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MULTIPLE GOALS, SATISFACTION, AND ACHIEVEMENT IN UNIVERSITY UNDERGRADUATE EDUCATION: A Student Experience in the Research University (SERU) Project Research Paper

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Dr. Heinke Roebken
Assistant Professor for Educational Management
University of Oldenburg/Germany

ABSTRACT

This study examines the relationship between student goal orientation and student satisfaction, academic engagement, and achievement. A variety of studies has shown that the type of goal orientation determines students' cognitive and behavioral reactions as well as their educational performance (e.g., Ames, 1992; Ames and Archer, 1988; Valle et al., 2003). Using data on 2309 college students from the University of California Undergraduate Experience Survey (UCUES), this study analyzes the relationship between different types of goal orientations and student behavior and academic outcomes. Three questions are addressed in this paper: First, it explores how students can be classified according to their goal orientation. Second, the study examines how multiple achievement goals relate to different socio-demographic characteristics. Third, the relative influence of goal orientation on indices of satisfaction, achievement, and academic engagement among undergraduate students is assessed. The results support the notion that students pursuing both mastery and performance goals are more satisfied with their academic experience, show a higher degree of academic engagement, and achieve better grades than students who pursue a mastery orientation alone or a work-avoidance/performance orientation. One practical implication of the study of goal orientation is that student applicants could be screened on the basis of both a high mastery as well as a high performance orientation.

Psychologists and educators have long considered the role of achievement goals in student learning (see Ames and Archer, 1988; Dweck and Leggett, 1988; Rawsthorne and Elliot, 1999; Valle et al., 2003). Achievement goals are commonly defined as the purpose of an individual's achievement pursuits (Dweck andLeggett, 1988; Maehr, 1989). Much of the early research on student goal orientation separated mastery from

performance goals. When pursuing mastery goals, the student wants to develop competence by acquiring new skills and knowledge. They value and are willing to undertake activities that allow them to improve their knowledge, and they perceive effort as a positive, effective way to achieve their goals. Mistakes are considered a normal step in the learning process (Bouffard and Couture, 2003, p. 21). In contrast, students pursuing performance goals are more concerned with demonstrating their abilities relative to other students. Here, efforts are perceived negatively. Students with a performance goal see intelligence as fixed, avoid challenging tasks in an effort to avoid negative evaluations, are less likely to be intrinsically motivated, and consider errors as indicative of a lack of ability (Gonzalez et al., 2001, p. 182). Besides mastery and performance orientation, some authors also distinguish a work-avoidance orientation (Meece et al., 1988; Meece and Holt, 1993). Students with a work-avoidance orientation try to avoid failure even without hard work, so achievement is represented as completing a task with as little effort as possible.

A variety of studies has shown that different goal orientations determine students' cognitive and behavioral reactions as well as their educational performance (e.g., Ames, 1992; Ames and Archer, 1988; Valle et al., 2003). Generally it is assumed that students are more satisfied and achieve better performance if they pursue a mastery orientation or a more intrinsic motivation (e.g., Fortune et al., 2005). Students with a mastery orientation seem to be more willing to pursue challenging tasks, have positive feelings towards the learning situation, and exhibit an adaptive attributional pattern (Ames and Archer, 1988; Dweck, 1988). Mastery goal orientation is often linked to long-term and high-quality involvement in learning. Performance goals, in contrast, are hypothesized to be associated with negative outcomes, such as surface processing of study material or reduced task enjoyment. Many works therefore suggest that students should be encouraged to adopt mastery goals and minimize their adoption of performance goals (e.g., Ames, 1992).

More recent studies disagree with the mastery goal perspective. They indicate that in specific situations performance goals can also promote the development of competences (e.g., Harackiewicz and Sansone 1991) and call for a reconceptualization of goal theory, which acknowledges the positive effects of performance goals. It has also been pointed out that the different goal orientations do not necessarily need to be treated as opposites. For example, Meece and Holt (1993) found that students could be high in mastery motivation and also high in performance orientation, while others could be low in both dimensions. Since at least the 1990s, there has been a sustained research focus on how multiple goals interact and jointly influence student learning and achievement (e.g., Wentzel 1991, 1993; Wolters et al., 1996). From this viewpoint, achievement goals are seen as complementary and it is acknowledged that students can pursue a mastery, performance, or work-avoidance orientation simultaneously (e.g., Valle et al., 2003).

Assessing students' achievement goals can provide valuable insights into differing ways they engage in, evaluate, and perform in academic learning. Analyzing how orientation relates to academic engagement and performance has significant theoretical and practical implications for administrative, curricular, and instructional decision-making and practices (Elliot and Dweck, 1988; Meece and Holt, 1993). If educators and administrators want to improve the academic experience of college students, understanding the potential factors that enhance motivational strivings should therefore be of primary concern. This study examines how multiple achievement goals relate to different socio-demographic characteristics and how they affect student behavior.

Specifically, this study addresses three main issues. The first aim of the study is to examine how students can be classified according to their goal orientation. Using cluster analysis, different groups of students will be established based on their mastery, performance, and work-avoidance goal orientations. Second, it analyzes how the clusters relate to different demographic characteristics. Third, the study investigates whether the identified clusters differ significantly in selected variables related to academic engagement, satisfaction, and college achievement.

METHOD

The data from the University of California Undergraduate Experience Survey (UCUES) was utilized to answer the research questions. Since 2002, students can participate in the web-based survey on the undergraduate experience at all eight undergraduate campuses of the University of California. UCUES offers longitudinal data on student academic engagement, civic engagement, instructional technology, and institutional academic policies and practices. In this study, a total of 2309 undergraduate students included in the UCUES survey of 2005 were examined in this study. More than half of the students were female (57.5%), and 41.1% were male (due to missing data the numbers do not add up to 100%). Approximately 31% of the undergraduate students were white, 43% were Asian, 10% of the respondents were Hispanic, 2% were African American, and 14% reported other ethnic backgrounds or declined to state. The UCUES team designed a variety of questions in order to produce a detailed picture of the way students vary amongst themselves and over time in terms of their motivations, perspectives, and practices. Specifically, UCUES provides data on students' goal orientation, their educational and overall satisfaction with their undergraduate experience, and their engagement in the academic life of the university. The appendix shows how the variables relevant for this study were measured.

RESULTS

Cluster Formation. Cluster analysis was used for grouping students of similar goal orientation into one cluster. Since the UCUES data set is very large, k-means clustering was chosen. In this approach, the researcher specifies the number of clusters in advance, then calculates how to assign cases to the K clusters. In order to classify students as a function of the mastery, performance, and work-avoidance/performance orientation, a three-cluster solution was chosen. Based on the three goal orientations underlying this study, it was assumed that students could be attached to a cluster predominated by mastery, performance, or work-avoidance orientation. However, the results of the cluster analysis indicate that the three orientations can be complementary and that it is possible for students to pursue several goals simultaneously. To assess the validity of the three-cluster solution, the inter-cluster differences in the dependent variables were analyzed. Since significant differences between three clusters were revealed, it was decided to use this three-cluster solution for the subsequent analyses. Figure 1 displays the grouping of the cluster solution:

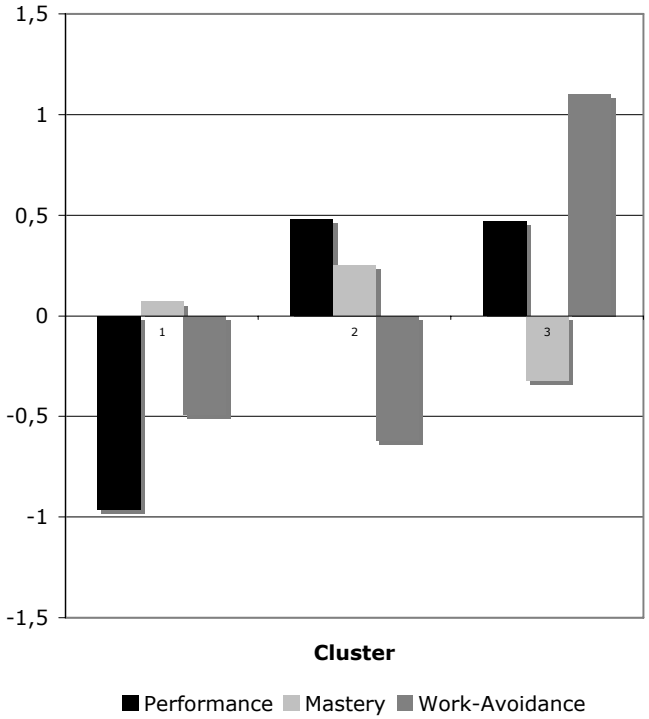
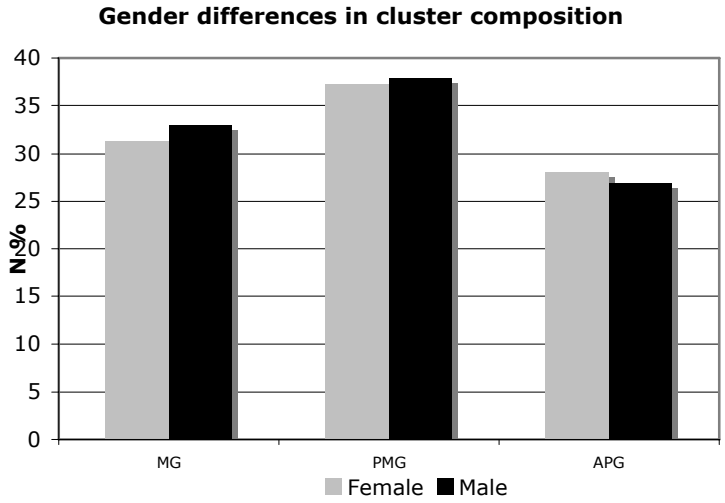


Figure 1: Graphical representation of the three clusters of goal orientation

The first cluster showed the weakest performance and work-avoidance orientation, while the pursuit of gaining knowledge and competences scored slightly above average. The second cluster had predominance in performance/orientation, but it also showed the largest mastery-orientation. In contrast to the first two clusters, the third one is characterized by a strong work-avoidance/orientation and an above average performance orientation. Compared to the variation in work-avoidance and performance orientation, the scores on mastery varied only slightly across the three clusters. Since the first cluster was low on performance as well as work-avoidance and scored only above the mean on mastery orientation, it was decided to label the first group mastery group (MG; n=708). The second group was labelled performance/mastery group (PMG; n=832), and the third one work-avoidance/performance group (APG; n=609).

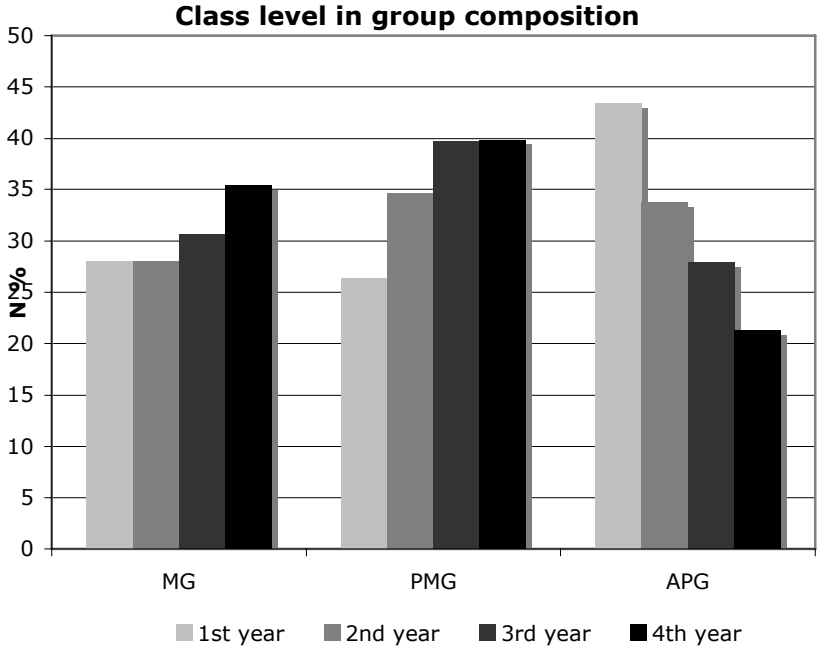
SOCIO-DEMOGRAPHIC DIFFERENCES

Chi-square tests were performed in order to analyze students' socio-demographic characteristics in cluster membership. With the exception of gender, all analyzed background variables indicated significant differences between the clusters.



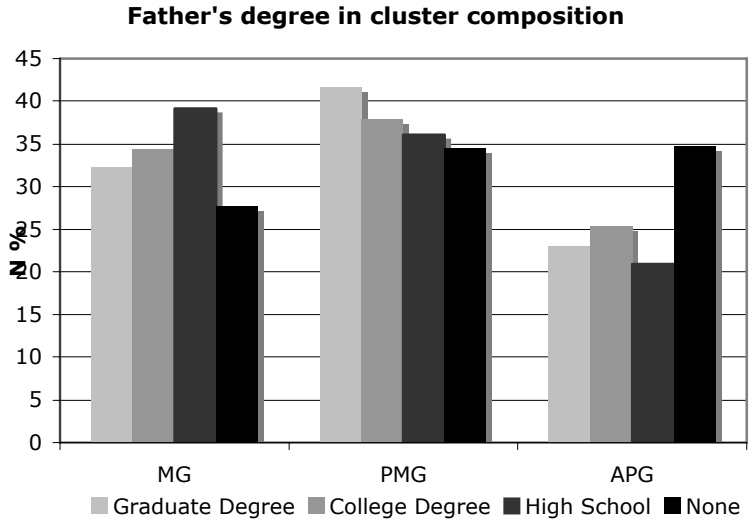
χ^2=1.73, p=.786, n.s.

Cramer's V = .020, p=.786, n.s.



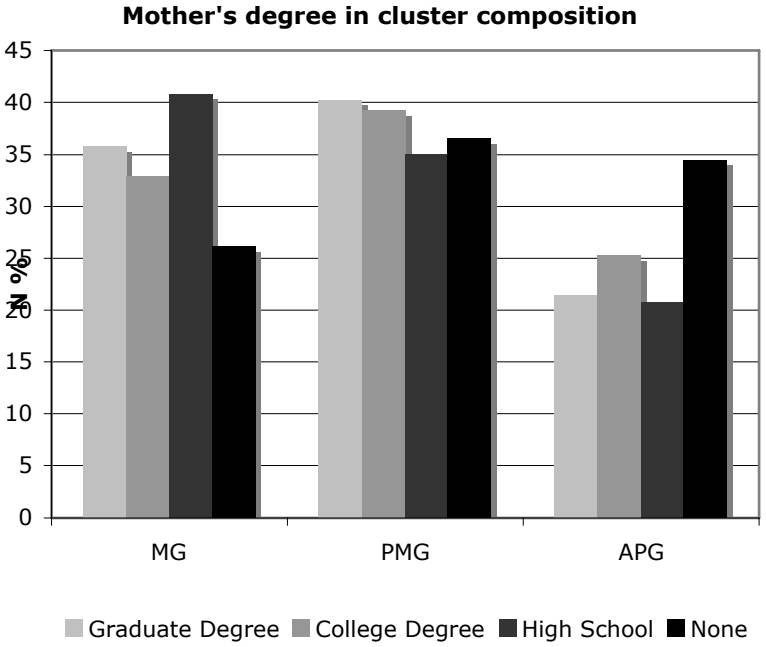
χ^2=57.88, p<0.001

Cramer's V = .116, p<0.001



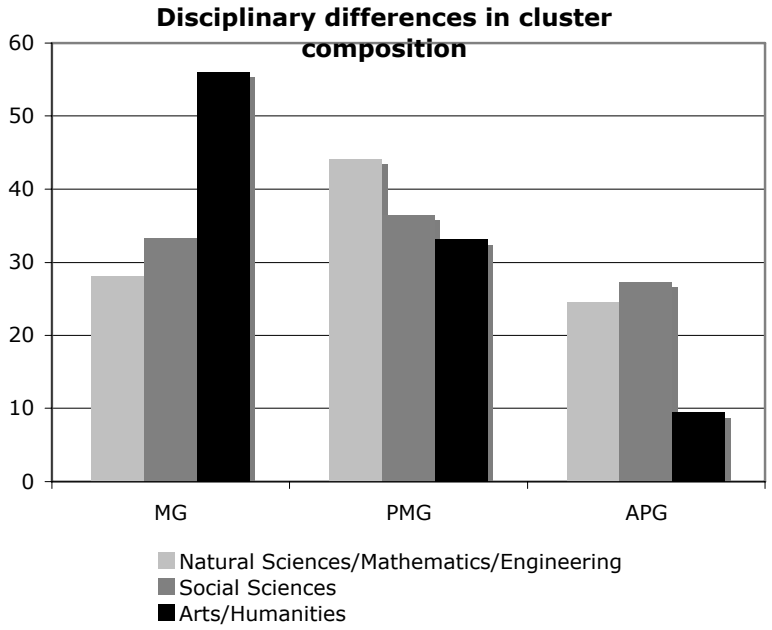
χ^2=39.04, p<0.001

Cramer's V = .095, p<0.001



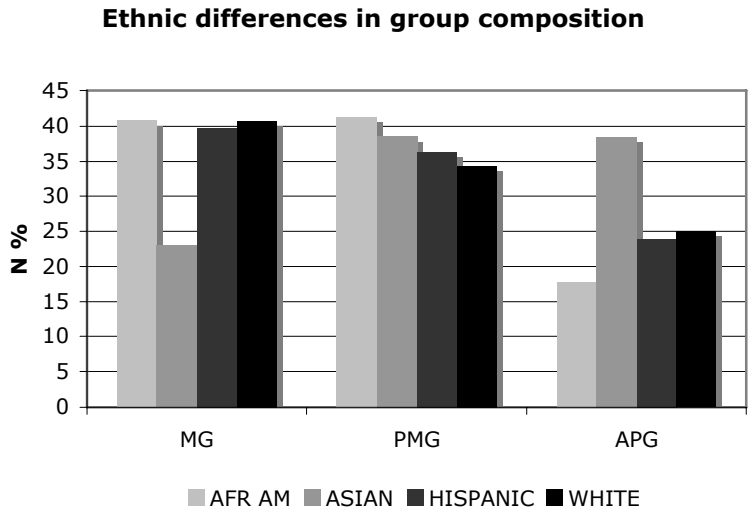
χ^2=48.42, p<0.001

Cramer's V = .150, p<0.001



χ^2=68.71, p<0.001

Cramer's V = .126, p<0.001



χ^2=114.7, p<0.001

Cramer's V = .163, p<0.001

Gender. No significant gender differences were found between the three clusters.

Class level. The Chi-square test indicated significant cluster differences in terms of class level. The group composition in mastery and performance/mastery oriented learning goals shows a similar student body regarding their class level: both clusters contained more students in their third or fourth academic year than students in their first or second year. In contrast, the work-avoidance/performance cluster consists of significantly more freshmen and significantly fewer students in their senior year.

Parental Education. Significant differences in terms of parental education between the three clusters were detected. Parents of students in the mastery and the performance/mastery cluster have obtained more graduate and college degrees than parents of work-avoidance/performance students. Also, parents of students with a

mastery orientation left school less often without degrees than parents of students pursuing a performance/mastery or a work-avoidance/performance orientation.

Disciplinary differences. Students in arts and humanities were most often associated with a mastery orientation and least often with a work-avoidance/performance orientation. Compared to the arts and humanities students, social and natural science students are more equally distributed among the three clusters. Students in natural sciences, mathematics and engineering were most likely to pursue a performance/mastery orientation, and were approximately equally distributed among the work-avoidance/performance group and the mastery cluster. Social scientists were most often associated with a performance/mastery orientation and less often with a work-avoidance orientation or a mastery orientation.

Ethnic background. Ethnic differences were also found between the groups. Asian students were most often included in the work-avoidance/performance cluster and least often in the mastery-cluster. African-American, Hispanic, and white students are more often associated with mastery goals and performance/mastery goals than with work-avoidance/performance goals.

GOAL ORIENTATION, STUDENT SATISFACTION, ACHIEVEMENT, AND ACADEMIC ENGAGEMENT

In order to analyze the relationship between goals orientation and different indices on engagement and achievement, two steps were taken. By means of MANOVA, it was first determined whether the clusters identified were significantly different in the variables that are relevant to satisfaction, achievement, and academic engagement. All dependent variables revealed significant differences between the three groups, and it was decided to perform ANOVA on these significant effects. Tukey's HSD was used for post-hoc comparisons. The results are displayed in Table 1.

Table 1: Means and standard deviations obtained by clusters for each of the dependent variables

	Mastery		Performance/ Mastery		Work-avoidance/ Performance	
	Mean	SD	Mean	SD	Mean	SD
Satisfaction:General educational experience	4.33	0.77	4.43	0.73	4.02	0.80
Satisfaction: Overall Undergraduate Experience	4.45	1.10	4.53	1.07	4.27	1.07
Academic Achievement	3.30	0.45	3.41	0.40	3.18	0.45
Integrative Learning	3.65	1.13	3.71	1.16	3.34	1.11

Deep Learning	3.77	1.01	3.85	1.06	3.67	1.08
Effort	3.48	1.12	3.68	1.10	3.37	1.11
Team Work	3.44	1.15	3.81	1.16	3.63	1.11

Groups differed significantly in their satisfaction with their educational experience. The post-hoc contrast revealed that students from the work-avoidance/performance group (M=4.02) were significantly less satisfied with their educational experience than students from the mastery and the performance/mastery groups. Students with performance/mastery orientation (M=4.43) did not differ significantly in terms of educational satisfaction from students pursuing only a mastery goal (M=4.33).

Significant group differences were also observed with regard to the overall undergraduate experience. Students with a work-avoidance/performance orientation are significantly less satisfied (M=4.27) with their overall undergraduate experience than students form the mastery (M=4.45) and the performance/mastery group (M=4.53). Between the MG and the MPG group no significant differences were observed.

In academic achievement, the differences across all three groups were significant. Post hoc contrasts indicated that students from the performance/mastery group had significantly higher GPA scores (M=3.41) than students who pursued only a mastery orientation (M=3.3). Students from the avoidance/performance group obtained significantly lower scores than the other two groups (M=3.18).

In the variable integrative learning, there were significant group differences, as well. Students from the work-avoidance/performance group engage significantly less in integrative learning (M=3.34) than students from the mastery (M=3.65) and the performance/mastery (M=3.71) groups. No statistically significant differences were observed between the latter two groups.

With regard to deep learning, the groups differed significantly. In this case, post hoc contrasts showed that students from the work-avoidance/performance group (M=3.67) obtained significantly lower scores than students from the performance/mastery group (M=3.85). The differences between the mastery (M=3.77) and the performance/mastery group were not statistically significant.

The study also revealed significant differences with regard to the effort students spent on academic activities. Students from the performance/mastery group (M=3.68) spent significantly more time on studying than did students from the mastery (M=3.48) and the work-avoidance/performance group (M=3.37). On the other hand, no significant differences were obtained between the mastery and the work-avoidance/performance groups.

With regard to teamwork, all groups differed significantly from each other. Post hoc contrasts indicated that students with a performance/mastery orientation engage more often in teamwork (M=3.81) than students from the work-avoidance/performance group (3.63). Students who pursue a mastery goal orientation scored significantly lower than the other two groups (M=3.44).

DISCUSSION

The purpose of this study was to develop and test a model of students' goal orientation and their relation to student satisfaction, academic achievement, and engagement. In contrast to previous research, this study was based on a trichotomous goal approach, which focuses not only on the traditional dual goal structure of mastery and performance, but also includes the dimension of work-avoidance. By means of cluster analysis, three different groups of goal orientation were established. The first cluster contained students with an above average mastery orientation and a low performance and work-avoidance orientation. The second cluster was characterized by the simultaneous pursuit of mastery and performance goals, while the third cluster included students with a strong work-avoidance and performance orientation. These results suggest that students do not have one single goal orientation (Middleton and Midgley 1997), but rather various levels of different goal orientations.

In a second step, differences in selected demographic variables between the three clusters were analysed. So far, little research has been conducted on the variables associated with the type of goal orientation pursued. As Midgley et al. (2001, p. 82) point out, there is a need for further investigation of differences in goal orientation by background characteristics that are prevalent in the student body. Previous research has found that demographic variables can have a profound effect on students' goal orientations (e.g., Hayashi and Weiss, 1994; White and Zellner, 1996; Nicholls and Miller, 1984; Gonzalez et al., 2001). Current goal theories therefore need to acknowledge the role that contextual factors (e.g., culture, parents, or academic level) can play in eliciting and shaping goal orientation of students. Consideration of students' sociodemographic characteristics may be especially critical to resolve the problem of how goal orientation develops and how they change over the course of time. Besides the more common demographic variables, such as age, gender, or cultural background, a number of additional sociodemographic factors seldom discussed in the literature were included in this analysis. The results of the chi-square test indicated significant differences in the following variables between the clusters.

Gender. Several studies tried to identify goal orientation as a function of gender (Ethnier et al., 2001; Brdrar et al., 2006; Meece and Holt, 1993). Brdar et al. (2006, p. 62) found that boys are more likely to adopt work-avoidance goals, while girls are more likely to pursue mastery goals. Gender differences have also been observed by Thorkildsen and Nicholls (1998) as well as Isogai et al. (2003). However, the UCUES data did not support the assertion that goal orientation differs between the sexes, which is consistent with the results of Meece and Holt (1993) and Niemivirta (1996), who concluded that performance orientation is equally frequent among male and female students.

Class level. Previous studies have focused on age differences and how they relate to goal orientation, while this study analyzed goal orientation as a function of the class level in which students were enrolled. Some age-related studies found that performance and work-avoidance was more prevalent among older students, while younger students tend to be more focused on learning (Brdrar et al., 2006, p. 63; Bouffard et al., 1998). This observation is often associated with contextual factors such as the increasing importance of obtaining good grades in order to get access to higher academic levels. Other studies found that older students were more likely to be learning oriented. Loevinger (1976) suggested that as ego development proceeds through adulthood, individuals move away from a pure performance orientation to more internally derived goals. In a similar vein, Kohlberg (1976) argued that as people develop morally, they

move away from a desire to conform to the standards of others and toward more individually determined standards of right and wrong.

This tendency is also supported by the results of this study. It seems that students in later study phases are more mastery or performance/mastery oriented than students in their first or second academic year. Three quarters of the students in their fourth year pursued either of the two goals, while less than one quarter belonged to the work-avoidance/performance group. In contrast, students in their first academic year were most often found in the work-avoidance/performance group (43%), and least often in the performance/mastery group (26%). A possible explanation for this observed pattern is that university students who are approaching graduation may value competences and practical skills that are useful for the job market more than grades. College seniors may therefore be more willing to invest more efforts in obtaining abilities and job-related skills rather than focusing on external evaluations alone. Younger students, in contrast, may value good grades and the social experience of their undergraduate studies more highly and adopt a work-avoidance orientation.

Parents. Several studies on the relationship between goal orientation and family characteristics are congruent with the assertion that parents influence the type of achievement goals students adopt (e.g., Bergin and Habusta, 2004). Parents often assume the role of motivator, and their own educational background may influence whether a child performs with a performance, mastery or work-avoidance orientation. In this study the chi-square test indicates that the types of academic degrees parents obtained differed significantly across the three clusters of goal orientation. Students with a performance/mastery orientation came more often from family backgrounds where mother and father had obtained a graduate or college degree and less often from families in which parents did not obtain a degree. It seems that the more educated the parents are, the greater the mastery or the performance/mastery orientation of children, while little education may foster a stronger work-avoidance/performance orientation. It seems reasonable to suggest that parents' educational experience influences their children's goal orientation—an idea which deserves further research.

Disciplinary differences. In some academic subjects, specific goal orientations seem to be more common than in others. For example, Newstead et al. (1996) reported that performance orientation is more common in science and technology than in other disciplines. The chi-square test supported this result: The majority of engineering students (39%) were found in the performance/mastery group. Humanities and arts students were more likely to pursue a mastery orientation. In the work-avoidance group, natural scientists and social scientists were approximately equally distributed; only students in the arts and humanities were clearly underrepresented. Students who decide to learn a language or develop skills in the performing arts may be more interested in improving their skills and obtaining practical competences in a specific field of knowledge than in external evaluations. Differences in the goal orientation of social scientists are less obvious, which may be attributable to the broad variety of subjects, which are subsumed under this category. Further, the body of knowledge and the kind of competencies students can acquire in the social sciences are usually less clearly defined (e.g., Whitley, 1984). Students in the social sciences may therefore have difficulties in adopting a clear mastery orientation, because the abilities and skills can often be derived only indirectly from social science knowledge.

Cultural differences. Cultural differences in goal orientation have been addressed in several studies (e.g., Isogai et al., 2003; Gano-Overway and Duda, 2001; Brandt, 2003; Lee et al., 2003). In this study, the brief comparison of the cultural backgrounds between

the different clusters supported the importance of cultural factors when studying goal orientation. Overall, African-American, Hispanic and white students rated higher in their mastery goal orientation than Asian students. Asian students choose a work-avoidance/performance goal orientation more often than the other ethnic groups. These results are partially consistent with the results reported by Lee (2000), who found that Anglo-American and Mexican-American physical education college students exhibited significantly higher mastery orientation scores as compared to other ethnic groups. Similarly, Isogai et al. (2003) reported that Japanese students scored significantly higher on performance orientation and significantly lower on mastery orientation than white students. While differences in goal orientation between ethnic groups are clearly indicated, additional investigation is needed to better understand these differences.

Goal orientation and student satisfaction. Previous research has suggested that dispositional achievement goals have an important influence on students' behaviors and cognitions. However, little research has examined the influence goal orientation has on students' satisfaction with their educational experience. The results of the ANOVA showed that undergraduate students who pursue a performance/mastery or a mastery orientation are more likely to be satisfied with their educational experience and their overall undergraduate experience. Moreover, it seems that especially the combination of performance and mastery goals may be more facilitative for educational and general satisfaction. In contrast, the pattern of results for students with a work-avoidance orientation is that they are less satisfied with both their educational as well as their overall undergraduate experience, which has been observed in some other studies as well. For example, in a study on female athletes, Petherick and Weigand (2002) highlighted the importance of promoting a mastery team climate when attempting to foster adaptive affective and cognitive motivational responses in female athletes. They found that a mastery goal orientation was positively related to intrinsic motivation and team satisfaction, and negatively associated with feelings of pressure and tension. In contrast, a performance goal orientation corresponded positively to pressure and tensions and negatively to enjoyment and team satisfaction. Similarly, Ames and Archer (1988) found that students who perceived an emphasis on mastery goals in the classroom had a more positive attitude toward the class and a higher level of task enjoyment.

In this analysis, students with performance and mastery orientation reported the highest degree of satisfaction in both areas, namely educational and overall undergraduate experience. This may be due to the fact that multiple goals guarantee students some flexibility to adapt more successfully to a variety of learning situations (e.g., Valle et al., 2003). Students adopting several goals may have more opportunities to satisfy either one goal or the other, depending on the specific demands and the learning context. In contrast, students who only focus on one goal, e.g., social goals (prestige or friendship) may be more easily disappointed during the examination phase. However, adopting multiple goals also requires coordination and flexibility when establishing priorities in the achievement of any one goal. Students could therefore also feel incapable of coordinating these goals (e.g., Valle et al., 2003, p. 74). Considering that the students with a high performance/mastery orientation were most satisfied with their undergraduate experience, it can be concluded that the students in this sample showed sufficient skills and abilities to coordinate effectively and manage to achieve different goals (see also Wentzel, 1999, 2000).

Goal orientation and academic achievement. The results of the ANOVA indicated that students who pursue a performance/mastery orientation achieve better college grades

than students who pursue a mastery orientation alone. Students with a work-avoidance/performance orientation displayed the lowest level of academic achievement. Significant differences were found among all three clusters. This indicates that the relationship between goal orientation and achievement may be more complex than often hypothesized in previous studies. Early works on goal theory found that a mastery orientation is positively associated with academic achievement, while a performance orientation is linked to lower achievement test scores (e.g., Ames, 1992). The multiple goal approach indicates that the combination of performance and mastery goals can lead to higher academic achievements than the pursuit of mastery goals alone or the adoption of a work-avoidance/performance orientation. Similar results were obtained by Archer (1994) and Bouffard et al. (1995), who showed that students with multiple goals were able to obtain higher academic achievement.

This finding also supports the notion that the dichotomous distinction between mastery and performance goals may be too simplistic; not always does a pure mastery orientation increase achievement and satisfaction and not always do performance goals predict lower outcomes and less motivation. Recent studies revealed a more complicated picture of the dichotomous goal theory. For example, Barron and Harackiewicz (2001) argued that performance goals can lead to higher, not lower, grades and do not affect intrinsic motivation. Consonant with the finding of this study, Pintrich and Garcia (1991) reported that students classified in high learning *and* high performance goals showed the highest level of self-efficacy. The multiple goal perspective, in which performance and mastery goals are combined, may therefore represent a more realistic picture of student goals and offer the potential for a more sophisticated understanding of the complex phenomena of student learning and achievement.

Goal orientation and academic engagement. Students with a performance/mastery orientation engaged more frequently in integrative learning, applied deep learning strategies more often, spent more effort preparing for classes, and were more actively involved in teamwork than students with a mastery orientation. Mastery and performance/mastery students were more similar in terms of academic engagement, while students with a work-avoidance/performance orientation paid the least attention to integrative learning, effort, and deep learning. The results coincide in general terms with those observed in most studies (e.g., Meece, 1994; Seifert, 1995; Valle et al., 2003), thus confirming that the group focused on learning and the group with a performance/mastery orientation both present a similar engagement in academic issues. On the basis of the ANOVA concerning the three clusters of goal orientation and their type and intensity of academic engagement, it can be suggested that when mastery or performance/mastery orientation is prominent, students engage more actively in coursework and are more willing to value and use deep learning processes.

Summing up, students who pursue both a strong mastery and a strong performance orientation are more satisfied with their educational experience and their overall undergraduate experience, achieve higher performance outcomes, integrate their knowledge gained in different courses more frequently, examine their own point of view more often, work harder, and work with classmates to better understand the course material more often than students with a mastery or a work-avoidance/performance orientation.

The findings have theoretical as well as practical implications. The classical dualistic perspective perceived goal orientation as contradictory and mutually exclusive: one goal could only be achieved at the expense of another one. In contrast, these findings

indicate that this trade-off is not as distinct as often assumed. Moreover, the simultaneous pursuit of performance and mastery goals may be more beneficial than pursuing a mastery orientation alone—a view that has dominated in the goal theory literature for a long time. With regard to the goal theory debate, the current findings support the multiple goal perspective, suggesting that both task and performance approach goals may facilitate achievement and satisfaction. This result has also been observed in previous studies (Elliot and Harackiewicz, 1996; Brdra et al., 2006; Valle et al., 2003). However, the observed effects were often very small, which requires empirical research that replicates these findings (Linnenbrink, 2005, p. 210).

What are the practical implications of the present findings? Given that students do pursue multiple goals, it is important to understand how different types of achievement goals interact to influence achievement and satisfaction. Therefore, knowledge on how goal orientation develops and changes and how it affects motivational and educational outcomes will be useful to everybody who is involved in improving the academic learning environment. Since the idea that the combined pursuit of performance and mastery goals has beneficial associations has garnered support, one implication of the study is that student applicants could be screened on the basis of both a high mastery as well as a high performance orientation.

There are a number of limitations to this study. First, because the sample in the present study was limited to college students, it is necessary to broaden the age spectrum of participants. Additional empirical work would be useful to determine the generalizability of the findings to other educational settings. Second, it is important to note that the data in the present study is exclusively quantitative in nature, as students' goal orientation and satisfaction levels were assessed by means of closed-ended questionnaire items. More open-ended approaches may be helpful to supplement the quantitative approach with an increased understanding of the interplay between achievement goals, their development, and their impact on learning processes. Finally, the data used was collected at one point in time, therefore no causal links can firmly be established. More longitudinal studies that follow students from elementary school to college and measure changes in their goal orientation are needed. Empirical work on these issues would be particularly beneficial to teachers and administrators who may wish to understand the process of how students set their goal orientation and what other changes might occur concomitantly. Also, continuing to adopt a multiple goal orientation will hopefully contribute to a fuller understanding of the influence of achievement goals in different learning contexts.

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APPENDIX

Items and Reliabilities for Scales used in the Study

Scale and Items	Reliability
Mastery Orientation	.83
• Intellectual curiosity was important when I decided on my major.	
• I prefer course material that arouses my curiosity, even if it is difficult to learn.	

Mastery Orientation (continued) • The most satisfying thing in a course is trying to understand the content as thoroughly as possible. • I prefer course material that really challenges me so I can learn new things. • When I can, I choose assignments that I can learn from even if they don't guarantee a good grade. • One of the best parts of my college experience is finding a class that's really interesting. • I enjoy thinking about how to tackle a challenging assignment.	
Performance Orientation • It is important to me that my college education leads to a high paying job. • Prestige was important when I decided on my major. • My main concern in my classes is getting good grades. • I want to get better grades in school than most other students get. • I want to do well in school because it is important to show my ability to others.	.73
Work-avoidance Orientation • Easy requirements were important when I decided on my major. • I chose my major because it allows me time for other activities. • I couldn't get into my first choice of major.	.66
Educational Satisfaction How satisfied are you with each of the following aspects of your educational experience? • Advising by faculty on academic matters (courses, requirements, etc.) • Advising by faculty on other matters (careers, life plans, etc.) • Accessibility of faculty outside of class • Quality of faculty instruction • Quality of teaching by TA's • Availability of courses needed for graduation • Access to small classes • Value of the education you are getting given how much you have to pay for it • Availability of courses for general education or breadth requirements	.87

Educational Satisfaction (continued) • Ability to get into a major that you want • Overall academic experience	
Overall Satisfaction How satisfied are you with each of the following aspects of your educational experience? • Overall social experience • Overall UC experience	.81
Integrative Learning Thinking back on this academic year, how often have you done each of the following? • Put together ideas or concepts from different courses when completing assignments • Brought up ideas or concepts from different courses during class discussions	.61
Deep Learning Thinking back on this academic year, how often have you done each of the following? • Developed your own point of view about an issue and used facts and examples to support your viewpoint • Examined how others gathered and interpreted data and assessed the soundness of their conclusions • Reconsidered your own position on a topic through closely examining the arguments of others	.79
Effort Thinking back on this academic year, how often have you done each of the following? • Worked harder than you ever thought you could to meet an instructor's standards or expectations • Asked a question in class because you were curious to learn more about a topic • Contributed to a class discussion because you were excited about the topic being discussed • Found a course so interesting that you did more work than was required • Prepared two or more drafts of a paper or assignment before turning it in	.78

Team Work	.70
Thinking back on this academic year, how often have you done each of the following? • Helped a classmate better understand the course material when studying together • Worked with classmates outside of class to prepare class assignments (in person)	