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Self-Determination and Positive Adult Outcomes: A Follow-Up Study of Youth with Mental Retardation or Learning Disabilities

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ABSTRACT: *There is increased emphasis on self-determination as an important outcome for youth with disabilities if they are to achieve positive adult outcomes after they leave school. However, the causal link between self-determination and positive adult outcomes has remained untested. The Arc conducted a follow-up study of students with mental retardation or learning disabilities for whom data regarding self-determination had been collected prior to their high school exit. Data regarding adult outcomes for these students nearly 1 year after graduation were collected. The resulting analysis determined that self-determined students were more likely to have achieved more positive adult outcomes, including being employed at a higher rate and earning more per hr than peers who were not self-determined. A framework for promoting self-determination as an educational outcome is presented.*

From 1989 to 1993 the U.S. Department of Education, Office of Special Education Programs funded a series of model-demonstration projects to promote self-determination for youth with disabilities (Ward & Kohler, 1996). This funding initiative was implemented in response to (a) the growing body of literature indicating that students with disabilities were graduating to generally disappointing adult

outcomes (Chadsey-Rusch, Rusch, & O'Reilly, 1991) and (b) the call from people with disabilities for increased choice and more control over decisions that impact their lives (Gagne, 1994; Kennedy, 1996). Self-determination has been identified as a critical outcome of the transition process for students with disabilities (Halloran, 1993; Wehman, 1993).

There are a number of reasons why educators should devote instructional time and resources to promoting self-determination. First, adults with disabilities have consistently emphasized the importance of this outcome for an enhanced quality of life (Gagne, 1994; Kennedy, 1996). Second, the acquisition of attitudes and abilities related to self-determination can contribute to increased student involvement in educational planning and decision making (Van Reusen & Bos, 1994; Wehmeyer & Ward, 1995). Third, students who leave school as self-determined young people should achieve more positive adult outcomes.

Although this third reason has considerable face validity, it remains essentially an untested hypothesis because, until recently, there have been few definitional frameworks within which to evaluate self-determination as an educational outcome, and even fewer means of measuring such an outcome. Wehmeyer (1996) defined self-determination as "*acting as the primary causal agent in one's life and making choices and decisions regarding one's quality of life free from undue external influence or interference* [italics added]." (p. 22). A causal agent makes or causes things to happen in his or her life (Deci & Ryan, 1985).

In this definitional framework, an act or event is self-determined if the individual's action(s) reflect four *essential characteristics*: (a) the individual acts autonomously; (b) the behaviors are self-regulated; (c) the person initiates and responds to event(s) in a "psychologically empowered" manner; and (d) the person acts in self-realizing manner (Wehmeyer, 1996). Behavior is

1. *Autonomous* if the person acts according to his or her own preferences, interests and/or abilities, and independently, free from undue external influence or interference.
2. *Self-regulated* if people make decisions about which skills to use in a situation; examine the task at hand and their available repertoire; and formulate, enact, and evaluate a plan of action with revisions when necessary.
3. *Psychologically empowered* if people act based on the beliefs that they have the capacity to perform behaviors needed to influence outcomes in their environment and, if they perform such

behaviors, anticipated outcomes will result.

4. *Self-realized* if people use a comprehensive, and reasonably accurate, knowledge of themselves and their strengths and limitations to act in such a manner as to capitalize on this knowledge in a beneficial way. (Wehmeyer, 1996)

Wehmeyer, Kelchner, and Richards (1996) conducted an empirical validation of this conceptual framework with more than 400 adults with mental retardation in which data were collected on self-determined behavior and each of the four essential characteristics. The sample was divided into two dichotomous groups based on the performance of behaviors generally agreed upon as reflecting self-determination. Analyses indicated that, on measures of each of the four essential characteristics, there were significant differences between individuals who engaged in behaviors reflecting self-determination and those who did not.

Based on these findings, we developed and field-tested a self-report measure of self-determination for adolescents with cognitive disabilities. *The Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995) operationalizes the definitional framework described previously. Completion of the scale provides data on student global self-determination, as well as individual autonomy, self-regulation, psychological empowerment, and self-realization. Using *The Arc's Self-Determination Scale* we measured the self-determination of students with mental retardation and learning disabilities during their final year of high school. This article reports the findings of a follow-up study to link self-determination and adult outcomes.

PROCEDURES

Participants

Study participants were 80 students with cognitive disabilities from school districts in Virginia, Connecticut, Alabama, and Texas. Students were recruited for participation if they were receiving special education services based on a cognitive disability (mental retardation or learning disability) and would be leaving school (either by gradu-

ation or certificate of attendance) at the completion of that school year (1994-1995). The mean age of the sample was 19.82 years ($SD = 1.52$), and students ranged from 17 to 22 years of age. The mean IQ for the group was 77.31 (IQ no available for five students). Fifty percent of the sample consisted of students with mild mental retardation (mean age = 20.15, $SD = 1.78$, mean IQ = 61.43). The remainder were students with learning disabilities (mean age = 19.42, $SD = 1.18$, mean IQ = 93.10). Fifty-five percent of the students were female ($n = 55$, mean age = 20.05, $SD = 1.70$, mean IQ = 70.61), while 45% were males ($n = 35$, mean age = 19.56, $SD = 1.25$, mean IQ = 85.38). Sixty-nine percent ($n = 55$) of the students were classified as white, 21% ($n = 17$) as African American, 5% as Hispanic ($n = 4$); and the remainder either Native American or Asian American. As described subsequently, analyses took into account the effects of differing levels of intelligence on self-determination.

Procedures

During the last half of the 1994-1995 school year, students graduating from school (or aging out) in each school district were identified. Consent from students and family members was obtained to administer measures of self-determination and to conduct a follow-up survey during the subsequent year. Data on self-determination and locus of control was collected in the student's school by his or her classroom teacher. Both measures are designed for group or individual administration and require limited information to administer. All assessments were scored by project personnel.

After developing a follow-up survey, project staff conducted mail and telephone interviews to collect information about student outcomes. There were a total of 111 students who had graduated, aged out, or dropped out for whom we had self-determination information. Data collection began 9 months after the students exited high school. Three mailings were conducted in a 3month period, followed by telephone contacts for nonrespondents and personal interviews. A protocol for telephone and face-to-face interviews was developed based on suggestions from Edgar, Levine, and Maddox (1988). There were a total of 80 completed surveys received. Thirty-eight percent of the completed surveys were received by

mail (16% from the first mailing, 18% from the second, and 4% from the third), 35% from telephone contacts, and 27% from personal interviews. In most cases, the survey was completed by a family member, with the ex-student participating when possible. For less than 10% of the sample, the respondent was not the student's parent but another significant other (in most cases a teacher) who had had contact with the student in the previous 2 months and was familiar with the student's adult outcomes. Of the 31 students for whom we were unable to obtain follow-up data, 74% ($n=23$) had moved and no forwarding information was available, and 26% ($n = 8$) refused to complete the survey when contacted by phone or mail.

Demographic data for students were collected by a school records' review. This included the student's age and birth date; ethnicity; verification of high school exit and special education eligibility; intelligence score; and, when available, the number and types of vocational education classes completed by the student.

Instrumentation

Measuring self-determination and locus of control. Data regarding student self-determination were collected using *The Arc's Self-Determination Scale* (Wehmeyer & Kelchner, 1995), a 72-item self-report scale that provides data on each of the four essential characteristics as well as overall self-determination. Section 1 measures student autonomy, including the student's independence and degree to which he or she acts on the basis of personal beliefs, values, interests and abilities. Section 2 measures student self-regulation and is composed of two subdomains; (a) interpersonal cognitive problem-solving and (b) goal-setting and task performance. Section 3 is an indicator of psychological empowerment or the various dimensions of perceived control (Zimmerman, 1990). Section 4 measures student selfrealization. Self-determined people are self-realizing in that they use a comprehensive, and reasonably accurate, knowledge of themselves and their strengths and limitations to act in such a manner as to capitalize on this knowledge in a beneficial way. Self-knowledge forms through experience with and interpretation of one's environment and is influenced by evaluations of others,

reinforcements, and attributions of one's own behavior (Wehmeyer, 1996).

There are a total of 148 points available on the Scale and higher scores reflect higher self-determination. *The Arc's Self-Determination Scale* was normed with 500 students with and without cognitive disabilities in rural, urban, and suburban school districts in five states. Information about this process is available in the procedural guidelines for the Scale (Wehmeyer & Kelchner, 1995). The Scale's concurrent criterion-related validity was established by showing relationships between *The Arc's Self-Determination Scale* and conceptually related measures. It had adequate construct validity, including factorial validity established by factor analysis and discriminative validity as well as adequate internal consistency (Wehmeyer, in press).

Student locus of control was measured using the adult version of the Nowicki-Strickland Internal-External Scale (ANS-IE; Nowicki & Duke, 1974). People who see themselves as in control of outcomes in their lives have an internal locus of control, while people who perceive outcomes as controlled by others, fate, or chance hold an external locus of control. The ANS-IE consists of 40 items answered with a "yes" or "no" and higher scores reflect more external orientations. The scale has reported split-half reliability figures ranging from .74 to .86, with test-retest reliability figures ranging from .63 to .76. Although normed with adults without disabilities, the instrument has been found to be reliable and valid for use with individuals with mental retardation or learning disabilities (see Wehmeyer, 1993).

Measuring adult outcomes. Project personnel reviewed follow-up and follow-along studies to identify instruments to collect data regarding adult outcomes and identified 24 unique studies conducted since 1984. From this set, we collected all instruments available, either through the published report or from the authors. After an examination of these survey instruments, we selected and adapted questions from the National Consumer Survey (Jaskulski, Metzler, & Zierman, 1990) and the National Longitudinal Survey (Wagner, D'Amico, Marder, Newman, & Blackorby, 1992).

The survey instrument was to be mailed to a student's last known address, in all cases that of his or her parents. Based on the possibility that former students might not live at that address and concerns that students with cognitive disabilities would not be able to independently complete the survey, we decided to construct the instrument with a parent or family member as the primary respondent. We wanted students involved to the greatest extent feasible and requested that, if at all possible, family members include their son or daughter in the process. The final instrument contained a series of questions pertaining to student living arrangements, current and past employment situations, postsecondary education status, and community integration outcomes. Many of the questions developed are identified in the results section with their relevant outcome (see Author Notes for information on obtaining a copy of the survey). Levine and Edgar (1994) found high agreement between parental and postgraduate students on most variables in follow-up studies but determined that there were problems on agreement in the areas of salary level, hours worked, and medical benefits received. Because we were reliant on parent report and concerned about the problems with reliability in these areas, we asked parents to report specifically how they identified this information. This information was used only when it was obtained from a pay stub, an employment contract, or from the student.

Analyses

Analyses of variance between respondents and nonrespondents indicated no significant differences between these groups on total self-determination and subdomain scores or locus of control scores. A second series of analyses of variance determined that there were no significant differences, either on self-determination and locus of control measures or age and IQ score, between data collected by the three methods (e.g., mail, telephone, personal interview). As a second check of the reliability of the mail survey, 10 mail respondents were also contacted by telephone and completed a second survey. In all 10 cases, responses were identical between the two surveys.

For most variables, data collection yielded percentage scores of respondents who answered

either yes or no. To examine the effect of self-determination on these outcomes, we divided the sample into two dichotomous groups based on a frequency distribution of self-determination total scores and conducted chi-square analyses based on this distribution. Because we have found small but significant correlations between intelligence and self-determination scores (Wehmeyer et al., 1996), we were concerned that the self-determination groups would reflect level of intelligence instead of self-determination. Primarily we were concerned that the high self-determination group would consist disproportionately of students with learning disabilities, while the low self-determination group would consist disproportionately of students with mental retardation. To prevent this, we computed two frequency counts, one each by disability (learning disability, mental retardation). The top and bottom third of each frequency count were assigned to the high or low self-determination groups, respectively. By assigning students in the top and bottom third of the sample, rather than determining group membership by a median split, we ensured that groups consisted of students with clearly different levels of self-determination.

To verify that the groups were not different according to intelligence, we performed an analysis of variance for IQ score by self-determination group. There were no significant differences between groups ($F = .24, p = .63$). The mean IQ of the low self-determination group was 72 ($SD = 24.7$), the mean for the high group was 75 ($SD = 18.52$). The mean age for the high group was 20.28 and the average total self-determination score was 113. The mean age of the low self-determination group was 19.62 with a mean total self-determination score of 70.86. There were a total of 46 students assigned to one of the two groups. A chi-square analysis indicated that there were no differences between whether students were assigned to the low or high self-determination group based on the state in which they lived.

Although the majority of respondents ($n = 75, 94\%$) either graduated from high school or left bearing a certificate of completion, a small proportion ($n = 5, 6\%$) were classified as having dropped out. We were concerned about the impact of these students on the analyses, presuming that students who dropped out of school would fare more poorly as young adults.

Two factors allayed this concern. First, several of the students who dropped out left school to pursue jobs, and all were over 18, the age at which most students without disabilities exit school. Second, in the final assignment to groups, only three students who dropped out ended up in either the high or low self-determination group. A chi-square analysis for self-determination group by high school exit indicated no significant differences in the distribution from that expected. As such, analyses proceeded with these students in the sample.

In addition to conducting chi-square analyses for survey results to examine outcomes by self-determination group, two questions yielded ratio-level data (wage per hour and hours worked). In both circumstances, however, we stipulated that only data based on something other than parental estimate (e.g., pay stub, employment contract, student report) would be used. This limited the number of responses and skewed the number of participants in each of the two self-determination groups. In these cases, we assigned the students to one of two groups, high and low wage or high and low hours worked, based on frequency counts. We then conducted a multivariate analysis of covariance with wage or hours worked groups as the independent variable, total self-determination and subscale scores as dependent variables, and intelligence score as the covariate. To further explore the factors that contributed to higher earning power for graduates, we conducted a linear regression analysis with wage per hour as the dependent variable; and IQ, self-determination subscale scores, and the number of vocational classes in which students had been enrolled during secondary education as predictor variables. All analyses were conducted using SPSS for Windows (Norusis, 1992).

RESULTS

As depicted in Figure 1, the vast majority of ex-students (90%; $n = 72$) still lived with their parents nearly 1 year after graduation. These figures were virtually the same for students independent of self-determination group, and there were no significant differences on the chi-square analysis for this variable. The low number of students living outside the family home ($n = 8$) made

analyses inadvisable regarding who helped students find housing. However, there were significant findings for the analysis for self-determination group by stated preference to live elsewhere. In the group as a whole, 31% indicated that their son or daughter would prefer to live elsewhere, 60% that he or she would not want to live elsewhere, and 9% were unsure or felt the question was not applicable. However, 44% of the respondents for the high self-determined group indicated that their son or daughter wanted to live elsewhere, while only 19% of the low self-determined group indicated likewise ($\chi^2 = 8.13, p = .04$).

There were significant differences between low and high self-determination groups on whether they maintained a checking account ($\chi^2 = 4.75, p = .03$) or a savings account ($\chi^2 = 5.34, p = .02$). As illustrated by Figure 2, the high self-determination group was more likely to maintain both a checking and savings account than the low self-determination group.

There were no significant differences by self-determination groups for either current or past postsecondary education enrollment, the receipt of a diploma, or license from such a body. For the group as a whole, 60% of the students were, working either full- or part-time for pay outside the home. There were significant differences between self-determination groups on this variable ($\chi^2 = 6.75, p = .009$). Former students in the high self-determination group were more likely to be employed than their peers in the low self-determination group.

As Figure 3 presents, ex-students in the high self-determination group were more likely to be employed than their peers in the low self-determination group. Multivariate analysis of covariance of self-determination total and subscale scores and locus of control scores, controlling for intelligence level, for high and low wage per hour (from respondents whose information came from a source other than parental estimate) yielded significant differences for low and high wage earners on self-determination total [$F(1, 10) = 10.22, p = .01$], autonomy [$F(1, 10) = 6.01; p = .04$], and psychological empowerment [$F(1, 10) = 11.62, p = .007$] scores. For all three of these indicators, scores for the high self-determination group were more positive than scores for the low self-determination group.

For total self-determination, the mean score for the high self-determination group was 103.38, the score for the low group was 86.4. There were no differences between high and low groups based on hours worked per week on any measure. There were too few respondents who met the above criterion to analyze the presence or absence of benefits by low or high self-determination group.

The regression analysis with hourly pay rate as the dependent variable and IQ, self-determination subscale scores, and the number of vocational education classes in which students were enrolled during high school as independent variables yielded an R^2 of .81. Variables contributing significantly to the variance in the dependent variable included IQ, psychological empowerment, self-realization, and self-regulation subscale scores. Table 1 presents regression statistics for this analysis and Table 2 presents the correlation matrix from this analysis.

DISCUSSION

These results provide preliminary empirical evidence that self-determination is an important educational outcome if youth with disabilities are to achieve positive adult outcomes after they leave high school. Interpretation of these data must proceed with caution, however. One limitation to the current design was that we measured self-determination with a self-report measure and adult outcomes with a parental report measure. The potential measurement problems with this are mitigated somewhat by the fact that the outcome measure was a report of observable outcomes, such as whether students were employed, how much they earned, or where they lived. Levine and Edgar (1994) found considerable agreement between parents and students on such variables, and, for those variables where Levine and Edgar found poor agreement, we put controls in place to ensure more reliable information.

Second, we were unable to control for the fact that students had different school experiences based either on where they lived or on the type of disability. Data were collected from four different states and from rural, urban, and suburban areas. The school experiences and curricular content no

FIGURE 1
Graduates' Living Arrangements

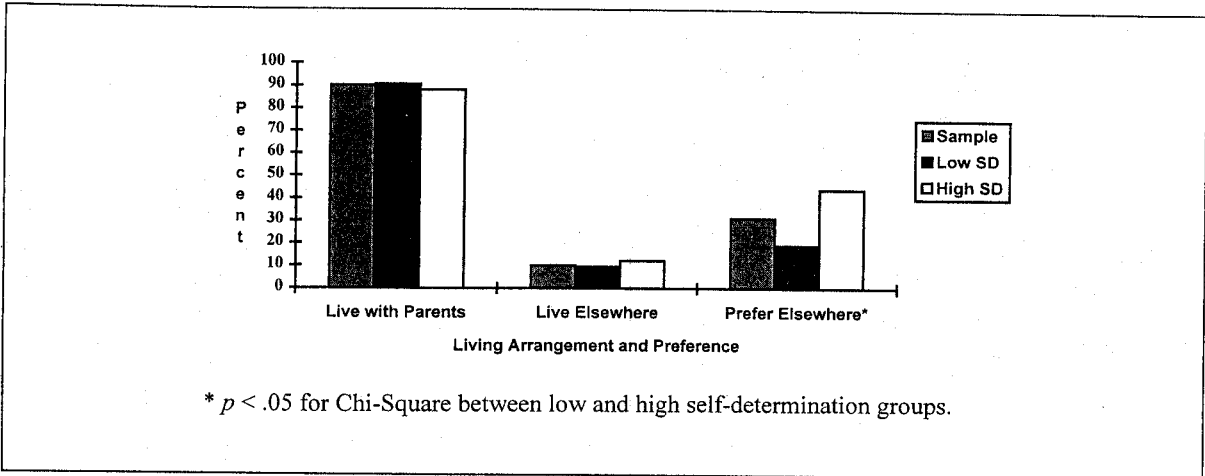


FIGURE 2
Student Autonomy and Independence

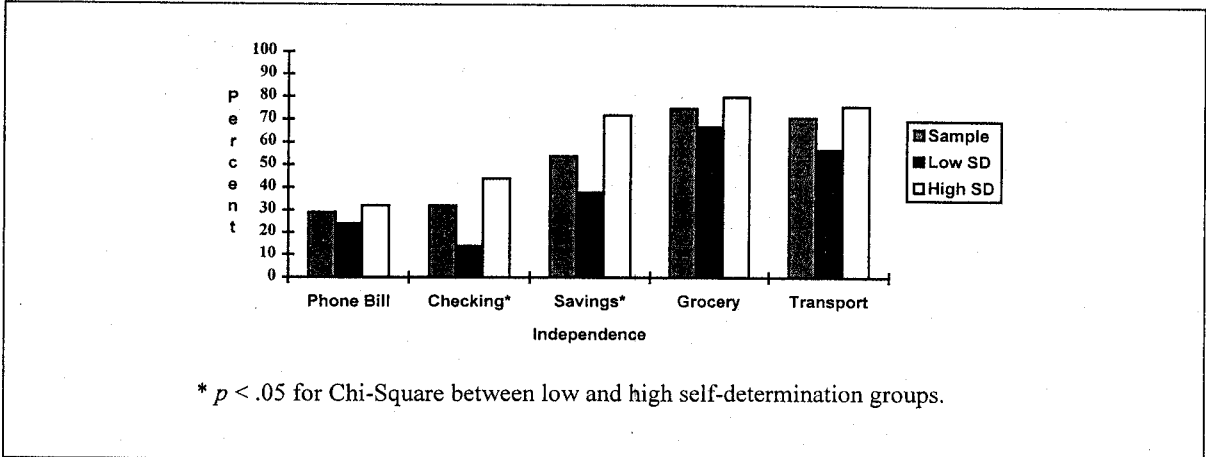


FIGURE 3
Employment Outcomes

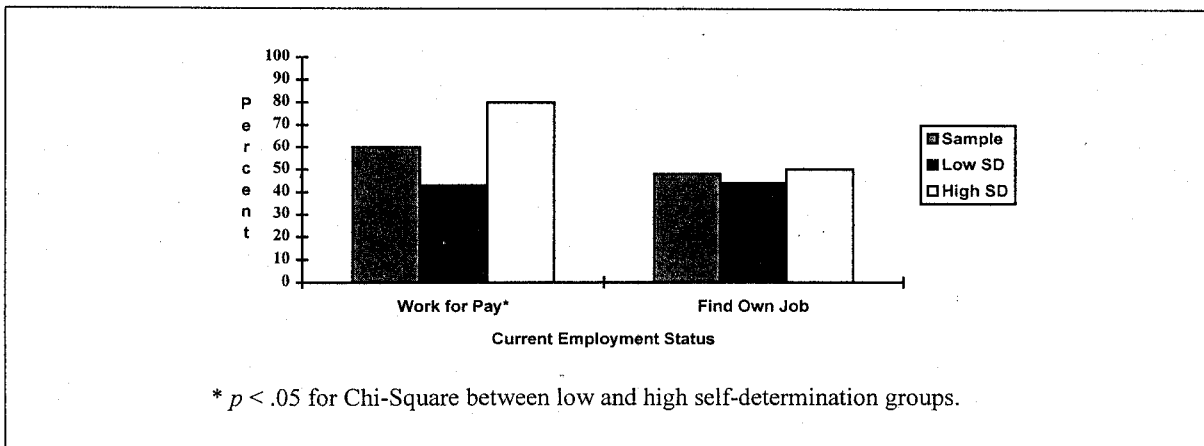


TABLE I*Regression Statistics for Regression Analysis*

<i>Variable</i>	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>T</i>	<i>Sig T</i>
SDS Autonomy	.0161	.0451	.0809	.357	.73
SDS Psychological Empowerment	.7468	.2869	.7174	2.60	.04
SDS Self-Realization	-.8281	.3549	-.7024	-2.33	.05
SDS Self-Regulation	.6953	.2216	.8569	3.14	.02
Number of Vocational Education Classes	-.2182	.2540	-.1704	-.859	.41
IQ	.0725	.0220	.6570	3.29	.01

Note: SDS = Self-Determination Scale**TABLE 2***Correlation Matrix for Regression Analysis*

	<i>Pay per Hour</i>	<i>Auto</i>	<i>Psych Emp.</i>	<i>Self-Real</i>	<i>Self-Reg</i>	<i>Voc Classes</i>	<i>IQ</i>
Pay per Hour	1.000						
Auto	.310 <i>p</i> = .14	1.000					
Psych Emp	.532 <i>p</i> = .02	.246 <i>p</i> = .19	1.000				
Self Real	.420 <i>p</i> = .06	.295 <i>p</i> = .15	.653 <i>p</i> = .006	1.000			
Self-Reg	.493 <i>p</i> = .03	.581 <i>p</i> = .02	.141 <i>p</i> = .31	.565 <i>p</i> = .02	1.000		
Voc Classes	.340 <i>p</i> = .11	.203 <i>p</i> = .24	.509 <i>p</i> = .03	.344 <i>p</i> = .114	.250 <i>p</i> = .195	1.000	
IQ	.517 <i>p</i> = .03	-.310 <i>p</i> = .14	.333 <i>p</i> = .12	.312 <i>p</i> = .139	-.111 <i>p</i> = .35	.238 <i>p</i> = .207	1.000

Note: Auto = Autonomy subscale scores. Psych Emp = Psychological empowerment subscale scores. Self-Real = Self-Realization subscale scores. Self-Reg = Self Regulation subscale scores. Voc Classes = Number of vocational education classes.

doubt varied. Although preliminary analyses indicated no differences in group assignment based on the state in which students lived, programmatic efforts for students with this is

still a factor that must be considered when interpreting the findings. Additionally, learning disabilities and students with

mental retardation typically differ. The former receive instruction emphasizing cognitive strategies and academic skills, and the latter receive instruction focusing on functional life skills. The potential impact of these different learning opportunities was attenuated by the fact that students with mental retardation and those with learning disabilities were equally represented in low and high self-determination groups, but, again, this should be taken into consideration. Finally, degree of success relative to adult outcomes varies over time, and this study used only a single data-collection time. As such, generalizations about the link between self-determination and adult outcomes across the life span should be limited.

However, given the number of important variables that influence adult outcomes, like unemployment rate, availability of postsecondary education opportunities, or family and societal expectations, the fact that student self-determination accounted for any differences suggests the potential importance of this outcome. Throughout the data there was a consistent trend characterized by self-determined youth doing better than their peers 1 year out of school. Members of the high self-determination group were more likely to have expressed a preference to live outside the family home, have a savings or checking account, and be employed for pay. Students who earned the most had significantly higher self-determination scores and individual subdomains of self-determination contributed significantly to the students' wages per hour.

Self-determination status did not account for differences in all areas. There were no significant differences in the degree to which students in the two self-determination groups paid their own rent, mortgage, utilities, or phone bill, or arranged for their own transportation. At least two factors seemed to account for these results.

1. Almost all students lived at home and it is not unreasonable to expect that youth only 1 year out of school might not be asked by their family member to contribute to the rent or might still rely on the family for transportation.
2. A number of the students' families received SSI payments that they, in turn, applied to rent, mortgage, or utilities. In our telephone

and personal interviews, we realized that this income was being reported as if the son or daughter paid the relevant bill.

The finding that self-determination and intelligence level contributed to postgraduation wages while the number of vocational education classes did not should not be misinterpreted as an indictment of vocational education training. We made no attempt to determine the effectiveness of the training students received or how individualized and effective the overall educational program was for each student.

IMPLICATIONS FOR PRACTICE

Given the potential importance of self-determination for positive adult outcomes for youth with disabilities, what can educators do to ensure that students leave school as self-determined young people? Wehmeyer (1996) identified a set of *component elements*, the acquisition or development of which lead to the emergence of self-determination. These component elements include, but are not limited to, (a) choice making, (b) decision making, (c) problem-solving, (d) goal setting and attainment, (e) self-observation skills (f) self-evaluation skills, (g) self-reinforcement skills, (h) internal locus of control, (i) positive attributions of efficacy and outcome expectancy, (j) self-awareness, and (k) self-knowledge. Educational efforts to promote self-determination will focus on these component elements, which include both skills to be learned and attitudes or beliefs to develop.

To acquire the skills that lead to self-determination, students need to learn how to access resources they will need as adults, communicate interests and preferences, set and monitor achievable goals, plan and manage the use of time, identify and solve problems, and self-advocate. Self-advocacy skills include learning how to be assertive but not aggressive; how to negotiate, compromise and use persuasion; how to be an effective leader and team member, and what rights and responsibilities exist. It is particularly important for educators to move away from an over-reliance on typical lecture- or materials-based models of instruction to teach many of these skills. Student-directed learning strategies, including self-management procedures like self-instruction, self-

monitoring and self-reinforcement, are important to employ. Also important are other models, such as role-playing, metacognitive strategies, and brainstorming, which may too often be underutilized with students with disabilities. This will enable students to both acquire the skills that lead to self-determination and gain experience controlling their lives.

Skill development must go hand in hand with the promotion of attitudes critical to becoming self-determined. To encourage self-determination, teachers should provide activities that optimally challenge the student and promote autonomy by supporting student initiation of activities and allowing choice. Students with disabilities need to learn that they are causal agents for their own lives, and excessive external control is detrimental to this outcome. Students need to be provided the opportunities to express preferences, make choices, and experience outcomes based on those choices.

Similarly, educational emphasis needs to be placed on actively involving students in the educational planning, decision making, and program implementation process (Van Reuson & Bos, 1994). This is particularly important in transition planning and program development. Student involvement has the potential to increase student interest in and motivation to learn transition-related skills and provides hands-on experience in making choices and decisions.

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