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Dispositional factors affecting motivation during learning in adult basic and secondary education programs

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Abstract

Research indicates that about a quarter of adult students separate from formal adult basic and secondary education (ABE/ASE) programs before completing one educational level. This retrospective study explores individual dispositional factors that affect motivation during learning, particularly students' goals, goal-directed thinking and action based on hope theory and attendance behaviors, and self-perceptions of competency based on affective domain attributions about external and internal obstacles to learning and employment, and demographic factors. Among 274 ABE/ASE students, those learners who made an education gain in 1 year significantly differed from those who did not in only a few dispositional or demographic variables; and by educational level they significantly differed in a wide variety of dispositional and demographic variables. These findings suggest researchable questions and programmatic considerations that may lead to future innovations that improve learner persistence.

Keywords

Introduction

Each year approximately 1.4 M adults with limited literacy or low educational attainment enroll in adult basic and secondary education (ABE/ASE) programs (US Department of Education [USDE], 2006a) authorized by the Workforce Investment Act of 1998 (P.L. 105–220), Title II: The Adult Education and Family Literacy Act (AEFLA). Many of these adult learners fail to master literacy skills required for full participation in economic and civic life (National Institute for Literacy, 2000). One oft cited reason for this lack of success is insufficient learner persistence in ABE/ASE (Comings, 2007; National Research Council, 2012). Typically, adult education research views persistence as supported by motivations and hindered by situational and programmatic barriers. Some researchers (e.g., Quigley, 1997; Ziegler, Bain, Bell, McCallum, & Brian, 2006), however, suggest that study of individual dispositional factors, as opposed to situational and program factors, could yield insights on reasons adults, who had sufficient motivation to enroll in ABE/ASE, do not persist in these programs. Indeed, given the challenges of adult literacy program attrition and the complexities of adult decision-making, policy makers, program administrators and intervention developers may benefit from understanding more about the dispositions of individual ABE/ASE learners. Therefore, the purpose of this article is to present exploratory

analyses of some dispositional or person-oriented factors affecting motivation during learning for 274 ABE/ASE learners as bases for future research and innovations in practice.

The problem of persistence in adult education

Persistence is commonly defined as hours of attendance (intensity) over a period of time (duration; Comings, 2009). For several decades ABE/ASE program data show patterns of poor persistence as many adult literacy learners do not persist or participate in enough instruction to measurably improve their literacy skills. About a quarter of learners separate from these programs before completing even one adult educational functioning level, which is roughly equivalent to two K-12 grade levels (Tamassia, Lennon, Yamamoto, & Kirsch, 2007; USDE, 2006a). After a full year, only 37–38 % of the ABE and low ASE learners, whose literacy skills range from no reading ability to 8th grade level, gain one or more educational functioning levels; and 42–45 % of high ASE learners, whose literacy skills are 9th to 12th grade levels, earn a high school diploma or General Educational Development (GED) (USDE, 2006b). Researchers have suggested various models for understanding learner persistence (e.g., Beder, 1991; Comings, Parrella, & Soricone, 1999; Meder, 2000; Quigley & Uhland 2000; Tracy-Mumford, 1994; Ziegler et al., 2006), yet the issue continues to plague adult education programs.

Comings (2009) recently reported persistence in ABE/ASE programs was favorably associated with variables representing previous engagement in learning experiences after formal schooling, presence of strong social support networks, and having personal goals; and was negatively associated with demands of daily life, lack of social support, and lack of motivation. He also found the typical ways of classifying students in education research, such as gender, ethnicity, previous school experience, employment status, number of children, and parents' educational background, did not have a strong influence on persistence in adult education. After more than a decade of examining the question of persistence in ABE/ASE, Comings (2009) asserted that learners' intermittent participation and movement between ABE/ASE programs and self-study so confounds data for traditional group level persistence analyses that the concept should be redefined to include learning outside of ABE/ASE programs. Even so, a better understanding of adult learners' dispositions would likely help ABE/ASE programs improve their contributions to learners' educational achievements both during and between program enrollments.

Further evidence of poor learner persistence is found in the results of four recent adult literacy intervention studies (Alamprese, MacArthur, Price, & Knight, 2011; Hock & Mellard, 2011; Greenberg et al., 2011; Sabatini, Shore, Holtzman, & Scarborough, 2011). As these studies tested efficacy of reading instruction interventions with samples of adult learners, each research program encountered serious sample attrition, which ranged between 38 and 50 %. Sabatini et al. (2011) reported the learners in their study who completed a 15-week trial of supplemental decoding and fluency tutoring were older, had poorer text skills, and scored significantly lower on a subtest for understanding directions than non-completers. Yet, little is known about the dispositional factors associated with learners who did not persist in these well designed and soundly executed research studies and how the researchers and instructors might have motivated more participants to persist to the study's completion. However, a study on dispositional variables and persistence by Ziegler et al. (2006) with 245 women in adult education programs found that dispositional variables relating to self-efficacy, resilience, attitudes regarding education, and internal attributions were moderate predictors of persistence, with 69 % accuracy in predicting high and low attendance.

In light of the patterns of poor persistence observed in both ABE/ASE practice and research settings, we suspected that descriptive data from our adult literacy intervention study could be useful for developing insights into dispositional factors affecting individual ABE/ASE learners who do not persist in program-based learning. Specifically, we recognized that our data would support a retrospective analysis of dispositional or person-oriented factors affecting adult motivation during learning.

Factors affecting motivation during learning

Many theories and models of motivation have been discussed in educational and psychological research literature during the past several decades. Among these are theories centered on expectancies for success, theories centered on task value, theories that integrate values and expectancies, and theories integrating cognition and motivation (for an overview of motivational theories see Eccles and Wigfield, 2002). Pintrich and Schunk's (2002) social-cognitive theory of motivation currently prevails in the literature, and includes such concepts as intrinsic motivation, self-efficacy, and goal orientation.

Intrinsic motivation is an individual's willingness and desire to engage in an activity because the activity is a means to an end (Pintrich & Schunk, 2002). Researchers have hypothesized many distinct types of intrinsic motivation; however Linnenbrink and Pintrich (2002) suggest that personal and situation interest are particularly applicable in academic contexts. Hidi and Harackiewicz (2000) posit that personal interest is relatively stable over time and reflects an individual's level of interest regarding a specific topic or domain; situation interest, on the other hand, is not as stable over time and is based on specific learning context. Research suggests that both types of intrinsic motivation are positively correlated with increased persistence, engagement, and academic achievement (Pintrich & Schunk, 2002).

Bandura (1997) defined self-efficacy as an individual's belief about his or her ability to perform in a specific context, task, or domain. This construct differs from self-esteem or self-concept because it focuses on an individual's ability within a specific context rather than his or her self-perceptions of global ability. For example, an individual may have high self-efficacy regarding their ability in reading, but lower self-efficacy regarding performance in writing. Self-efficacy is informed by prior success (or lack thereof) in similar contexts and is correlated with a variety of academic outcomes including achievement, effort, and persistence (Bandura, 1997; Pintrich & Schunk, 2002).

According to achievement goal theory, two types of learning goals exist: mastery and performance. With mastery goals, learners evaluate ability based on increased understanding, mastery of concepts, and/or improved performance relative to prior performance (Ames, 1992). With performance goals, learners evaluate self-worth and personal ability based on the quality of one's own performance relative to the quality of performance by others (Ames, 1992). Research suggests that mastery goals are positively correlated with engagement, study skills, and achievement. Performance oriented goals are positively correlated with achievement; however, performance goals do not appear to lead to increased engagement or study skills (Linnenbrink & Pintrich, 2002).

In the context of these several theories, Beier and Kanfer (2010) suggested a heuristic framework for understanding motivational issues related to adult training and development activities, comprised of three interrelated and recursive stages: (a) the choice to participate in learning, (b) motivation during learning, and (c) the transfer of learned knowledge or skills to applied settings. This model allows examination of qualitatively different processes in each stage while acknowledging the effects of prior and subsequent stages. We found the

model useful for framing our present analysis of dispositional factors in the context of motivation during learning and, in turn, persistence.

Our data do not address the first and third stages of this model. However, Comings (2009) qualitatively examined issues related to the first stage, that is, how the choice to participate in learning related to persistence in ABE/ASE settings. He identified five common routes into adult education participation based on interviews with more than 250 participants: (a) long-term, in which education itself is the learner's goal; (b) mandatory, in which attendance is required by an outside party (e.g., law enforcement) and so attendance is the learner's goal; (c) short-term, to meet a specific, immediate need or goal; (d) try-out, with high barriers to participation and unclear goals that are generally insufficient to sustain motivation; and (e) intermittent, with episodic participation and movement between programs until goals are achieved.

Our study data along with ABE/ASE program data enabled us to retrospectively explore the second stage, that is, motivation *during* learning. Beier and Kanfer's (2010) model posits that goal striving and self-regulation processes affect individual motivation during learning. Goal striving and self-regulation include an individual (a) setting proximal learning goals (e.g., to increase one reading level); (b) engaging in goal-directed activities (e.g., attend class regularly); (c) monitoring interim progress (e.g., take tests); (d) allocating personal resources (e.g., time); and (e) updating self-perception of competency. The model suggests that when this process breaks down, an individual's motivation diminishes and, unless attendance is mandatory, he or she would likely discontinue participation in the ABE/ASE program.

Although the data we collected in the context of a larger study of adult literacy do not precisely align with Beier and Kanfer's model, the data sufficiently represent several dispositional or person-oriented variables associated with goal striving and self-regulation processes, including (a) proximal goals, (b) goal-directed thinking and action based on hope theory, (c) attendance behaviors, and (d) self-perceptions of competency based on affective domain attributions of external and internal obstacles to learning and employment. Three theories contributed to our a priori decisions on data collection. These are goal theory (e.g., Bandura, 1997; Linnenbrink & Pintrich, 2002); hope theory (Snyder et al., 1991); and attribution theory (Bruning, Schraw, & Ronning, 1999; Weiner, 1985). Goal theories are generally discussed above, and hope and attribution theory are described below.

Hope theory

Positive psychology's Hope theory (Snyder et al., 1991) helps explain how people persist toward goal attainment even in the face of obstacles. This theory defines hope as "a cognitive set that is composed of a reciprocally derived sense of successful agency (goal-directed determination) and pathways (planning of ways to meet goals)" (Snyder et al., 1991, pp. 570–571). In contrast to the more widely known concept of self-efficacy (Bandura, 1982), hope is conceptualized as a more general cognitive set that applies across settings and, as such, may yield a wider range of goal-related predictions. Further, hope is differentiated from self-efficacy in that it is conceptualized around the ideas generated (pathways) and energy expended (agency) when a person encounters an obstacle to achieving a goal. In the present study, measures of pathways and agency are proxies for goal-directed thinking and action.

When a person encounters an obstacle to a goal, he or she may employ "pathways thinking" to identify strategies and steps to overcome the barrier and achieve the goal (Snyder et al., 1991). Pathways thinking often involves, but is not limited to, breaking down a large or long-term goal into several smaller goals, and generating ideas of different routes to these goals. In that way, when an obstacle arises, the individual can take a different route to the

goal. Individuals also exhibit "agency", that is, self-talk or beliefs in self that lead a person to start work toward achieving a goal as well as the continuing belief that when encountering obstacles he or she can actually take an alternative pathway (Snyder et al., 1991). In some sense, agency is like having self-efficacy to act upon self-generated ideas (pathways). External agents can influence hope; their resources can help people to increase their pathways and agency, rather than conceptualizing goal setting and hope as solely individual pursuits (Bernardo, 2010).

For example, consider a high school dropout working in food service who wants to earn more than minimum wage. He might think about a variety of pathways to achieving this goal—work hard in the current job in order to merit a wage increase; look for a higher paying job requiring the same level of skill as the current job; or become qualified for jobs in higher paying fields. Pathways thinking might include breaking these options into such smaller goals as "earn a GED" and then "earn a technical certification." Agency thinking promotes selection and action toward one of these pathways, with such thoughts as, "I am capable of learning and passing the GED," and could be realized by this individual enrolling in an ASE program. As this individual encounters obstacles to a proximal goal (e.g., find transportation to class), these same patterns of thought may be engaged to identify pathways to overcome the obstacles and act upon them (e.g., ask a classmate for a ride, take the bus, etc.).

Attribution theory

In the present study, self-perceptions of competency are represented by items based on attribution theory (Bruning et al., 1999). Attribution theory describes the affective domain of personal beliefs or perceived causes of results, or how individuals explain events in their lives (Bruning et al., 1999). This theory can help better understand individual learners self-perception of competency during learning, which in turn contributes to motivation during learning.

Attribution theory classifies beliefs about causality on three continua: stable-unstable, controllable-uncontrollable, and internal-external locus of control (Weiner, 1985). A learner may attribute his test score to a stable cause such as a good memory, or to an unstable cause such as the test covering topics he just happened to remember. A learner may attribute her success on a test to a controllable cause, such as her good test preparation skills, or to an uncontrollable cause, such as good luck. A learner may attribute his success on a test to an internal state such as being in a good mood, or to an external cause such as a teacher who likes him. Another way of conceptualizing attributions for academic success includes the four most common attributions, which are effort, ability, task difficulty, and luck (Ziegler et al., 2006). Weiner (1985) posits that attributions influence emotional experiences and motivated behavior, especially the stability of causes, which influences expectancy of success as well.

Included in our background questionnaire were a series of questions exploring individual learners' attributions of internal and external obstacles to their participation and success in adult education and employment. As with hope, we suspect that some attributions may contribute to individual breakdowns or obstacles in goal striving and self-regulation, and result in lost motivation during learning, which in turn contributes to lack of persistence in ABE/ASE programs. Our several attribution questions provide an opportunity to explore and gain insights into individual affective domains and dispositional factors that may facilitate or frustrate persistence in ABE/ASE programs.

Differences by adult literacy levels

Differences in adult learners' dispositions in relation to their literacy levels are of interest because many researchers and practitioners work with a specific segment of this population, which covers the range from non-literate learners to individuals nearing completion of their high school equivalency credential. The USDE requires AEFLA-funded literacy programs to measure and report participants' skill level and gains based on educational functioning levels (USDE, 2006a, b). For ABE/ASE programs, learners are instructionally categorized into six educational functioning levels, each of which approximate two K-12 levels (e.g., Level 1 is roughly 1st and 2nd grade level equivalent; Level 6 is roughly 11th and 12th grade level equivalent). Sabatini et al.'s (2011) findings clearly demonstrated an inverse relationship between reading skills and persistence (lower skill—higher persistence), suggesting educational functioning level may be an important factor for understanding motivation during learning. Given that our data set spans Levels 1–6, an examination of differences in person-oriented and dispositional factors by level may be of value for understanding learner persistence in ABE/ASE programs.

Research questions

In light of the need to better understand the person-oriented or dispositional factors affecting adult learners' motivations during learning, we investigated the following research questions:

1. In what goals, goal-directed thinking and action, attributions, affective domain states, and demographic variables do individual ABE/ASE learners significantly differ according to their educational gain status?

2. In what goals, goal-directed thinking and action, attributions, affective domain states, and demographic variables do individual ABE/ASE learners significantly differ according to their educational functioning levels?

Method

The present study uses a retrospective design to identify significant individual differences in measures of thinking and behaviors associated with motivation during learning by educational gain status during 1 year of adult literacy program participation, and among USDE's National Reporting System (NRS) educational functioning levels (described below). Retrospective studies pose questions and use data collected about outcomes of interest that have already occurred at the time the study—in this instance learner data on attendance and educational gain status. Such studies usually cannot draw cause-and-effect conclusions because of confounding factors, but may give rise to hypotheses that can then be further tested.

Sample selection

As a part of a larger study of adult literacy, our research staff collected data from people enrolled in 13 Midwestern AEFLA-fund ABE/ASE programs. Participants had to be at least 16 years old; withdrawn from secondary education without earning a secondary credential or attaining basic reading, writing, or math skills; have US citizenship or authorization to work in the US as a foreign national in order to receive a nominal participation payment; and volunteer to participate in the study. We excluded English language learners from the study because the larger study was concerned with adult literacy interventions rather than language acquisition.

In order to create a heterogeneous sample that spanned the full range of low literacy learners, we drew a stratified sample based on the six educational functioning levels defined

by the NRS educational functioning levels (USDE, 2006b). The NRS levels are: Level 1 Adult Basic Education (ABE) Beginning Literacy, Level 2 Beginning ABE, Level 3 Low Intermediate ABE, Level 4 High Intermediate ABE, Level 5 Low Adult Secondary Education (ASE), and Level 6 High ASE. Each NRS level describes a set of skills and competencies that students entering at that level can do in the areas of reading, writing, numeracy, speaking, listening, and functional and workplace areas. In general, an NRS level approximates about two grade levels in school (USDE, 2006b). Most of the programs from which we drew our sample used the Comprehensive Adult Student Assessment System (CASAS) (2001) to classify their learners in these categories; the remainder used the Test of Adult Basic Education (TABE; CTB/McGraw-Hill, 2004).

At each study site we randomly selected participants for a stratified sample of learners with reading Levels 4, 5, and 6, with a goal of 60 learners per level. Due to a low number of volunteers from Levels 1, 2, and 3, we conveniently used all eligible volunteers from these three levels for a total sample of 319 learners. We eliminated 10 participants' data because of incomplete information, and the remaining 309 learners were classified as follows: 29 in Level 1, 44 in Level 2, 56 in Level 3, 60 in Level 4, 59 in Level 5, and 61 in Level 6.

For our analyses related to attendance and educational gain status, we again began with a sample of 319 and excluded 45 learners who participated in programs that did not collect or provide educational gain data ($n = 274$). Seventy of these learners did not achieve an educational gain in the year following our assessment while 204 did.

The sample was comprised of men (41 %) and women (59 %) between ages 16 and 73 ($M = 31$, $SD = 15$). Race and ethnicity of the sample were representative of the study region's non-ESL ABE and ASE participants: 38 % White non-Hispanic, 35 % African American, 11 % Hispanic, 8 % Multiracial/multiethnic, and 8 % Asian and Native American.

Instruments and variables

In our analyses we included relevant variables from adult education programs reporting systems and our own data collection. To measure goal-directed thinking, we used the Hope Scale (Snyder et al., 1991) Pathways and Agency subscales, and to measure goal-directed action we used attendance data. To measure goals, attributions, affective domain states and demographic variables we developed a background questionnaire that was administered to all study participants. These instruments and variables are described below.

Hope scale: pathways and agency subscales—We administered the Hope Scale (Snyder et al., 1991), a 12-item instrument to assess pathways and agency thinking, to understand more about the individuals' goal-directed thinking and action (Beier & Kanfer, 2010). Four items on this scale that measure pathways thinking provide insight into whether a person perceives workable routes to goal attainment (e.g., I can think of many ways to get out of a jam; Even when others get discouraged, I know I can find a way to solve the problem). Four items measure agency, which indicates the degree to which a person is likely to take action toward obtaining goals (e.g., My past experiences have prepared me well for my future; I meet the goals that I set for myself).The other four items in the instrument are distracters and are not scored in the scale or the subscales. Respondents rate each statement on this instrument from 1 to 4, where a score of 1 represents definitely false, 2 mostly false, 3 mostly true, and 4 definitely true. Table 1 lists the pathways thinking and agency items (omitting the Scale's four distractor items).

The Hope Scale, validated in studies of college students and two groups of adults in psychological treatment, has exhibited acceptable internal consistency (overall $a = .74$ to .88; pathways thinking items $a = .63$ to .86; and agency items $a = .70$ to .84). Further, the

instrument reports having test–retest reliabilities ranging from .85 for 3 weeks to .82 for 10 weeks, as well as concurrent and discriminant validities (Snyder et al., 1991). In our sample, we found reliability estimates of $a = .59$ for the Pathways subscale, $a = .72$ for the Agency subscale, and $a = .73$ for the combined Hope Total score.

Attendance variable—ABE/ASE programs typically report the hours each participant attended by month. In order to smooth out the month-to-month variations and the differences in participant survey dates, we calculated from monthly data a variable representing the mean hours per quarter for the preceding four quarters for each participant.

Goals, attributions, and affective domain states variables—Research staff and consultants created a 44 item background questionnaire intended, in part, to describe participants' affective domain traits and states. Participants reported their goals for adult education, views about life and self, job opportunity limitations, and internal and external obstacles to their success in adult education. Table 2 lists nine items drawn from this questionnaire representing goals, attributions and affective domain states utilized in the present analyses.

Background and demographic characteristic variables—Also included in the above referenced 44 item questionnaire, we collected descriptive data about participants. Participants self-assessed and self-reported language experiences; educational background; literacy, numeracy, and computer/internet usage practices; labor force participation; social participation; health and disability status; and household and family information and income. Table 3 lists nine items drawn from this questionnaire representing background and demographic characteristics in the present analyses. We excluded items pertaining to high school history; voting habits; religious participation; alcohol and drug use; and literacy, numeracy and computer usage practices.

NRS level and educational gain status variables—We used the NRS levels of each learner, as indicated by the programs' periodic reassessment using CASAS or TABE, at the time we surveyed them—regardless of whether they had been in an adult education program before that time.

CASAS and TABE are two of the three most prevalent assessments used in ABE/ASE programs. CASAS measures life skills needed by youth and adults in employment, home, and community environs (e.g., reading and writing tasks for completing a job application form) (Mellard & Anderson, 2007). Government agencies and state institutions have documented the validity of CASAS (e.g., USDE Joint Dissemination Review Panel/Program Effectiveness Panel). The test publishers provide grade level equivalents for the purpose of ABE/ASE record keeping only, but also report a monotonic increasing relationship between CASAS scores and GED exam scores (for earning a high school credential) in both reading and math (CASAS, 2003). One NRS level increase requires an approximately 4 % increase in CASAS score. Internal consistency reliability for the reading and math sections are .91–.97.

TABE (CTB/McGraw-Hill, 2004) provides valid competency levels and measures progress among native English-speaking adult learners with limited literacy skills (Mellard & Anderson, 2007). The assessment measures academic content categories that reflect current trends in adult education, national standards, and adult curricula (e.g., reading, math computation, applied math and language). The assessment extends from basic literacy and numeracy skills up to advanced literacy and numeracy skills, such as those measured on a GED exam (CTB/McGraw-Hill, 2004). The internal consistency reliability for all levels is acceptable (.88–.95).

We created a dichotomous variable for education gain status by retrospectively accessing these learners' adult education records to determine their NRS level 1 year after administering our assessment battery. For individuals who at the start of our study were rated at Levels 1 through 5, we defined an educational gain as advancing to the next level or higher. For those students in Level 6, an educational gain was defined as successful completion of the GED exam. Table 4 displays the proportion of learners by level that achieved educational gains; we found no significant differences by level, χ^2 ($n = 264$, $df = 5$) = 6.310, $p = 0.277$, suggesting all levels improved at a roughly consistent rate.

Data collection procedures

Self-reported learner data—For the Hope Scale and background questionnaire, research staff trained graduate research assistants to orally administer the surveys using methods that would not bias results (e.g., social desirability acquiescence biases, Dillman, 2000). Oral administration removed the potential for bias against adults with low literacy skills who might not have been able to decode or respond to written questionnaires.

Program-supplied data—We obtained access to individual learner data on attendance and educational gain status via one state's adult education online database known as the Portal to Adult Basic Literacy Operational System.

Data analysis

Initially we performed a discriminant analysis, looking for variables that would distinguish between individuals making an educational gain and those who did not; we found no significant differences in this analysis. Therefore, we conducted exploratory analyses to identify significant differences between educational gain statuses by NRS levels for person-oriented variables related to motivation during learning, such as goals, goal-directed thinking and action, attributions, affective domain states, and demographic variables. We used Chi-square tests of significance, and Cramer's V or Phi to indicate effect size. We made an a priori decision to set our statistical significance level at alpha < .10. We chose this cutoff in light of the exploratory nature of our study, the lack of a strong theoretical framework, and uncertainty about whether our instruments addressed the relevant student activity domains (e.g., family and peer support), had sufficient breadth of content and used appropriate response formats. In addition, we performed analysis of variance (ANOVA) for Hope subscale scores (Pathways and Agency), composite variables representing the affective domain (e.g., help received, internal obstacles and external obstacles), and attendance.

Findings

Goals

Educational gain status differences—We found no significant differences in learners' goals according to their educational gain status (Table 5).

Educational functioning level differences—Two significant differences by educational functioning level existed in the learners' goals or reasons for enrolling in adult education (Table 6). These differences were: (a) to get HS diploma/GED, χ^2 ($n = 308$, $df = 5$) = 73.96, $p < 0.001$, $V = 0.490$; and (b) another reason (not specified in our survey), χ^2 ($n = 308$, $df = 5$) = 14.60, $p = 0.012$, $V = .0.218$. The HS diploma/GED goal was more likely for learners in Levels 3–6 than Levels 1 and 2. Having another reason for attending adult education was more likely for learners in Levels 1–3 than higher-level learners. Post hoc analysis of program information about learner goals did not identify any particular other reason, only that the learners had reasons for enrolling in adult education other than the five

reasons in our survey, which paralleled the US Department of Education's National Reporting System's goals.

Goal-directed thinking: pathways hope and agency hope

Educational gain status differences—Learners' goal-directed thinking showed no significant differences according to their educational gain status in either the Pathways or Agency subscales of the Hope Scale (Table 7).

Educational functioning level differences—Goal-directed thinking in learners showed significant differences by NRS functioning level in the Pathways subscale, $F = 2.984$, $p = 0.012$ (Table 8). We found no significant differences in the Agency subscale.

Goal-directed actions: attendance

Educational gain status differences—ANOVA results (Table 7) show a significant difference by educational gain status in hours attended, $F = 14.132$, $p < 0.001$, in which those learners who achieved gains attended more ($M = 52.94$ h per quarter, $SD = 30.03$) than those who did not ($M = 36.49$ h per quarter, $SD = 23.79$).

A post hoc analysis indicated a significant moderate correlation between hours attended and educational gain status, $r = 0.235$, $p = 0.01$. However, regression analyses of these variables identified two significant relationships with hours attended: (a) received help (more help, more attendance; Adj. R-squared = 0.023, $F = 6.613$, Beta (standardized coefficient) = -0.163, and $p = 0.011$); and (b) internal obstacles (fewer obstacles, more attendance; Adj. R-square = 0.018, $F = 4.764$, Beta = -0.149, and $p = 0.03$).

Educational functioning level differences—We found significant differences by NRS level in hours attended, $F = 2.629$, $p = 0.025$, with ABE participants in Levels 1–3 ($M = 56.95$, $SD = 33.71$; $M = 51.72$, $SD = 24.37$; $M = 57.80$, $SD = 28.22$, respectively) attending more hours per quarter than ASE participants in Levels 4 to 6 ($M = 49.30$, SD = 32.77; $M = 48.73$, $SD = 31.09$; $M = 37.88$, $SD = 22.98$, respectively) (Table 8).

Attributions

Educational gain status differences—Learners who made a gain differed significantly from those who did not in their perception of job opportunity limitations because of writing skills, χ^2 ($n = 271$, $df = 1$) = 8.75, $p = 0.003$, $\phi = 0.180$; and math skills, χ^2 ($n = 272$, $df = 1$) = 5.84, $p = 0.016$, $\phi = 0.146$, with non-achievers more likely to perceive limitations in both cases (Table 5).

Educational functioning level differences—Significant differences by NRS Level were evident in the learners' perceptions of how their skills limited their job opportunities, with ABE learners (Levels 1–3) generally more likely to perceive limitations than ASE learners (Levels 4–6). The perceived limitations encompassed reading, χ^2 ($n = 303$, $df = 5$) = 59.23, $p < 0.001$, $V = 0.442$; writing, χ^2 ($n = 305$, $df = 5$) = 45.10, $p < 0.001$, $V = 0.385$; math, χ^2 ($n = 306$, $df = 5$) = 13.38, $p < 0.001$, $V = 0.209$; and computer skills, χ^2 ($n = 306$, $df = 5$) = 24.48, $p < 0.001$, $V = 0.283$ (Table 6).

ANOVA results (Table 8) indicate significant differences by NRS level regarding external obstacles, $F = 3.983$, $p = 0.002$; and internal obstacles, $F = 2.466$, $p = 0.033$. Visual inspection of these data show a linear progression by level in the mean scores for receiving help, in which lower-level learners received more help and higher-level learners received less.

Affective domain states

Educational gain status differences—Life satisfaction status differed according to educational gain status, χ^2 ($n = 274$, $df = 5$) = 8.65, $p = 0.071$, with achievers more likely to be satisfied with life (Table 5).

Educational functioning level differences—As is also shown on Table 6 only one emotional state differed significantly by NRS level: felt downhearted and blue, χ^2 ($n = 309$, $df = 20$) = 29.56, $p = 0.077$, $V = 0.155$, with Levels 5 and 6 learners less likely to report having this feeling.

Demographic characteristic differences

Educational gain status differences—The analysis identified only one demographic characteristic that significantly differed by educational gain (Table 5): Hispanic status, χ^2 ($n = 269$, $df = 1$) = 5.65, $p = 0.017$, $\phi = 0.145$, where learners with this status were less likely to make an educational gain. Approximately 8 % of our sample reported Spanish as their first language, and 12 % indicated Hispanic ethnicity.

Educational functioning level differences—The analysis identified seven demographic characteristics that significantly differed by educational functioning level (Table 6). These characteristics were (a) racial membership, χ^2 ($n = 290$, $df = 20$) = 55.50, $p < 0.001$, $V = 0.219$; (b) marital status, χ^2 ($n = 309$, $df = 25$) = 35.06, $p = 0.087$, $V = 0.151$; (c) having a learning disability diagnosis, χ^2 ($n = 302$, $df = 5$) = ; 32.39, $p < 0.001$, $V = 0.327$; (d) overall health status, χ^2 ($n = 309$, $df = 20$) = 30.05, $p = 0.069$, $V = 0.156$; (e) mother's education, χ^2 ($n = 270$, $df = 50$) = 80.39, $p = 0.004$, $V = 0.244$; (f) received government funds, χ^2 ($n = 301$, $df = 15$) = 31.72, $p = 0.007$, $V = 0.187$; and (g) household income, χ^2 ($n = 259$, $df = 4$) = 48.41, $p < 0.001$, $V = 0.216$.

Specifically, ABE learners (Levels 1–3) were more likely than ASE learners (Levels 4–6) to have a learning disability diagnosis, report having fair or poor health, and have a mother who did not graduate high school. Racial membership, however, exhibited a different pattern, with more than expected self-identified White learners in Levels 5 and 6, and more self-identified African American learners in Levels 1 and 2; with Levels 3 and 4 including equal percentages of both of these racial categories.

Discussion

Among 274 ABE/ASE students, those learners who made an education gain in 1 year significantly differed from those who did not in only a few dispositional or demographic variables. However, by educational level these same individuals significantly differed in a wide variety of dispositional and demographic variables. These findings suggest several researchable questions and programmatic considerations associated with motivation during learning, and in turn, may lead to future innovations that improve learner persistence in ABE/ASE program-based learning.

Goals

The AEFLA's National Reporting System (NRS; USDE, 2006a, b) requires ABE/ ASE programs collect and monitor progress toward learners' goals. The system allows for three primary learning goals. First, the system anticipates that many learners have the goal of becoming literate and obtaining the knowledge and skills necessary for employment and self-sufficiency. Second, the system expects some learners have the goal of completing their secondary school education and earning high school equivalency credentials. Finally, the system assumes that some have the goal of obtaining parental skills necessary to be full

partners in their children's educational development. These three goals align with national economic and civic interests of the AEFLA, and the measures related to these goals are the basis for program performance evaluation and funding.

Program-defined goals may not align with the many motivations and goals of individual enrollees, and/or may be too broad to induce behaviors that lead to goal attainment. Learners in our sample differed significantly by their current levels of reading and numeracy skills with respect to their goals or motives for participating in adult education. Not surprisingly, individuals at higher levels more often specified earning a GED or high school diploma as their proximal goal because they were nearer to the achievement than were lower level learners. Likewise, learners at every level were just as likely to cite employment and family reasons for participating. However, our data indicate that learners significantly differed by level for the category we referred to as "another reason" (see Table 6).

Lower-level learners were more likely to have "another reason" than higher-level learners. The implication of this difference is that these learners have reasons (motivations) for enrolling in adult education that are not captured by the current measurement systems. We can speculate that if AE programs could better understand and track learners' real goals for enrolling and progress toward these goals, perhaps the programs could improve learners' persistence.

Further, misalignment between current program goals and performance indices and learners' personal goals may be clouding our understanding of learner persistence. Indeed, learners may have personal, undocumented goal attainments or goal non-attainments that relate to their discontinuing participation in adult education. Conversely, when programs do not track progress toward these real goals, learners may not perceive their own level or rate of progress and become discouraged. Programs may better serve learners by documenting and tracking progress toward learners' personal goals.

Goal-directed thinking: pathways hope and agency hope

Hope is a goal-directed construct that enables people to find pathways to reach their desired goals as well as to believe in their capability to reach these goals (Snyder et al., 1991). We found significant differences in Pathways Hope according to NRS functioning levels. Participants in Level 1 had the highest scores in Pathways Hope, followed by Level 6 participants, Levels 3 and 4, Level 5, and lastly Level 2 participants with the lowest scores in Pathways Hope. These results show the importance of understanding person-level differences; they do not show a linear progression according to functioning level, but rather reflect individual differences that might in turn influence participants' goal striving and self-regulation (motivation during learning) and persistence in program-based learning.

Goal-directed action: attendance

Attendance is not only a goal-directed action that supports motivation during learning, but an integral part of our definition of persistence (hours of attendance over a period of time). Of interest here is whether the learners' motivations and attendance were sufficient to reach a goal, such as gaining one level of educational function. Among our sample, learners who achieved gains averaged 53 h per quarter, while non-gaining learners attended 36 h per quarter. Various studies indicate 80–118 h of instruction is required to achieve a one level gain (e.g., Rose and Wright, 2006 100–110 h of participation for 50 % of adult learners; Greenberg, Rodrigo, Hughes, and Bunting (2002) 80 h of instruction for 60 % of their study sample; and Messemer (2006) 118 h for an incarcerated study population).

Three person-oriented differences related to attendance offer opportunities for further investigation and innovative interventions. First, like Sabatini et al. (2011), we found

learners who began the year at lower educational functioning levels attended more than those at higher levels. Second, individual learners who received more help from others were more likely to have higher attendance. Third, individual learners who perceived lower internal obstacles were more likely to have higher attendance. Qualitative study may help us understand possible explanations, such as adults who read at very low levels have, by necessity, recognized their need for and are more amenable to the help of others. Or perhaps those adults whose disposition perceives fewer internal obstacles are more likely to enroll as well as stay enrolled in ABE/ASE program learning.

Attributions

Learners' attributions of how their skills limit their job opportunities significantly differed by their skill levels across all measured domains (reading, writing, math, and computer skills; Table 6). Differences by level may, in fact, represent reasonable self-assessments of their own skills versus the needed skills in the contemporary economy. Learners who made gains were less likely to view themselves as limited by their writing and math skills than learners who did not make gains (Table 5). From Bruning et al.'s (1999), Weiner's (1985) and Bandura's (1982) frameworks, one might surmise that learners' beliefs about causality and self-efficacy are stronger because of past gains and thus they not only think of themselves as less limited but have the assessment evidence to support those beliefs.

Affective domain states

The emotions of learners in our study differed by level for only one state: feeling downhearted and blue (Table 6). Lower-level learners were more likely to have such feelings compared to higher-level learners. Conversely, learners who made educational gains were significantly more likely to be satisfied with their lives (Table 5)—even before achieving the gain.

Demographic characteristics

We were not surprised to find that our sample of ABE/ASE learners demographically differed from one another based on their initial level of reading and numeracy skills (Table 6). Specifically, we found significant differences in characteristics that often have a relationship to achievement in US society (e.g., having a learning disability diagnosis, overall health status, mother's education, racial identification, whether you and/or someone in the family receives government funds, and household income). However, when we looked for demographic differences among these same learners based on educational gains (Table 5), only one characteristic emerged (i.e., Hispanic status), which may be related to the 8 % of people in our sample for whom Spanish was their first language. Otherwise, the clear lack of distinction between gainers and non-gainers in other demographic characteristics can be viewed as an encouraging finding for learners—that is, their demographic profile, family history, and current economic situation do not predict their success or failure in adult education.

Policy and program implications

From our retrospective study we see evidence of the need for better program goal alignment with learner goals. Although AEFLA was not enacted with the intention of helping people simply achieve personal goals, we hypothesize that program staff can use learners' personal goals in a way that increases persistence and attendance, subsequently increasing national capacity of reading, writing and math abilities. In the aggregate, increasing educational goal attainment would be good for the economic and civic goals of AEFLA.

We also observed that learners with more hours of attendance also tended to receive more help and perceived fewer internal obstacles. Presumably these learners employed more goal-directed thinking; for those learners who are less likely to independently generate new routes to their goals, programs might be more proactive in offering help outside of the classroom (e.g., tutoring, mentoring, social networking), which might in turn increase both accountability and persistence. Actually changing the way learners think about internal obstacles (building up pathways thinking) is a harder task. Bernardo (2010) suggests tapping into social networks as a source of hope; external agents can stimulate other individuals' sense of agency and can help find resources to increase pathways. Such techniques as Motivational Interviewing (Miller & Rollnick, 1991, 2002) and Client-Directed Outcome-Informed practices (Duncan, 2010) might also be considered by ABE/ASE programs to improve overall learner outcomes.

Study limitations

Naturally a retrospective study such as this cannot make claims about cause-and-effect because of confounding factors. For example, the study participants were enrolled in 13 different ABE/ASE programs that differed from one another in many ways that confound the data (e.g., curriculum, instructor qualifications, programs hours available for attendance);and we had insufficient data to statistically control for these differences. Further, interaction among these and other unmeasured variables (e.g., family issues, financial obligations) and the measured variables might provide a more sophisticated understanding of learner motivation during learning.

Conclusion

We believe that high quality instruction in a meaningful curriculum accounts for and is necessary for most learners to make educational gains, but in many cases these curricula are not sufficient. Learners need exposure to that instruction—that is, they need to be in attendance for a sufficiently long period of time. The learners in our study who achieved educational gains had greater exposure to the instruction. The connection among variables describing people and their dispositional characteristics as well as educational gains at various performance levels is a complicated framework. Learner characteristics came into play as evidenced by the demographic characteristics and pathways thinking that differentiated educational functioning levels. As Beier and Kanfer's (2010) model suggests, goal striving and self-regulation processes affect individual motivation during learning. We have explored only a few of the factors related to this motivational model, specifically, goals, goal-directed activities and updating self-perception of competency. This study points to opportunities for interventions and programmatic changes to affect motivation during learning and, in turn, persistence. Other factors, such as progress monitoring and allocation of personal resources also represent opportunities for further research, development, and program improvements.

Acknowledgments

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Table 1

Hope Scale Pathways and Agency Items

Variable name	Statement[a]
Pathways[b]	I can think of many ways to get out of a jam
	There are lots of ways around a problem
	I can think of many ways to get the things in life that are most important to me
	Even when others get discouraged, I know I can find a way to solve the problem
Agency[b]	I energetically pursue my goals
	My past experiences have prepared me well for my future
	I've been pretty successful in life
	I meet the goals that I set for myself

Source: Snyder et al. (1991)

[a]Participants rated each question as definitely false, mostly false, definitely true, and mostly true

[b]Treated as a scaled variable in analyses

Table 2

Goals and affective domain background questionnaire items

Variable name	Survey question	Answer options[a]
Goals	Did you decide to take adult education classes to ...?	Get a better job; meet current job requirements; get a high school diploma or GED; further education (not related to diploma or GED); help children with their homework; other
Life satisfaction status	On the whole, how satisfied are you with your life over the past 12 months?	Extremely satisfied, satisfied, neither, unsatisfied, extremely unsatisfied
Felt calm and peaceful	During the past 4 weeks, have you felt calm and peaceful ...?	Almost all of the time, a good bit of the time, some of the time, a little of the time, almost none of the time
Had a lot of energy	During the past 4 weeks, have you had a lot of energy ...?	Almost all of the time, a good bit of the time, some of the time, a little of the time, almost none of the time
Felt downhearted and blue	During the past 4 weeks, have you felt downhearted and blue ...?	Almost all of the time, a good bit of the time, some of the time, a little of the time, almost none of the time
Hard work	If I work hard my reading skills will improve	Strongly agree, agree, neither, strongly disagree
Job opportunities limited	Do you think your job opportunities are limited because of your ...?	Reading skills; writing skills; math skills; computer skills
Internal obstacles[b]	What obstacles or barriers have made it difficult for you to be involved in a program to improve reading skills? Feeling unwelcome Not knowing anyone in the class Not needing reading skills Dislike of school Problems learning	Very important obstacle, somewhat important obstacle, not at all important obstacle
External obstacles[b]	What obstacles or barriers have made it difficult for you to be involved in a program to improve reading skills? An inflexible or demanding work schedule Inadequate childcare Inadequate transportation Having little or no time Family problems	Very important obstacle, somewhat important obstacle, not at all important obstacle

[a]Participants had the option to refuse to answer or indicate that they did not know the answer to any question

[b]Treated as a composite variable in analyses

Table 3

Background and demographic questionnaire items

Variable name	Survey question	Answer options[a]
Race	What is your race?	White, black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, Multiracial
Hispanic status	Are you Hispanic or Latino?	Yes, no
Marital status	Which of the following describes your current marital status ...?	Never married; married, living with spouse; married, spouse living elsewhere; living as married; separated or divorced; widowed
Children under 18	During the past month, have children under 18 lived in your household?	Yes, no
Learning disability diagnosis	Have you ever been diagnosed as having a learning disability?	Yes, no
Overall health status	In general, would you say your health is ...?	Excellent, very good, good, fair, or poor
Mother's education	What is the highest level of education your mother, stepmother, or female guardian completed?	Less than high school; some high school; GED or high school equivalency; high school; attended vocational, trade or business school after high school; less than 2 years college; associates degree; college 2 years or more, no degree; college degree (BS or BA); postgraduate, no degree; postgraduate degree (MS, MA, PhD, MD, etc.)
Received government funds	Did you or anyone in your household receive funds—like Supplemental Security Income (SSI); Women, Infants, and Children supplemental nutritional benefits (WIC); or Temporary Aid to Needy Families (TANF)—during thepast 12 months?	Yes, me; yes, someone else; both; no
Receive help[b]	How much help do you get from family members or friends with ... Filling out forms, such as job applications or tax forms? Reading or explaining newspaper or magazine articles? writing notes, letters, or email? Using basic arithmetic, such as filling out order forms or balancing a checkbook?	A lot, some, a little, none

[a]Participants had the option to refuse to answer or indicate that they did not know the answer to any question

[b]Treated as a composite variable in analyses

Table 4

Sample's educational gain by national reporting system (NRS) level

NRS level	Made an educational gain		
	No n (% of level)	Yes n (% of level)	Total[a] n (% of total)
1	5 (42)	7(58)	12(5)
2	6 (35)	11 (65)	17(7)
3	14 (25)	42 (75)	56 (21)
4	16 (27)	44 (73)	60 (23)
5	15 (26)	43 (74)	58 (22)
6	9(15)	52 (85)	61 (23)
Total	65 (25)	199 (75)	264 (100)

χ^2 ($n = 264$, $df = 5$) = 6.310, $p = 0.277$

[a]Among the 274 participants with educational gain data, 10 did not have NRS level information associated with their records

Table 5

Tests of significance by educational gain status

Variable name	Educational gain status differences	
	χ^2	Effect size Cramer's V or ϕ
Goals		
To get a better job	χ^2 ($n = 274$, $df = 1$) = 1.41, $p = 0.240$	$\phi = 0.072$
To meet job requirements	χ^2 ($n = 274$, $df = 1$) = 0.02, $p = 0.883$	$\phi = 0.009$
To get HS diploma/GED	χ^2 ($n = 274$, $df = 1$) = 2.55, $p = 0.110$	$\phi = 0.110$
To further education	χ^2 ($n = 271$, $df = 1$) = 0.18, $p = 0.675$	$\phi = 0.025$
To help children with homework	χ^2 ($n = 274$, $df = 1$) = 0.28, $p = 0.598$	$\phi = 0.032$
Another reason	χ^2 ($n = 273$, $df = 1$) = 2.54, $p = 0.111$	$\phi = 0.096$
Affective domain characteristics		
Life satisfaction status	χ^2 ($n = 274$, $df = 5$) = 8.65, $p = 0.071$ [*]	$V = 0.178$
Felt calm and peaceful	χ^2 ($n = 274$, $df = 4$) = 4.87, $p = 0.301$	$V = 0.133$
Had a lot of energy	χ^2 ($n = 274$, $df = 4$) = 3.91, $p = 0.419$	$V = 0.120$
Felt downhearted and blue	χ^2 ($n = 274$, $df = 4$) = 1.23, $p = 0.874$	$V = 0.067$
Hard work	χ^2 ($n = 274$, $df = 4$) = 4.94, $p = 0.293$	$V = 0.134$
Job opportunities limited		
By reading skills	χ^2 ($n = 270$, $df = 1$) = 2.28, $p = 0.131$	$\phi = 0.092$
By writing skills	χ^2 ($n = 271$, $df = 1$) = 8.75, $p = 0.003$ [*]	$\phi = 0.180$
By math skills	χ^2 ($n = 272$, $df = 1$) = 5.84, $p = 0.016$ [*]	$\phi = 0.146$
By computer skills	χ^2 ($n = 272$, $df = 1$) = 0.36, $p = 0.547$	$\phi = 0.037$
Demographic characteristics		
Race	χ^2 ($n = 271$, $df = 6$) = 10.49, $p = 0.105$	$V = 0.104$
Hispanic status	χ^2 ($n = 269$, $df = 1$) = 5.65, $p = 0.017$ [*]	$\phi = 0.145$
Marital status	χ^2 ($n = 274$, $df = 5$) = 7.93, $p = 0.160$	$V = 0.170$
Children under 18	χ^2 ($n = 273$, $df = 10$) = 7.14, $p = 0.712$	$\phi = 0.078$
Learning disability diagnosis	$p = 0.202$ [§]	$\phi = 0.083$
Overall health status	χ^2 ($n = 274$, $df = 4$) = 1.32, $p = 0.859$	$V = 0.069$
Mother's education	χ^2 ($n = 240$, $df = 10$) = 9.69, $p = 0.468$	$V = 0.201$
Received government funds	χ^2 ($n = 302$, $df = 3$) = 32.39, $p < 0.001$ [*]	$V = 0.110$
Household income	χ^2 ($n = 230$, $df = 4$) = 6.690, $p = 0.153$	$V = 0.171$

[§]Fisher's exact test

[*]$p < 0.10$

Table 6

Tests of significance by NRS education functioning level

Variable name	NRS level differences	
	χ^2	Effect size Cramer's V
Goals		
To get a better job	χ^2 ($n = 309$, $df = 5$) = 6.58, $p = 0.254$	0.146
To meet job requirements	χ^2 ($n = 309$, $df = 5$) = 4.33, $p = 0.503$	0.118
To get HS diploma/GED	χ^2 ($n = 308$, $df = 5$) = 73.96, $p < 0.001$ [*]	0.490
To further education	χ^2 ($n = 306$, $df = 5$) = 7.31, $p = 0.199$	0.155
To help children with homework	χ^2 ($n = 300$, $df = 5$) = 5.97, $p = 0.309$	0.139
Another reason	χ^2 ($n = 308$, $df = 5$) = 14.60, $p = 0.012$ [*]	0.218
Affective domain		
Life satisfaction status	χ^2 ($n = 309$, $df = 20$) = 25.11, $p = 0.197$	0.143
Felt calm and peaceful	χ^2 ($n = 309$, $df = 20$) = 20.16, $p = 0.448$	0.128
Had a lot of energy	χ^2 ($n = 308$, $df = 20$) = 23.26, $p = 0.276$	0.137
Felt downhearted and blue	χ^2 ($n = 309$, $df = 20$) = 29.56, $p = 0.077$ [*]	0.155
Hard work	χ^2 ($n = 309$, $df = 20$) = 23.04, $p = 0.287$	0.137
Job opportunities limited		
By reading skills	χ^2 ($n = 303$, $df = 5$) = 59.23, $p < 0.001$ [*]	0.442
By writing skills	χ^2 ($n = 305$, $df = 5$) = 45.10, $p < 0.001$ [*]	0.385
By math skills	χ^2 ($n = 306$, $df = 5$) = 13.38, $p < 0.001$ [*]	0.209
By computer skills	χ^2 ($n = 306$, $df = 5$) = 24.48, $p < 0.001$ [*]	0.283
Demographic characteristics		
Race	χ^2 ($n = 290$, $df = 20$) = 55.50, $p < 0.001$ [*]	0.219
Hispanic status	χ^2 ($n = 306$, $df = 5$) = 5.93, $p = 0.314$	0.139
Marital status	χ^2 ($n = 309$, $df = 25$) = 35.06, $p = 0.087$ [*]	0.151
Children under 18	χ^2 ($n = 308$, $df = 50$) = 51.97, $p = 0.397$	0.155
Learning disability diagnosis	χ^2 ($n = 302$, $df = 5$) = 32.39, $p < 0.001$ [*]	0.327
Overall health status	χ^2 ($n = 309$, $df = 20$) = 30.05, $p = 0.069$ [*]	0.156
Mother's education	χ^2 ($n = 270$, $df = 50$) = 80.39, $p = 0.004$ [*]	0.244
Received government funds	χ^2 ($n = 301$, $df = 15$) = 31.72, $p = 0.007$ [*]	0.187
Household income	χ^2 ($n = 259$, $df = 4$) = 48.12, $p < 0.001$ [*]	0.216

[*]
$p < 0.10$

Table 7

Means and standard deviations of scaled, composite, and calculated variables by educational gain status with ANOVA results

Educational gain status	Hope scale: pathways *M* (*SD*)	Hope scale: agency *M* (*SD*)	Hours attended per quarter *M* (*SD*)	Receive help *M* (*SD*)	External obstacles *M* (*SD*)	Internal obstacles *M* (*SD*)
Not achieved	3.12 (0.458)	3.01 (0.590)	36.49 (23.79)	3.00 (0.837)	2.19 (0.652)	2.30 (0.670)
Achieved	3.08 (0.479)	3.02 (0.511)	52.94 (30.03)	2.94 (0.829)	2.10 (0.605)	2.24 (0.560)
	$F = 0.443$	$F = 0.024$	$F = 14.132$	$F = 0.229$	$F = 1.007$	$F = 0.379$
	$p = 0.506$	$p = 0.877$	$p < 0.001$[*]	$p = 0.632$	$p = 0.317$	$p = 0.539$

[*]
$p < 0.10$

Table 8

Means and Standard Deviations of Scaled, Composite, and Calculated Variables by NRS Education Functioning Level with ANOVA Results

NRS level	Hope scale: pathways[a] M (SD)	Hope scale: agency[a] M (SD)	Hours attended per quarter M (SD)	Receive help M (SD)	External obstacles M (SD)	Internal obstacles M (SD)
1	3.32 (0.504)	3.03 (0.684)	56.95 (33.71)	2.29 (1.009)	2.61 (0.580)	2.23 (0.659)
2	2.94 (0.603)	3.02 (0.577)	51.72 (24.37)	2.56 (0.780)	1.93 (0.638)	2.04 (0.557)
3	3.05 (0.543)	3.02 (0.631)	57.80 (28.22)	2.82 (0.806)	2.15 (0.617)	2.14 (0.214)
4	3.05 (0.469)	3.02 (0.529)	49.30 (32.77)	2.84 (0.733)	2.14 (0.599)	2.36 (0.532)
5	3.00 (0.417)	2.95 (0.504)	48.73 (31.09)	3.09 (0.697)	2.17 (0.569)	2.29 (0.529)
6	3.18 (0.427)	3.03 (0.432)	37.88 (22.98)	3.53 (0.485)	2.09 (0.603)	2.39 (0.618)
	$F = 2.984$	$F = 0.179$	$F = 2.629$	$F = 15.563$	$F = 3.983$	$F = 2.466$
	$p = 0.012$ *	$p = 0.970$	$p = 0.025$ *	$p < 0.001$ *	$p = 0.002$ *	$p = 0.033$ *

Mean scores represent the average of the four scored items in each Hope subscale and exclude the distractor items

*
$p < 0.10$