Program Characteristics that Predict Improved Learner Outcomes

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Abstract

This study identifies adult education program characteristics that predict improved learner outcomes through statistical analyses of data across four years in a single state. Data indicate that, collectively, several predictors contribute to our understanding of learner outcomes, including (a) learner entry level, (b) size of community, (c) staff qualifications, and (d) learner exposure to high quality services. A surprising finding was the lack of robust outcome predictors that maintain consistency from one year to another.

Adult education (AE) programs in the U.S. serve about 2.7 million learners (U.S. Department of Education [USDE], 2004) with a variety of goals, such as improved literacy and numeracy skills, a high school equivalency credential, entry into a new field of employment, or proficiency in English as a second language (ESL). Yet we know little about characteristics that differentiate among AE programs with respect to these various learner outcomes (Alamprese, 2003a; Kruidenier, 2002; Sheehan-Holt & Smith, 2000), nor a program's role in fostering outcomes. Therefore, the purpose of this study was to extend the literature by identifying program characteristics that contribute to, and thus may be changed to improve, learner outcomes.

AE services referred to in this study are provided through programs funded under the *Adult Education and Family Literacy Act* (AEFLA) of 1998. The National Reporting System (NRS), (USDE, 2001) requires all states to implement standardized data collection procedures yielding data that demonstrate program results. Kansas is one of only three states to receive distinction from the USDE for best practices that contribute to adult learner outcomes (Kansas Board of Regents [KBOR], 2005a). AEFLA-funded programs provide comprehensive AE services to the broadest range of participants and collect consistent participant, staff, and quality data across Kansas programs, as compared to school-based or other Workforce Investment Act AE programs. Therefore, we took advantage of Kansas' *Indicators of a Quality Adult Education Program* data (KBOR, 2000b) and AEFLA grants data to describe and analyze the characteristics of programs associated with documented outcomes.

Researchers (Alamprese, 2003a; Fitzgerald & Young, 1997; Hohn, 2001; Long, 2001) have pointed to the value of considering the interrelations of multiple elements and processes in AE programs simultaneously. We posed our research question as: What program characteristics were predictive of learner outcomes during each of fiscal years (FY) 2001, 2002, 2003, and 2004? We believe the answer to this question will result in findings useful for adult educators, researchers, policymakers, and other stakeholders.

Literature Review

Researchers have identified relationships between learner outcomes and numerous characteristics over which state and local programs have at least some measure of control. Collectively these characteristics shape the AE system (Hohn, 2001) as a response to learners, funders, and other stakeholders.

AE literature points to the following program characteristics for possible associations with learner outcomes: (a) instructional and administrative staffing pattern, (b) monitoring of resources and learners, (c) staff preparation and development, (d) exposure to quality services, (e) learner entry level, (f) treatment of learners with disabilities, and (g) characteristics of the target population.

*Staffing Pattern*

One program characteristic that researchers associate with learner outcomes is the instructional and administrative staffing pattern (Council for Advancement of Adult Literacy [CAAL], 2003). Some research implies employing more full-time staff in programs might be essential to maximizing outcomes (Chisman, 2002; Fitzgerald & Young, 1997). Program administrators often work with minimal resources, potentially hampering staff effectiveness (Chisman, 2002). Administrative decisions may interconnect with teacher turnover and ultimately with learner retention (Smith, Hofer, & Gillespie, 2001). Sufficient administrative time may be required to meet extensive management responsibilities and ensure ample staff support.

*Monitoring of Resources*

Creativity in developing services may be required to meet administrative responsibilities (Alamprese, 2003a), especially where funding is inadequate (Amstutz, 2001). Administrators also contribute to successful programs by planning effective innovations (Hohn, 2001), including those in program design (Mellard & Scanlon, 2004; Moore & Stavrianos, 1995; Ziegler & Durant, 2001).

*Attendance Policies*

Learner persistence in AE may hinge on whether the intake process is open or managed. In open-entry, open-exit programs, learners opt to stop in for services at their convenience, which may devalue AE services and lead to dropout (Bass, 2002; Mellard & Scanlon, 2004). Managed enrollment communicates that AE instruction is too valuable to be missed and requires strong attendance policies designed to encourage regular learner attendance and commitment to reaching goals (Patterson, 2005; Mellard & Scanlon, 2004). Close inspection of learner attendance is suggested as a contributor to AE program outcomes (Sheehan-Holt & Smith, 2000).

*Staff Preparation*

Instructional staff preparation might be an important influence on learner outcomes (Kruidenier, 2002; Sheehan-Holt & Smith, 2000). Staff preparation includes educational background, credentialing, previous experience, and ongoing professional development (Patterson, 2005). Moore and Stavrianos (1995) wrote that adult educators believe professional development is an indicator of program quality.

*Exposure to Quality Services*

Another issue relevant to learner outcomes is the quality of services. Chisman (2002) noted that high quality instructional services included "greater intensity" of services (p. 20), strong professional development, and additional staff time. Chisman's claim implies other questions: Do greater intensity and more time correlate with high quality? Are programs offering high-quality services more likely to achieve positive learner outcomes?

Researchers noted a need to better understand the relation between exposure to instruction and learner outcomes (Alamprese, 2003a; Boudett & Friedlander, 1997; Fitzgerald & Young, 1997; Perin & Greenberg, 1993; Quigley, 1997). Alamprese called for a "more systematic examination of length, frequency, and content of instruction as 'critical variables for learner success' " (pp. 7–8). Fitzgerald and Young found weekly instructional hours related to learner outcomes. Sheehan-Holt and Smith (2000) asserted that increases in weekly instructional hours may contribute to AE program completion.

*Learner Entry Level*

Entry level of learners in the aggregate may be another characteristic that contributes to learner outcomes. Learner skills, as identified in a standardized pretest score at enrollment, may be closely tied to learner outcomes such as educational gain (Patterson, 2005; Beder, 1999). Fitzgerald and Young (1997) and Raudenbush (1997) described how the covariate of learner pretest scores accounted for high proportions of the variance in posttest achievement scores.

*Treatment of Learners with Disabilities*

Another potential predictor of outcomes is the manner in which adults with learning disabilities (LD) are treated (Alamprese, 2003b; Corley & Taymans,

2002; Snow & Strucker, 2000). Up to 80% of adult learners may have some form of LD, however "the impact of [LD] on achievement" in AE is unclear (Moore & Stavrianos, 1995, p. 33). Identifying a disability is the first step toward providing accommodations; other intake steps involve comprehensive counseling and in-depth assessment (Alamprese, 2003a; Mellard & Scanlon, 2004; Hohn, 2001; Quigley, 1997; Sheehan-Holt & Smith, 2000). Counseling involves determining learner needs, previous educational experiences, and potential barriers (Quigley, 1997). Alamprese (2003a) observed that service-need refinement needs to continue as learners participate in program services.

*Target Population*

Population characteristics (Alamprese, 2003a; Chisman, 2002) may also relate to learner outcomes. Understanding target population characteristics may mean considering location, including geographical location of the main center and its satellite sites (Alamprese, 2003a), numbers of program sites (Moore & Stavrianos, 1995), and convenience of services (Moore & Stavrianos, 1995; Quigley, 1997). Long (2001) found that adults cited inconvenient locations as one reason for not enrolling in AE. Other considerations of location involve the number of program sites and how urban or rural those sites are (Cotton, 1996; Moore & Stavrianos, 1995).

Many other program characteristics were suggested, but not tested, as possible contributors. Therefore, the purpose of this study is to statistically identify which program characteristics were predictive of learner outcomes.

Methodology

As described in the preceding literature review, AE researchers have identified a loose cluster of variables with potential to influence learner outcomes (e.g., Alamprese, 2003a; Fitzgerald & Young, 1997; Hohn, 2001; Long, 2001). Therefore, we designed this study to simultaneously analyze these variables in an integrated manner. We designed this study as a secondary data analysis using data from 31 programs. We employed correlational techniques, principal components analysis, and regression modeling to reduce the number of variables and account for multiple elements' contribution to learner outcomes.

*Data Sources*

This study includes a convenience sample of all AEFLA programs in Kansas. We used aggregated data addressing all AE services. The state data did not provide learner characteristics or outcomes at the individual level. We drew publicly accessible data from AEFLA grant applications and performance reports (KBOR 2004a; 2005b). In addition, the data included population variables and quality-related variables from the *Indicators of a Quality Adult Education Program* (KBOR, 2000b; 2002; 2004b).

*Program Descriptives*

AEFLA-funded programs annually serve approximately 10,000–12,000 Kansans 16 years and older (KBOR, 2004d). Descriptive data based on the FY 2004 data set are presented in the following paragraphs of this section to allow readers to compare AE programs in Kansas with other states' programs.

*Program sites and funding.* The host agencies sponsoring the 31 programs included 17 community colleges, one four-year university, 11 school districts, and two non-profit agencies. The mean federal award was $119,817. The mean state award was $33,789. Expenditure per participant averaged $706.82, and expenditure per outcome was $547.98. *Expenditure per participant* considers total federal and state funding in terms of number of learners served, whereas *expenditure per outcome* divides the same total funding by the number of outcomes those learners achieve in the program. The median community size for program sites was 26,760 residents, and populations in sites where program services were offered ranged from 4,645 to 339,639 residents.

*Program staffing.* As in many other states (Chisman, 2002; CAAL, 2003), Kansas AE programs tended to rely on part-time paid staff. Of the mean 13 staff members per program, 10 were part-time employees. Instructor-to-learner ratios averaged one instructor per 25 participants. Annually instructors worked approximately 15 hours per week, and administrators worked 11.86 hours per program participant. Staff overall received an average hourly wage of $15.57.

*Program results.* The NRS (USDE, 2001) requires programs to collect data on five core learner outcomes: (a) achieved an educational gain, (b) entered employment, (c) retained or improved employment, (d) received a GED or high school diploma, and (e) entered post-secondary education or other training (USDE, 2001). Table 1 presents means and standard deviations for program outcome data.

Table 1
*Proportion of Outcomes in Kansas Adult Education Programs (FY 2004)*

| Outcome | Mean proportion | SD |
|---|---|---|
| Number of outcomes per participant (ABE, ASE, & ESL combined) | 1.30 | .33 |
| Proportion of level 1–11 participants making learning gains | .62 | .09 |
| Proportion of entered employment outcomes (of those with this goal) | .63 | .22 |
| Proportion of retained or improved employment (of those with this goal) | .74 | .25 |
| Proportion of received GED outcomes (of those with this goal) | .66 | .20 |
| Proportion of entered post-secondary education or vocational training outcomes (of those with this goal) | .54 | .28 |

*Note:* Outcomes are those defined by the National Reporting System.

On average 62% of all participants in a program achieved an educational gain. In order for a participant to make an educational gain, he or she must complete an NRS level as measured via standardized testing (USDE, 2001). In Kansas the standardized assessment used to measure learning gains from pretest to posttest is the Comprehensive Adult Student Assessment System (CASAS, 2001; KBOR, 2000a). Of those learners who stated earning a GED as a goal in FY 2004, the mean proportion who received a GED was .66, and for those learners aiming to enter employment, the mean outcome proportion was .63. For learners whose goals included keeping or improving their jobs, the mean outcome proportion was .74. Among learners whose goal was to enter post-secondary education or vocational training, the mean proportion was .54.

Another measure of program results was the program's total quality ratings on *Indicators of a Quality Adult Education Program* (KBOR, 2000b, 2002, 2004b). The *Indicators* consist of measurable ratings that evaluate the program's performance in providing services (Mellard & Scanlon, 2004). Each rating of high, medium, or low is weighted by a number of "quality points," which are totaled across all indicators. Programs scored an average 72 quality points out of a possible 88.

*Aggregate learner data.* Kansas programs tended to be small, with a median 197 participants. About 60% of all participants were ABE or ASE learners. On average 57% of ABE and ASE participants entered at an intermediate ABE level, and English language learners were most likely to enter at a beginning ESL level.

Median annual attendance was 49 hours, with a range of 26 to 82 hours per participant. Adult learners were generally young; about half were under 25 years old, and 90% were under 45, on average. The median percentage of program participants living in rural areas (defined as 2,500 residents or less) was 11.3, with a range between 0 and 42. Data on disability prevalence were collected from participants who provided documentation on physical or cognitive disabilities. These data indicated that an average 12.5% of participants had documented disabilities and requested accommodations.

*Analysis Methods*

*Dependent variable*. Outcomes represent desired program results as defined by either the NRS or the state plan, for example, learners earning a GED, finding a job, or entering postsecondary education. The dependent variable was the proportion of outcomes per participant. Because the NRS permits up to four outcomes per participant, and values each outcome equally, possible values for this variable ranged from 0.0 up through 4.0. Therefore a program with 1.95 as a proportion would be considered to have, on average, almost two outcomes per participant for the year. The mean proportion was 1.30. Of 9,788 participants statewide, 62% made a learning gain, 20% received a GED, and 18% retained or improved employment. Another 9% of participants entered employment, and 5% entered post-secondary education or vocational training.

*Independent variables*. Each potential predictor variable was calculated and/or transformed to meet statistical assumptions for regression analysis and ensure accuracy of explained variance (Tabachnick & Fidell, 2001). All variables were measured in the same way from year to year, yet the values of the variables changed annually, such as variables involving number of participants. Data tables and more detailed information on correlations, principal components, and regression analyses are available via Web browser at http://das.kucrl.org.

*Predictors*. Statistical modeling identified several different independent variables as the best predictors of outcomes per participant in a year. The first 2001 predictor variable—Proportion of ABE and ASE Participants in Program (%ABE/ASE1)— characterizes the extent of proficient English speakers (i.e., non-ESL participants) seeking basic skills and other AE program services, compared to all participants. A second 2001 predictor variable—Technology Instruction Completers within Participants (TECH1)—represents learners who completed technology instruction within all program participants.

The first 2002 variable—%ABE/ASE2—represents the corresponding 2002 proportion of ABE/ASE learners within all learners in the program. We computed the second 2002 variable—Instructor Hours by Professional Development Level (PROFDEV2)—based on a rationale for weighting the value of an instructor's time by the instructor's qualifications and the program's professional development and credentialing ratings (Patterson, 2005). This predictor represents the value of instructional time, with instructors with graduate degrees working in programs with high rates of professional development implementation and adult education credentialing considered to have high value.

Some variables could be readily combined into composites based on summed standard scores (i.e., z-scores) of the original variables. FY 2003 had one composite variable comprised of High ASE Learners and Advisors to the Program—referred to here as Involvement of High ASE Learners and Advisors (ASE/ADVISORS3). Scores on ASE/ADVISORS3, a summed z-score ranging in value from -2.72 to 2.81, had a mean of 0 and a standard deviation of 1.58. Programs with increasingly positive scores on ASE/ADVISORS3 would tend to exhibit strength in enrolling the most advanced learners and in engaging advisors.

The first 2004 variable, Proportion of Adults with Disabilities (DISABILITIES4), refers to the incidence of adults with disabilities receiving accommodations in the program. Community Size of Program Sites (COMMSIZE4, as transformed) represents the summed population size of communities where the AE program has learning sites, to distinguish among programs serving communities with small or large populations.

The first composite for 2004, Rural Instructional Staff Hours (RURALSTAFF4), refers to average instructional staff time expended annually relative to the prevalence of program participants who reside in rural areas. Scores on RURALSTAFF4, a summed z-score ranging from -2.65 to 2.59, had a mean of 0 and a standard deviation of 1.43. Programs with positive scores on RURALSTAFF4 would tend to have increased numbers of rural learners and many instructional staff hours.

Learner Exposure to Quality Services (QUALITY4), represents the extent of time in which administrators, instructional staff, and ABE/ASE participants involve themselves in program services that reflect overall quality ratings. The staff components of this composite include average administrative hours per participant and average instructional staff hours. The participant component is represented in the program's proportion of participant hours in the third quarter of

the fiscal year (i.e., from January 1 to March 31) within all participant hours. Scores on QUALITY4, a summed z-score ranging from -5.90 to 4.02, had a mean of 0 and a standard deviation of 2.49. Programs with high quality ratings, many administrative and instructional staff hours, and high proportions of third quarter participant hours would tend to have high scores on QUALITY4.

*Analytical limitations.* Secondary data analysis brings with it certain limitations. First, the data sets relied primarily on programs' self-reported data, even though verified heavily with documentation and through KBOR monitoring, and the rigor of grants data collection varied considerably among programs. Second, access to many variables allowed us to examine a broad set of potentially relevant variables for only a small number of cases, even if those cases represented 100% of Kansas AEFLA programs. Another concern we noted during cross-validation of regression models was loss of model fit. This loss implies that some program-level predictors of outcomes appear inconsistent from year to year, which may reflect internal program changes, shifting policy emphases across years, or the small sample size of our study. Finally, many meaningful variables from the literature review, such as instructional method or staff education level, did not correlate significantly with outcomes in our study. Possible explanations include multicollinearity, small sample size, or, in instances where variability was limited, restriction of range.

## Findings

Ideally a set of predictor variables would account for 100% of the variability of learner outcomes. However in our analysis, we found variables that could explain up to half the variance in one year, but far less in other years. These findings are organized for each of the four fiscal years studied and are summarized in Table 2.

For 2001, the estimated Proportion of Outcomes was predicted from %ABE/ASE1, and the model explained a moderate amount, 42%, of the variance in learner outcomes (p < .001).  The model including TECH1explained 32% of the variance in learner outcomes (p < .01) but was not included in Table 2 since the first 2001 model fit the data best. The 2002 model predicted Proportion of Outcomes increased as PROFDEV2 increased while controlling for %ABE/ASE2, explaining 34% of variance (*p* = .001). Our 2003 model explained a small amount, 23%, of variance (*p* < .01); as ASE/ADVISORS3 scores increased, Proportion of Outcomes would increase.

Table 2

*Best-fitting Multiple Regression Equations and Proportion of Variance (Adjusted $R^2$) for Prediction of Proportion of Outcomes by Year*

| Applied year | Multiple-regression equation Variable | Beta | Adjusted $R^2$ 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|
| 2001 | Proportion of ABE and ASE participants in program | -.660*** ∇ | .42*** | .24** | .34*** | .24** |
| 2002 | Proportion of ABE and ASE participants in program | -.407* ∇ | .43*** | .34** | .32** | .26** |
|  | Instructor hours by professional development level | .361* |  |  |  |  |
| 2003 | Involvement of high ASE learners and advisors | .508** | .02 | .12* | .23** | + |
| 2004 | Proportion of adults with disabilities⊗ | .300* | .25** | .17* | .21* | .50*** |
|  | Community size of program sites (as transformed) | -.586*** |  |  |  |  |
| 2004 | Rural instructional staff hours | .712*** | + | .32*** | + | .49*** |
| 2004 | Learner exposure to quality services | .750*** | + | + | + | .55*** |

*Notes*: Betas are standardized beta coefficients. Proportion of variance accounted for by predictors reflects the total amount of variability explained in the model, with adjustment for sample size; possible values for adjusted $R^2$ range from .00 to a maximum of 1.00.

∇ A negative sign resulted from transformation of the variable.

+ Model could not be cross-validated into this fiscal year.

⊗ Two cases were identified as outliers and removed prior to analysis.

* $p < .05$; **$p < .01$; ***$p < .001$

A large proportion of variance could be explained in one of the 2004 models. A first 2004 model explaining 50% of possible variance ($p < .001$) predicted Proportion of Outcomes from DISABILITIES4 and COMMSIZE4. We removed two influential outliers for DISABILITIES4 (i.e., two small programs with a disabilities proportion greater than 27%). As DISABILITIES4 increased, after adjusting for COMMSIZE4, the Proportion of Outcomes would increase. After adjusting for the DISABILITIES4, COMMSIZE4 was negatively related to outcomes (i.e., smaller community size tended to be associated with more outcomes per participant, and larger community size with fewer outcomes per participant). As RURALSTAFF4 increased, Proportion of Outcomes was predicted to increase. This model explained 49% of the variance of Proportion of Outcomes for 2004 ($p < .001$). In a final model, as QUALITY4 increased, Proportion of Outcomes would increase. This model explained 55% of the variance of outcomes ($p < .001$).

Our cross-validation of the models developed for each year when fit with variables from other years demonstrated that models based in FY 2001 and 2002,

as well as the first composite model from 2004, were most consistent across years as shown in Table 2.

<div align="center">Discussion and Recommendations</div>

Our findings suggest potential policy and program improvements that may improve learner outcomes. These findings also indicate possible topics for future empirical research.

*Learner Entry Level*

The ratio of ABE/ASE participants to ESL participants remained a predictor of outcomes in multiple years of our analysis, despite some fluctuations. Programs predominantly serving ABE/ASE participants tended to have higher proportions of outcomes than mostly ESL programs. ABE/ASE participants may have an advantage in making learning gains as they likely have greater familiarity with U.S. educational expectations and find highly developed ABE/ASE services in programs where English language learners are relative newcomers and ESL services are still developing. ABE/ASE participants may pursue a GED more often than ESL participants, often because of language barriers or previous education credentials. Employment outcomes may be more accessible for ABE/ASE participants, particularly those not facing legal barriers to employment.

Local population characteristics and needs may determine the balance of entry levels AE programs serve; however, programs might consider potential for outcomes in planning recruitment strategies. With care to avoid serving only upper-level learners, programs could aim for an optimal balance between effectively serving ABE/ASE and ESL participants.

*Professional Development*

The variable PROFDEV2 predicted outcomes inconsistently. However, we speculate that this variable's predictive value may change course in analyses of future data. If this variable performs significantly in future models, this finding would confirm the trend Kruidenier (2002) noted in which staff members with more training were more likely to help adult learners improve skills. It is important to note that this predictor, as defined in our study, measures not only formal staff preparation before joining the program but also the program's ability to support ongoing credentialing in adult education and professional development relevant to program improvement objectives. Certainly, not all professional development or

credentialing activities are directly associated with learner outcomes. Still, programs might consider elements of staff preparation, adult credentialing, and professional development when examining local data as part of program improvement efforts.

*Involvement of High ASE Learners and Advisors*

A third predictor, ASE/ADVISORS3, explained a small proportion of variance in the first three years but was not cross-validated to the fourth year because data were unavailable. Do AE programs that commonly emphasize the advantages of obtaining a GED credential tend to attract learners with high ASE skill levels, that is, learners who perceive themselves as close to passing the GED tests? Is the prevalence of advisors who advise program staff on issues such as recruitment, retention, and program design related to learner outcomes? Our procedures could only minimally detect the feasibility of this variable given our sample size and available data.

*Disabilities*

Our first 2004 model identified a potential link between disability prevalence and community size, that is, higher proportions of positive learner outcomes in programs with sites in smaller communities or with higher disability prevalence. At first glance, this connection may seem counterintuitive, and the reader may wonder how disability prevalence could be connected to community size. The issue may not be that more adults with disabilities live in smaller communities or that programs in smaller communities have better resources for providing accommodations. Rather, staff at sites in smaller communities may be more apt to identify learner needs. This finding lends support to the notion of the interconnectedness of education systems in smaller communities (Cotton, 1996); sites in smaller communities may have staff members who regularly cross paths with or live near learners. One ad hoc comment on this finding by an adult educator from a small community was, "You don't just see your students in class, you see them in the grocery store and on the street, and you get to know them and what they need."

Our finding about disabilities does not destine programs with low incidence of disability or programs in larger communities to fewer learner outcomes. On the contrary, programs can exercise a substantial measure of control over effective documentation and accommodation of adults with disabilities. Decisions about class site location are also largely under a program's control. Assuming

effectiveness in providing disability services is comparable, we speculate that convenient sites (Long, 2001) in neighborhoods within larger communities might serve participants as well as sites in smaller communities. If this model continues to explain a substantial amount of variance in proportion of learner outcomes in future years, we recommend further research into the nature of disabilities prevalence and community size.

*Time and Quality*

Instructional time has long been associated with learning opportunities (e.g., Carroll, 1963). Our final 2004 model reflects, at least in part, an element of time dedicated to program services. Staff and participant time is particularly relevant to a program's capacity to provide services that learners will opt to consume. This model suggests that it takes sufficient time for participants to reach outcomes.

The model combined staff and participant time with program quality ratings to predict outcomes. Meeting extensive management responsibilities (Sissem, 2004) may require just as extensive administrative time. Creativity in developing services (Alamprese, 2003a) and planning effective program design (Mellard & Scanlon, 2004; Moore & Stavrianos, 1995; Ziegler & Durant, 2001) calls for adequate time. The strong attendance policies implied in managed enrollment should encourage regular learner attendance and deep learner commitment to reaching goals (Patterson, 2005; Mellard & Scanlon, 2004), yet data collection and close inspection of learner attendance (Sheehan-Holt & Smith, 2000) can be time-consuming.

In support of Smith, Hofer, and Gillespie's 2001 findings, administrative involvement may relate to teacher retention and ultimately learner retention. Instructional staff members, like administrators, need enough "time and support…to do their jobs" (Smith, Hofer & Gillespie, p. 1). Time is critical for instructional staff to plan for and provide instructional services, participate in professional development, and report learner data. This instructional staff time may be especially critical in areas with greater proportions of rural residents, as suggested in our second model.

Yet predicting learner outcomes may hinge not just on the time provided through administrative or instructional services, but also on sufficient exposure of learners to quality services (Carroll, 1989). The participant component of the composite Learner Exposure to Quality Services specifically refers to participant time spent in program activities during the third quarter of the year (i.e., January to

March). High proportions of participant time in the third quarter, along with staff time and quality components in the composite, tended to be associated with increased learner outcomes. We speculate that the predominance in this composite of participant time in the third quarter may indicate that cumulative exposure from the first and/or second quarters is needed for some participants to complete outcomes. Also, by avidly consuming third-quarter services, some learners may fulfill New Year's resolutions to continue their education, pass the GED, or make a change in employment. Alternatively, in the third quarter program staff may encourage learners to complete a goal before a late spring GED graduation ceremony, before the end of a traditional academic year, or before starting summer or fall vocational training. Regardless of rationale, participants appeared to dedicate their time before outcomes occurred. Finally, the model extends prediction of outcomes from the element of administrator, instructional staff, and learner time to exposure to quality services. This model suggests that, while exposure may be necessary to achieve outcomes, the exposure tends to occur in programs offering high quality services, as demonstrated through strong quality ratings. Chisman's (2002) claim about high quality instructional services—that they are more intense and require more time—appears to be warranted. To answer our earlier question, these data suggest that additional time may combine with high quality to predict learner outcomes. We also speculate that the higher the quality of the instructional services, the less time a learner would need to accomplish a given objective (e.g., Carroll, 1989).

We agree with colleagues that the need to further understand the relationship between exposure to AE services and outcomes remains (Alamprese, 2003a; Boudett & Friedlander, 1997; Fitzgerald & Young, 1997; Perin & Greenberg, 1993; Quigley, 1997). Still, we would add program quality as a further consideration for investigation, particularly because only one year of data for this composite was available to study. To bolster the relationship between learner exposure to quality services and outcomes, adequate funding needs to be available so that programs may develop and expand quality services, manage and monitor enrollment and attendance, fully compensate staff for all the hours they work (Smith, Hofer & Gillespie, 2001), and keep the doors open long enough for learners to put in the time to reach their goals. Therefore, we also recommend further study of the fiscal resources required to help participants achieve outcomes.

*Outcomes Analysis*

An integrated analysis of learner outcomes is clearly a complex undertaking. Our discussion to this point has identified the most consistent predictors in our

dataset. Data inconsistencies from year to year indicate that some characteristics may relate to learner outcomes minimally, if at all. Other characteristics may have a causal relationship that fluctuates with time. Program staff members need to be aware, while looking at local data, of the potential for change in the relationship of characteristics with outcomes.

Data inconsistencies may yield much useful information. Less consistent predictors of learner outcomes in AE programs overall might demonstrate greater consistency in future analyses of individual outcomes, such as learning gains or employment. Knowing what does not consistently predict outcomes may benefit a program, too. If a program has invested significant resources in program components that do not consistently associate with improved outcomes locally, staff may want to re-consider these investments, particularly in states where continued funding is tied to outcomes. Inconsistencies may serve as a starting point for determining measurable characteristics staff wants to track at an individual level. They may also point to aspects of the program that need improvement. By locally examining data, programs will more fully understand predictors of outcomes.

Our dependent variable, Proportion of Outcomes, includes both core NRS and state outcomes. Our analysis assumes all outcomes are equal, that no single outcome has more value than another. But, to borrow from Orwell, are some outcomes "more equal than others"? We know which outcomes occur most frequently, but we do not know which outcomes are most valuable to learners. Analysis of individual outcomes, where available, would certainly strengthen future studies, particularly if outcomes could be analyzed at the individual learner level or at least by a particular entry level of learners. Further study of the value of outcomes would also benefit AE.

## Conclusion

We began our study by asking which program characteristics were predictive of improved learner outcomes. A surprising finding was the lack of robust individual outcome predictors that maintained consistency from one year to another. Our research did not generate a simple checklist of procedures, staff development activities, or policies to implement. Rather, we found that programs with a mix of characteristics—including an emphasis on learners, trained staff, quality services, and convenient location—were more likely to make a positive difference in learner outcomes.

Program administrators face the difficult task of linking program priorities with resources to find the optimal mix of program characteristics that meet local goals and improve learner outcomes. AE researchers (e.g., Alamprese, 2003a; Fitzgerald & Young, 1997; Hohn, 2001; Long, 2001) have theorized that program characteristics should be viewed as a system rather than as individual elements. Administratively, AE programs might address the issues relevant to each predictor, but the greatest benefit, we hypothesize, will result from viewing these predictors as interacting and fostering a collective influence on outcomes.

What do program administrators know about learner entry level, and how can they target recruitment efforts to serve an optimal balance of ABE/ASE and ESL participants? What are their staff qualifications and what do they need to do to implement professional development activities to improve services? What steps can they take to offer services that effectively accommodate learner disabilities at sites regardless of size? Finally, how can they maximize learner exposure to high quality services in a setting where administrators and instructional staff have sufficient time to plan and provide those services? Our findings suggest that by answering these questions, AE program administrators will solve the puzzle of how best to improve learner outcomes.

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