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UNIVERSITY 100 ORIENTATION COURSES AND LIVING-LEARNING COMMUNITIES BOOST ACADEMIC RETENTION AND GRADUATION VIA ENHANCED SELF-EFFICACY AND SELF-REGULATED LEARNING

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ABSTRACT

Nationwide, almost a third of 1st-year college students do not return to begin their sophomore year, and the 5-year graduation rate for undergraduates is only around 40%. It is important for universities to implement interventions, such as freshman transition courses, to help new students adjust to college life and succeed, and it is critical that such programs are evaluated to see if they are reaching their goals. The present study examined short-term self-efficacy and self-regulated learning, and long-term academic performance, retention, and graduation rates over 7 years for 1st-year students enrolled in George Mason University's "University 100"orientation courses ($N = 284$) and demographically similar students who did not take the course ($N = 299$). Results indicate strong effects of University 100 course participation on academic retention and graduation—90% of University 100 students returned to school for their sophomore year whereas this was true for only 78% of comparison students. Five years later, 75% of the students involved in the orientation course were still in school or graduated compared to 60% of students not enrolled in the course. The graduation rate after 7 years for those in the

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orientation course was 70%, compared to 56% for comparison students. Effects on retention and graduation were even stronger for sections of University 100 that involved Living-Learning Communities. Finally, those in University 100 courses had higher academic self-efficacy and self-regulated learning and these motivational variables mediated the positive effects of the program on graduation and retention.

According to the American College Testing Program (ACT, 2008), the national first-to-second-year student retention rate for four-year public universities in 2008 was 68%% (ACT Institutional Data File, 2008). Thus, a full third of incoming freshman students do not return for their sophomore year in college. During the past several decades, it has become increasingly important for universities to identify effective modes of maintaining high student retention rates (Colton, Connor, Shultz, & Easter, 1999; Derby & Smith, 2004). Administrators are not only concerned with first-to-second-year retention but also retention through graduation (Noble, Flynn, Lee, & Hilton, 2007; Schnell & Doetkott, 2003; Williford, Cross Chapman, & Kahrig, 2001). One of the factors affecting student retention is initial college adjustment (Williford et al., 2001). Many universities have utilized new student orientation courses as a means of acclimating freshmen to college life as well as improving the freshman-year experience (Hendel, 2007; Schnell & Doetkott, 2003; Williford et al., 2001). For instance, in Schnell and Doetkott's (2003) study, incoming freshmen attended seminars that were meant to familiarize students with campus resources and help students develop time-management strategies. During difficult economic times, clear evidence of the success of such orientation programs is needed in order to justify continued funding. The present study examines whether George Mason University's (GMU) "University 100" first-year student orientation courses and living-learning communities are effective in increasing student self-efficacy, service usage, self-regulated learning, retention, and graduation.

The effectiveness of freshmen orientation programs on student performance, academic retention, and graduation has been examined somewhat in previous research, and the evidence is mixed, depending on characteristics of the program, university, and the student outcomes assessed. For the most part, past research indicates that orientation courses can positively influence academic performance, student retention through the sophomore year, and retention through graduation (Baker & Pomerantz, 2000; Colton et al., 1999; Noble et al., 2008; Williford et al., 2001). Colton et al. (1999) concluded that students who participated in the freshman program at Kutztown University had significantly higher persistence rates than those that did not take the orientation course. However, in Hendel's (2007) assessment of a land-grant, research university, they did not find a significant relationship between participation in orientation programs and student persistence rates. Schnell and Doetkott's (2003) 4-year longitudinal analysis yielded

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significantly higher graduation rates for students at a midwestern university who took their freshman seminar (51.4%) than those who did not (44.01%). Similarly, researchers at Ohio University examined the impact of a graded, 2-credit hour, orientation course on first-to-second-year retention and retention through graduation rates within a 4-to 6-year time frame (Williford et al., 2001). Undergraduate and graduate peer mentors and non-faculty administrators led the course. The participants' GPAs were collected for each year that they were registered. Results indicated that although there was no difference in the first-to-second-year retention rates of those who did and did not participate in the seminar, they did find higher graduation rates within a 6-year period among the students who participated in the program compared to those that did not (Williford et al., 2001).

Sanchez, Bauer, and Paronto (2006) sought to determine the effects of a first-year program on student retention through graduation, satisfaction, and commitment. The freshman program used in this study consisted of a peer-advising program paired with a new-student orientation course. The orientation course was randomly assigned to freshman business majors. There were two sections of the one-credit, semester long course—one utilized peer advising while the other was just an orientation course. The participants in the peer-advised sections were randomly assigned to peer advisors and met with their mentors weekly after each orientation class. The researchers hypothesized that student satisfaction and club/organizational commitment would be positively related to student retention. Data were collected at five time periods, with the first four occurring within the participant's first year and the fifth 4 years later. Although peer mentoring was associated with higher student satisfaction and higher levels of club/organizational commitment, the researchers did not find a significant difference in the graduation rate of the two cohorts (Sanchez et al., 2006). A popular feature of some orientation programs is that they are organized into "Living-Learning Communities" or LLCs.

Living-Learning Communities and Orientation Courses

In recent years, universities across the country have implemented living-learning communities as a means of acclimating freshmen and other new students to the college experience. Many of these living-learning communities have an orientation course or seminar attached included in the program to further assist students in adjusting to college life. Several researchers have begun to look at the effectiveness of such programs in assisting new students. Noble et al. (2007) studied the influence of participation in the University of South Alabama's first-year program on freshman GPA and graduation within 4 years as well as graduation within 5 years. This freshman program was a voluntary, living-learning community in which participants lived on the same floor under the advisement of peer advisors. The first-year program in this study had several key elements including orientation, tutoring, peer mentoring, and group activities. The

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orientation portion of this program was a first-year seminar that aided students in acclimating to living on campus. Some of the topics that were covered included developing good test-taking strategies and study habits. Researchers found that the freshman program had a significant effect on participants' grade point average, which was .15 points higher than non-participants who also lived on campus, and .25 points higher than off-campus nonparticipants. Similarly, participants were 45% more likely to graduate than non-participants who resided on campus and 75% more likely to graduate than non-participants who lived off campus (Noble et al., 2007). Noble et al.'s (2007) study demonstrates the importance of freshman-year orientation courses and living-learning communities.

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Baker and Pomerantz (2000) assessed the effectiveness of living-learning communities at Northern Kentucky University on fall-to-spring retention rates. Twenty-five students were assigned to each section of the living-learning communities. These participants took three courses together. In addition, the living-learning communities were usually coupled with a freshman orientation course. Focus groups were held near the end of the program to gain an understanding of the students' perspectives on the program. The researchers surveyed the participants and similar cohorts of non-participants to determine student satisfaction, campus involvement, academic performance, and course load. Participant GPAs were .30 points higher than the control group, a greater percentage of participants made the Dean's List/Honor Roll, and participants, on average, took one more credit hour per semester than non-participants. Students enrolled in the program had slightly higher first-to-second semester retention rates than their classmates, and participants also indicated high campus involvement (Baker & Pomerantz, 2000).

It is important to note that even though most of these freshman orientation programs believe that what such programs are doing is increasing student self-efficacy, motivation, self-regulated learning, help seeking, and academic service usage, and that such changes in student motivation and self-regulated learning are what account for increased student retention and graduation, this has not been examined directly in previous research. That is, the literature regarding freshman transition courses has not explored possible motivational mediators or mechanisms that may explain why these interventions have proven to be beneficial to student retention and graduation. The present study examines student self-efficacy, help seeking, and self-regulated learning as potential mediators of gains made in academic retention, and thus these motivational constructs are briefly explored next.

Self-Regulated Learning

Self-regulation, from a social-cognitive perspective, involves setting goals, strategizing, monitoring, and reflecting upon one's own learning (Zimmerman & Schunk, 2008). Further, self-regulation involves the simultaneous interplay of

several aspects of student learning, including cognitive, metacognitive, motivational, and contextual aspects (Zimmerman, 2006). Successful self-regulation prompts the learner to adjust affect, behaviors, and cognitions based on evaluative feedback received from behavioral, environmental, and covert (cognitive and metacognitive) processes until optimal levels of performance are achieved. In addition, self-regulation is conceptualized as a cyclical process, given the critical role of feedback related to past performance. With regard to college students, self-regulation is critical due to the demands of higher-level thinking and the focus on independent learning. In fact, student inability to self-regulate learning behaviors is a crucial reason for academic learning difficulties (Zimmerman & Schunk, 2008). On the other hand, students who are effective self-regulated learners tend to be more motivated, report high self-efficacy beliefs, use effective strategies, and self-evaluate to achieve their academic goals.

Numerous studies indicate that self-regulation has a positive effect on college student academic performance and motivational beliefs (Kitsantas, 2002; Kitsantas, Winsler, & Huie, 2008; Wolters, 1998; Zimmerman, 2006). Wolters (1998) determined which behaviors college students utilize to increase their resolve in executing academic tasks. Participants consisted of 151 students enrolled in an introductory psychology course. Findings suggest that self-efficacy, help seeking (i.e., actively seeking help from a professor or tutoring center), changing the study environment (i.e., studying in a quieter area), and increasing one's resolve were strategies that students would utilize in completing difficult tasks (Wolters, 1998).

Help Seeking and Academic Performance

Help seeking refers to one's likelihood of seeking aid when trying to resolve a problem. Help seeking is generally an adaptive self-regulatory strategy that students utilize in dealing with complex academic tasks that they cannot comprehend on their own (Karabenick & Knapp, 1998). As a goal-directed and intentional behavior, help seeking helps academically struggling students to achieve their desired performance goal by recognizing the need for assistance, identifying an appropriate resource, seeking the necessary assistance, and, thus, employing a strategy to achieve a learning goal. Studies shows that help seeking correlates with academic achievement (Karabenick & Knapp, 1998). For example, Stanton-Salazar, Chavez, and Tai (2001) examined the help-seeking behaviors of Latino high school students in a Californian urban community. The researchers administered several surveys measuring various aspects of help-seeking behaviors (including one's inclination to use academic support resources) to participants. Analyses indicated a positive association between help seeking and academic performance (Stanton-Salazar et al., 2001). Similarly, in a recent study with college students with learning disabilities (Troiano, Liefeld, & Trachtenberg, 2010), students who sought help frequently from an academic support center were

more likely to graduate as well as attain higher levels of achievement than those who did not.

Self-Efficacy, Academic Performance, and Retention

According to Bandura (1997), self-efficacy is the level of belief one has in his or her capabilities in completing a task successfully. Self-efficacy beliefs are context and domain-specific and they are malleable and can be increased by intervention. Self-efficacy beliefs not only influence the effort and persistence that an individual expends on a task but also determine the level of perseverance in the face of obstacles. Self-efficacy beliefs also influence student self-regulation through the use of more effective learning strategies and increased interest in learning activities (Zimmerman, 2006). Students who display positive self-efficacy beliefs set process-oriented goals, use more effective strategies, and report high personal standards to monitor and evaluate their own work. Research studies show that high efficacy beliefs have been found to be associated with greater student academic achievement and retention (Caprara, Fida, Vecchione, Del Bove, Vecchio, Barbarnelli, et al., 2008; Devonport & Lane, 2006; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004). For example, researchers who have examined the effects of perceived self-efficacy on academic performance and retention have found that students with high levels of self-regulatory efficacy early on were more likely to graduate from high school and had higher academic achievement (Caprara et al., 2008). Similarly, Devonport and Lane (2006) examined selfefficacy and coping strategies among college freshmen and related these to student retention. They found that students who dropped the course obtained lower scores across several self-efficacy variables, including time-management skills, group work capability, and ability to utilize learning resources. In summary, self-efficacy is a key construct of motivation and a powerful predictor of academic success.

Overall, the studies reviewed above have found that extended freshman orientation programs positively influence student academic performance and first-to-second-year retention rates. However, few studies examine retention through graduation. Furthermore, most of the studies on college student retention do not compare retention through graduation across multiple individual difference variables such as self-efficacy and self-regulation. Prior research does not investigate the effects of first-year orientation courses on students' self-efficacy and self-regulation as potential mediators. Similarly, there is limited research that analyzes the effects of different types of orientation courses (living-learning communities vs. regular orientation courses) on student retention through graduation, first-to-second-year retention, and college academic performance all together. Finally, research regarding orientation courses has not examined the role of students' help-seeking behaviors on student retention or graduation.

The Present Study

The present study examined the effects of University 100 (UNIV 100) courses offered at George Mason University in the fall of 2002 on academic performance, self-efficacy, self-regulated learning, help seeking, and retention over the course of 7 years. This study also tested whether the combination of living-learning communities and the orientation courses was particularly beneficial in terms of retention and graduation rates. Finally, we examined whether effects of UNIV 100 on retention and graduation were mediated by increased student self-efficacy and self-regulation. More specifically, the following research questions were formulated:

1. Do students who chose to take UNIV 100 and those who did not differ initially on academic performance, self-regulation, and self-efficacy, gender, ethnicity, and age?
2. Is participation in UNIV 100 associated with increases in a) student GPA, b) retention, and c) graduation over 7 years, compared to students who did not take UNIV 100?
3. Do UNIV 100 students who are enrolled in a living-learning community (LLC) show greater academic performance, retention, and graduation than those not in a LLC?
4. Is UNIV 100 participation associated with increased help seeking, academic self-efficacy, self-regulated learning, and student use of academic and student services, and satisfaction with the university?
5. Are effects of UNIV 100 on retention and graduation mediated by increases in student self-efficacy and self-regulated learning?

Hypotheses were that UNIV 100 and LLCs would have positive effects in each case, and that the effects would be mediated by increased self-efficacy and self-regulated learning.

METHOD

Participants

First-semester college students at George Mason University (GMU; $N = 590$), a large, ethnically diverse metropolitan research university, participated in the study. About half of students ($N = 284$) were enrolled in, and recruited from, UNIV 100, a first-semester orientation course (described more below). The comparison participants were not enrolled in UNIV 100, and instead were recruited from large and popular first-year courses (such as Psychology 100, Biology 103, or Communications 100; $N = 305$). Surveys were distributed in class to participants during the first 2 weeks of their first semester on campus (T1, Fall 2002). The mean age of the subjects was 18.9 years and 63% were female. The sample

was 62% White/European American, 17% Asian, 7% African American, 5% Hispanic/Latino, and 9% "other/mixed" according to student self-report on the T1 survey. About half (58%) of the students had declared their major during their first semester. Surveys were administered in class again during the last 2 weeks of the first semester, T2 ($N = 256$). The survey was distributed and returned again at the end of the students' second (Spring) semester via e-mail (T3; $N = 94$). Student enrollment status, GPA, and graduation status were obtained, with student consent, each semester for the next 7 years from student records. Additional demographic information about the sample is provided in Table 1.

Measures

The Motivated Strategies for Learning Questionnaire

Subscales from the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1993) were used to measure self-regulated learning and academic self-efficacy at three time points. The self-reported questionnaire involves a 7-point Likert-type scale ranging from 1 = *not at all true of me* to 7 = *very true of me*. The self-efficacy scale contained eight items (i.e., "I'm confident I can do an excellent job on the assignments and tests in my courses"; $\alpha = .93$ for this sample). The metacognitive self-regulation scale contained twelve items (i.e., "When I study for a class, I set goals for myself in order to direct my activities in each study period"; $\alpha = .79$). Help seeking included four items (i.e., "When I can't understand the material in a course, I ask another student in class for help"; $\alpha = .52$). Peer learning included three items (i.e., "When studying for a course, I often try to explain the material to a classmate or friend"; $\alpha = .76$). Time management included eight items (i.e., "I attend class regularly"; $\alpha = .76$). Effort regulation contained four items (i.e., "I work hard to do well in my classes even if I don't like what we are doing"; $\alpha = .69$). The MSLQ has been widely used and been shown to have good psychometric properties (Pintrich et al., 1993).

Service Use and Satisfaction with the University

Also included in the surveys were items designed to assess the extent to which students' self-reported use of an exhaustive variety of academic (e.g., Academic Support and Advising Services, Math Tutoring Center, etc.) and non-academic services (e.g., Student Activities Office) available on campus. Each office/service was listed, and participants were asked to identify how often they *planned to use* (in the current semester in the case of T1, and for upcoming semester at T2 and T3), and *actually used* each of these services during the current semester (for T2 and T3). We summed all responses (0 = no, yes = 1) across services and used the overall total in the analyses.

Table 1. UNIV 100 Initial Differences and Similarities Between Comparison Participants

	UNIV 100		Comparison	
	M/%	(*SD*)	*M*/%	(*SD*)
Gender				
Male	40.8%		34.4%	
Female	59.2%		65.6%	
Ethnicity				
White	63.5%		60.7%	
African American	8.2%		6.2%	
Hispanic	5.7%		4.6%	
Asian American	15.6%		18.7%	
Other	7.1%		9.8%	
Native Language				
English	81.0%		76.9%	
Other	19%		23.1%	
First Generation Student				
Yes	28.4%		34.9%	
No	71.6%		65.1%	
High School Academic Records				
Overall SAT	1106.3	(149.03)	1086.69	(124.58)
High School GPA	3.26	(0.39)	3.24	(0.39)
Family SES				
Mother's Education*	3.56[a]	(1.63)	3.27	(1.37)
Father's Education	4.28	(1.94)	4.03	(1.76)
Income	4.65[b]	(1.95)	4.45	(1.96)
Age*	18.61	(0.63)	19.24	(2.54)
T1 Motivation				
Self-Efficacy	5.04	(0.94)	4.96	(0.93)
Metacognition	4.39	(0.86)	4.36	(0.82)
Time Management	4.93	(0.91)	4.95	(0.88)
Effort Regulation	4.80	(1.14)	4.83	(1.04)
Peer Learning*	4.02	(1.27)	3.65	(1.27)
Help Seeking*	4.55	(0.99)	4.38	(1.09)

Note: *$p < .05$.

[a]scale: 1 = some high school, 2 = graduated from high school, 3 = some college/professional school, 4 = Bachelor's degree, 5 = some graduate study, 6 = Master's degree, 7 = some doctoral study, 8 = Doctoral degree.

[b]range: 1 = $10,000-20,000, 2 = $21,000-40,000, 3 = $41,000-60,000, 4 = $61,000-80,000, 5 = $81,000-100,000, 6 = $101,000-150,000, 7 = $151,000-200,000, 8 = $201,000-300,000, 9 = < $300,000.

This survey at each time point also had questions regarding the students' overall satisfaction with their college experience and the university and extent to which they have found supportive personnel. For example, questions included "I believe I am receiving a good education at GMU; Have you found someone at GMU who has been helpful with your academic aspirations and goals?; So far, how has your college experience met your expectations?; Rate your overall satisfaction with your experience at GMU thus far; All in all, if you had to do over again, would you enroll at GMU?" Answers were provided on a 5-point, "strongly disagree" to "strongly agree" scale.

Retention, GPA, and Graduation

These outcomes were provided to us for participating students, with student and university consent. Retention was defined as continuing enrollment in the university according to university records and/or graduation from the university. For example, participants who returned to school in Spring 2003 were considered retained (and received a "1") for that semester. For each subsequent semester for the next 7 years through Fall 2009, including summers, students were classified as 0 = dropped out (no longer matriculated) or 1 = still enrolled. Furthermore, everyone who graduated from the university at some point within that time frame was categorized as retained at all time points. For those who did not graduate but had breaks in enrollment, that is, they left for one or more semesters and then came back as registered again, they were categorized as retained continuously throughout their last semester at the university.

The semester in which students received their Bachelor's degree was noted. There were 10 students who at fall 2009 were still enrolled in the university but had not yet received their Bachelor's degree. These participants were categorized as retained throughout the entire time but not graduated. Graduation was defined as having obtained any Bachelor's degree by Fall 2009. Cumulative and term GPA were obtained for each semester enrolled, and final cumulative GPA at graduation was also obtained.

Procedure

During the fall of 2002 (T1), participants were recruited in UNIV 100 courses and from common introductory courses such as Psychology 100, Biology 103, and Communications 100. With permission of the instructors, the researchers spent 5 minutes of class during the first 2 weeks of the semester to describe the study and distribute hard copy surveys to interested students. Included in the survey packet was the informed consent form. Similar surveys were also administered in the same classes during the last two weeks of the participants' first semester (T2). A final survey was distributed via e-mail to students at the end of the following spring semester (T3). Participation was voluntary and one or two extra credit points were given to students who were enrolled in courses such as Psychology

100 that offered credit for research participation. Also, students who completed the survey at T2 and T3 were entered into a random drawing for a $50 prize, which was distributed to one winner at each time point.

University 100 at GMU

The UNIV 100 course was a 14-week freshman orientation course that was meant to ease the transition to college life. There were six different types of UNIV 100 courses offered during the fall of 2002, including five types of academic skills courses consisting of the general academic skills course, academic skills for undecided majors, academic skills for student athletes, academic skills for School of Management students, and academic skills for at-risk students who participated in GMU's Early Identification Program. The final kind of UNIV 100 course was comprised of sections with living-learning communities. For all sections, peer advisors and voluntary faculty mentors facilitated weekly seminar sessions that revolved around developing time-management skills, critical-thinking skills, healthy living, and choosing academic majors and career paths. The class size was small, with an average of 15-18 students in each section, and the course was very interactive in nature. The participants were encouraged to become familiar with campus resources to better their academic success and college experience. Weekly journals were kept as a means of self-reflection. Participants were required to attend three campus events outside of the parameters of the course. One of the events had to be facilitated by the university's Learning Services office. The other events had to be associated with a student organization of the participant's interest. Students received grades and one or two credits for their enrollment. Similarly, during the semester, students were required to attend an outdoor-learning event that consisted of team-building exercises. Finally, participants were encouraged to meet with their academic advisors throughout the semester.

RESULTS

Preliminary Analyses—Initial Demographic Differences

The first question was to see if there were pre-existing differences at the beginning of their first semester of their freshmen year (T1) between those enrolled in the UNIV 100 course and those not. There were very few demographic differences between the freshmen that participated in the UNIV 100 courses and those that did not across the 14 demographic variables measured at Time 1 as seen in Table 1. The results for the high school performance, motivational, and some demographic differences between the two groups are discussed in depth below.

High School Performance and Demographics

T-tests revealed that there were no differences between the two groups on high school GPA or SAT scores. Likewise, both cohorts had fathers with similar levels of education (4 = a Bachelor's degree). Both groups of participants had an annual family income averaging $61,000-80,000, and there were no differences in immigrant status, ethnicity, gender, first language, or whether the target student was the first in their family to attend college. There was a small but statistically significant difference between the groups on maternal education, $t(516.98) = -2.28$, $p < .05$, $d = .19$. Mothers of UNIV 100 participants had slightly higher education, on average, than mothers of the other participants. However, it is notable that maternal education itself was not associated with student retention or graduation, nor with any of the motivational variables. The other small difference found was on student age. Participants enrolled in UNIV 100 were 6 months younger, on average, than their comparison peers, $t(320.814) = 4.06$, $p < .01$. However, this was due to there being two older (> 40) students present in the non-UNIV 100 group. The difference in age between the groups was no longer present after removing these outliers. Further, student age was not associated with retention, graduation, or motivation.

Motivation/Self-Regulation

The UNIV 100 and comparison cohorts did not differ in self-efficacy, metacognition, time management, or effort regulation at T1. However, *t*-tests revealed significant group differences in T1 peer learning and help seeking. The UNIV 100 students reported higher peer-learning $t(582) = -3.54$, $p < .01$ and help seeking $t(583) = -2.03$, $p < .05$ than their peers not enrolled in the program. It is important to note, however, that the T1 assessment occurred about 2 weeks after the semester (and the UNIV 100 course) had already begun, so it is unclear whether this is a pre-existing difference or whether the orientation course, that emphasized peer learning and help seeking, had already started to have an effect the early in the semester.

Question 2—Group Differences in Academic Performance, Retention, and Graduation

The second research question assessed whether UNIV 100 students and comparison students differed in performance outcomes of grade point averages, college persistence, and graduation. Data for these three variables were collected each semester that the student was enrolled at GMU.

Retention

Table 2 provides retention rates for each year of school for those who did and did not enroll in UNIV 100 courses. Chi square analyses revealed that there were significant differences between the UNIV 100 and comparison groups in academic

Table 2. Retention and Graduation by Fall 2009

	UNIV 100	Comparison
Retention by semester		
(Semester 4) Fall 2003*	89.8%	77.9%
(Semester 7) Fall 2004*	83.1%	71.1%
(Semester 10) Fall 2005*	79.9%	64.5%
(Semester 13) Fall 2006*	77.8%	61.9%
(Semester 16) Fall 2007*	75.0%	59.9%
Graduation within seven years*	68.7%	55.9%

Note: *$p < .05$.

retention across each of the five time points that were measured. Significantly more (12%) UNIV 100 participants returned for the start of their sophomore year (89.8%) compared to students who did not participate in the course (77.9%), $\chi^2(1) = 15.17$, $p < .01$. Similarly, 83.1% of UNIV 100 participants returned 2 years later whereas only 71.1% of those that were not enrolled in the course returned for their junior year, $\chi^2(1) = 11.73$, $p < .01$. The same patterns were observed favoring the UNIV 100 group in academic retention 3- ($\chi^2(1) = 17.11$, $p < .01$), 4- ($\chi^2(1) = 17.51$, $p < .01$), and 5-years later ($\chi^2(1) = 15.14$, $p < .01$). The difference between groups grew each year to where after five years at the fall of 2007, 75% of the students who took the orientation course were either still enrolled or graduated compared to 59.9% of students who were not enrolled in the first-semester orientation course.

Graduation

The 7-year graduation rate for both groups is also listed in Table 2. Chi square analyses revealed that there was a significant difference in the graduation rates between the students who took the transition course and the students who did not. UNIV 100 participants had a 14% higher graduation rate (68.7%) compared to their classmates who did not participate in the course (55.9%), $\chi^2(1) = 10.15$, $p < .01$.

Because other studies have found that students who live on campus in their first year are more likely to persist and graduate than those who live off campus (Noble et al., 2007), and UNIV 100 students were more likely to live on campus, a living-on-campus confound effect was tested. Independent t-test analyses revealed no overall significant differences in retention and graduation rates between students living on vs. off campus.

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We reported 7-year graduation rates above because we could, having followed the students for that long. However, 6-year graduation rates are more often used in national estimates so here we provide the 6-year rates as well for comparison purposes. The 6-year graduation rate for our UNIV 100 students was

67% compared to 55% for non-participants. The national 6-year graduation rate for 4-year public colleges in 2008 (the 6th year for this sample) was 44% (ACT Institutional Data File, 2008).

GPA

Table 3 shows student cumulative GPAs by group at three different time points—at semester two, semester eight, and then final cumulative GPA at either graduation or drop out. *T*-tests indicated that UNIV 100 students did not differ significantly in their cumulative grade point averages at any time point with students who did not take UNIV 100 classes. It is important to note that even at T1 and semester two, there were no differences in academic performance, so the two groups of students were equivalent in their academic performance and initial potential at the start of college. There continued to be no differences in average grades, but the UNIV 100 students were simply more likely to persist and graduate than those who did not take the orientation course.

Question 3—LLCs vs. Regular UNIV 100 Sections

Similar to the second research question, the third question inquired as to the effectiveness of the living-learning community (LLC) sections of UNIV 100 compared to the regular UNIV 100 sections for academic retention and graduation. Table 4 provides retention rates and the 7-year graduation rate for those who attended LLC sections of UNIV 100 (n = 70) and those in regular UNIV 100 sections (n = 212). There were no significant differences between the LLC and regular UNIV 100 cohorts on retention in their sophomore year. However, the difference between these two types of programs grew with each continuing year. Students who participated in the UNIV 100 LLCs had significantly higher retention rates than students enrolled in other sections of UNIV 100 for the start of

Table 3. Cumulative Grade Point Average by Group

	UNIV 100	Comparison
	M (*SD*)	*M* (*SD*)
Spring 2003 (S2)	2.73 (.69)	2.73 (.71)
Spring 2008 (S8)	2.85 (.60)	2.91 (.56)
Final GPA[a]		
Drop Outs	2.33 (.79)	2.53 (.87)
Graduated[b]	3.08 (.45)	3.06 (.41)

Note: [a] = cumulative GPA at graduation or last semester of enrollment. [b] = Graduated by Fall 2009.

Table 4. Comparison of Living Learning Communities and Other Sections of UNIV 100

	LLC UNIV 100 (*N* = 70)	Other UNIV 100 (*N* = 212)
Retention by semester		
(S4) Fall 2003	94.3%	88.2%
(S7) Fall 2004*	91.4%	80.2%
(S10) Fall 2005*	91.4%	75.2%
(S13) Fall 2006*	91.4%	73.1%
(S16) Fall 2007*	88.6%	70.3%
Graduation within 7 years		
Graduated by Fall 2009*	85.7%	62.7%

Note: *$p < .05$.

their third year, $\chi^2(1) = 4.71$, $p < .01$, fourth year, $\chi^2(1) = 7.83$, $p < .01$, fifth year, $\chi^2(1) = 10.17$, $p < .01$, and sixth year, $\chi^2(1) = 9.34$, $p < .01$. Furthermore, there was a significant and very impressive difference in the ultimate graduation rates between those who were in UNIV 100 LLC sections (86% graduated within 7 years) and those in regular UNIV 100 courses (63%), $\chi^2(1) = 12.86$, $p < .01$. For purposes of national comparison, the 6-year graduation rate for LLC participants was 83% compared to 61% for regular UNIV 100 participants, also significantly different.

Question 4—Service Use, Satisfaction, Self-Efficacy, and Self-Regulated Learning

The next set of analyses was conducted to see if the UNIV 100 students engaged with university services more, felt more efficacious about themselves as learners, were more satisfied with their university experience, and exhibited greater self-regulated learning than the similar students who did not attend the orientation classes. These variables were collected at the beginning of the fall 2002 semester (T1), the end of the first semester at GMU (T2), and at the end of the spring 2003 semester. Multivariate ANOVAs were conducted when there were multiple, related, dependent measures within a time point in each case, and where those were significant, follow-up individual *t*-tests are reported. Repeated-measures ANOVAs were not feasible given the attrition of subjects over time and the desire to use all information possible at each time point.

Service Use

T-tests were conducted comparing the two groups on student self report of both *planned* service use for the upcoming semester usage and *actual use* of various

academic and non-academic services on campus at each time point. There were no differences between the two groups on how much they *planned* to use specifically *academic* services, such as the tutoring or writing centers, at T2 and T3; see Table 5. However, at T1, those that participated in the orientation course planned to use academic services more than the comparison group, $t(572) = -2.2$, $p < .05$. For students' plans to use *non-academic services*, such as career services and the student activities office, there were notable differences between the cohorts at T1 and T3. At T1, the UNIV 100 students planned to use non-academic services marginally more often than their comparison classmates, $t(558.09) = 1.84$, $p < .10$, and at T3, this difference became statistically significant, $t(92) = -2.04$, $p < .05$.

In terms of self-reported *actual* use, significant differences were found between the groups on use of academic services at the first two time points. The UNIV 100 cohort reported using *academic services* more often than the comparison cohort, at T1, $t(572) = 2.14$, $p < .05$, and T2, $t(253.84) = 4.14$, $p < .01$. At T3, there were no significant differences. For use of *non-academic services*, there were no differences between the UNIV 100 and the comparison cohort in number of times these services were used at T1 and T3. However, at T2, the UNIV 100 sample used non-academic services more often than their classmates, $t(235.79) = -2.66$, $p < .01$.

Table 5. Service Usage by Group

	UNIV 100	Comparison
	M (*SD*)	*M* (*SD*)
Academic[a]		
Planned		
T1*	4.53 (3.51)	3.90 (3.26)
T2	3.02 (3.13)	3.18 (3.34)
T3	2.84 (3.10)	2.42 (2.81)
Actual		
T1*	0.98 (1.56)	0.71 (1.40)
T2	2.15 (2.02)	1.30 (1.28)
T3	1.33 (1.45)	1.02 (1.37)
Non-Academic[a]		
Planned		
T1*	3.46 (2.99)	3.01 (2.80)
T2	0.67 (1.05)	0.53 (1.04)
T3	0.92 (0.79)	0.60 (0.72)
Actual		
T1	0.92 (1.48)	0.78 (1.27)
T2*	0.36 (0.71)	0.17 (0.45)
T3	0.31 (0.51)	0.36 (0.57)

Note: *$p < .05$.

QA: What does "*a*" represent?

Peer Learning and Help Seeking

Significant differences in student self-reported (Motivated Strategies for Learning Questionnaire–MSLQ) peer-learning behaviors between the UNIV 100 and comparison cohort were found both at T1, $t(582) = 3.54$, $p < .001$, and at T3, $t(94) = 2.12$, $p < .05$; see Table 6. The UNIV 100 group reported higher peer learning than their classmates at both T1 and T3. However, the two groups did not differ in their self-reported use of peers for learning at T2. Similarly, the same pattern of findings was obtained for student help seeking. There were significant differences on MSLQ help-seeking behaviors between the two groups at T1, $t(583) = –2.03$, $p < .05$, and T3, $t(94) = –2.23$, $p < .05$. In contrast, the two groups did not differ in their help-seeking behaviors at the T2.

Table 6. Self-Efficacy and Self-Regulated Learning by Group

	UNIV 100	Comparison
	M (*SD*)	*M* (*SD*)
Self-Efficacy		
T1	5.04 (0.94)	4.96 (0.93)
T2	4.96 (1.20)	4.99 (0.80)
T3*	5.39 (0.98)	4.87 (0.85)
Self-Regulation		
Metacognition		
T1	4.39 (0.86)	4.36 (0.93)
T2	4.29 (0.94)	4.33 (0.72)
T3*	4.76 (0.80)	4.27 (0.78)
Time Management		
T1	4.93 (0.91)	4.95 (0.88)
T2	4.65 (1.05)	4.75 (0.88)
T3*	4.68 (0.77)	4.61 (0.79)
Effort Regulation		
T1	4.80 (1.14)	4.83 (1.04)
T2	4.58 (0.99)	4.75 (1.02)
T3	5.04 (0.98)	4.86 (0.85)
Peer Learning		
T1*	4.02 (1.27)	3.65 (1.27)
T2	4.02 (1.98)	3.87 (1.37)
T3*	4.28 (1.27)	3.67 (1.52)
Help Seeking		
T1*	4.55 (0.99)	4.38 (1.09)
T2	4.23 (0.90)	4.15 (1.17)
T3*	4.34 (0.85)	3.86 (1.23)

Note: *$p < .05$.

Self-Efficacy and Self-Regulated Learning

Table 6 also lists means and standard deviations for student academic self-efficacy, metacognitive self-regulation, time management, and effort regulation for those who were and were not in UNIV 100 course for all time points. There were significant group differences on self-efficacy, metacognition, and effort regulation at the end of the first school year at T3. The UNIV 100 cohort reported higher effort regulation, $t(94) = -2.78$, $p < .01$, metacognition, $t(94) = -3.07$, $p < .01$, and self-efficacy. $t(94) = -2.78$, $p < .01$, than the comparison group. The two cohorts did not differ at any time point on time management.

Satisfaction with the University

The final component of this research question was determined whether students enrolled in the orientation class yielded higher college satisfaction ratings than their classmates who did not participate in the course. Likewise, this research question also analyzed whether the students involved in the living-learning community sections of UNIV 100 would have higher satisfaction than those enrolled in regular sections of UNIV 100.

Increased general university satisfaction was found for those enrolled in the orientation course compared to those not in the course. The UNIV 100 students, at T2, more strongly believed that they would be able to find someone to help them achieve their career aspirations, $t(237) = 2.55$, $p < .05$, compared to non-participants. Also, the students who participated in the UNIV 100 course reported having an easier time making friends with other students, $t(237) = -2.94$, $p < .05$. Similarly, UNIV 100 students reported having found a college mentor more often than those that did not participate in the course, $t(248) = 2.93$, $p < .05$. Likewise, a larger percentage of the UNIV 100 cohort claimed their college experience met their expectations, $t(248) = -2.05$, $p < .05$. Finally the UNIV 100 students also reported they were more satisfied with their overall college experience than their peers who were not in the orientation program, $t(248) = -1.99$, $p < .05$. Several of these results were still statistically significant with the smaller sample available at T3. Students who participated in UNIV 100 still reported an easier time making friends at the college, $t(94) = -2.30$, $p < .05$, at T3 and the UNIV 100 group reported higher overall satisfaction with college experience, $t(94) = -2.30$, $p < .05$, at the end of the school year than those that were not enrolled in the course.

LLCs and Satisfaction at T2

Similarly, students involved in the living-learning community sections of UNIV 100 felt more strongly that they were receiving a good education, than those in regular UNIV 100 sections, $t(140) = -2.66$, $p < .05$. Those enrolled in the LLCs believed more that they met someone that would help them achieve their goals, $t(140) = -1.92$, $p < .05$, and they reported that obtaining a college degree was

important to them, $t(140) = -2.00$, $p < .05$, more so than those in regular sections of UNIV 100. Finally, UNIV 100 students enrolled in the LLC sections reported that they if they had to do it all over again they would be likely to re-enroll in the university more often, $t(146) = -2.13$, $p < .05$ than those who were enrolled in other sections of the orientation course (see Figure 1).

Question 5—Mediation through Self-Efficacy and Self-Regulation

Lastly, to demonstrate that UNIV 100 may have its positive effects on retention and graduation by increasing student self-efficacy and self-regulation, we followed the steps outlined by Baron and Kenny (1986) for testing mediation. First, it was necessary to show that UNIV 100 was associated with increases in these motivational variables. This was shown above in Table 6. Two variables at T3 varied significantly as a function of UNIV 100 attendance—self-efficacy and metacognitive self-regulation. Thus, these two variables were selected as potential mediators. A second essential step for showing mediation is that one's independent variable (in this case, UNIV 100 participation) is related to the outcome of interest (retention/graduation by 7 years). This was shown above in Tables 2 and 4.

It is also necessary to show that the outcome variable is related to the potential mediators (self-efficacy and metacognitive self-regulation). Thus, Table 7 shows how these two motivational variables did differ between those who graduated and those who did not. Those who were retained/graduated had higher metacognitive self-regulation, $t(94) = 2.85$, $p < .01$, and self-efficacy, $t(94) = -3.10$, $p < .01$, at T3 than their classmates that dropped out before then. The final step we took to test for mediation involved logistic regression analyses in which participation in UNIV 100 predicted graduation/retention, with and without the mediator variables of self-efficacy and self-regulation included (each one at a time). This was done to determine whether the effect of UNIV 100 on 7-year graduation disappeared or was considerably weakened when the motivational variable was included.

For 7-year graduation, logistic regression analyses confirmed significant differences in the likelihood of graduating for those who were enrolled in the UNIV 100 course and those who were not. The odds of graduating were almost 50% less if

Table 7. Motivation by Retention at Semester 16

Motivation at T3	Retained/Graduated	Dropped Out
	M (*SD*)	*M* (*SD*)
Metacognitive SR*	4.64 (.81)	4.09 (.75)
Self-Efficacy*	5.27 (.93)	4.62 (.88)

Note: *$p < .05$.

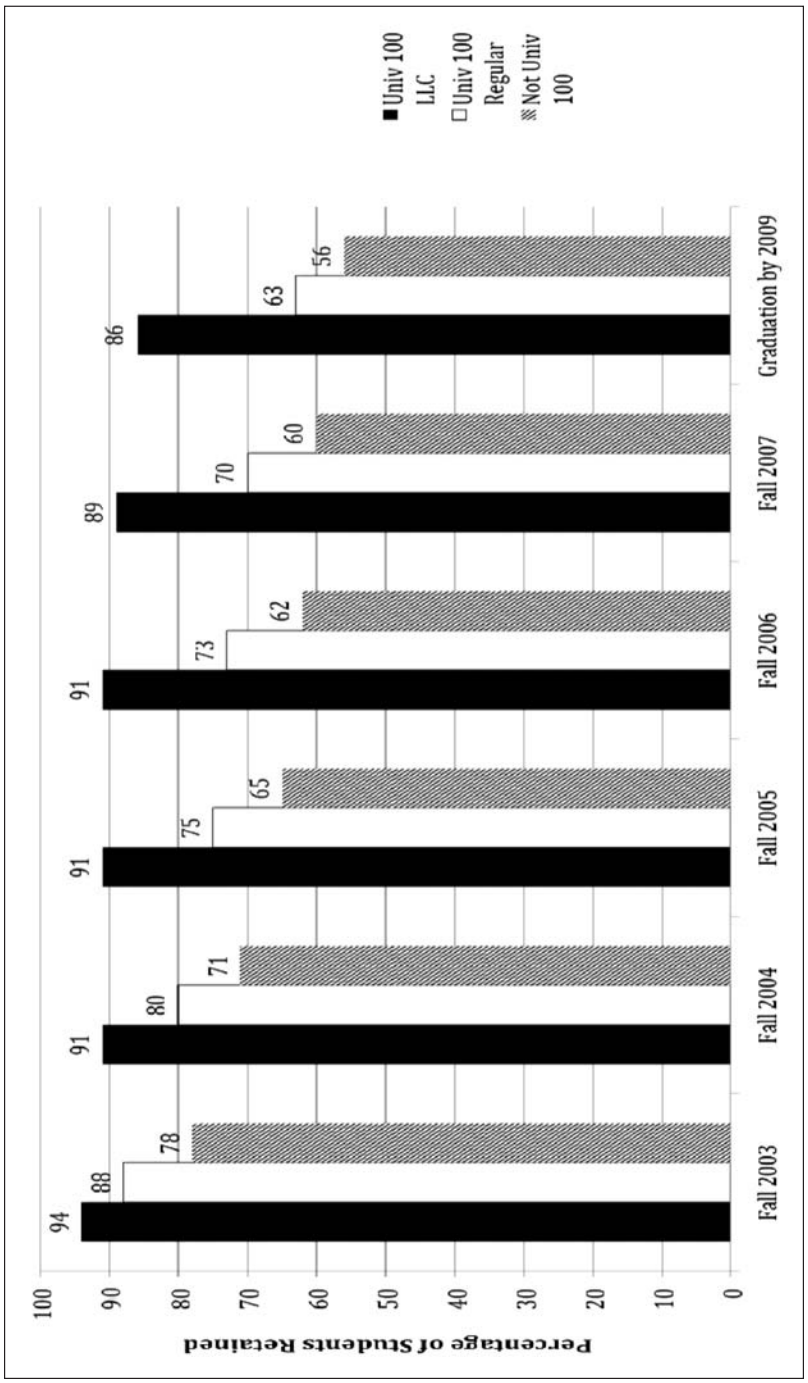

Figure 1. Retention over time and graduation within 7 years as a function of UNIV 100 and LLC participation.

one were *not* enrolled in UNIV 100 during the freshman year, $B = -.55$, *S.E.* = .17, Wald χ^2 (1) = 10.08, $p < .01$, odds ratio = .58. When self-efficacy was entered into the second hierarchical step, the UNIV 100 effect disappeared, $B = -.45$, *S.E.* = .53, Wald χ^2 (1) = .71, $p = .40$. However, the self-efficacy effect was quite significant; the odds of graduating were 2.3 times higher if one's reported self-efficacy rating was one point higher at T3, $B = .84$, *S.E.* = .32, Wald χ^2 (1) = 7.06, $p < .01$. The same analyses were then conducted with metacognitive self-regulation as the mediator rather than self-efficacy. The results were the same. The effect of UNIV 100 on graduation became non-significant when metacognitive self-regulation was included in the model. Thus, statistical mediation was demonstrated in the multivariate models: when one association between two variables is explained by the links it has with a third variable, the original association goes away or is reduced when the third variable is included (Baron & Kenny, 1986).

DISCUSSION

Topics of great concern for university administrators across the United States are rates of undergraduate student retention and graduation. In an effort to aid new students in their transition to college life and to maximize student retention, first-year orientation courses and living-learning communities are often implemented (Hendel, 2007; Schnell & Doetkott, 2003; Williford et al., 2001). Although a major goal of such programs is to increase student engagement and satisfaction with the university, enhance self-efficacy, and develop self-regulated learning skills, previous studies have not explored whether such programs enhance these aspects of student motivation. This study examined whether students who voluntarily attended a first-semester orientation program, University 100 (with or without a living-learning community), at George Mason University demonstrated enhanced academic performance, student retention over 5 years, and graduation over 7 years compared to demographically similar students who did not participate in the orientation program. We also tested whether the UNIV 100 program was linked with enhanced student self-efficacy, help seeking, peer learning, use of campus services, and self-regulated learning, and whether benefits in retention/graduation appeared to be due to increases in student self-regulated learning and self-efficacy.

Our hypotheses concerning enhanced retention and graduation were supported. Those enrolled in UNIV 100 courses returned to school for their second, third, fourth, and fifth year, and eventually graduated at considerably higher rates than students who were not enrolled in the orientation course in their first semester. Retention rates for those in the orientation course were consistently 12-15% higher for each continuing year in school—90% compared to 78% for 1-year retention and 75% vs. 60% for 5-year retention. In the end, 69% of UNIV 100 participants graduated from the university within 7 years compared to only 56% of

first-year students who did not receive the first semester orientation experience. This is strong evidence of the effectiveness of first-year orientation programs. Results of the present study are consistent with other research (Colton et al., 1999; Derby & Smith, 2004; Noble et al., 2007) that has found higher persistence and graduation rates for those who participate in similar orientation courses.

QA: 2008 or 2007?

Even more impressive effects on retention and graduation were observed for students who were enrolled in living-learning community (LLC) sections of UNIV 100, in which all students share a floor of a residence hall with their classmates also in their UNIV 100 orientation course. One-year retention was 94%, 5-year retention was 89%, and the eventual graduation rate was an impressive 86% for those in LLC sections of UNIV 100. This supports Noble et al. (2007) and Baker and Pomerantz's (2000) studies that found an association between LLC involvement and retention.

Although strong effects were observed for retention and graduation rates, it is notable that with regard to academic performance as measured by GPA, no differences in performance at any time were observed between those in orientation courses (or for LLCs) and those who were not. These results, thus, do not replicate those of Baker and Pomerantz (2000), Colton et al. (1999), Noble et al., (2008), and Williford et al. (2001), who all found small positive enhancements to student GPA at various points throughout college for those in transition/orientation courses. Perhaps the curriculum in the UNIV 100 sequence at GMU places less emphasis on increasing student grades and performance compared to programs at other universities, and focuses more on campus involvement, use of services, peer-learning, help seeking, and self-regulated learning. Ultimately, it is retention and persistence through graduation (and not GPA) that is most important both for the student and for university administrators.

QA: 2008 or 2007?

One of the strengths of this study was that in addition to the typical outcomes measured in previous research (retention and graduation), we also measured numerous aspects of student motivation and self-regulated learning at multiple time points to see if participation in the orientation course was linked with enhanced engagement with university services, satisfaction, and self-regulation. Our hypotheses concerning these motivational and behavioral measures were largely supported. The UNIV 100 group reported greater academic self-efficacy, help seeking, peer-learning behavior, effort regulation, and metacognitive self-regulation on the MSLQ at the end of the first school year than their peers who did not take the orientation course. Further, the UNIV 100 group of students reported more plans to use, and more use of, a variety of academic and non-academic services on campus during their first year. It is also noteworthy that students in UNIV 100 courses reported more overall satisfaction with the university experience and felt that they had found peers and mentors who could help them along the way. One of the core goals of most first-year orientation programs, including the one examined here, is to familiarize students with campus resources and have them take advantage of the various university services and resources, and to get students

to seek help, take responsibility for and regulate their own learning processes. It would appear that the freshman orientation courses at George Mason University, and perhaps elsewhere, are accomplishing their goal of getting first-year students to use campus resources and become more self-regulated learners.

Another final contribution made by this study is that, to our knowledge, it is the first to test a mediational model positing that the reason why orientation courses have a positive effect on retention and graduation is through enhancing student self-efficacy and self-regulated learning. Indeed, the results of our hierarchical logistic regression analyses confirmed our hypothesis in that the positive effect of UNIV 100 participation on retention and graduation was explained by its effects on self-efficacy and metacognitive self-regulation. Once these mediators were incorporated into the model, the effects of UNIV 100 were greatly reduced or disappeared. Thus, it would appear that first-year orientation classes such as UNIV 100 at GMU increased student self-efficacy and self-regulated learning, and these gains help explain the benefits observed from these programs in terms of retention and graduation rates.

Although the current study added to the literature on the utility of first-year orientation courses by a) examining GPA, retention, and graduation over many years all in the same study, b) assessing student engagement, motivation, satisfaction, and self-regulated learning, and c) testing a mediational model, it is not without limitations. First (but as is typical for research in this area), it was not possible for us to randomly assign students to receive the UNIV 100 intervention. Thus, it is possible that differences seen here between the UNIV 100 and comparison groups were due to some unmeasured selection factor making the students who signed up for the orientation courses systematically different from those who did not. This seems unlikely, however, because our preliminary analyses revealed that the two groups were identical on a wide variety of family background, demographic, and prior performance variables, including high school GPA, SAT scores, and first semester college GPA, with the exception of slight differences on maternal education and age, two variables that were not related to any of the outcome measures. Nevertheless, it remains difficult to interpret the T1 group differences favoring the UNIV 100 group that were observed in self-reported peer learning and help seeking. Given that the first time point for data collection occurred up to the third week of the semester, it is very possible that the UNIV 100 curriculum already had a chance to take effect when T1 data were collected.

Another limitation of the study was that there was considerable attrition from T1 to T3, at least in terms of student survey completion rates. Getting students to complete a long questionnaire at the end of their first school year right before or during final exams is understandably difficult. It is notable and encouraging, however, that fairly large and significant effects were still found even with the reduced T3 sample. Finally (and as is also typical of previous research), the study took place at only one university and thus generalization to other schools

and first-year orientation programs is obviously limited. However, university transition courses are expected to, and necessarily do, differ from campus to campus. It is thus important for additional research to be conducted at different types of colleges and universities to learn which kinds of programs work well on varied campuses. One potentially relevant and rather unique feature of the current setting (George Mason University [GMU]) was that the overall retention rate for our entire sample (and indeed for GMU; 86%), was somewhat higher than national averages (ACT Institutional Data File, 2008).

In conclusion, the findings of the present study have clear implications for students, parents, and university faculty, staff, and administrators. Semester-long transition courses, such as the University 100 program at George Mason University, and especially living-learning communities associated with such programs, appear to be quite effective, not only for increasing student engagement with the university, motivation, and self-regulated learning, but also for increasing student retention and eventual graduation. Given critical budget shortages, it is imperative that university programs have evidence of their efficacy for continued receipt of funding. Such programs appear to be working quite well and thus should not only be continued, but likely expanded and perhaps made more compulsory as part of general curriculum requirements. Parents are also well advised to ensure that their students enroll in living-learning communities and university orientation courses upon matriculation in their first semester. University administrators and researchers should further examine first-year orientation programs to determine the aspects of such programs that work well within their own university setting.

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