The Effects of Dual Enrollment Courses: Do They Prepare Students for College?

Ernesto Soto: McNair Scholar

Dr. Mary Pritchard: Mentor

Psychology

Abstract

The focus on academic success starts early for many students. For example, many high school students have clear career goals and may take steps to ensure success at the collegiate level in order to achieve their goals (McWhirter, Torres, Salgado, & Valdez, 2007). Studies have shown that students who rate high on academic self-efficacy while in high school continue to succeed in their postsecondary education (Eccles, Vida, & Barber, 2004; Eccles & Wigfield, 2002). One method in which high school students can be better prepared for postsecondary education and increase their academic self-efficacy (Margolis & McCabe, 2004) is by participating in programs that offer college-level curriculum at the high school level, such as dual enrollment (DE) programs. Method: Two hundred and eight undergraduate students responded to questionnaires assessing factors that may help DE students succeed in college, including higher self-efficacy, academic hardiness, perfectionism, and expectations of success. Results: DE students in DE students was facilitating anxiety. For those students that did not take dual enrollment courses, the main factors related to GPA were academic hardiness, general self-efficacy, and organizational skills. Conclusion: College administrators may wish to emphasize different factors for success based on students' academic backgrounds. Keywords: dual enrollment courses, academic success, academic self-efficacy

Introduction

High school is often seen as one of the most significant times in adolescents' lives. As students prepare to graduate from high school, they are faced with important decisions. Should they move into the work force, continue with their education, or perhaps take a moment to decide what they actually want to do? There are those students who already know that they will enroll in college upon completion of high school and will plan accordingly so that their transition into college can go as smoothly as possible. Some high schools even allow students to take college level courses while simultaneously working on high school requirements. These dual enrollment (DE) programs were designed to help facilitate a smooth transition from high school to college. Since the introduction of the DE program, the number of high school students who earn at least some college credits has increased (Kleiner & Lewis, 2005). Kleiner and Lewis (2005) reported that approximately 813,000 high school students took post-secondary level courses during the 2002-2003 academic year, with 84% of those students having participated in DE courses. The number of students participating in these courses is expected to increase yearly (Bailey, Hughes, & Karp, 2002).

One of the benefits of dual enrollment programs is that upon graduation from high school, students should have a better understanding of the curricula that are required for college level courses. Data from the National Center for Education Statistics (NCES; 2005) reported that 66% of 2004 high school graduates enrolled in college within twelve months of high school completion. However, the national retention rate of all first year academic college students was only 52%. When considering that almost half of all first year college students do not return for their second academic year, research on factors affecting retention rates is critical. Greene and Forster (2003) stated that only 31% of 2002 high school graduates were prepared for post-secondary education, based on satisfactory completion of required courses for college and demonstration of basic literacy skills. But this is where dual enrollment programs come in. When students are introduced to college level courses at the high school level, the transition into college should be a natural progression. But is it?

DE courses provide a number of advantages to high school students who decide to take advantage of these courses. In addition to a smoother transition to college, students are able to shorten the actual time spent to attain an undergraduate degree, having already taken some of their prerequisites. This, in turn, allows them to expand their



academic options once in college (Andrews, 2004; Fincher-Ford, 1996). Another benefit of the DE program is that it strengthens the high school curriculum and raises teachers' academic expectations of their students. The students who take part in these courses should be better acclimated to the academic and social demands of college, which then allows them to make wiser choices pertaining to pursuing post-secondary education (Karp, Bailey, Hughes, & Fermin, 2005). Finally, high achieving high school students are often faced with boredom in the classroom because they are not mentally challenged in their courses (Plucker & McIntire, 1996). One of the benefits of dual enrollment programs is that they provide those students a greater challenge by allowing them to work on college level curricula. Not only does this remove the boredom from their learning, but it also benefits them by giving them a head start with their entry-level college courses. This preparation allows them to start on more challenging college courses or even upper level courses once they arrive in college (Goetz, Frenzel, Pekrun, Hall, & Lüdtke, 2007).

However, having taken DE courses in high school does not necessarily mean that students will perform better once in college (Micceri, Brigman, & Spatig, 2009). In fact, whereas some researchers have found that students who take DE courses perform better in college (Andrews, 2004; Foster, 2010; Spurling et al., 2002) and have higher graduation rates (Parke, Nichols, & Brown, 2002), others have found that DE courses have no impact on college GPA (Micceri et al., 2009; Williams, 2010) or retention (McCormick, 2010).

This begs the question: is it something about DE students that makes them succeed? Are there factors that DE students are more likely to possess (e.g., motivation, personality factors, self-efficacy) than non-DE students that might give them an advantage once in college? Below we will discuss factors known to impact college performance that might also be more prevalent in DE students.

Self-efficacy

Students who have a high level of confidence in their own academic ability (academic self-efficacy) expect more from themselves and perform better in school (Chemers, Hu, & Garcia, 2001). DeWitz, Woolsey, and Walsh (2009) suggest that self-efficacy in college students is associated with academic success and purpose in life. Margolis and McCabe (2004) stated that DE students generally have a stronger academic self-efficacy than do non-DE students as they are traditionally challenged with their academics. They further suggest that non-DE students could overcome low self-efficacy by taking more challenging courses. Additionally, Gore (2006) and Majer (2009) found that academic self-efficacy is the single best predictor of GPA (Solberg & Villareal, 1997) and first-year retention among college students. Bandura and Locke (2003) suggested that one's self-efficacy is rooted in the core belief that one has the power to produce desired effects. Students with higher self-efficacy tend to participate more readily, work harder, pursue more challenging goals, and spend more time towards fulfilling their academic goals (Pajares, 2003). In other words, individuals who display a higher self-efficacy towards a particular behavior are more likely to perform better and persist longer towards a variety of academic behaviors (Moulton, Brown, & Lent, 1991). Students with weaker self-efficacy may choose goals that undermine their success (Hsieh, Sullivan, & Guerra, 2007).

Perfectionism

Studies have shown that students who rate high in perfectionism have higher GPAs (Rice & Slaney, 2002), whereas those that rate lower in perfectionism are less satisfied with their GPAs and have lower GPAs (Grzegorek, Slaney, Franze, & Rice, 2004). However, no studies have examined differences in perfectionism between DE and non-DE students. Thus, one goal of the present study was to examine this difference as well as its potential impact on GPA in college.

Hardiness

Research suggests that academic performance is influenced by a student's academic goals (Dweck, 2002). Students who work on a performance-based orientation attempt to establish their academic standing by avoiding situations that might demonstrate their inadequacies. In contrast, students who operate from learning-based orientation view academic challenges as opportunities to acquire new skill sets and enhance their competence (Dweck & Leggett, 1988). Benishek and Lopez (2001) suggest that students who achieve their academic goals through effort and emotional self-regulation (control) make personal sacrifices to excel academically (commitment), and students who purposely seek out difficult course work because of the long-term personal growth (challenge) tend to do better when they use a learning-based orientation. Studies have also shown that students who rate high in

challenge have a clearer relationship between academic success and viewing their academic work as important, thus encouraging them to put forth their deep involvement with their studies to be scholarly successful and achieve higher GPAs (Maddi, 2006; Maddi & Khoshaba, 2005). Thus, it is not surprising that college students who score high on academic hardiness (control, commitment, challenge) have higher GPAs (Sheard & Golby, 2007). However, no studies have examined whether DE and non-DE students differ in academic hardiness; thus one goal of the present study was to assess this question as well as the possible relation between academic hardiness and GPA in DE and non-DE students.

Achievement anxiety

The influence of achievement anxiety on academic performance is mixed. Cassady and Johnson (2002) found that students who worry more or have higher test anxiety show performance declines in their exam scores and grades. Even though students in DE courses may suffer from achievement anxiety, many of these students will often give up before they even make a full effort to attempt the DE courses (Pajares, 1996). However, Jones, Hollenhorst, Perna, and Selin (2000) found that heightened arousal due to an increase in anxiety actually motivated students to work harder and to achieve optimal performance. When students are challenged, especially in DE courses, their low self-efficacy and achievement anxiety may actually improve (Margolis & McCabe, 2004). Given the inconsistent findings in the area of achievement anxiety and GPA, it would be wise to continue to further study this area. In addition, no studies have specifically examined whether there are differences in achievement anxiety between DE and non-DE students. The present study will do just that.

Expectations of success

Students who expect to succeed in school tend to have their own individual goals and preferred study methods (VanZile-Tamsen, 2001). For example, students who achieve high grades take responsibility for their own learning by asking for help from the instructor when they do not understand something (Zimmerman, 1990; Zimmerman, Bonner, & Kovach, 1996). Those students that spend an increased amount of time focusing on their assignments and practice good note-taking methods are those that expect to do well in their academics and are concerned with higher GPAs (Thomas & Rohwer, 1987; 1993). Choi (2005) found that students who spent the time to achieve their goals were primarily focused on higher GPAs and were therefore able to obtain their desired goals. Students that put forth the extra work and rigorous academic preparation through programs such as dual enrollment courses increase their level of success in postsecondary education due to the increased understanding of expectations of college. But again, no studies have assessed this directly. The present study will investigate whether DE students do in fact have higher expectations for success than do non-DE students and whether those differences may relate to differences in GPA.

Present study

Previous research implies that dual enrollment courses are beneficial to incoming college students (Andrews, 2004; Goetz et al., 2007; Karp et al., 2004). However, research on the actual benefits of taking DE courses in high school on college performance and retention is mixed (Andrews, 2004; Foster, 2010; McCormick, 2010; Micceri et al., 2009; Parke et al., 2002; Spurling et al., 2002; Williams, 2010). One reason for the conflicting research findings could be that it is not DE courses per se that increase college performance and retention, but something about DE students. That is, some DE students may possess certain traits that increase their chances of success in college. We hypothesized that students who took DE courses while in high school would have higher GPAs than those who did not. Second, we hypothesized that DE students would score higher on certain traits known to relate to college success (e.g., academic hardiness, expectations of success, perfectionism). Finally, we hypothesized that these higher GPAs in DE students would be related to certain traits that DE students are more likely to possess that help them succeed, including higher self-efficacy, academic hardiness, perfectionism, and expectations of success. Because the results of the influence of achievement anxiety on collegiate performance are mixed (Cassady & Johnson, 2002; Jones et al., 2000), no specific hypotheses were made about that factor.

Method

Participants

Participants in this study were recruited from a pool of general psychology students who registered through the computer software program Qualtrics, an Internet-based subject pool management program. There were 208 total student participants (34.0% male, 65.6% female) of which 95 had taken DE courses and 113 had not. In order to ensure that students were traditional college students, and took their DE courses within four years of entering college, students over the age of 21 were not invited to participate. The average age was 18.94 (SD= .90), with the youngest student being 18 years old and the oldest being 21 years old. Of the student participants, 83.7% of students were Caucasian, 1.0% African-American, 6.2% Latino, 3.8% Asian, 1.0% Native American, 1.0% Pacific Islander, and 3.3% considered themselves as other. The psychology students received course credit for participating in the survey. The Institutional Review Board approved the study protocol before data collection began.

Materials and procedures

Achievement anxiety test. The Achievement Anxiety Test was created by Alpert and Haber (1960). The Achievement Anxiety Test measures anxiety about academic achievement and performance, and consists of 19 items that cover two different areas: facilitating anxiety (9 items, $\alpha = .72$) and debilitating anxiety (10 items, $\alpha = .74$). Each item had a different response category, although all were measured on a 5-point Likert scale indicating the degree to which the statement applies to the respondent. The mean of responses was calculated for each scale, with higher scores indicating a higher level of anxiety for each given scale.

Frost multidimensional perfectionism scale. The Frost Multidimensional Perfectionism Scale was developed by Frost, Marten, Lahar, and Rosenblate (1990). The Frost Multidimensional Perfectionism Scale consists of 35 items that cover six different areas: concern over mistakes (9 items, $\alpha = .89$), personal standards (7 items, $\alpha = .74$), parental expectations (5 items, $\alpha = .78$), parental criticism (4 items, $\alpha = .81$), doubts about actions (4 items, $\alpha = .71$), and organization (6 items, $\alpha = .92$). Responses were based on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The mean of each subscale was calculated, with higher scores suggesting higher amounts of perfectionism in that particular area.

Generalized expectancy for success scale. The Generalized Expectancy for Success Scale was created by Fibel and Hale (1978). The Generalized Expectancy for Success Scale consists of 30 items that measure students' expectations of being successful in three different areas: general expectations of success (10 items, $\alpha = .74$), long-range career-oriented expectations of success (7 items, $\alpha = .71$), and expectations about their abilities to successfully solve personal problems (8 items, $\alpha = .47$). Responses were based on a 5-point Likert scale (1 = highly improbably, 2 = improbable, 3= equally improbably and probable, not sure, 4 = probable, 5 = highly probable). The mean of responses was calculated for each subscale, with higher scores indicating a higher expectancy of being successful.

College self-efficacy inventory. The College Self-Efficacy Inventory (CSEI) was created by Solberg, O'Brien, Villareal, and Kennel (1993). The College Self-Efficacy Inventory consists of 19 items ($\alpha = .94$) that measure college self-efficacy (i.e., How confident are you that you could successfully complete the following task: Ask a professor or instructor a question outside of class?). The scale covers four different areas: academic self-efficacy (7 items, $\alpha = .89$), social self-efficacy (8 items, $\alpha = .88$), roommate self-efficacy (4 items, $\alpha = .87$), and social integration (2 items, $\alpha = .48$). Responses were based on a 9-point Likert scale (1 = *totally unconfident*, 2 = *very unconfident*, 3 = *unconfident*, 4 = *somewhat unconfident*, 5 = *undecided*, 6 = *somewhat confident*, 7 = *confident*, 8 = *very confident*, 9 = *totally confident*). To calculate self-efficacy, the mean of all responses was calculated, with higher scores indicating a higher college self-efficacy.

College academic self-efficacy scale. College Academic Self-Efficacy Scale (CASES) was created by Owen and Froman (1988). The College Academic Self-Efficacy Scale consists of 33 items that measure confidence and academic self-efficacy (i.e., How much confidence do you have about doing each of the behaviors listed below: Asking a professor in class to review a concept you do not understand?). Responses were based on a 5-point Likert

scale (1 = quite a lot to 5 = very little). The mean of all items on the CASES was calculated (α = .91). Lower scores indicate more confidence and higher academic self-efficacy.

Academic hardiness scale. The Academic Hardiness Scale was created by Benishek and Lopez (2001). The Academic Hardiness Scale consists of 19 items that measure students' attitudes regarding grades and academic success over three different areas: commitment (10 items $\alpha = .85$), challenge (6 items $\alpha = .77$), and control (3 items $\alpha = .75$). Responses were answered on a 4-point Likert scale (1 = *completely false*, 2 = *mostly false*, 3 = *mostly true*, and 4 = *completely true*). To calculate the Academic Hardiness Scale the mean of all subscales was taken ($\alpha = .86$). Higher scores indicate positive academic self-concepts of academic confidence, dedication, and motivation towards their academics.

Results

As predicted, students who completed DE courses had higher college GPAs than did students who did not complete DE courses, GPA, t(152) = 3.19, p < .01 (see Table 1). In addition, as expected, students who took DE courses in high school displayed higher levels of personal standards, t(196) = 2.81, p < .01, fewer doubts about their actions, t(200) = -2.02, p < .05, greater general expectations of success, t(201) = 2.16, p < .05, greater confidence in their problem solving abilities, t(195) = 2.02, p < .05, higher college self-efficacy as measured by the CSEI, t(202)= 2.71, p < .01, greater self-efficacy in their coursework, t (198) = 3.17, p < .01, higher social self-efficacy (e.g., perceived ability to make new friends, talk to professors), t (198) = 2.10, p < .05, greater beliefs in their abilities to integrate socially in college (e.g., get a date, join a club), t (201) = 2.27, p < .05, greater college academic selfefficacy as measured by the CASES, t(205) = -3.49, p < .01, and higher academic hardiness, t(195) = 2.10, p < .05, than did those that did not take DE courses in high school. Although no specific hypotheses were made about achievement anxiety, in the present study, students who took DE courses in high school displayed lower levels of facilitating anxiety, t(201) = -2.08, p < .05, but there were no differences in debilitating anxiety, t(202) = 1.04. There were also no significant differences between high school students that participated in DE courses and those that did not in their concern over mistakes, t(199) = .55, parental expectations, t(200) = 1.05, parental criticism, t (203) = .58, organizational skills, t(202) = .43, expectations of success in their chosen career, t(198) = 1.92, selfefficacy about getting along with and working well with their roommate, t(193) = 1.84, commitment to school, t (200) = 1.56, challenging themselves in school, t(200) = 1.90, or not being in complete control of their education, t(203) = .97.

Because we wanted to ascertain whether the factors that affect student success differed in their relationships with GPA in DE and non-DE students, we ran separate regressions for each group. In order to find out the order of their importance of these variables, the stepwise regression method was chosen. All variables that did not differ between the two groups in the t-test were not included in the regressions.

In students who participated in dual enrollment courses while in high school the sole variable that related to GPA was facilitating anxiety, F(1, 60) = 28.01, p < .001, $R^2 = .32$. For those students that did not take dual enrollment courses, the main predictors that related to GPA were academic hardiness, F(1, 60) = 15.61, p < .001, $R^2 = .21$, and general self-efficacy, F(2, 59) = 15.84, p < .001, $R^2 = .35$.

Discussion

Although previous research implies that dual enrollment courses are beneficial to incoming college students (Andrews, 2004; Goetz et al., 2007; Karp et al., 2004), research on the actual benefits of having taken DE courses in high school on college performance and retention is mixed (Andrews, 2004; Foster, 2010; McCormick, 2010; Micceri et al., 2009; Parke et al., 2002; Spurling et al., 2002; Williams, 2010). The purpose of the present study was to: 1) investigate whether college GPAs differed between students who had taken DE courses and those who had not; 2) investigate whether factors known to affect collegiate success differed between students who took dual enrollment courses and those who did not; and 3) investigate whether the factors that related to college GPA differed between DE and non-DE students.

As expected, students who completed DE courses in high school did, in fact, have higher GPAs in college. In addition, there were some differences between DE and non-DE courses in factors known to affect GPA. For example, DE students scored higher than non-DE students on several measures of perfectionism (Rice & Slaney, 2002), including having higher levels of personal standards and fewer doubts about their actions. In addition, DE students reported higher levels of general expectations of success, as well as greater confidence in their problem solving abilities (Venezia et al., 2003). DE students also reported greater college self-efficacy (Margolis & McCabe, 2004), including greater self-efficacy about their coursework, higher social self-efficacy (e.g., make new friends, talk to professors), greater beliefs in their abilities to integrate socially in college (e.g., get a date, join a club), and greater college academic self-efficacy. Finally, DE students reported higher levels of academic hardiness than those that did not take DE courses in high school (Sheard & Golby, 2007).

Given the differences between DE and non-DE students in factors known to relate to success in college, our last hypothesis concerned the potential differences in how these factors would relate to GPA in DE and non-DE students. The findings from the present study supported our hypotheses that these factors would differ. The sole predictor of GPA in DE students was facilitating anxiety. Preckel, Holling, and Vock (2006) suggest that students who have a higher level of facilitating anxiety are more likely to fail in their academic careers. The findings from this study help support those findings in which students that are enrolled in DE courses scored lower on facilitating anxiety. Therefore, we could suggest that these students might be more likely to succeed and have higher GPAs as they are not afraid of underachieving in their academics.

On the other hand, the factors related to GPA in non-DE students were academic hardiness and general expectations of success. This makes sense as the AHS measures a student's hardiness and ability to be able to rise up to academic challenges (Benishek, Feldman, Shipon, Mecham, & Lopez, 2005). Regardless of DE status, undergraduate students tend to rise to the challenge of their academic commitments and challenges to succeed in their studies, in order to justify their decision to attend college and finish within four years (Lifton, Seay, & Bushko, 2000; Lifton et al., 2006). In addition, students that put forth the extra work and rigorous academic preparation tend to do better in postsecondary education due to an increased understanding of the expectations of college courses (Venezia et al., 2003). Perhaps these two factors did not appear as predictors of GPA in DE students because they were already greater in those students to begin with. Future studies should investigate this possibility.

Limitations

The present study has several limitations that must be considered. The results were based on self-reported survey data, which does not ensure complete honesty from the participants. In addition, the majority of our participants were Caucasian, which may limit the applicability of our findings to students of other races. Future studies should utilize a more diverse sample. Finally, our data was correlational in nature. Future studies should track DE and non-DE students as they enter college to examine whether these differences hold in both high school and in college.

Conclusion

The present study highlights the fact that college students who have participated in DE courses do in fact have higher GPAs than do students who have not participated in DE courses. In addition, DE students differ in a number of positive ways from non-DE students in factors known to relate to academic success. As a result, the variables that relate to GPA differ between DE and non-DE students. These findings can help influence future studies as well as academic counselors that may be looking at certain traits to help students better prepare for college.

References

- Alpert, R., & Haber, R. N. (1960). Anxiety in academic achievement situations. *Journal of Abnormal and Social* Psychology, 61, 2007-215.
- [2] Andrews, H. (2004). Dual credit research outcomes for students. *Community College Journal of Research and Practice, 28,* 415-422.
- [3] Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology*, *38*, 87-99.
- [4] Bailey, T. R., Hughes, K. L., & Karp, M. M. (2002). What role can dual enrollment programs play in easing the transition between high school and postsecondary education? *Journal for Vocational Special Needs Education, 24,* 18-29.
- [5] Benishek, L. A., & Lopez, F. G. (2001). Development and initial validation of a measure of academic hardiness. *Journal of Career Assessment*, 9, 333-352.
- [6] Benishek, L. A., Feldman, J. M., Shipon, R., Mecham, S. D., & Lopez, F. G. (2005). Development and evaluation of the revised academic hardiness scale. *Journal of Career Assessment*, 13, 59-76.
- [7] Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology*, *27*, 270-295.
- [8] Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology*, 93, 55–64.
- [9] Choi, N. (2005). Self-efficacy and self-concept as predictors of college students' academic performance. *Psychology in the Schools*, 42, 197-205.
- [10] Dweck, C. S. (2002). Messages that motivate: How praise molds students' beliefs, motivation, and performance (in surprising ways). In J. Aronson & J. Aronson (Eds.). *Improving academic achievement: Impact of psychological factors on education* (pp. 37-60). San Diego, CA US: Academic Press.
- [11] Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
- [12] DeWitz, S., Woolsey, M., & Walsh, W. (2009). College student retention: An exploration of the relationship between self-efficacy beliefs and purpose in life among college students. *Journal of College Student Development*, 50, 19-34.
- [13] Eccles, J. S., Vida, M. N., & Barber, B. (2004). The relation of early adolescents' college plans and both academic ability and task-value beliefs to subsequent college enrollment. *The Journal of Early Adolescence*, 24, 63-77.
- [14] Eccles, J., & Wigfield, A. (2002). Motivational beliefs, values, and goals. Annual Review of Psychology, 53, 109– 132.
- [15] Fibel, B., & Hale, W. (1978). The generalized expectancy for success scale: A new measure. *Journal of Consulting and Clinical Psychology*, 46, 924-931.
- [16] Fincher-Ford, M. (1996). *High school students earning college credit: A guide to creating dual-credit programs.* Thousand Oaks, CA: Corwin Press.
- [17] Frost, R. O., Marten, P., Lahar, C. M., Rosenblate, R. (1990). The dimensions of perfectionism. Cognitive Therapy and Research, 14, 449-468.
- [18] Foster, R. (2010). Cooperative and concurrent enrollment and college retention. Journal of Career and Technical Education, 25, 38-45.
- [19] Goetz, T., Frenzel, A. C., Pekrun, R., Hall, N. C., & Lüdtke, O. (2007). Between and within-domain relations of students' academic emotions. *Journal of Educational Psychology*, 99, 715-733.
- [20] Gore, P. A. (2006). Academic self-efficacy as a predictor of college outcomes: Two incremental validity studies. *Journal of Career Assessment, 14,* 92–115.
- [21] Greene, J. P., & Forster, G. (2003). Public high school graduation and college readiness rates in the United States. *Education Working Paper 3*. Retrieved from <u>http://www.manhattan-institute.org/html/ewp_03.htm</u>
- [22] Grzegorek, J. L., Slaney, R. B., Franze, S., & Rice, K. G. (2004). Self-criticism, dependency, self-esteem, and grade point average satisfaction among clusters of perfectionists and non-perfectionists. *Journal of Counseling Psychology*, 51, 192-200.
- [23] Hsieh, P., Sullivan, J. R., & Guerra, N. S. (2007). A closer look at college students: Self-efficacy and goal orientation. *Journal of Advanced Academics*, 18, 454-476.
- [24] Jones, C., Hollenhorst, S., Perna, F., & Selin, S. (2000). Validation of the flow theory in an on-site whitewater kayaking setting. *Journal of Leisure Research*, *32*, 247-262.
- [25] Karp, M., Bailey, T., Hughes, K., & Fermin, B. (2005). Update to state dual enrollment policies: Addressing

access and quality. U.S. Department of Education Office of Vocational and Adult Education.

- [26] Kleiner, B., & Lewis, L. (2005). Dual enrollment of high school students at postsecondary institutions: 2002–03 (NCES 2005–008). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- [27] Lifton, D., Seay, S., & Bushko, A. (2000). Can student "hardiness" serve as an indicator of likely persistence to graduation? Baseline results from a longitudinal study. *Academic Exchange Quarterly*, 2, 73–81.
- [28] Lifton, D., Seay, S., McCarly, N., Olive-Taylor, R., Seeger, R., & Bigbee, D. (2006). Correlating hardiness with graduation persistence. *Academic Exchange Quarterly*, 10, 277–282.
- [29] Maddi, S. R. (2006). Hardiness: The courage to grow from stresses. Journal of Positive Psychology, 1, 160–168.
- [30] Maddi, S. R., & Khoshaba, D. M. (2005). *Resilience at work: How to succeed no matter what life throws at you.* New York: Amacom.
- [31] Majer, J. M. (2009). Self-efficacy and academic success among ethnically diverse first-generation community college students. *Journal of Diversity in Higher Education*, *2*, 243-250
- [32] Margolis, H., & McCabe, P. P. (2004). Self-efficacy a key to improving the motivation of struggling learners. *Clearing House*, *77*, 6.
- [33] McCormick, K. G. (2010). A study of the relationship between high school dual enrollment participation and college persistence, including potential intervening variables, in southeast Tennessee (Ed. D. dissertation, Tennessee State University). Retrieved from Dissertations & Theses (No. AAT 3413703).
- [34] McWhirter, E. H., Torres, D. M., Salgado, S., & Valdez, M. (2007). Perceived barriers and postsecondary plans in Mexican American and White adolescents. *Journal of Career Assessment*, 15, 119-138.
- [35] Micceri, T., Brigman, L., & Spatig, R. (2009). Assessing the Rigor of HS Curriculum in Admissions Decisions: A Functional Method, Plus Practical Advising for Prospective Students and High School Counselors. Paper presented at the Annual Association for Institutional Research, 2009.
- [36] Moulton, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, 38, 30-38.
- [37] National Center for Education Statistics, U.S. Department of Education Institute of Education Sciences. (2005). Dual enrollment of high school students at postsecondary institutions: 2002-2003 (NCES 2005-008). Retrieved from <u>http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005008</u>
- [38] Owen, S. V., & Froman, R. D. (1988). *Development of a college academic self-efficacy scale*. Paper presented at the 1988 annual meeting of the National Council on Measurement in Education.
- [39] Pajares, F. (1996). Self-efficacy beliefs in academic settings. Review of Educational Research, 66, 543-578.
- [40] Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading and Writing Quarterly, 19*, 139–158.
- [41] Parke, B., Nichols, J., & Brown, A. S. (2002). Collegiate connection: A program to encourage the success of student participation in high school/university dual enrollment. *Mid-western Educational Researcher*, 15, 23-31.
- [42] Plucker, J. A., & McIntire, J. (1996). Academic survivability in high-potential, middle school students. *Gifted Child Quarterly*, 40, 7-14.
- [43] Preckel, F., Holling, H., & Vock, M. (2006). Academic underachievement: Relationship with cognitive motivation, achievement motivation, and conscientiousness. *Psychology in the Schools*, 43, 401-411.
- [44] Rice, K. G., & Slaney, R. B. (2002). Clusters of perfectionists: Two studies of emotional adjustment and academic achievement. *Measurement and Evaluation*, 35, 35–48.
- [45] Sheard, M., & Golby, J. (2007). Hardiness and undergraduate academic study: The moderating role of commitment. *Personality and Individual Differences*, 43, 579-588.
- [46] Solberg, V. S., & Villareal, P. (1997). Examination of self-efficacy, social support, and stress as predictors of psychological and physical distress among Hispanic college students. *Hispanic Journal of Behavioral Sciences*, 19, 182-201.
- [47] Solberg, V. S., O'Brien, K., Villareal, P., & Kennel, R. (1993). Self-efficacy and Hispanic college students: Validation of the College Self-Efficacy Instrument. Hispanic. *Journal of Behavioral Sciences*, 15, 80-95.
- [48] Spurling, S., Gabriner, R., & City College of San Francisco, C. G. (2002). The effect of concurrent enrollment programs upon student success at City College of San Francisco. Retrieved from CA Office of Institutional Development Research and Planning City College of San Francisco: <u>http://www.ccsf.edu/Offices/Research_Planning/pdf/ecepss02.pdf</u>
- [49] Thomas, J., & Rohwer, W. (1987). Grade-level and course specific differences in academic studying: Summary. *Contemporary Educational Psychology*, *12*, 381-385.
- [50] Thomas, J., & Rohwer, W. (1993). Proficient autonomous learning: Problems and prospects. In M. Rabinowitz

(Ed.) Cognitive science foundations of education (pp. 1-32). Hillsdale, NJ: Erlbaum.

- [51] VanZile-Tamsen, C. (2001). The predictive power of expectancy of success and task value for college student's self-regulated strategy use. *Journal of College Student Development*, *42*, 233-241.
- [52] Venezia, A., Kirst, M. W., & Antonio, A. L. (2003). *Betraying the college dream: How disconnected K-12 and postsecondary education systems undermine student aspirations*. Washington, DC: U.S. Dept. of Education.
- [53] Williams, J. F. (2010). Early college academic performance: Studying the effects of earning college credits from advanced placement and dual enrollment (Ed. D. dissertation, Tempe University). Retrieved from Dissertations & Theses (No. AAT 3390529).
- [54] Zimmerman, B. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology*, 82, 51-59.
- [55] Zimmerman, B., Bonner, S., & Kovach, R. (1996). *Developing self-regulated learners: Beyond achievement to self-efficacy*. Washington, DC: The American Psychological Association.

Tables

	DE				Non-DE			
Measure	N	M (SD)	95% CI	N	M (SD)	95% CI		
GPA	77	3.24 (.60)	[.13, .56}	77	2.89 (.74)	[.13, .56}		
Facilitating Anx.	94	28.11 (5.40)	[-2.76,08]	109	29.52 (4.28)	[-2.76,08]		
Debilitating Anx.	94	29.24 (5.60)	[74, 2.39]	110	28.42 (5.70)	[74, 2.39]		
Concern over Mistakes	92	24.29 (8.10)	[-1.51, 2.69]	109	23.71 (6.99)	[-1.51, 2.69]		
Personal Standards	90	25.34 (4.54)	[.50, 2.86]	108	23.67 (3.86)	[.50, 2.86]		
Parent Expectations	92	15.98 (4.26)	[52, 1.69]	110	15.39 (3.72)	[52, 1.69]		
Parent Criticism	95	9.68 (4.00)	[73, 1.33]	110	9.38 (3.47)	[73, 1.33]		
Doubts about Actions	93	10.22 (3.13)	[-1.69,02]	109	11.06 (2.85)	[-1.69,02]		
Organization	93	23.27 (5.28)	[-1.03, 1.61]	111	22.98 (4.28)	[-1.03, 1.61]		
General Expectations of Success	92	38.03 (4.45)	[.12, 2.67]	111	36.64 (3.72)	[.12, 2.67]		
Expectations of Career Success	93	26.02 (3.55)	[.97, .50]	107	25.06 (3.55)	[.97, .50]		
Beliefs about Problem Solving Abilities	91	29.37 (3.31)	[.95, .47]	106	28.42 (3.29)	[.95, .47]		
CSEI	93	123.25 (24.11)	[9.45, 3.49]	111	113.80 (25.38)	[9.45, 3.49]		
CourseSE	91	46.62 (9.67)	[4.29, 1.35]	109	42.32 (9.42)	[4.29, 1.35]		
SocialSE	90	37.78 (8.69)	[2.77, 1.32]	110	35.00 (9.75)	[2.77, 1.32]		
RoommateSE	91	28.04 (5.84)	[1.59, .86]	104	26.45 (6.18)	[1.59, .86]		
SocialIntegration	92	11.75 (3.53)	[1.12, .49]	111	10.63 (3.48)	[1.12, .49]		
CASES	94	2.50 (0.54)	[25, .07]	113	2.75 (0.48)	[25, .07]		
Commitment	92	30.72 (4.90)	[1.06, .67]	110	29.66 (4.56)	[1.06, .67]		

Table 1. Dual Enrollment Key Variables

Challenge	94	16.29 (3.07)	[.82, .43]	108	15.46 (3.08)	[.82, .43]
Control	93	7.62 (2.33)	[28, .83]	112	7.35 (1.72)	[28, .83]
AHS	91	54.66 (7.58)	[.14, 4.33]	106	52.43 (7.31)	[.14, 4.33]

Note: CI = confidence interval. The following were acronyms used: Ego Identity Scale = EIS; Facilitating = Facilitating Anxiety; Debilitating Anxiety = Debilitating; Concerns Over Mistakes = Mistakes; Personal Standards = PerStandards; Parental Expectations = ParentExpectations; Parental Criticism = ParentCriticism; Doubts About Actions = Doubts; General Efficacy = Efficacy; Career Oriented Expectancy = Career; Personal Problem Solving = ProblemSolving; College Self-Efficacy Inventory = CSEI; Course Self-Efficacy = CourseSE; Social Self-Efficacy = SocialSE; Roommate Self-Efficacy = RoommateSE; Social Integration = SocialIntegration; College Academic Self-Efficacy Scale = CASES; Academic Hardiness Scale = AHS.

•	Tal	bl	le 2	. Factor	s Affecting	g GPA	in DE	and	Non-DE	Students
---	-----	----	------	----------	-------------	-------	-------	-----	--------	----------

	<u>B</u>	<u>SE B</u>	<u>β</u>
DE:			
Step 1 Facilitating Anx.	06	.01	56**
Non-DE:			
Step 1 AHS	.05	.01	.45**
Step 2 AHS GE	.05 07	.01 .02	.49** - 38*

Note: ** p < .001, * p < .01, DE = Dual Enrollment; Facilitating Anx. = Facilitating Anxiety; AHS = Academic Hardiness Scale; GE = General Expectations of Success.