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A Longitudinal Study of Chickering and Reisser's Vectors: Exploring Gender Differences and Implications for Refining the Theory

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A racially mixed random sample of 247 students at a midsized public university in the Southeast completed the Student Development Task and Lifestyle Inventory at the beginning of their first year, beginning of their sophomore year, and end of their senior year (Winston, Miller & Prince, 1987). Results showed partial support of Chickering and Reisser's theory of development in that students progressed in their development along three measured vectors throughout their college career. Results contradicted the assumption that developing purpose is a vector experienced only toward the end of one's college career. Important gender differences also emerged, particularly regarding issues of tolerance. Results are discussed in light of reconsideration of the theory and implications for student affairs practice.

The psychosocial development of college students has been a central focus for researchers of college student development and student affairs practitioners for several decades. Building on early theories by Erikson (1968) and Marcia (1966), Chickering (1969) wrote one of the earliest and most influential works on the psychosocial development of college students. In his initial theory, Chickering conceptualized development as a process in which students proceed along seven vectors in a roughly sequential fashion. His original vectors linked students' college experiences to

their personal development.

As Chickering's theory has been tested and refined over time it has been partly validated, partly revised, and partly reconfigured. Reisser (1995) noted that Chickering's original theory was limited in that it was based on students in small liberal arts colleges who were primarily traditionally aged students. To correct this limitation and to incorporate more than 2 decades of new research and theory, Chickering and Reisser (1993) redefined and reordered some of the vectors to provide a more accurate picture of college student development. They also included writings collected from students and professionals to bring the theory, and its vectors, to life (Reisser). This revision defined development as proceeding along the seven vectors of developing competence, managing emotions, moving through autonomy toward interdependence, developing mature interpersonal relationships, establishing identity, developing purpose, and developing integrity (Chickering & Reisser; Reisser). Chickering and Reisser noted that development can be appropriately expressed as a series of steps, or *vectors*, a term used to convey direction and magnitude. In organizing their vectors, Chickering and Reisser noted that students' cognitive development parallels their capacity for movement along the different vectors. For example, they noted that as students move from dualistic to

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multiplistic thinking, their tolerance increases—a change accounted for in their fourth vector of developing mature interpersonal relationships. Later cognitive shifts to commitment in relativism (Perry, 1970) relate to Vector 5, establishing identity. In his earlier theory, Chickering (1969) proposed that establishing identity (then Vector 4) depended upon progress made in the first three vectors. This was rationalized by noting that one had to develop a sense of personal identity before connecting with others in a more mature fashion. In the updated theory, Chickering and Reisser reordered their vectors based on research including that which questioned the assumption that personal autonomy is a necessary condition for achieving intimacy. Thus, the autonomy vector was moved prior to the developing mature interpersonal relationships vector. For Chickering and Reisser, *autonomy* referred to the task of developing self-sufficiency, taking responsibility for one's personal goals, and being less swayed by the opinions of others. *Intimacy*, a component of mature interpersonal relationships, referred to the shift away from dependence on others toward an interdependent relationship between equal partners in a friendship or romantic relationship.

Although Chickering and Reisser did not state the order of their vectors as rigidly sequential, they did note that the vectors should be viewed a guide to determine where students are developmentally and where they are headed. Although they cautioned readers that they hesitated to depict development in their model as proceeding from one stage to another, they did propose a sequential model suggesting that earlier vectors form a foundation for later vectors. They noted that the college experience is likely to move students along the first four vectors, which in turn helps them develop their identity. After developing

identity (Vector 5), students are more able to develop purpose and integrity.

Since its original publication in 1969, research on Chickering's theory has shown that men and women experience vectors involving autonomy and mature interpersonal relationships in different ways (Mather & Winston, 1998; Straub, 1987; Straub & Rodgers, 1986; Taub, 1995; Taub & McEwen, 1991). Originally, Chickering (1969) asserted that establishing autonomy was a necessary condition for developing the capacity for intimacy characterized in mature interpersonal relationships. This assumption was called into question in studies finding that women tend to develop intimacy prior to autonomy and that women develop greater capacity for intimacy than do men (Straub). Specifically, most women first proceed through the vector now called developing mature interpersonal relationships prior to developing autonomy. Research has shown that women's sense of self is organized around being able to make and maintain relationships (Gilligan, 1982) and that when given a choice, women are more likely to preserve relationships rather than pursue personal objectives (Josselson, 1987). Of note in more recent years, research has demonstrated that connectedness with others may be as important for autonomy development in men as it is for women (Baxter-Magolda, 1992).

In the second edition of *Education and Identity*, Chickering and Reisser (1993) rightfully acknowledged that there may be gender differences within the autonomy vector. They noted that males assert autonomy through separation, individual rights, and playing by the rules and women develop autonomy in ways that preserve relationships and harmony. In the second edition, Chickering and Reisser emphasized to a greater extent the balance between serving the needs of the self

and depending upon others (interdependence) rather than earlier emphasis on independence. Chickering and Reisser cited research noting that women may move along the mature interpersonal relationships vector earlier than the autonomy vector (Straub & Rodgers, 1986).

More recent research has shown not only a link between relationships and autonomy development in women, but also three factors that make significant independent contributions toward women's autonomy development: the quality of relationships, parental role in providing emotional support, and an orientation toward groups beyond themselves, also called other-group orientation (Taub, 1995). Along this line, excessive parental support can inhibit women's development of autonomy. Furthermore, women's relationships also may influence the clarifying purpose task because of their preference to consult with others in making decisions (Taub).

One of the most frequently used techniques used to measure development along some of these vectors is the Student Development Task and Lifestyle Inventory (SDTLI) (Winston, Miller, & Prince, 1987). This measure uses self-reported data to provide information about a student's development in areas such as developing mature interpersonal relationships, tolerance (part of mature interpersonal relationships), academic autonomy, and developing purpose. Longitudinal studies are particularly important in validating Chickering and Reisser's (1993) vectors, given the assumption that the college experience brings about gradual development during students' college experience. A recent longitudinal study validated the assumption that developing purpose and competence are influenced by college experiences (Martin, 2000). In Martin's study, 354 entering freshmen at a small, liberal arts, religiously

affiliated residential college completed the SDTLI at the beginning of their freshman and end of their senior year. Martin's study was limited, however, by a 38% response rate, a nonrandom sample, and measurements that did not include assessment at some point during students' college experience. Given the importance of the educational process to development, it is critical to understanding of Chickering's theory to gauge how and when developmental change occurs during the process of experiencing the college environment.

Our study focused on two research questions. First, we wanted to determine whether students progressed in their development of academic autonomy, tolerance, mature interpersonal relationships, and developing purpose during their college experience. Second, we wanted to know if there were gender differences in the degree of development experienced by participants in our study.

Given Chickering and Reisser's suggestion that vectors proceed in a sequential fashion, we hypothesized that students would experience significant development in academic autonomy during their first year and significant development in their tolerance, mature interpersonal relationships, and developing purpose between the beginning of their sophomore year and end of their senior year. We hypothesized that there would be no significant changes in tolerance, mature interpersonal relationships, and developing purpose during the first year of college given that the theory suggests that students are focused on issues of autonomy at that time in their development.

METHOD

As part of a large-scale assessment project at a midsized public university in the Southeast, a

four-year longitudinal study was conducted analyzing students' development along Chickering's vectors over the course of their college careers.

Participants

All participants were traditionally aged college students (18 to 22) 40% of whom were men and 60% of whom were women. The racial background of participants was 79% Caucasian, 11% Asian American/Pacific Islander, 7% African American/Black, and 3% identified as "other" including Hispanic/Latino students. All participants lived in residence halls during their first year. Approximately one half lived in residence halls their sophomore year and one third during their senior year. Compared with the population from which the sample was drawn, women and Caucasian students were slightly overrepresented and African American students were slightly underrepresented in the final sample. All participants attended the same highly selective institution. Most students at this institution ranked in the top 10% of their high school class, had SAT scores at least one standard deviation above the mean, and were from middle to upper socioeconomic status homes.

Materials

The SDTLI (Winston et al., 1987) is a survey instrument based on Chickering's and Reisser's theory. The instrument was developed using a factor analysis of items with an initial sample of 500 students from six colleges and universities, a confirmatory factor analysis with 1,100 students at 12 colleges and universities, and an additional confirmatory factor analysis, reliability analysis, and norm collection from 1,200 students across the United States and Canada.

The SDTLI is focused primarily on two of Chickering and Reisser's vectors, with

additional scales measuring aspects of a third vector. Several scales measure Establishing and Clarifying Purpose and Developing Mature Interpersonal Relationships. In addition, three scales measure aspects of a third vector, Moving Through Autonomy Toward Interdependence. Each scale measuring the two primary vectors measured are composed of several subtasks each. Establishing and Clarifying Purpose (alpha = .90) includes Educational Involvement (16 items, alpha = .75), Career Planning (19 items, alpha = .80), Lifestyle Planning (11 items, alpha = .62), Life Management (16 items, alpha = .69), and Cultural Participation (6 items, alpha = .45). Developing Mature Interpersonal Relationships (alpha = .76) includes the subtasks of Peer Relationships (13 items, alpha = .75), Tolerance (9 items, alpha = .55), and Emotional Autonomy (8 items, alpha = .55). Aspects of Moving Through Autonomy Toward Interdependence measured include Academic Autonomy (alpha = .70) and Intimacy (alpha = .70) with 10 and 19 items, respectively. Test-retest reliability coefficients for Establishing and Clarifying Purpose were .85, .78 for Mature Interpersonal Relationships, .79 for Academic Autonomy and .84 for Intimacy. Winston (1990) also reported evidence for validity in that subtasks correlate more highly with their assigned tasks than with other tasks. Winston reported that the Purpose and Mature Interpersonal Relationships scales were found to be independent of one another. Factor analysis found only two factors (purpose and mature interpersonal relationships). In addition, Winston reported significant correlations with other instruments that measure similar concepts such as the study skills and family independence scales from the College Student Questionnaire (Peterson, 1968 as cited in Winston, 1990), the Career Planning and Career Exploration Scales from

the Career Development Inventory (Super, Thompson, Lindeman, Jordan, & Myers, 1981 as cited in Winston, 1990), and the Values Scale (Super & Neville, 1985 as cited in Winston, 1990).

Design and Procedure

Students completed the SDTLI (Winston, Miller, & Prince, 1987) at the beginning of their first year, the beginning of their sophomore year, and at the end of their senior year. To facilitate this process, in August 1994, prior to their arrival on campus, a randomly selected sample of 600 incoming first-year students received a letter from the dean of students asking them to participate in a special study of the undergraduate experience. Students were asked to attend a voluntary meeting during a required week of orientation to complete the SDTLI and to continue with the study over the next 4 years. Of those students receiving letters, 407 agreed to participate and completed surveys with usable responses in the week before their first classes began. These students were invited to attend a testing session at the beginning of the sophomore year and at the end of their senior year. To standardize data collection, students had to attend these sessions for their surveys to be counted in the current study. Of those 407 students (227 female and 180 male), 274 students (169 female, 105 male) completed the survey administration at the beginning of their sophomore year. Those 274 students were invited to complete the survey again at the end of their senior year, 247 (147 female, 100 male) of whom did so. Cases with missing data were not included in this final sample.

RESULTS

Following the recommendations of Tabachnick and Fidell (1989) for a design seeking to

determine the significance of group differences on multiple dependent variables in a time series design, a repeated measures Multivariate Analysis of Variance (MANOVA) was used. Through this analysis, we measured whether students experienced significant development throughout their 4 years of college in their developing purpose, developing mature interpersonal relationships, tolerance, and academic autonomy. Development along these vectors was treated as a within-subjects variable to determine the nature of participants' development over time. Multivariate results indicated that students experienced significant development across the vectors measured, $F(8, 187) = 48.96, p < .001$. In addition, an eta statistic was computed to determine the effect size of the developmental change. The effect size for developmental change from the first through fourth year was .68, indicating a moderate to high degree of developmental change. Univariate analyses for each variable indicated significant change for developing purpose, $F(2, 388) = 221.62, p < .001$, significant change for developing mature interpersonal relationships, $F(2, 388) = 12.20, p < .001$, marginally significant change for tolerance, $F(2, 388) = 2.96, p = .053$, and significant change for academic autonomy, $F(2, 388) = 24.29, p < .001$. In the case of developing purpose, the effect size was moderate (.53). Effect sizes were otherwise low or very low (.06, .02, and .11 for mature interpersonal relationships, tolerance, and academic autonomy, respectively). In all cases, change occurred in the direction of greater development along the tasks or subtasks measured.

As shown in Table 1, significant developmental change occurred for developing purpose between the beginning of the first year and the beginning of the sophomore year, and between the beginning of the sophomore year

TABLE 1.

Mean Purpose, Relationships, Tolerance, and Autonomy Scores at the Beginning of Students' First Year, Beginning of Sophomore Year, and End of Senior Year

Dependent Measure	Testing Occasion		
	Beginning First Year	Beginning Sophomore	End of Senior
Developing ^a Purpose			
<i>M</i>	33.0	37.2	47.3
<i>SD</i>	9.9	10.7	9.6
Mature ^b Interpersonal Relationships			
<i>M</i>	19.0	19.1	20.5
<i>SD</i>	5.7	4.9	4.6
Tolerance ^c			
<i>M</i>	6.2	6.4	6.5
<i>SD</i>	1.9	1.8	1.8
Academic ^a Autonomy			
<i>M</i>	5.1	5.6	6.3
<i>SD</i>			

^a = Significant difference between time 1-2, 1-3, and 2-3 at $p < .001$.

^b = Significant difference between time 1-3 and 2-3 at $p < .001$; no difference between time 1-2 at $p = .05$.

^c = Significant difference between time 1-3 at $p < .001$, no other significant differences at .05.

and the end of the senior year. Significant developmental change did not occur for mature interpersonal relationships during the first year of college, yet there were significant differences between the beginning of the second year and the end of the senior year and between precollege and senior year development on this vector. Similarly, changes in tolerance did not emerge during the first year, but were apparent from precollege to the end of students' senior year. Finally, significant changes in academic autonomy emerged for each testing occasion.

With regard to gender differences, a MANOVA using gender as the independent variable and the four developmental tasks as dependent variables revealed that gender differences existed across the variables measured $F(4, 191) = 10.89, p < .001$. An eta statistic revealed a low effect size for this difference (.19). Univariate analyses showed significant differences on two of the four dependent variables. Specifically, significant gender differences emerged on developing mature interpersonal relationships $F(1, 194) = 7.70, p < .01$ and on the tolerance task

$F(1, 194) = 34.74, p < .001$. Effect sizes for these differences were very low (.04) and low (.15), respectively.

A MANOVA using gender as the independent variable and participants' scores for mature interpersonal relationships on each testing occasion (beginning of first year, beginning of sophomore year, end of senior year) as a dependent variable was computed to determine when changes occurred on this variable during the study period. The MANOVA revealed multivariate significance $F(3, 192) = 3.46, p < .05$. Univariate analyses of between-subject effects by year showed that men and women differed in their development of mature interpersonal relationships at the beginning of their first year $F(1, 194) = 8.88, p < .01$, and at the end of their senior year $F(1, 194) = 5.42, p < .05$, but not at the beginning of their sophomore year $F(1, 194) = 2.77, p .05$. Mean differences are reported in Table 2.

On the SDTLI tolerance subtask, a MANOVA revealed multivariate significance in the difference between men and women's scores over time $F(3, 192) = 11.54, p < .001$, and univariate differences on each testing occa-

sion, $F(1, 194) = 25.67, p < .000, F(1, 194) = 21.74, p < .001, F(1, 194) = 25.63, p < .001$, respectively. In fact, women began their college experience with tolerance scores exceeding those reached by men at the end of their college experience. Still, the effect size for these differences was low (.15).

DISCUSSION

Results of the current study reveal partial support for the validity of Chickering and Reisser's (1993) theory, though some results suggest that the theory should be reexamined. Research has validated that college students develop along Chickering and Reisser's vectors during the college experience (Cooper, Healy, & Simpson, 1994; Martin, 2000; Straub, 1987). Similarly, students in the current study advanced in their development throughout their college experience in the areas of developing purpose, mature interpersonal relationships, academic autonomy, and tolerance, supporting the validity of Chickering and Reisser's assertion that development along these vectors occurs during college.

The process and timing of development

TABLE 2.

Mean Scores on Developing Mature Interpersonal Relationships by Sex at the Beginning of Students' First Year, Beginning of Sophomore Year and End of Senior Year

Sex	Beginning First Year	Beginning Sophomore	End of Senior
Male			
<i>M</i>	17.4	18.4	19.5
<i>SD</i>	5.9	5.2	4.7
Female			
<i>M</i>	19.9	19.6	21.0
<i>SD</i>	5.3	4.6	4.5

Note. A significant difference exists comparing Time 1 and Time 3 but not Time 2 at a $p < .05$.

TABLE 3.
Mean Scores on Tolerance by Sex at the Beginning of Students' First Year,
Beginning of Sophomore Year and End of Senior Year

Sex	Beginning First Year	Beginning Sophomore	End of Senior
Male			
<i>M</i>	5.4	5.6	5.7
<i>SD</i>	2.2	2.1	2.1
Female			
<i>M</i>	6.7	6.8	7.0
<i>SD</i>	1.5	1.5	1.5

Note. Significant gender differences exist for each testing occasion ($p < .001$).

found in this study differed from the sequential developmental sequence suggested by Chickering and Reisser. In particular, our results contradict the assumption that developing purpose occurs primarily at the end of students' college careers. According to the current Chickering and Reisser theory (1993), developing purpose is the sixth of seven vectors, postulating that it is addressed late in the college years after successfully completing the five prior vectors. We found that significant development occurs in the developing purpose vector during the first year of college with additional development occurring during the remainder of students' college career.

If growth along the developing purpose vector occurred only at the end of the college experience, we would have found no difference from the first year to sophomore year and a significant difference from sophomore to senior year. Contrary to this assumption, development occurred throughout students' college experience, including their first year. This finding suggests that Chickering and Reisser's theory should be reexamined to account for development in later vectors earlier

during students' college experience. It may be that the seven vectors all constitute areas of development during the college experience but that development may not proceed in sequence or have a step-by-step relationship. This line of inquiry awaits significant further research.

Additional findings of note in the current study emerged in the area of gender differences in mature interpersonal relationships and tolerance, some of which confirm prior research, others add to the current knowledge base. The gender difference in mature interpersonal relationships confirms prior research showing that women are more developmentally advanced than men in this vector throughout their college experience, particularly with more advanced capacity for intimacy throughout college (Utterback, Spooner, Barbieri, & Fox, 1995; Greeley & Tinsley, 1988). The fact that no gender difference was found in developing purpose also confirms prior research (Utterback et al., 1995).

By looking at the specific subtask of tolerance found within the mature interpersonal relationships vector, we were able to

pinpoint an area of difference with implications for student development researchers and student affairs practitioners. We found a difference in tolerance, where women not only were more tolerant than men throughout their college experience, but women also were more tolerant at the beginning of their college experience than men were after 4 years of development during college. Though the effect size for this gender difference was low, the difference points to a trend worth considering from a research and programming perspective. Chickering and Reisser (1993) noted the importance of a highly developed degree of tolerance, given that it provides students with the skills to comprehend the unfamiliar rather than dismiss or degrade it. Furthermore, well-developed tolerance allows for an appreciation of diversity and an understanding of the ways in which discrimination can damage community.

The fact that men reported less tolerance than women may have roots in their restricted role models. For example, research has shown that boys are encouraged to emulate their fathers and other men and girls are encouraged to consider role models of both sexes (Cramer, 2000). Having a broader range of role models from which to choose may allow women to develop a greater sense of tolerance for differences in people they encounter. This difference also may relate to the importance men place on relationships and on their privileged status in U.S. society. Given that privilege and inequality are least understood by those who are most privileged in a cultural system (Jones & McEwen, 2000), men may be less tolerant due to a lack of awareness of their privileged status and its implications for their tolerance of others with whom they interact.

The findings of the current study should be considered in light of two limitations. First,

the fact that all participants attended the same institution limits the generalizability of our findings. The environmental factors at the institution where data was collected may have affected growth on the developing purpose vector in ways that would not occur at other institutions. For this reason it is particularly important for the findings to be replicated in a different setting before applying them too broadly. In addition, subject attrition was an issue of concern. Approximately half of those who began the study filled out all measures throughout the study's duration, and these students may have differed in substantive ways from those who did not choose to continue their participation.

A second limitation of the current study is the repeated measures design used, which is prone to inflate the likelihood of Type I error (Tabachnick & Fidell, 1989). In this case, the passage of time—and by implication, developmental progress of respondents—is bound up in the periodic collection of data. Given that most differences reported were at the $< .001$ level, this concern is attenuated. Still, one should be particularly cautious of differences at the .05 level such as the gender difference in developing mature interpersonal relationships that was evident during students' first year and senior year given the concern over inflated Type I error rates.

A clear implication of this study is the need for reconsideration of the sequential nature of Chickering and Reisser's vectors. Although they stop short of calling their vectors hierarchical, Chickering and Reisser are clear to call them steps, and are careful to place them in a particular order in their theory. The current study revealed evidence that calls this aspect of their theory into question. Perhaps development is not so much a series of steps or building blocks, but rather could be conceptualized differently, like horizontal

movement along several rows of an abacus, where development is triggered by environmental factors, such as those outlined in the second half of Chickering and Reisser's book. Regardless, it seems that the current ordering of the vectors does not capture the nature of movement along the developing purpose vector. If indeed earlier vectors are building blocks, a study involving structural equation modeling would help substantiate that assertion. Also further research is needed to confirm whether development on the developing purpose vector occurs throughout students' college experience, as found in the current study, or whether it is more restricted to the end of students' college career as suggested by Chickering and Reisser. A multicampus study with data collected during each year of college attendance would provide a much clearer picture of the true developmental framework experienced by college students today—to the extent that the developmental experience can be captured by a single theory.

An additional implication is the clear need for student affairs practitioners to address

tolerance levels among college men. Focusing efforts on facilitating men's development in the areas of stereotypes, respectful language, and the value of diversity seems critical to attenuating this gender difference. Student affairs administrators may want to consider promoting opportunities for constructive, deliberate interactions between men and women to create spaces for enhancing men's understanding of privilege and enhancing their tolerance and sensitivity.

Ultimately, this study confirms the importance of studying the many different areas in which college students develop, and the factors that lead to such development. As educators continue to understand this process, it becomes increasingly likely that productive learning environments can be effectively shaped to promote student's growth in the many areas of their evolving selves.

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REFERENCES

- Baxter Magolda, M. B. (1992). Knowing and reasoning in college: Gender related patterns in students' intellectual development. San Francisco: Jossey-Bass.
- Chickering, A. W. (1969). *Education and identity*. San Francisco: Jossey-Bass.
- Chickering, A. W., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco: Jossey-Bass.
- Cooper, D. L., Healy, M. A., & Simpson, J. (1994). Student development through involvement: Specific changes over time. *Journal of College Student Development, 35*, 98-102.
- Cramer, P. (2000). Development of identity: Gender makes a difference. *Identity and Gender, 34*, 42-72.
- Erikson, E. (1968). *Identity, youth, and crisis*. New York: Norton.
- Gilligan, C. (1982). *In a different voice*. Cambridge, MA: Harvard University Press.
- Greeley A. T., & Tinsley H. E. A. (1988). Autonomy and intimacy development in college students: Sex differences and predictors. *Journal of College Student Development, 29*, 512-520.
- Jones, S. R., & McEwen, M. K. (2000). A conceptual model of multiple dimensions of identity. *Journal of College Student Development, 41*, 405-413.
- Josselson, R. (1987). *Finding herself: Pathways to identity development in women*. San Francisco: Jossey-Bass.
- Marcia, J. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology, 3*, 551-559.
- Martin, L. (2000). The relationship of college experiences to psychosocial outcomes in students. *Journal of College Student Development, 41*, 294-302.
- Mather, J. C., & Winston, R. B. (1998). Autonomy and development of traditional-aged students: Themes and processes. *Journal of College Student Development, 39*, 33-50.
- Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. Troy, MO: Holt, Rinehart & Winston.
- Reisser, L. (1995). Revisiting the seven vectors. *Journal of College Student Development, 36*, 505-512.
- Straub, C. A. (1987). Women's development of autonomy and Chickering's theory. *Journal of College Student Personnel, 28*, 198-205.
- Straub, C. A., & Rodgers, R. (1986). An exploration of Chickering's theory and women's development. *Journal of College Student Personnel, 27*, 216-224.
- Tabachnick, B. G., & Fidell, L. S. (1989). *Using multivariate statistics*. New York: Harper & Row.
- Taub, D. J. (1995). Relationship of selected factors to traditional-age undergraduate women's development of autonomy. *Journal of College Student Development, 36*, 141-151.
- Taub, D. J., & McEwen, M. K. (1991). Patterns of development of autonomy and mature interpersonal relationships in Black and White undergraduate women. *Journal of College Student Development, 32*, 502-508.
- Utterback, J. W., Spooner, S. E., Barbieri, J. A., & Fox, S. N. (1995). Gender and ethnic issues in the development of intimacy among college students. *NASPA Journal, 32*, 82-89.
- Winston, R. B. (1990). The Student Development Task and Lifestyle Inventory: An approach to measuring students' psychosocial development. *Journal of College Student Development, 31*, 108-120.
- Winston, R. B., Miller, T. K., & Prince, J. (1987). *Student Developmental Task and Lifestyle Inventory*. Athens, GA: Student Development Associates.