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# The Influence of Time-Limitations, Faculty, and Peer Relationships on Adult Student Learning: A Causal Model

Adult students are one of the most rapidly growing segments of today's college student population, making up approximately 40% of all college students (Chronicle of Higher Education Almanac, 1999–2000). While their numbers have increased, our understanding of the unique factors that predict adult student success have not increased likewise. The role of social integration is one that is especially unclear for adult students. Studies based on the experience of younger students consistently support the important role of social integration for student success (Astin, 1993; Pace, 1984; Pascarella & Terenzini, 1991; Pascarella, Whitt, Nora, Edison, Hagedorn, & Terenzini, 1996; Tinto, 1987, 1993). However, these studies are based primarily on the experience of white, middle-class students younger than 23 years old, so their relevance to adults and other nontraditional students may be limited. This limitation is especially salient for adults because their lives often contain multiple off-campus responsibilities and relationships that may limit their time available for investment in social relationships.

According to Astin's (1984, 1993) model of student involvement, activities that draw student-effort off campus have a negative effect on learning because these involvements leave students with less energy or time for campus involvement. Thus, the growing number of students who commute, work, and enroll part-time are at risk for learning less because these characteristics limit their time on campus. Adult students are likely the most time-limited group of the college student population;

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nearly all adults commute, most work, and many enroll part-time, leaving them with less time available for on-campus involvement (Kasworm, 1990b; Schlossberg, Lynch, & Chickering, 1989). However, because of the overlap among these variables, it is difficult to identify the effects of each specific variable. Differences related to adult students may be mistakenly attributed to age rather than to the unique combination of these time limitations. For the purpose of this study, "time-limited" students are students who have commitments off-campus such that their time available for campus involvement is limited. These are students who commute, enroll part-time, work over 20 hours off campus, or who are over 23 years old. These groups are time limited in terms of the time available for on-campus involvement.

Many studies of adults put them in the category of "nontraditional students" along with commuters, part-time students, students who work many hours, first-generation college students, and students of color (Bean & Metzner, 1985; Kasworm, 1990a, 1990b; Kasworm & Pike, 1994; Kuh, 1993, 1995; Metzner & Bean, 1987). This presents a broad picture of nontraditional students, but since there is some overlap of students in each group, unique features of each specific group's experience are masked. Further investigation is warranted to understand the way each of these nontraditional characteristics affects student success in college, particularly for adult students who most often attend college in a nontraditional way.

Studies of the effect on student peers on learning focused primarily on younger students have found that peers serve a vital educational function as they engage students more deeply in the college experience, thereby enhancing their learning (Astin, 1993; Pascarella & Terenzini, 1991). This raises an important question about the role of peers in the success of adult students. Kasworm and Pike (1994) found that adult students succeed in college at about the same rate as traditional age students, but they engage in fewer interactions with peers than their traditional counterparts. Moreover, those interactions are not important predictors of their success. This finding is consistent with other studies showing that social integration is relatively unimportant for adult student success (Chartrand, 1990; Kasworm & Pike, 1994; Metzner & Bean, 1987). However, these findings are not conclusive, as other studies have found peer interaction to be correlated with adult student success (Arnold, Kuh, Vesper, & Schuh, 1993; Cleveland-Innes, 1997; VanStone, Nelson, & Niemann, 1994).

One reason for the mixed findings regarding the contribution of social integration may be the inclusion of three distinct variables in the social integration construct. Most studies define social integration as one or more of the following variables: involvement in social activities on cam-

pus, in social relationships with other college students, and involvement in educationally related peer relationships (Bean & Metzner, 1985; Kasworm & Pike, 1994; Pascarella & Terenzini, 1991). For adult students, these three components may be unrelated to each other. Adults do not typically engage in many campus activities, and their social needs are likely met through existing relationships off campus (Chartrand, 1990). However, relationships with an educational component may not be readily available in those settings. Hence, when educationally related relationships are put in the same category with purely social relationships, their effectiveness in terms of predicting student success may be masked, especially for adult students (Bean & Metzner, 1985; Chartrand, 1992; Cleveland-Innes, 1997).

In studies not focused specifically on adults, educationally related peer relationships appear to be a wise investment of student time. Peer learning increases the effort students invest in learning, both in the group setting and individually. Students in peer learning groups report spending more time on coursework than their peers not in such groups (Tinto, 1998a, 1998b). One source of educationally related peer relationships is in formal peer learning programs, such as study groups and tutoring settings. Students show marked increases in learning when they are involved in such programs (Bonsangue & Drew, 1995; Tinto, 1998a, 1998b; Treisman, 1992). Tinto (1998a) investigated programs that enrolled students together in blocks of courses and required students to work together in groups. He found that students earned higher grades and persisted in college longer when they were involved in such programs. These findings are especially helpful in understanding nontraditional students as they were a large proportion of the students in his study. Tinto focused on the classroom and peer learning groups that grew out of the classroom. His conclusions about restructuring courses around peer learning are well founded, but his research does not address peer relationships that originate in the out-of-class arena.

In summary, there are studies that show the importance of peer learning that include nontraditional students, but do not address the out-of-class arena (Tinto, 1998a, 1998b: Treisman, 1992). Similarly, there are studies that address the out-of-class arena and peer learning, but do not include many nontraditional students in their study (Astin, 1993; Kuh, 1993, 1995; Kuh, Schuh, Whitt & Associates, 1991; Pascarella & Terenzini, 1991). Those studies that do include nontraditional students, treat them as one group, rather than identify similarities and differences among the groups (Chartrand, 1990, 1992; Bean & Metzner, 1985; Kasworm & Pike, 1994).

The study presented in this article uses multiple-linear path analysis

to investigate the factors that influence success for adult students. It asks whether these factors differ for different ages, and how time limitations, in particular, affect success. Peer relationships are defined broadly and not limited to classroom-related activities. Younger students were included in the study to identify whether the differences were related to age or to other nontraditional characteristics of commuting, enrolling part-time, and working. Social and academic integration variables were disaggregated into variables of nonacademic social interaction, interaction with faculty members, and educationally meaningful peer relationships. The question of whether adults are different because of their age or because of their time-limited status is central to this study.

It is important to note that the term "adult" is problematic as it implies that 18–22-year-old students are not adults. Despite my belief that younger students are adults, I have chosen to use the term "adult" because it is the most commonly used term in studies about students older than 23 years. The focus of this study is degree-seeking adult students enrolled either full-time or part-time in degree-granting institutions. This includes students who have returned to college after taking time off and those who have been going to college consistently since high school.

The study is guided by the following two research questions:

1. How do background characteristics, time-limiting characteristics of the college experience, social and academic integration, and quality of effort contribute to student learning?
2. Is there a difference in this pattern based on the age of students (20–23, 24–29, 30 and older)?

## *Methods*

### *The Conceptual Model*

This model is based on the notion that student effort is a good predictor of student learning, such that students who invest more effort in their educational endeavors learn more (Pace, 1984). Thus, effort in reading and writing is expected to have a positive effect on learning. A second expectation is that frequency of engagement with faculty and peers and high-quality relationships with faculty, administrators, and students will increase the amount of effort students invest in the college experience and thereby enhance their learning (Arnold, Kuh, Vesper, & Schuh, 1993; Astin, 1984; Pascarella & Terenzini, 1991; Tinto, 1998a. Thus, a social and academic integration is expected to have a direct effect on learning and an indirect effect on learning through its positive effect on effort in reading and writing.

The next set of related expectations are based on Astin's (1993) findings that investment of time in ventures unrelated to the college experience, such as working off campus, hinder student learning because they limit time students have available to invest in the college experience. Hence, it is expected that time available for on-campus pursuits is limited by being older, working more than 20 hours per week off campus, enrolling part-time, and commuting. These variables and interactions between these variables are expected to have a negative direct effect on learning and also negative indirect effects on learning through negative effects on social and academic integration and effort in reading and writing. Older students have been found to be less engaged with peers, but to report equal levels of learning as younger students do (Kasworm & Pike, 1994). However, the effects of their lesser engagement have not been identified. This study seeks to identify the way time-limitations affect older students, with the expectation that peer relationships will be less essential to their learning than it is for younger students.

Background variables of class level, institution type, advanced degree plans, academic major, gender, first-generation status, and ethnicity are included in the model to identify their effects and to hold them constant. Previous studies have found background variables to affect social and academic integration and effort, but have not examined their effect on time limitations (Kuh, Vesper, Connolly, & Pace, 1997). However, other studies (Rendon & Hope, 1996) have found that first-generation students and students of color are more likely to have external time demands on their college experience. Figure 1 shows the Proposed Path model.

### *The Survey*

The fourth edition of the College Student Experiences Questionnaire (CSEQ) (Kuh & Pace, 1998) was used for this study. The CSEQ is designed to assess where students expend effort related to their college experience and what they learn as a result of their college experience. It measures quality of effort through 13 activity scales on topics of writing experiences, campus facility use, course learning, the arts, experience with faculty, personal experiences, library use, computer and information technology, clubs and organizations, student acquaintances, science and quantitative experiences, topics of conversation, and information in conversations. Gains are measured in general education, intellectual skills, science, personal development, and vocational preparation. Because of this study's focus on adult students, many of whom were already working in careers, the vocational preparation scale of the CSEQ was not used.

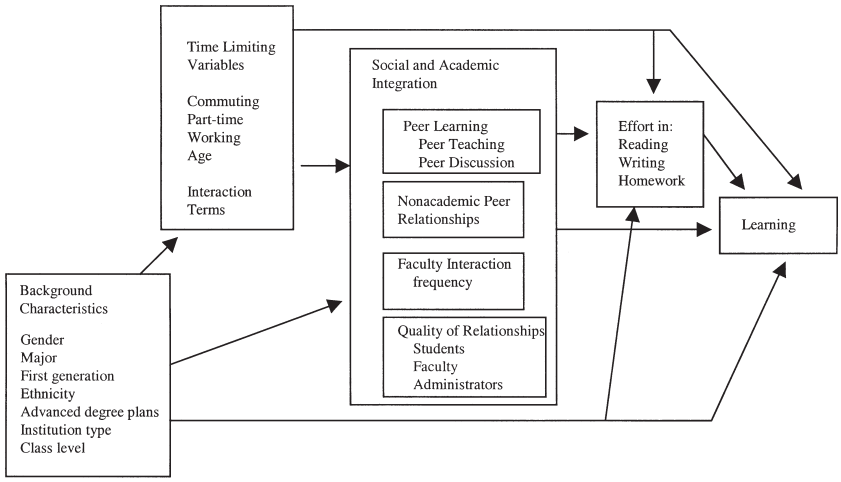


FIG. 1. Proposed Path

The CSEQ relies on students' self-report of estimates of gains. Such self-reports are considered valid if the information given is known to the students, if the questions are phrased clearly, and if students consider the question worthy of a thoughtful response (Pace, 1985). The CSEQ items satisfy these conditions. In addition, self-reports have been shown to be correlated with more objective measures of learning gains, such as scores on objective tests (Pascarella & Terenzini, 1991; Pike, 1995). The items on the CSEQ scales have been described as clear, well defined, with high-face validity (Brown, 1985; DeCoster, 1989; McCammon, 1989; Mitchell, 1983). The CSEQ has been used since 1979, with over 350,000 college students, with demonstrated reliability and validity since its inception (Kuh, Vesper, Connolly, & Pace, 1997; Pace, 1992; Pace, 1987; Pace & Swayze, 1992).

### *The Sample*

The sample consisted of 4644 undergraduate students who took the College Student Experiences Questionnaire (CSEQ) during the 1998–1999 academic year, drawn from a larger data set of approximately 20,000 students from 20 institutions. The institutions were primarily comprehensive colleges and universities (60%, n=2767) or research universities (25%, n=1163), but included doctoral universities

(7.5%, n=347), liberal arts colleges (7.2%, n=337), and AA degree-granting colleges (.6%, n=30). The sample included slightly more women (n=2594, 57%) than men (n=2050, 43%).

Because adult students were the focus of this study, students over 23 years old were oversampled, representing 49% of this sample, whereas adult students constitute about 40% of the college students's population in the United States. Time-limitations of commuting, enrolling part-time, and working were important variables in this study, and these students were not evenly distributed among the data set, so they were oversampled also. In the college-student population, older students are more likely to work more hours off campus than younger students, so a larger portion of working students (26%) were selected for comparison purposes. For the entire sample, part-time students were 20%, commuting students were 58%, and working students made up 28% of the sample. These groups were oversampled from the CSEQ dataset, but they come closer to representing the college-student population in the United Stated today (Levine & Cureton, 1998). Oversampling of time-limited students restricts the extent to which this study may apply to all students, however it provides an opportunity to focus more closely on the ways these characteristics affect student learning. In addition, it allows us to ask whether time limitations have the same effects on learning for all age groups. First-year students and students younger than 20 years old were not included in this study because they had less experience in college and the model tests the way the college experience affects learning. Table 1 shows the sample in terms of age groups and time-limitations.

### *The Variables*

The variables predicting learning in this model came from four domains: effort in reading and writing, frequency and quality of relationships with peers and faculty, time-limiting characteristics, and back-

TABLE 1
Time-limiting Characteristics by Age Group (n=4644)

| | | | Commute | | Part-time | | Working | |
|---|---|---|---|---|---|---|---|---|
| *Age* | *n* | *%* | *n* | *%* | *n* | *%* | *n* | *%* |
| 20–23 | 2361 | 51 | 919 | 39 | 361 | 15 | 467 | 26 |
| 24–29 | 1345 | 29 | 970 | 72 | 263 | 20 | 488 | 43 |
| 30 and older | 938 | 20 | 791 | 85 | 299 | 32 | 335 | 41 |

ground characteristics. The ultimate endogenous variable was learning, which was measured with a 22-item composite variable. A second endogenous variable was effort in reading and writing, which was measured with six individual items about quantity of reading and writing students completed. The third endogenous variable was quality and frequency of relationships, which was measured by peer teaching, peer discussion, nonacademic peer relationships, faculty interaction, and quality of relationships with students, faculty, and administrators. The fourth endogenous variables measured time-limitations in terms of working, commuting, enrolling part-time, and being older than 23. Exogenous variables were background variables of gender, marital status, major, first-generation status, ethnicity, advanced degree plans, institution type, and college class level. All variables except background variables and time-limiting variables used a likert scale of measurement. Time-limiting variables of commuting, enrolling part-time, working, and being older than 23 were dummy variables, coded such that 2 meant they were time-limited and 1 meant they were not. Academic major was coded similarly, with 1=yes and 0=no for majors in science, social science, and business. Humanities majors were represented by zeros on the other dummy variables for major. Ethnicity was coded as two dummy variables, with 1=yes and 0=no for Asian/Pacific Islander, and a second group which combined Native American, Mexican American, Black/African American, Puerto Rican, Other Hispanic, and Other. In order to get at least 10% in each group, the Native American, Mexican American, Black/African American, Puerto Rican, Other Hispanic, and Other group were recoded into one group for use in multiple linear regressions. White students were represented by zeros on the other two ethnicity variables. Table 2 shows a description of all variables in this analysis.

### *The Analysis*

Descriptive statistics were used to identify the proportion of students in time-limiting categories, to calculate means for gains and for variables in the social and academic integration category. Analysis of Variance and t-tests were used to identify differences among groups in terms of the variables within the social and academic construct and differences in terms of composite gains.

A multiple linear-path model identified both the direct and indirect effects of variables. Astin's involvement theory states that investment of energy in off-campus pursuits has a negative effect on gains because it limits student effort on college-related experiences. A path analysis was well suited to test this effect because it could identify the effect of time

TABLE 2

Description of Variables

| *Background Variables* | *Definition* |
|---|---|
| Class level | Sophomore=2, junior=3, senior = 4 |
| Gender | Male=1, female=2 |
| Major | Dichotomous variables in which 0=no, 1=yes for the following majors: science, business and public administration, social science. Humanities major was represented by zeros on all of the other dummy variables for major. |
| First generation | Dichotomous variable in which 1=not first generation, 2=first generation |
| Ethnicity | Dichotomous variables in which 0=no, 1= yes for Asian/Pacific Islander and group which combined Native American, Mexican-American, Black/African-American, Puerto Rican, Other Hispanic, and Other. In order to get at least 10% in each group, the Native American, Mexican-American, Black/African-American, Puerto Rican, Other Hispanic, and Other group were recoded into one group for use in multiple linear regressions, with 1=yes and 0=no. Ethnicity of White was represented by zeros on all of the other dummy variables for ethnicity. |
| Advanced degree plans | Dichotomous variable in which 1= no advanced degree plans, 2=advanced degree plans. |
| Institution Type | Two dichotomous variables in which 1=no, 2=yes for comprehensive colleges and universities and research universities. |
| *Time Limiting Variables* | *Definition* |
| Commuting | Dichotomous variable in which 1=living on campus or within walking distance, 2=living off campus |
| Part-time | Dichotomous variable I which 1=enrolled for 12 or more units, 2=enrolled for 11 or fewer units |
| Working | Three individual variables: dichotomous variable in which 1= not working or working less than 20 hours per week off campus, 2=working 20 or more hours off campus; continuous variable measuring number of hours working per week, with 1= no job, 2=1–10 hours/week, 3=11–20 hours/week, 4=21–30 hours/week, 5=31–40 hours/week, 6=>40 hours/week; job affects school, with 1=no job, 2=job does not interfere, 3=job takes some time from school, 4=job takes lots of time from school. |
| Age | Two variables: when file was split by age group, 2=20–23, 3=24–29, 4=30 and older; when age was a predictor variable for the entire sample, 2=20–23, 3=24–29, 4=30–39; 5=40–55, 6=over 55. |
| *Social and Academic Integration* | *Definition* |
| Peer Teaching | Composite of four variables: explained science, demonstrated lab equipment, explained experimental procedure, explained scientific basis for concerns. Coded on 4-point likert scale, 1=never, 4=very often. Alpha = .86. |
| Peer Discussion | Composite of 31 variables: acquainted with students who were different in terms of interests, family background, age, race, country of origin; had serious discussions with students who were different in terms of: philosophy of life, political opinions, religious beliefs, race, country of origin; used information from other areas of life in class discussions; asked others to read writing; talked about: art, music, opinions of art, current events, social issues, different lifestyles, ideas of writers, the arts, science, computers, social and ethical issues related to science, the economy, international relations; met students for discussion; referred to course knowledge in peer discussion; |

TABLE 2 (*Continued*)

| *Background Variables* | *Definition* |
|---|---|
| | read as a result of peer discussion; explored different ideas, referred to instructor's comment in discussion; changed opinion as a result of discussion; persuaded others to change their minds as a result of arguments presented in discussion. Likert scale measuring frequency, with 1=never, 4=very often. Alpha = .91. |
| Nonacademic Peer Relationships | Composite of four variables: attended a club meeting, worked on campus committee, managed a club, played intramural sport. Likert scale measuring frequency, with 1=never, 4=very often. Alpha = .76. |
| Faculty Interaction | Composite of 13 variables: talked with instructor about course, discussed academic program, discussed ideas for term paper, discussed career plans, worked harder because of instructor feedback, socialized with faculty outside of class, discussed with faculty outside of class, asked about academic performance, worked harder to meet instructor's expectations, worked with faculty on research, asked for writing advice from instructor, met with faculty to discuss club, talked with faculty about personal concerns. Likert scale measuring frequency, with 1=never, 4=very often. Alpha = .88. |
| Quality of Relationships with Students | Seven point likert scale, with 1=competitive, uninvolved, sense of alienation; 7=friendly, supportive, sense of belonging. |
| Quality of Relationships pathetic; with Faculty | Seven point likert scale, with 1=remote, discouraging, unsym- 7=approachable, helpful, understanding, encouraging. |
| Quality of Relationships with Administrators | Seven-point likert scale, with 1=rigid, impersonal, bound by regulations; 7=helpful, considerate, flexible. |
| *Effort in Reading and Writing* | *Definition* |
| Effort in Reading | Three items: how many books, course packets, nonassigned books read; coded:0=none, 1=fewer than five, 2=5–10, 3=10–20, 4=more than 20. |
| Effort in Writing | Three items: how many essays, papers, reports written; coded 0=none, 1=fewer than five, 2=5–10, 3=10–20, 4=more than 20. |
| Hours on homework | How many hours per week spent on homework. Coded: 0=5 or less, 1=6–10, 2=11–15, 3=16–20, 4=21–25, 5=26–30, 6=more than 30. |
| *Learning* | *Definition* |
| | Composite variable of 22 variables: understand art, enjoy literature, broad general education, understand importance of history, knowledge about other parts of the world, aware of different philosophies, write clearly, present ideas through speaking, use computers, analyze quantitative problems, think analytically, put ideas together, understand science, understand new development in science, aware of consequences of new applications of science, ability to get along with different kinds of people, learning alone, adapting to change, function as a team member, good health habits, developing own values and ethics, understanding self. Measured with 4-point likert scale, with 1=little, 4=very much. Alpha=.9120. |

limitations both directly and indirectly through social and academic integration and effort.

The full model, including all independent variables, was tested in the analysis; only variables with betas ($p<0.01$) were included in the model.

Because the sample was large and because many variables were tested, a lower significance level ($p<0.01$) was necessary. Tolerance was set at .30 to prevent multicollinearity. Next, the data were reanalyzed with just the entering variables as possible predictors. To test the strength of the model, decompositions of bivariate covariation were conducted between all predictor variables and learning. Error terms were calculated for all endogenous variables. The path was tested with the entire sample of students (n=4644) and with each specific age group: 20–23 (n=2361), 24–29 (n=1345), and 30 years or older (n=938).

## *Results*

### *Learning by Time-limited Status*

Students 20–23 years old reported the most learning (mean =2.706, s =.513), followed by students 24–29 (mean =2.680, s =.548), with students 30 and older reporting the least learning (mean=2.618, s=.569). T-tests comparing time-limited students with same-age students who were not time limited yielded significant differences for students 29 and younger. For the age groups of 20–23 (n=2361) and 24–29 (n=1345), part-time students and commuting students reported significantly lower gains ($p<.05$) than their same-age peers who did not commute or enroll part-time. Time-limitations had no effect on gains for students 30 years and older.

### *Social and Academic Integration*

An ANOVA found no differences in frequency of faculty interaction among the age groups, but significant differences in peer teaching, peer discussion, and nonacademic peer relationships. Younger students engaged in more peer teaching and more nonacademic peer relationships than older students. Older students engaged in more peer discussion than younger students did. The means and significant differences by age are listed in Table 3.

TABLE 3

Means for Frequency of Interactions by Age Group

Means were scored on a four point likert scale, with 4 = very often, 1 = never

| | Age Groups | | | | |
|---|---|---|---|---|---|
| Variable | A 20–23 | B 24–29 | C 30 & older | F | F sig. |
| Faculty Interaction | 2.12 | 2.11 | 2.10 | .69 | >.50 |
| Peer Teaching+ | 2.39 | 2.38 | 2.29 | 8.16 | <.01 |
| Peer Discussion++ | 2.49 | 2.54 | 2.56 | 7.61 | <.01 |
| Nonacademic Peer Relationships* | 2.01 | 1.55 | 1.40 | 266.10 | <.01 |

*$p$ <0.01 A>B>C  +$p$ <0.01 A & B >C  ++$p$ <0.01 B &C > A

Students assessed quality of relationships with peers, faculty, and administrators with a seven-point likert scale, with 1 being low and 7 being high. Younger students reported higher quality of relationships with students than older students. Older students reported higher quality of relationships with faculty and administrators than younger students did. An ANOVA found all these differences to be significant at <.01. The means and significant differences by age group are listed in Table 4.

### *The Causal Model*

The path model was designed to identify predictors of student learning, focusing on the roles of age and time limitations on social and academic integration. Because age was an important variable in this study, the path was first tested with the entire sample to identify effects of age. Next, it was tested with age groups 20–23, 24–29, and 30 and older to identify the fit for each age group. The effects for the entire sample are listed in table 5. The regression coefficients and coefficients of multiple determination are listed in the appendix.

The strongest effects in the model came from social and academic integration variables, with the two strongest effects coming from peer discussion (.296) and peer teaching (.181). Nonacademic peer relationships did not enter the model with significance, but the remaining six social and academic integration variables all had effects of greater than .100, and all were significant ($p<0.01$). These effects were primarily direct effects, with some small indirect effects through their influence on effort in reading.

There were negative effects for enrolling part-time (–.029) and commuting (–.020), but working off campus had no significant effect on learning. Effort in reading had some effects, but none of the effort variables were as strong as the social and academic integration variables.

TABLE 4

Means for Quality of Relationships by Age Group

Means were scored on a four point likert scale, with 4 = very often, 1 = never

| | Age Groups | | | | |
|---|---|---|---|---|---|
| | A | B | C | | |
| Variable | 20–23 | 24–29 | 30 & older | F | F sig. |
| | n=2361 | n=1345 | n=938 | | |
| Quality of relationships with students* | 5.55 | 5.21 | 5.22 | 33.32 | <.01 |
| Quality of relationships with faculty+ | 5.15 | 5.12 | 5.44 | 16.59 | <.01 |
| Quality of relationships with administrators+ | 4.55 | 4.47 | 4.77 | 9.42 | <.01 |

*$p<0.01$ between A&C and A & B  +$p<0.01$ between A&C and B & C

TABLE 5
Effects for the Entire Group

| | Direct Effect | Indirect Effect | Total Effect | Original Covariation | Non-Causal |
|---|---|---|---|---|---|
| Peer Discussion | .286 | .010 | .296 | .485 | .189 |
| Peer Teaching | .174 | .007 | .181 | .408 | .227 |
| Faculty Interaction | .102 | .007 | .109 | .426 | .297 |
| Relationships w/ Students | .116 | .002 | .118 | .306 | .188 |
| Relationships w/Faculty | .121 | −.002 | .119 | .329 | .210 |
| Relationships w/Administrators | .117 | .002 | .119 | .300 | .181 |
| Number of course packets read | .041 | | .041 | .193 | .152 |
| Number of texts read | .044 | | .044 | .163 | .119 |
| Non-assigned books read | −.033 | | −.033 | .088 | .121 |
| Part-time | | −.029 | −.029 | −.048 | .019 |
| Commuting | | −.020 | −.020 | −.065 | −.045 |
| Science major | | .066 | .066 | .055 | −.011 |
| Business major | | −.026 | −.026 | −.038 | −.012 |
| Research University | | −.009 | −.009 | −.011 | −.002 |
| Comprehensive Colleges/Univ | | .001 | .001 | −.030 | −.031 |
| Age | −.071 | .017 | −.054 | −.055 | −.001 |
| Class level | | .045 | .045 | .049 | .004 |
| Women | | −.003 | −.003 | .019 | .022 |
| Asian/Pacific Islander | | −.025 | −.025 | .009 | .034 |
| Native Am/African Am/Latino | .084 | .026 | .026 | .078 | .052 |

$p<0.01$ for all variables

Background variables had effects of .066 or less, primarily through their effect on social and academic integration variables.

After the causal model was tested with the entire sample as one group, it was tested with each of the three age groups: 20–23, 24–29, and 30 and older. Effects and residuals are displayed by age group in Tables 6, 7, and 8.

### *Effects by Age Group*

Time-limiting characteristics exercised their effect primarily indirectly, rather than directly. For the 20–23 age group and the 24–29 age group, there were several indirect effects of time-limiting characteristics on gains, but there were no direct effects. For 20–23-year-olds, there were negative indirect effects for commuting (−.025) and enrolling part-time (−.016). For 24–29-year-olds, there were negative indirect effects for enrolling part-time (−.033) and working (−.010). For students 30 and older, enrolling part-time had a negative effect on their learning (−.046). These findings are consistent with Astin's involvement theory (1984),

TABLE 6
Effects for Students Age 20–23

| | Direct Effect | Indirect Effect | Total Effect | Original Covariation | Non-Causal |
|---|---|---|---|---|---|
| Peer Discussion | .350 | | .350 | .541 | .191 |
| Peer Teaching | .189 | | .189 | .438 | .249 |
| Faculty Interaction | .091 | | .091 | .448 | .357 |
| Relationships w/ Students | .125 | | .125 | .277 | .152 |
| Relationships w/ Faculty | .138 | | .138 | .349 | .213 |
| Relationships w/ Administrators | .078 | | .078 | .283 | .205 |
| Part-time | | −.016 | −.016 | −.050 | −.034 |
| Commute | | −.025 | −.025 | −.041 | −.016 |
| Business | | −.027 | −.027 | −.038 | −.011 |
| Social Science | | .010 | .010 | .049 | .039 |
| Science | | .072 | .072 | .056 | −.016 |
| First Generation | | −.021 | −.021 | −.029 | .008 |
| Women | | .023 | .023 | .015 | −.008 |
| Asian/Pacific Islander | −.055 | −.027 | −.082 | −.031 | −.051 |
| Native Am/African Am/Latino/a | .092 | .031 | .123 | .078 | −.045 |
| Research University | | −.028 | −.028 | .007 | .035 |
| Comprehensive Colleges and U's | | −.010 | −.010 | −.029 | −.019 |
| Class level | | .059 | .059 | .074 | .015 |

$p<0.01$ for all variables

TABLE 7
Effects for Students Age 24–29

| | Direct Effect | Indirect Effect | Total Effect | Original Covariation | Non-Causal |
|---|---|---|---|---|---|
| Peer Discussion | .273 | | .273 | .469 | .196 |
| Peer Teaching | .187 | | .187 | .406 | .219 |
| Faculty Interaction | .118 | | .118 | .409 | .291 |
| Relationships w/ Students | .129 | | .129 | .342 | .213 |
| Relationships w/ Faculty | .092 | | .092 | .318 | .226 |
| Relationships w/ Admin. | .118 | | .118 | .294 | .176 |
| Working | | −.010 | −.010 | −.014 | −.004 |
| Part-time | | −.033 | −.033 | −.059 | −.026 |
| Native Am/African Am/Latino/a | | .022 | .022 | .099 | .077 |
| Research U | | −.047 | −.047 | −.045 | .002 |
| Comprehensive Colleges and U's | | −.047 | −.047 | −.030 | .017 |
| Business major | | −.029 | −.029 | −.037 | −.008 |
| Science major | | .076 | .076 | .108 | .032 |
| Class level | | .016 | .016 | .077 | .062 |
| Women | | .009 | .009 | .010 | .001 |

$p<0.01$ for all variables

TABLE 8
Effects for Students Age 30 and Older

| | Direct Effect | Indirect Effect | Total Effect | Original Covariation | Non-Causal |
|---|---|---|---|---|---|
| Peer Discussion | .215 | | .215 | .407 | .192 |
| Peer Teaching | .125 | .016 | .141 | .332 | .191 |
| Faculty Interaction | .137 | .016 | .153 | .403 | .250 |
| Relationships w/ Faculty | .151 | | .151 | .333 | .182 |
| Relationships w/ Admin.. | .222 | | .222 | .363 | .141 |
| Part-time | | –.046 | –.046 | .004 | .050 |
| Course packets read | .099 | | .099 | .222 | .123 |
| Native Am/African Am/Latino/a | .131 | | .131 | .126 | .005 |
| Class level | | .031 | .031 | .041 | .010 |
| Science | | .010 | .010 | –.025 | –.035 |
| Women | | –.014 | –.014 | .050 | .064 |

$p<0.01$ for all variables

asserting that the more deeply students are involved in the life of the university, the more they will gain from their college experience. Working off campus, commuting, and enrolling part-time have been consistently found to have a negative effect on learning for traditional-age students. This study confirms that and suggests that this effect persists for students 24–29 years old. Enrolling part-time had a negative effect (–.046) on learning for students 30 and older.

Students 30 and older were not affected negatively by working many hours or communting, but they were affected positively by social and academic integration variables. Peer teaching, peer discussion, faculty interaction, and quality of relationships with faculty and administrators had positive effects on learning for every age group. For students 20–29 years old, quality of relationships with students also had strong positive effects. The total effects for social and academic integration variables are listed in Table 9.

Quality of relationships with administrators got progressively stronger with each age group. For students 30 and older, this was the strongest variable in the equation. The total effects for peer teaching and for peer discussion got lower with each progressive age group, but those effects were relatively high even for the oldest group. Frequency of interaction with faculty had increasing effects for each progressive age group. Faculty interaction was a stronger predictor of gains for older students than it was for younger students. Conversely, educationally related student interaction (peer teaching and peer discussion) was a stronger predictor of gains for younger students than it was for older students.

TABLE 9
Total Effects for Social and Academic Integration for Entire Sample and Split by Age Groups

| Variable | Entire Sample n=4644 | 20–23 n=2361 | 24–29 n=1345 | 30 and older n=938 |
|---|---|---|---|---|
| Peer Teaching | .181 | .189 | .187 | .141 |
| Peer Discussion | .296 | .350 | .273 | .215 |
| Faculty Interaction | .109 | .091 | .118 | .153 |
| Quality of relationships with students | .118 | .125 | .129 | — |
| Quality of relationships with faculty | .119 | .138 | .092 | .151 |
| Quality of relationships with administrators | .119 | .078 | .118 | .222 |

However, it is important to note that both faculty interaction and educationally related peer interaction were strong predictors for all students, regardless of age.

When the model was tested on the entire sample as one group, the proposed model provided a relatively good fit for learning, with an error term of .785. However, it did not predict the other endogenous variables nearly as well. When the model was tested on each age group, a similar pattern emerged, with lower error terms for learning than for the other endogenous variables. The model fit for learning was slightly stronger for the younger students than the older students. The error terms for learning were .763 for the youngest group, .804 for the 24–29-year-olds, and .809 for the students 30 and older. We would expect a stronger fit for the younger students because this model is built on literature based primarily on the traditional student experience. The noteworthy finding is that the model has a good fit for adult students whose experience in college is markedly different from that of traditional-age students.

The decomposition of bivariate covariation shows that the noncausals for social and academic integration variables were larger than those for effort, time-limiting, or background variables. However, the social and academic integration variables were also the strongest predictors of learning, with larger total effects than all other variables. The social and academic integration variables are correlated with each other, so that any single effect of one variable would be larger when it is treated alone, as in a correlation. When it was entered along with the other variables, as in a multiple linear regression, the individual strength of the prediction for each of these intercorrelated variables decreased from the original covariation. The alpha reliability among the social and academic integration variables was .70, indicating these variables are correlated with one another.

*Discussion*

Peers have consistently been identified as central to a successful learning experience in college for traditional students (Astin, 1993; Pascarella & Terenzini, 1991), but findings regarding their contribution to adult student success have been mixed (Chartrand, 1990; Metzner & Bean, 1987). By separating educationally related peer relationships from purely social relationships, this study found that peer relationships contribute strongly to learning for students of all ages when those relationships are related to learning. This effect was strongest for traditional age students, but remained strong for older students as well.

Tinto's recent work (1998a, 1998b) demonstrates that classrooms structured around peer learning predict students learning better than traditional classrooms where students work individually and independently. The current study supports the value of peer learning, although the measure of peer learning was not focused on classroom-related peer learning. The peers could have come from the classroom, the workplace, the neighborhood, or anywhere. The distinguishing feature of these peer relationships was the focus on educationally related topics of conversation. This finding may be especially important for time-limited students who have limited access to campus peers due to off-campus responsibilities, but who may have peers off campus with whom they discuss ideas related to their education. Kasworm & Pike (1994) measured peer interaction in terms of campus peers and found that adult students interacted less frequently than younger students (Kasworm & Pike, 1994). However, the current study measured peer relationships in terms of discussing educationally related ideas, and students 24 and older reported engaging in such discussions at a greater frequency than their younger counterparts. Thus, adult students engaged in more educationally related peer discussions, and those discussions were the strongest predictors of their learning. This presents a new perspective on the role of peers for adult student learning, highlighting the important role of educationally related peer relationships.

Off-campus involvements and activities that draw students' energy away from the college experience have been found to hinder student learning (Astin, 1993; Pascarella & Terenzini, 1991), but those studies have not focused on students 30 years and older. This study found that commuting and working had negative effects on learning for students 29 and younger, but these time limitations did not affect learning for students 30 and older. In addition, time limitations had a negative affect on peer discussion for students 29 and younger, but no effect for students 30 and older. These older students appear not to be as hindered by time limitations.

Quality of relationships with administrators was a strong predictor of learning for all students in this study, but it was strongest for students 30 years and older. When these students viewed administrators as flexible, helpful, and considerate, rather than rigid, impersonal, and bound by regulations, they learned more. The strength of this variable provides empirical support for the call that higher-education environments must restructure their services, hours, and perceptions about adult students (Kasworm, 1993; Schlossberg, Lynch, & Chickering, 1989).

With the exception of enrolling part-time, students 30 and older appear to be quite different from younger students in terms of their ability to manage time limitations in such a way that they do not hinder learning as they do for younger students. However, they are quite similar to younger students in terms of the learning benefit they derive from educationally related peer relationships. Prior research has found the role of peers to be relatively unimportant for adult students, but this study concludes that when peer relationships have an educational focus, they are vitally important to learning for all students, regardless of age.

In 1996, the American College Personnel Association drafted the Student Learning Imperative, asserting that the central role of student affairs is to foster student learning (American College Personnel Association, 1994). This study suggests two clear ways in which student affairs divisions can foster student learning. One way to enhance learning, especially for adults, is through improving the quality of relationships between administrators and adult students. The area of quality service has received much attention in terms of student satisfaction, but this study suggests that it also has a strong positive effect on learning. Because much of the administrative services fall within the student affairs area, student affairs professionals have a large responsibility for enhancing student learning simply by providing quality service.

A second way student learning may be enhanced is through peer learning. This study suggests that the most profitable investment of student effort is in educationally related peer relationships, regardless of the age of the student. Accordingly, the most profitable investment of student affairs administrators may be in developing programs, settings, and services that facilitate such relationships. Tinto (1998a, 1998b) calls for a restructuring of the academic side of the house around peer learning groups; this study supports his call and echoes it to the student affairs side as well.

### *Limitations*

This study relied on a national sample of students that was disproportionately weighted with adult students, so we must be cautious when generalizing to all students. Because adults were the focus of the study, the

oversampling of adults allowed a close look at the adult experience and the variables that affect their learning. Traditional-age students in this sample provided an important comparison. Their experience and the variables affecting their learning were similar to what we would expect, based on many studies of the college experience of traditional students (Kuh, 1993, 1995; Pascarella & Terenzini, 1991). However, caution must be exercised before generalizing the findings from this study to all students because the sample was weighted with older students. Nonetheless, the comparison of adults with younger students highlighted several important new understandings of the adult student experience, namely that commuting, enrolling part-time, and working do not have a negative effect on their learning, that peer relationships with an educational focus have a strong effect on their learning, and finally that their perceptions of the quality of their relationships with administrators is vital to their learning.

### *Future Research*

The important contribution of peers to adult student learning raises important questions about who those peers are and about the nature of those relationships. Given previous findings that adults report engaging in fewer peer relationships on campus than traditional-age students (Kasworm and Pike, 1993), further research should focus on where peer learning relationships occurs for adults. It could be that the workplace offers an important environment for peer learning for adult students, similar to the campus environment for traditional students. Further investigation of the kinds of activities and environments that promote peer learning could provide practical suggestions for institutional reform that would foster peer learning.

The issue of academic motivation is not addressed in this study. It is likely that educational motivation is a covariate of talking with peers about educationally related topics and also a covariate of learning. Thus, students who discuss academic content with friends because they are motivated to learn, so that motivation may be the force behind both educationally related peer relationships and also behind learning. Further research should address the way academic motivation affects engagement in peer learning and also how it affects learning in general. There is a large body of literature about academic motivation, but its effect on peer learning deserves a fuller investigation.

### *Conclusion*

The findings from this study are consistent with previous studies of traditional-age students, but they present a somewhat different picture of

students 30 years and older. Like younger students, their learning was enhanced by peer learning and high-quality relationships with others on campus. However, unlike younger students, their learning was not hindered by working many hours off campus or commuting. Thus, the social arena remains important for adults when those social relationships are related to educational endeavors, but assumptions that adult students are inherently at a disadvantage because of their multiple obligations off campus is not supported by this study. Older students appear to have developed a way of managing such time limitations to nullify their effects in ways that their younger counterparts have not.

APPENDIX

Betas and Coefficients of Multiple Determination ($R^2$) for Each Endogenous Variable for Entire Sample and by Age Group

| Dependent Variable: Learning | All $R^2$=.384 | Age 20–23 $R^2$=.418 | Age 24–29 $R^2$=.354 | Age 30 and older $R^2$=.344 |
|---|---|---|---|---|
| Course packets read | .041* | | | .099** |
| Texts read | .044* | | | |
| Faculty Interaction | .102** | .091** | .118** | .137** |
| Peer Teaching | .174** | .189** | .187** | .125** |
| Peer Discussion | .286** | .350** | .273** | .215** |
| Student Relationships | .116** | .125** | .129** | |
| Faculty Relationships | .121** | .138** | .092** | .151** |
| Administrative Relationships | .117** | .078** | .118** | .222** |
| Native Amer/African Amer/Latino/a | | | .092 | .131** |
| Asian/Pacific Islander | | .055 | | |
| Age | −.071** | | | |

**$p$<0.001 *$p$<0.01

| Dependent Variable: Number of Texts Read | All $R^2$=.079 | Age 20–23 | Age 24–29 | Age 30 and older |
|---|---|---|---|---|
| Peer Teaching | .081** | | | |
| Peer Discussion | .134** | | | |
| Part-time | −.130** | | | |
| Science major | −.051* | | | |
| Social science major | .081** | | | |
| Age | .068** | | | |
| Women | .051** | | | |

**$p$<0.001 *$p$<0.01

APPENDIX (*Continued*)

| Dependent Variable: Course Packets Read | All | Age 20–23 | Age 24–29 | Age 30 and older |
|---|---|---|---|---|
| | $R^2$=.069 | | | $R^2$=.090 |
| Faculty Interaction | .170** | | | .164** |
| Peer Teaching | .055* | | | .159** |
| Peer Discussion | .093** | | | |
| Part-time | –.038* | | | –.090** |
| Social Science major | .047* | | | |
| Student relationships | .011* | | | |
| Faculty Relationships | –.050 | | | |

**$p$<0.001 *$p$<0.01

| Dependent Variable: Faculty Interaction | All | Age 20–23 | Age 24–29 | Age 30 and older |
|---|---|---|---|---|
| | $R^2$=.034 | $R^2$=.032 | $R^2$=..044 | $R^2$=.032 |
| Working | | | –.088* | |
| Commuting | –.085** | –.088 | | |
| Part-time | –.063** | | –.082* | –.142* |
| Asian/Pacific Islander | | | | |
| Asian/Pacific Islander | –.057* | | | |
| Research University | –.141** | –.172** | –.121** | |
| Comp. Colleges and U's | –.122** | –.114** | –.194** | |
| Class level | .103** | .132** | | .110** |
| Business major | –.055** | | –.074* | |
| Social Science major | | | | |

**$p$<0.001 *$p$<0.01

| Dependent Variable: Peer Teaching | All | Age 20–23 | Age 24–29 | Age 30 and older |
|---|---|---|---|---|
| | $R^2$=.176 | $R^2$=.163 | $R^2$=.190 | $R^2$=.104 |
| Part-time | –.087** | –.085** | | -.144** |
| Age | –.057** | | | |
| Science major | .395** | .385** | .406** | .233** |
| Social Science major | | .054* | | |
| Women | –.064** | –.079** | | –.110* |
| Class level | .085** | .084** | .086* | .127** |
| Comp. Colleges and U's | | | –.129** | |
| Research U's | | | –.131** | |

**$p$<0.001 *$p$<0.01

| Dependent Variable: Peer Discussion | All | Age 20–23 | Age 24–29 | Age 30 and older |
|---|---|---|---|---|
| | $R^2$=.014 | $R^2$=.019 | $R^2$=.016 | $R^2$=.010 |
| Part-time | | | –.084* | |
| First generation | –.049* | –.060* | | |
| Science | | | | –.107* |
| Business major | | –.076 | –.075 | |
| Native Amer/African Amer/Latino/a | | .079** | .089** | .081* |

APPENDIX (*Continued*)

| | | | | |
|---|---|---|---|---|
| Asian/Pacific Islander | −.070** | −.076 | | |
| Class level | .070** | .088 | | |
| **$p$<0.001 *$p$<0.01 | | | | |
| Dependent Variable: Quality of Relationships with Students | | | | |
| | All | Age 20–23 | Age 24–29 | Age 30 and older |
| | $R^2$=.026 | $R^2$=.019 | $R^2$=.004 | |
| Commute | −.106** | −.139** | | |
| Women | .048** | | .072* | |
| Age | −.081* | | | |
| **$p$<0.001 *$p$<0.01 | | | | |
| Dependent Variable: Quality of Relationships with Students | | | | |
| | All | Age 20–23 | Age 24–29 | Age 30 and older |
| | $R^2$=.005 | $R^2$=.023 | $R^2$= 0 | $R^2$= 0 |
| Research University | −.063** | −.084** | | |
| Women | | .061* | | |
| **$p$<0.001 *$p$<0.01 | | | | |
| Dependent Variable: Quality of Relationships with Administrators | | | | |
| | All | Age 20–23 | Age 24–29 | Age 30 and older |
| | $R^2$=.005 | $R^2$= 0 | $R^2$=.006 | $R^2$= 0 |
| Research University | −.070** | | −.079* | |
| **$p$<0.001 *$p$<0.01 | | | | |

## *References*

American College Personnel Association (ACPA) (1994). *The student learning imperative: Implications for student affairs.* Washington, DC: Author.

Arnold, J. C., Kuh, G. D., Vesper, N., & Schuh, J. H. (1993). Student age and enrollment status as determinants of learning and personal development at metropolitan institutions. *Journal of College Student Development, 34,* 11–16.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*, 297–308.

Astin, A.W. (1993). *What matters in college? Four critical years revisited.* San Francisco: Jossey-Bass.

Astin, A.W. (1996). Involvement in learning revisited: Lessons we have learned. *Journal of College Student Development, 36,* 123–134.

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research, 55,* 485–540.

Bonsangue, M. V., & Drew, D. E. (1995). Increasing minority student success in calculus. *New Directions for Teaching and Learning, 61,* 23–33.

Brown, R. D. (1985). Review of College Student Experiences Questionnaire. In J. V. Mitchell, Jr. (Ed.), *The ninth mental measurements yearbook* (Vol. 1, pp. 365–366).

Chartrand, J. M. (1990). A causal analysis to predict the personal and academic adjustment of nontraditional students. *Journal of Counseling Psychology, 37,* 65–73.

Chartrand, J. M. (1992). An empirical test of a model of nontraditional student adjustment. *Journal of Counseling Psychology, 39,* 193–202.

Chronicle of Higher Education Almanac (1999–2000). College enrollments by age of students, p. 24.

Cleveland-Innes, M.(1994). Adult student drop-out at post-secondary institutions. *The Review of Higher Education, 17,* 423–445.

DeCoster, D. A. (1989). Review of College Student Experiences Questionnaire. In J. C. Conoley and J. J. Kramer (Eds.), *The tenth mental measurements yearbook,* (pp. 197–199). Lincoln. NE: University of Nebraska, Buros Institute of Mental Measurements.

Kasworm, C. E. (1990a). Adult students in higher education: Myths and realities. *Community/Junior College, 14,* 155–175.

Kasworm, C. E. (1990b). Adult undergraduates in higher education: a review of past research perspectives. *Review of Educational Research, 60,* 345–372.

Kasworm, C. E. (1993). An alternative perspective on empowerment of adult undergraduates. *Contemporary Education*, 64, 3, 162–165.

Kasworm, C. E., & Pike, G. R. (1994). Adult undergraduate students: Evaluating the appropriateness of a traditional model of academic performance. *Research in Higher Education, 36*, 689–710.

Kuh, G. D. (1993). In their own words: What students learn outside the classroom. *American Educational Research Journal, 30,* 277–304.

Kuh, G. D. (1995). The other curriculum: Out-of-class experiences associated with student learning and personal development. *Journal of Higher Education, 66*, 123–155.

Kuh, G. D., & Pace, C. R. (1998). *College student experience questionnaire* (*4th ed*.). Indiana University Press: Bloomington, Indiana.

Kuh, G. D., Schuh, J. H., Whitt, E. J., & Associates. (1991). *Involving colleges.* San Francisco: Jossey-Bass.

Kuh, G. D., Vesper, N., Connolly, M. R., & Pace, C. R. (1997). *College Student Experiences Questionnaire: Revised norms for the third edition.* Bloomington, IN: Center for Postsecondary Research and Planning, Indiana University.

Levine, A., & Cureton, J. S. (1998). *When hope and fear collide: A portrait of today's college students.* San Francisco: Jossey Bass.

McCammon, S. (1989). Review of College Student Experiences Questionnaire. In J. C. Conoley & J. J. Kramer (Eds.), *The tenth mental measurements yearbook* (pp. 199–201). Lincoln, NE: Buros Institute of Mental Measurements.

Metzner, B. S., & Bean. J. P. (1987). The estimation of a conceptual model of nontraditional undergraduate student attrition. *Research in higher education, 27,* 15–38.

Mitchell, J. V. Jr. (Ed.). (1983) *Tests in print III: An index to tests, test reviews, and literature on specific tests.* Lincoln, NE: University of Nebraska, Buros Institute of Mental Measurements.

Pace, C. R. (1984). *Student effort: A new key to assessing quality* (Report No.11). Los Angeles: University of California, Higher Education Research Institute.

Pace, C. R. (1985). *The credibility of student self-reports.* Los Angeles: University of California, Higher Education Research Institute.

Pace, C. R. (1987). *Test Manual and Norms: College Student Experiences Questionnaire.* Los Angeles: University of California, Center for the Study of Evaluation.

Pace, C. R. (1992). *College Student Experiences Questionnaire, Norms for the third edition.* Los Angeles: University of California, Center for the Study of Evaluation.

Pace, C. R., & Swayze, S. (1992). *Psychometric supplement to the CSEQ* (3rd ed. 1990). Los Angeles: University of California, Center for the Study of Evaluation.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students.* San Francisco: Jossey-Bass.

Pascarella, E. T., Edison, M. I., Whitt, E. J. (1996). *Cognitive effects of Greek Affiliation during the first year of college. NASPA Journal* 33, 242–259.

Pike, G. (1995). The relationship between self reports of college experiences and achievement test scores. *Research in Higher Education, 36,* 1–22.

Rendon, L. I., & Hope, R. O. (1996). *Educating a new majority: Transforming America's educational system for diversity.* San Francisco: Jossey-Bass.

Schlossberg, N. K., Lynch, A. Q., & Chickering, A. W. (1989). *Improving higher education environments for adults.* San Francsico: Jossey-Bass.

Tinto, V. (1987, 1993). *Leaving college.* Chicago: University of Chicago Press

Tinto, V. (1998a). Classrooms as communities. *Journal of Higher Education, 68,* 599–623.

Tinto, V. (1998b). Colleges as communities: Taking research on student persistence seriously. *The Review of Higher Education, 21,* 167–177.

Treisman, U. (1992). Studying students studying calculus: A look at the lives of minority mathematics students in college. *College Mathematics Journal, 23,* 362–372.

Van Stone, N., Nelson, J. R., & Niemann, J. (1994). Poor single-mother college students' views on the effect of some primary sociological and psychological belief factors on their academic success. *Journal of Higher Education, 65,* 571–584.