congruence between efficacy beliefs and actual performance” (p. 89). The review is specifically limited to studies investigating experimental and correlational research related to perceived Self-efficacy of LD students in the educational context. Nine studies were done between 1985 and 1989 and 13 published after 1990; the age of participants ranged from six years to college age; and the number of participants ranged from 3 to 336.

Even though there is a large body of research on LD students and reading ability, the Self-efficacy studies covered a wide variety of topics: eight studies focused on writing, five studied math skills, one study examined reading, one study looked at career and vocational interests; and seven studies were general academic functioning or “mixed” academic functioning (Klassen, 2002, p. 91). Gender was included as a variable in 5 of the 22 studies with either low numbers of girls for comparison or no significance found. There were some mixed findings, but in all but two studies, “increases in performance skills following intervention were mirrored by increases in measured Self-efficacy beliefs” (p. 91). Of the nine studies designed to explore the relationship between LD and typically achieving students, none of the studies used low-achieving students as control groups. LD students were more apt to overestimate their Self-efficacy and overestimate their abilities as well. Calibration between misestimating Self-efficacy or skills was difficult to determine since many of the studies did not have enough detail to determine this factor. For example, writing samples that were re-written were more difficult to score than math problems in which the differences were clear. One study described what was called the “self-protective” function in which a “façade of competence” was erected by the LD students to hide their academic difficulties (Alvarez & Adelman, as cited in Klassen, p. 95). The variety of skills covered make this literature review valuable in reviewing LD student perceptions of Self-efficacy as related to their performance skills. Limitations to this type of review included concept blurring where the measures described strayed from the basic definition of Self-efficacy. The study gave teachers and researchers insight to LD students and Self-efficacy and suggested that short examples of Self-efficacy estimates prior to a learning experience might help students with LD to predict their Self-efficacy better over time.

Replication of the instruments used needed to be done for validity and reliability. More research is needed on methods to uncover accurate self-beliefs of students with LD (Klassen,

2000, p. 100). Similarly, more research is needed to explore gender differences and developmental changes longitudinally. None of the studies used low achieving LD students who often make up the bulk of the LD students.

Despite these limitations, the Self-efficacy Scale (Sherer et al., 1982) was utilized in the larger project upon which the current study is based. This instrument measured how individuals believed their personal competence and control affected their ability to do something. It was concerned “not with the skills the person had, but with perceptions of what one can do with whatever skills one possesses” (Bandura, 1986, p. 391). The original Self-efficacy Scale had 36 questions, but thirteen items were taken out since they did not load at the .40 level or above (Sherer et al., p. 665). The test was validated with 23 items with two subparts. The first group of questions is called the General Self-efficacy score (GSE). Factor 1 of the test has 17 questions and accounted for 26.5% of the total variance. “Items loading on this factor measure self efficacy without reference to any specific behavioral domain” (p. 665). Factor 2 of the test had six items which accounted for 8.5% of the total variance measured the Social Self-efficacy score (SSE). These items reflected efficacy expectancies in social situations. “High scores on both sections indicated high Self-efficacy expectations” (p. 665). There were 7 filler items that are not counted. The two sub-sections are not added together. “Cronbach alpha reliability coefficients of .86 and .71 were obtained for the General Self-efficacy and for the Social Self-efficacy subscales, respectively” (p. 665).

Locus of Control

Early research by Rotter (1966) defined locus of control as a person’s expectancy of internal control over behavioral outcomes rather than luck, fate, or circumstances controlling what happens to them. The study of locus of control has been linked with higher school performance (Chubb, Fertman, & Ross, 1997; Nunn & Nunn, 1993) and self esteem in occupations (Wang, Kick, Fraser, & Burns, 1999). Wehmeyer (1993) linked locus of control to the education of students with disabilities. He examined variables such as self-determination, self-reliance, and self-advocacy as important outcomes. Students with disabilities need to become aware of their patterns of thought regarding assuming responsibility for their own lives and shifting away from parental and educational control of their lives. When the locus of control is shifted from adult manager to the student’s responsibility, personal feelings of self-worth could be enhanced if the efforts are successful (Luther, 2001).

The Locus of Control Scale (Nowicki & Strickland, 1973) focused on the personality trait of how the person perceived themselves as being in control of their destiny. It is based on the questionnaire developed by Rotter (1966) as part of his Social Learning Theory, which integrates learning theory with personality theory. Social Learning Theory as proposed by Rotter (1954) departed from the learning approaches of that time, psychoanalysis (based on Freud’s writing) and behaviorism (based on psychological motivational principles) (Rotter, 1993). He chose the empirical law of effect as the motivating factor--people are motivated to seek out positive stimulation, or reinforcement, and avoid unpleasant stimulation. He combined personality study and behaviorism and set forth the main idea that personality represents an interaction between individuals and their environment (Rotter, 1993).

Bandura's (1986) writing suggests that behavior theory has an emphasis on experimental methods, focuses on variables we can observe, measure, and manipulate, and avoids whatever is subjective, internal, and unavailable (as cited by Boeree, 1998). This suggests that personality theory is based on environment which causes the behavior. Bandura thought this was too simplistic and added that both are true: environmental causes behavior, and behavior also causes environment. In other words, "the world and the person cause each other" (Boeree, p. 1). Bandura later looked at personality as an interaction among three parts: environment, behavior, and the person's psychological processes (ability to imagine in one's mind, and language) (Boeree, p. 2). Bandura is considered the father of the cognitivist movement of learning theory. His extension of the personality theory led to observational learning (modeling) and self-regulation. Both social learning theory and personality theories help explain how self-concept and locus of control fit into this present research.

The locus of control measure (Nowicki & Strickland, 1973) provided a generalized expectancy for internal versus external control of reinforcement. Rotter (1966) believed that motivation led people to seek positive stimulation and avoid unpleasant stimulation. He described personality and behavior as constantly changing. His theory ranks people's beliefs about what is reinforcing to them in terms of a scale ranging from internal to external. Since this is an interactive factor, the person might be internal in one situation and external in another (Estrada, 2006; Rotter, 1966). According to North Central Regional Educational Laboratory (2005) guidelines, persons who have internal locus of control are in charge of their own behavior versus persons with external locus of control who see fate, luck, or external circumstances as causing things that happen to them. McCombs (1991) restated this concept to say that the person thinks, "I choose to direct my thoughts and energies toward accomplishment. I choose not to be daunted by my anxieties or feelings of inadequacy" (p. 1).

Several researchers link locus of control with achievement (Estrada, 2006; Kalechstein & Nowicki, 1997; Nowicki & Duke, 1974; Young & Shoor, 1986). Kalechstein and Nowicki (1997) reported in a meta-analysis that "the generalized and specific control expectancies were related to academic achievement" (p. 1) in many instances. Locus of control of reinforcement, based on Rotter's (1993) theories, was explained by Kalechstein and Nowicki (1997) as:

...the degree to which persons expect that a reinforcement or an outcome of their behavior is contingent on their own behavior or personal characteristics versus the degree to which persons expect the reinforcement is a function of chance luck or fate, under control of powerful others, or is simply unpredictable. (p. 489)

The Locus of Control Scale (Nowicki & Strickland, 1973; J. D. Brown, 1996) used in this study thus fits into personality theory and gives a deeper meaning to student choices that were expressed. This instrument centered on student perceptions of being in charge of their own destiny. High scores on this test indicated that the person perceived that things that happen to them were largely due to their own actions. This would be scored as an Internal Locus of Control. Low scores on this test indicated that the person had the perception that events that shaped their lives were due to forces and factors outside their own control. This would be scored as an External Locus of Control. It is generally recognized that "students who had a more Internal locus of control gained higher levels of academic achievement and were more successful adults than students with External locus of control" (Liebert & Spiegler, 1990, p. 448).

The 40-item scale was developed in a series of studies involving over 1000 male and female children from grade three to twelve (Fisher & Corcoran, 1994, pp. 525-527). Participants were primarily white with all socioeconomic levels represented. Student scores become more internal as they grow older. The score is obtained by adding the number of items that are scored “correctly.” YES is correct for items 1, 3, 5, 7, 8, 10-12, 14, 16-19, 21, 23, 24, 27, 29, 31, 33, 35-39, and NO for the remainder. Higher scores reflect more external locus of control. The Locus of Control Scale has only “fair internal consistency overall, with split-half reliabilities increasing with age: .32 for grades 3-5, .68 for grades 6-8, .74 for grades 6-11, and .81 for grade 12” (p. 503). Concurrent validity is also fair and correlates significantly with three other measures of locus of control and a number of academic and nonacademic behaviors. Race, socioeconomic level, and sex seem to mediate some of those findings, but do not seem to be affected by social desirability response set (p. 503).

Hughes et al. (2004) suggested further research to understand the factors needed to overcome barriers to high-poverty backgrounds and neighborhoods, lowered expectations, and lack of motivation for students with disabilities. School, home, and community partnerships were needed to address this situation. Programs needed to be strengthened to provide job seeking and job maintaining skills for students in high-poverty areas with limited job opportunities. Some type of community support network was needed to bridge the summer months. Limitations of the Hughes et al. study included a narrow snapshot of students’ situation at a particular point of time in the summer--a longitudinal record would provide a richer insight into the challenges these students face. The sample size was small which limited generalization and no other high-poverty school was included for comparison. Assessments of other community factors such as available public transportation, parent preferences, available job market, etc., were needed for impact on students’ employment. Also, no comparisons were made to students without disabilities who attended the same school and lived in the same neighborhoods. The appropriateness of the curriculum used (Next S.T.E.P., TSI, BERS, and other materials) needed to be tested for use with adolescents from diverse backgrounds (p. 40). The lack of high-stakes testing achievement should be addressed since lack of diploma status curtails opportunities for future employment (p. 40).

Methods

The present research examines demographic factors, intervention data, and student self constructs (Self-efficacy and Locus of Control) to determine the effects on transition in the areas of employment, postsecondary education, independent living, and self-determination for students with disabilities. More succinctly, this study is a partial summative evaluation of the STEP Grant to see if these factors made a difference in outcomes at the time of the Follow-up Study following high school, analyzing student data from the three-year intervention program.

Description of the Variables

The rationale for the inclusion of the three types of Independent Variables (Demographic Factors, STEP Grant Intervention Factors, and Mediating Factors) and Dependent Variables (Transition Outcomes in Employment and Postsecondary Education) in the model for the larger study (Niemann, 2007, p. 34) is grounded in theoretical and conceptual considerations as derived from the literature, as well as their availability from the STEP Grant.

Three conceptually distinct types of Independent Variables were utilized in the in the larger study (Niemann, 2007): Demographics, STEP Intervention Program Factors, and Mediating Factors. However, only the third type, Mediating Factors, is addressed in this report. Student scores were obtained from personality tests which were administered during the STEP Grant Intervention (Self-efficacy--General and Social--and Locus of Control). These personality measures are conceptualized as Mediating Factors, i.e., internalized student self constructs that moderate how the STEP Intervention Program factors affect transition outcomes. Testing was done in the elective class while students were in their final two years of high school. The grant specified that pre- and post-testing would be accomplished, but only one test was recorded for most participants. As a result, no comparison of growth was possible. Scores from the first test administration for the students were used in this research.

Self-efficacy Scale

The first personality-related test used with the STEP Grant participants was the Self-efficacy Scale (Sherer et al., 1982). The Self-efficacy scale used lickert responses to measure attitudes. This test has two sections (General and Social) which are interpreted separately. According to instructions on the test (Sherer et al., 1982, p. 1), the questionnaire is a series of statements about “personal attitudes and traits.” Students are to read the statements and decide to what extent it describes them.

Self-efficacy-General (SGEN)

The General section of the Self-efficacy Scale measures how individuals believed their personal competence and control affected their ability to do something and the extent of actually doing it. Based on 17 items, this section of the test was concerned “not with the skills the person had, but with perceptions of what one can do with whatever skills one possesses” (Bandura, 1986, p. 391).

Self-efficacy-Social (SSOC)

The Social section of the Self-efficacy Scale measures social relationships. The six items reflect efficacy expectancies in social situations, that “belief in one’s ability to deal effectively with others is more important in academic achievement or military promotion in rank” (Sherer et al., 1982, p. 669).

Locus of Control (LOC)

The second personality test administered to STEP Grant participants was the Locus of Control Scale (Nowicki & Strickland, 1973). This instrument, based on questions with YES/NO answers, centered on student perceptions of being in charge of their own destiny. The designations of Internal and External are considered by the authors to have positive and negative connotations, respectively. The scoring key is based upon presumptions that each statement has a “correct” answer with respect to the internal orientation, the preferred status. High scores were considered External Locus of Control and indicated that the person had the perception that events that shaped their lives were due to forces and factors outside their own control. Low scores were considered

Internal Locus of Control. It has generally been recognized that “students who had a more Internal locus of control gained higher levels of academic achievement and were more successful adults than students with External locus of control” (Liebert & Spiegler, 1990, p. 448).

Data Collection

The STEP Grant Student Follow-up Survey was available only via hard copy (not electronic) and was distributed and collected by this researcher when employed by the STEP No-cost Extension. Information gathered from the school district data base included ethnicity, gender, disability, high school grade point average, semesters of vocational education, vocational class grade point average, and test scores for Self-efficacy and Locus of Control tests. Other information was obtained through the survey.

Research Design

The research design for this study represents a partial program evaluation of the STEP Grant for 50 participants who left JCPS in 1997, 1998, 1999, and 2000 school years. However, the field of program evaluation is complex. Experts point out that many evaluation models have emerged since the 1960s, including a systems approach, simple checklists, and others. The evaluation model that is followed essentially dictates the results that are found (Worthen, Sanders, & Fitzpatrick, 1997). In brief, Worthen et al., provided examples of applying evaluation to curriculum evaluation: (a) by using professional judgment to assess the worth of curriculum; (b) by comparing performance indicators with behavior objectives and judging the worth of the curriculum; (c) by working closely with the decision-maker and the evaluator to list advantages and disadvantages of the available curriculums; or (d) by identifying curriculum goals so that the evaluator can judge the worth of the curriculum for students, parents and community served (p. 63). Each approach guides the evaluation process, and the way the evaluator views the evaluation process directly affects the activities selected. There is no universal philosophy of evaluation, just as there is no single philosophy of science (p. 64).

Data Checking and Coding

Data for the study were obtained from two distinct sources: via review of school district records and a survey of STEP Grant students. Student records on transition planning (not part of this report) were obtained from student archives. Elective class records and personality test results (SGEN, SSOC, and LOCUS tests) were obtained from the Project Coordinator. The STEP Grant Student Follow-up Survey and Consent Forms were mailed to 108 participants and 50 were returned by mail. All information was entered into a STEP Grant SPSS database by the researchers, being attentive to level of measurement in the process.

Missing Values

All 50 students took the personality tests, but a few questions in the Locus of Control tests were left blank (never more than four for any given question); mean values were imputed for these items. During subsequent data analysis, Cronbach's (1951) coefficient alpha was computed for internal reliability of the personality scales and the Self-Improvement Scale from the STEP Grant Student Follow-up Survey. The preliminary results for the Self-efficacy (Social) Scale were $\alpha =$

.061; further, the alpha-with-item-deleted value for two of the six items was negative, a red flag. Nichols (1999) notes that a negative alpha is due to a negative average covariance among the items. The most common explanation of this anomaly is that reverse score items were not correctly handled.

Accordingly, the original test results were re-analyzed. A disc with all data coding for the three personality tests (two Self-efficacy Scales plus Locus of Control) was provided by JCPS. Coding had been completed some seven years ago, prior to this analysis. Because the Cronbach's alpha computations were suspect, all items, for each of the tests in question, were recoded, being careful to follow reverse-score protocol based on the scoring key for the three scales. The value for Cronbach's alpha increased considerably for each of the three scales and the negative alpha-with-item-deleted values disappeared as a result of these changes. This revised data set was utilized in all subsequent computations. Beyond these changes, the data revealed no other out-of-range values or inconsistencies.

Psychometric Analysis

Cronbach's (1951) coefficient alpha was computed for all of the scales utilized in this study: the General and Social Self-efficacy subscales (Sherer et al., 1982), and the Locus of Control Scale (Nowicki & Strickland, 1973). For the Locus of Control Scale, the general coefficient alpha equates to the Kuder-Richardson 20 formula for dichotomous YES-NO answers. Cronbach demonstrated that the two formulas are essentially the same, adapted to the level of measurement (continuous vs. categorical). With scores ranging from 0 to 1, the closer to the number one, the better the reliability of the test is judged. Nunnally and Bernstein (1994) have noted that an alpha of .7 or above is typically considered adequate, but in exploratory research such as this, a relaxed standard of .6 can be utilized.

Types of Validity

Validity was defined by the 1985 Standards for Educational and Psychological Testing as the "appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores" (as cited by Gall et al., 1996, p. 249). They described validity as having five parts. The first part, Construct Validity was the "theoretical construct about the nature of human behavior." Constructs, such as self-concept, learning styles, or motivation for achievement, are not directly observable, but must be inferred from effects on behaviors. The second type of validity, Content Validity, was the degree the scores obtained on a test represent the content the authors say they measure (Gall et al., p. 250). The third type was Predictive Validity: the degree that predictions made by testing are confirmed by behavior of individuals after the test (p. 251). This was sometimes called Criterion-Related or Concurrent Validity (the fourth type) where new test scores are compared to previous test scores (p. 252). The fifth and final type of validity mentioned by Gall et al. was Consequential Validity--the fact that test scores, theory and beliefs behind the constructs and the language used to label the construct have "value and value-laden consequences when used to make decisions about individuals" (p. 252).

Guidelines associated with student assessment were proposed by Nitko (2001), who defined validity as "the soundness of your interpretations and uses of students' assessment results"

(p. 36). The emphasis was on the results being interpreted, not the instrument or procedures itself. Nitko outlined four principles for validation of assessment:

1. Interpretations are valid only to the degree that evidence supports appropriateness and correctness;
2. Uses of assessment are only valid to the degree that evidence supports correctness and appropriateness;
3. Interpretations and uses are valid only when the values implied by them are appropriate;
4. Interpretations and uses are valid only when consequences from interpretations and uses are consistent with appropriate values.

Each intended use of assessment results needs evidence provided separately.

Current interpretation of reliability relegates it to one of the eight types of validity (Nitko, 2001). “Reliability is information on whether the instrument is collecting data in a consistent and accurate way” (Seliger & Shohamy, 1989, p. 185). In this study two adopted instruments were used to collect data on students’ perceptions: the Self-efficacy Scale (Sherer et al., 1982) and the Locus of Control Scale (Nowicki & Strickland, 1973).

Validity Information on Existing Instruments

In this partial program evaluation, external criterion validity (Nitko, 2001) was the primary means of determining whether the factors delineated in the STEP Grant Intervention were related to success in transition employment outcomes--wages earned and hours worked. For this study, two tests were used as Mediating Factors to measure their influence on transition outcomes for the student participants--Self-Efficacy and Locus of Control. However, the evidence from these calculations was limited in generalizability. The scores might be highly valid when applied to participants from STEP Grant Follow-up Study, but not for the group who completed STEP intervention and who chose not to participate in the survey, or for those students in the mild disability category at the six grant high schools who chose not to participate in the STEP Grant. The records to compare these other groups are not available.

Self-efficacy Scale. The Self-efficacy Scale was reported to have good “criterion-related validity by accurately predicting that people with higher self-efficacy would have greater success than those who score low in self-efficacy in past vocational, educational, and monetary goals” (Sherer et al., as cited by Fischer & Corcoran, 1994, p. 525). Construct validity correlated significantly in predicted directions with other measures, e.g., the Ego Strength Scale, the Interpersonal Competency Scale, and the Rosenberg Self-Esteem Scale (Fischer & Corcoran, p. 525). Reliability was also reported to have good internal consistency (alphas of .86 for general section and .71 for social section) with no test-retest data reported (p. 525).

Locus of Control Scale. This is a 40-item dichotomous response scale to measure perceived control in affiliation, achievement, and dependency (Nowicki & Strickland, 1973). Watters and Thomas (1990) attempted to replicate the factor structure of this test and concluded that the dichotomous nature is the reason that replication of its factor structure has been so elusive (p. 515). Other authors attribute the difficulty of replication to small sample size; different sample characteristics (age, sex, socio-economic status, or culture); inconsistent administration of test;

different factor analytic techniques and/or criteria; and incomplete reporting of findings (Barling; Comrey; Walters & Klein; as cited by Watters & Thomas, p. 516). Internal consistency was reported as “fair” by Sherer et al. (as cited by Fischer & Corcoran, 1994, p. 503). Split-half reliabilities increased with age: .32 for grades 3-5, .68 for grades 6-8, .74 for grades 6-11, and .81 for grade 12. Stability of the instrument was also reported as “fair” in test-retest after six weeks with correlations of .63 (p. 503). Validity reported by Fischer and Corcoran correlated significantly with three other measures of locus of control, and also with academic and nonacademic behaviors. However, race, socioeconomic level, and sex tend to mediate findings (p. 503). Fisher and Corcoran (p. 503) also reported that test scores were sensitive to a therapeutically designed camping experience and found not to be affected by social desirability response sets. This test was designed to measure generalized self-efficacy only in vocational competence and social skills, and not in a variety of situations (Sherer et al., 1982). These research findings were upheld by more recent research by Choi (2003, p. 479) who reported that the internal consistency was satisfactory: “The Self-efficacy General subscale tended to be consistently higher (mid to high .80s) than the reliability of the Social Self-efficacy scores (far lower than .80). Choi (p. 479) noted that this is not surprising due to the small number of items (six) on the social section of the test, and rates the factor structure as “stable” and reliability as “acceptable.”

Information regarding the validity and reliability of the Self-efficacy Scale (Sherer et al., 1982) and Locus of Control Scale (Nowicki & Strickland, 1973) was provided from the original authors’ validation studies. More recent authors’ findings were also reported as supporting the initial findings (Choi, 2003; Fischer & Corcoran, 1994). Because research confirming the use of these scales for students with disabilities could not be found, Cronbach’s coefficient alpha was computed to check reliability of these scales for this population of students with mild disabilities. The Self-Improvement Scale as derived from the STEP Grant Intervention Follow-up Survey was also subjected to this reliability analysis.

Results

Literature reviewed in the areas of evaluation in general, and special education programs more specifically, depicts the need to continue research on outcome measures in order to change high school programs effectively. The National Longitudinal Transition studies (Blackorby & Wagner, 1996; SRI International, 2006) have followed large groups of special education students for over ten years. Little improvement has been seen in employment rates of students with mild disabilities. These groups (LD, BD, and MMD) are still dropping out at higher rates, have a higher unemployment rate, and lower completion of postsecondary programs than their non-disabled peers. With large numbers of these students accepting entry-level jobs, not pursuing additional training after high school, and having lowered ability to manage personality factors, their independence from family supports is much lower than their regular education peers.

All students in the STEP Grant met Kentucky Department of Education criteria for the Mild Disability category in order to receive services in special education according to their IEPs. Within the Mild Disability category, all three major disabilities are represented with 10% Mild Mental Disabilities, 10% Behavior Disabilities, and the majority 80% Learning Disabilities.

The Personality Scales

Along with better preparation and higher expectations, personality factors play an important role in how students with disabilities face the world. The concepts of Self-efficacy and Locus of Control were targeted for this research and testing was administered during the STEP Intervention Grant to try to determine the effects that personality factors have on the preparation and transition for these students. However, the personality tests were not pre-tested for use with students with mild disabilities. In this research the personality scales for Self-efficacy--General and Social--and Locus of Control represent Mediating Factors. These tests were selected as part of the STEP Grant by the PI, PC, and Advisory Board based on the evidence that these traits influence success for students with mild disabilities in gaining self-determination skills and planning for their futures (Wehmeyer, 1994).

For both of the Self-efficacy scales (Tables 1 & 2), the scoring of the tests results in a numerical score with a higher score reflecting students' increased perception of their ability to affect what happens to them in life. The Self-efficacy test has 30 questions. Seven of these are filler items and are not included in either of the two subscales--17-item General or 6-item Social. Table 1 presents the reliability analysis and descriptive statistics for the General Self-efficacy scale. While the composite values ($M = 3.49$; $SD = .464$) reflect good psychometric range for the items, the Cronbach's alpha of .640 demonstrates that the reliability for this sample of students with mild disabilities falls below the generally accepted threshold of .7 but does reach the marginally adequate reliability of .6 for exploratory research. However, the $\alpha - d$ for item 12 shows that the scale would increase to an acceptable level of reliability if it were deleted. Therefore, the decision was made to discard this item. All consequent statistics were computed with a new composite of 16 items instead of 17 ($M = 3.66$, $SD = .539$), yielding the new Cronbach's coefficient of .719.

Table 1

Descriptive Statistics and Reliability for Self-efficacy (General) Scale (N = 50)

Item	<i>M</i>	<i>SD</i>	Min	Max	R	$\alpha - d$
Q2	4.12	.983	1	5	4	.631
Q3	3.26	1.337	1	5	4	.641
Q4	4.24	.960	1	5	4	.607
Q7	2.92	1.383	1	5	4	.632
Q8	3.70	1.233	1	5	4	.603
Q11	3.10	1.147	1	5	4	.638
Q12	2.22	1.166	1	4	3	.719
Q15	3.76	1.170	1	5	4	.596
Q16	3.72	1.144	1	5	4	.617
Q18	3.46	1.199	1	5	4	.627
Q20	3.28	1.196	1	5	4	.605
Q22	3.18	1.257	1	5	4	.625
Q23	3.84	1.076	1	5	4	.590
Q26	3.18	1.395	1	5	4	.602
Q27	3.64	1.225	1	5	4	.661
Q29	4.10	1.200	1	5	4	.599
Q30	3.54	1.328	1	5	4	.607
Composite	3.49	.464	1	4.94	3.94	.640 ^a

Note. Min = Minimum; Max = Maximum; R = Range; $\alpha - d$ = alpha with item deleted.

^avalue for composite for $\alpha - d$ is Cronbach's coefficient alpha for overall scale.

The psychometric analysis of the second Self-efficacy subscale (Social, with 6 items) is given in Table 2. Again, the values for the scale composite are adequate ($M = 3.48$; $SD = .657$). However, the internal reliability analysis demonstrates that this subscale as validated by the authors does not have adequate consistency as a measure of Social Self-efficacy for these students with mild disabilities. The overall Cronbach's coefficient alpha is very low (.461). However, reliability would be increased to .589 if Q14 were deleted. That would bring the scale almost to the minimum acceptable level of .6 suggested by Nunnally and Bernstein (1994) for exploratory research. Thus, subsequent calculations were based on the Cronbach alpha of .589 from five items rather than the original six. The mean and standard deviation for the new composite are 3.57 and .760, respectively.

Table 2

Descriptive Statistics and Reliability for Self-efficacy (Social) Scale (N = 50)

Item	<i>M</i>	<i>SD</i>	Min	Max	R	$\alpha - d$
Q6	3.76	1.519	1	5	4	.372
Q10	3.36	1.242	1	5	4	.364
Q14	3.04	1.385	1	5	4	.589
Q19	3.52	1.093	1	5	4	.384
Q24	3.40	1.278	1	5	4	.425
Q28	3.82	.983	1	5	4	.313
Composite	3.48	.657	1	5	4	.461 ^a

Note. Min = Minimum; Max = Maximum; R = Range; $\alpha - d$ = alpha with item deleted.

^aValue for composite $\alpha - d$ is Cronbach's coefficient alpha for overall scale.

The final Mediating Factor, the Locus of Control Scale (Nowicki & Strickland, 1973), had 40 items, scored on a YES, NO basis. After reverse scoring, high scores (more YES answers) indicate an external locus of control. Table 3 presents the reliability analysis and descriptive statistics for the 40 items, with NO coded 0 and YES coded 1. The composite indicates that the respondents had an overall external motivational orientation of 39% YES answers. Among the 40 items, Q38 received the most external orientation (80%) while Q4 was the most internal (only 6% answered YES). The overall Cronbach's coefficient alpha of .719 was just above the minimal acceptable level for internal scale reliability. It should be remembered that Cronbach's coefficient alpha and the Kuder-Richardson 20 procedure for dichotomous responses are equivalent.

Table 3

Descriptive Statistics and Reliability for Locus of Control Scale (N = 50)

Item	<i>M</i>	<i>SD</i>	Min	Max	R	$\alpha - d$
Q1	.29	.452	0	1	1	.707
Q2	.72	.454	0	1	1	.721
Q3	.60	.484	0	1	1	.707
Q4	.06	.240	0	1	1	.716
Q5	.64	.485	0	1	1	.703
Q6	.10	.303	0	1	1	.713
Q7	.28	.454	0	1	1	.708
Q8	.38	.476	0	1	1	.732
Q9	.49	.500	0	1	1	.712
Q10	.48	.494	0	1	1	.722
Q11	.52	.484	0	1	1	.709
Q12	.50	.505	0	1	1	.706
Q13	.29	.452	0	1	1	.721
Q14	.48	.494	0	1	1	.711
Q15	.20	.404	0	1	1	.715
Q16	.37	.482	0	1	1	.705
Q17	.42	.499	0	1	1	.712
Q18	.37	.482	0	1	1	.719
Q19	.44	.491	0	1	1	.707

(table continues)

Table 3. (*continued*)

Item	<i>M</i>	<i>SD</i>	Min	Max	R	$\alpha - d$
Q20	.18	.388	0	1	1	.721
Q21	.56	.501	0	1	1	.702
Q22	.22	.419	0	1	1	.719
Q23	.32	.457	0	1	1	.714
Q24	.57	.495	0	1	1	.709
Q25	.35	.476	0	1	1	.720
Q26	.14	.350	0	1	1	.714
Q27	.50	.495	0	1	1	.709
Q28	.31	.461	0	1	1	.717
Q29	.51	.500	0	1	1	.706
Q30	.33	.469	0	1	1	.726
Q31	.48	.594	0	1	1	.719
Q32	.23	.417	0	1	1	.717
Q33	.35	.476	0	1	1	.719
Q34	.63	.479	0	1	1	.713
Q35	.31	.460	0	1	1	.705
Q36	.45	.497	0	1	1	.714
Q37	.12	.328	0	1	1	.711
Q38	.80	.404	0	1	1	.732
Q39	.45	.487	0	1	1	.709

(table continues)

Table 3. (continued)

Item	<i>M</i>	<i>SD</i>	Min	Max	R	$\alpha - d$
Q40	.11	.302	0	1	1	.717
Composite	.39	.464	0	1	1	.719 ^a

Note. Min = Minimum; Max = Maximum; R = Range; $\alpha - d$ = alpha with item deleted.

^avalue for composite for $\alpha - d$ is Cronbach's coefficient alpha for overall scale.

Summary

The STEP Grant was envisioned to support students with mild disabilities in their high school years and make their transition outcomes more successful. This study was organized to provide data that were collected and to explore relationships between Independent and Dependent Variables. Both quantitative and qualitative methods were employed.

Data checking and coding were explained and procedures detailed to replace missing values with means since the number of participants in this study was so small. Data obtained to answer each research question were described using descriptive statistics, ANOVA, chi-square, correlations, and semipartial correlations. Sources for data included records review, JCPS database, student test data for personality factors, and the STEP Grant Student Follow-up Survey. For the nominally measured School Attended, data were disaggregated by school to see if individual factors were influenced by attendance site.

Reliability analysis was performed on the three personality scales--Self-efficacy (General and Social) and Locus of Control since no literature showing reliability of these measures for use with students with mild disability could be found. Two of the three personality tests had to be modified to obtain acceptable Cronbach's alpha internal consistency (both of the Self-efficacy scales). Even with these changes, the three scales were only marginally reliable for this group of mildly disabled students.

The reader should remember that all of these findings are based upon a small grant ($N = 108$) and that only 50 of those students returned the survey upon which these data are based, so both representativeness and generalizability are an issue for the current study. At the same time, the findings here clearly warrant more in-depth investigation.

Results of psychometric analysis indicate that the Self-efficacy-General and Social Scales are not acceptable for use with this population without modification. Both subscales were altered by removing one item to come closer to an acceptable alpha level, and even then the Social subscale was slightly below the relaxed standard of .6 for exploratory research. The Locus of Control measure also produced a barely acceptable alpha, especially considering the 40 item length. More research is clearly needed on these instruments for use with mildly disabled

individuals. As well, more research on personality scales generally needs to be conducted to check whether they are adequate for this population.

During the grant years (1996-1999), materials and strategies were piloted; career exploration was accomplished and linked to postsecondary programs; students were given assistance in job development and placement; personality factors (self-advocacy, self-efficacy, locus of control) were explored with students; and self-determination skills were taught in the Elective Classes. The 108 students were encouraged to stay in school rather than dropping out, and the 50 students who participated in the STEP Follow-up Survey were able to complete requirements for their diplomas. In this respect, the program was highly beneficial for this group of students who were from low socioeconomic backgrounds and were at risk of dropping out of high school. Specifically, 46 of 50 were successful according to the STEP criteria (employment or post-secondary education). Compared to typical experiences for students with mild disabilities (Blackorby & Wagner, 1996; NTL2, 2003), this program was tremendously successful. Additional research is needed to measure reliability and validity with constructs of self-efficacy and locus of control when assessing students with mild disabilities. Also, educating students at this level in how personality traits of self-efficacy and locus of control affect their decision-making is essential to help them to grow toward independence and to raise their self-esteem.

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