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## Undergraduate Goal Orientations Across the Globe: Does the 3 X 2 Model Hold Up?

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**Abstract:** Recently, a large-scale study of college students' motivation orientations when they transitioned to online learning because of the global COVID-19 pandemic found that unlike prior studies, in the 3 x 2 goal orientation framework the standard for competence (self, other, task) was of greater importance than valence (approach, avoidant). Moreover, previous research found students' different goal orientations related to how they responded to the shutdown academically from both volition and social perspectives. We investigated whether a three-factor model would replicate with unique undergraduate cross-cultural samples, and we wanted to examine how students with different goal orientations responded to the shutdown of their universities due to the pandemic. Students from a U.S. university and students from Oman completed a 44-item goal orientation survey, a demographic survey, and an 11-item survey to assess students' experiences following the pandemic. Results indicate that students who set task-based goals were less likely to have negative experiences related to the social aspects of the pandemic and those students who had negative responses to the lack of social contact were also expected to have lower grades.

**Keywords:** COVID-19, goal orientations, motivation, undergraduates.

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### Introduction

Due to the COVID pandemic of 2020, many universities chose to move all courses to online instructional methods. This transition resulted in many changes to the way students interacted with their coursework, professors, and classmates. This rapid transition had multiple ramifications for faculty, administrators, staff, and students. These transitions and shutdowns, specifically disruptions to campus life and changes in course delivery potentially impacted student volition and motivation. Indeed, Usher et al. (2024) reported that undergraduate psychology majors at a large, research university in the Southeastern US self-reported decreases in motivation and self-regulatory behaviors. They also reported that more than 75% of the students felt an increase in stress which the students attributed to the transition to online course delivery. Similarly, Daniels et al. (2021) reported significant decreases in Canadian undergraduates' motivation, engagement, and perceptions of success. It is important to note however, that the impact of the pandemic and transition to online learning did not affect all students in a uniform manner. Cromley and Kunze (2021) found that the shutdown tended to decrease female students' academic self-concept and self-efficacy, but it did not have the same effect on male students. They also reported differential effects for minoritized students and those from low SES homes. Mayers et al. (2022) also found that the shutdown had a greater negative impact on female as compared to male undergraduates. It is clear the transition to online course delivery affected student motivation and other aspects of their academic behaviors, but that these effects were not uniform across samples or individuals.

As evidenced by the extant literature, the transition for college students from face-to-face and hybrid classes to a completely online setting provided a unique opportunity to examine how students' goal orientations might affect how they dealt with these adverse circumstances. Previous investigations have determined that interactions with faculty members, both within and outside of the classroom, and with other students, enhance students' learning experiences and

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increase positive academic outcomes for students (Astin, 1993; Pascarella, 1980; Pascarella & Terenzini, 1991, 2005). Therefore, this unique situation created a chance to examine whether the types of goals a student sets predict how resilient they are regarding study habits and social engagement when faced with academic challenges.

The current study was designed to replicate and extend previous findings regarding the impact of goal orientation on students' response to the transition to all online learning due to the shutdown of universities during the COVID-19 pandemic (Was & Greve, 2021). Specifically, we investigated whether task-oriented students demonstrated resilience to the impact of the transition and if Elliot et al.'s (2011) 3 x 2 framework of goal orientations is a robust representation of students' goals. The current study also took advantage of the unique samples of undergraduates where two of the authors work. One is a university in a metropolitan area in the Rocky Mountain region of the United States. This university is a designated Hispanic Serving Institution with more than 20% of the students identifying as Hispanic. The other sample comes from a university in Oman. It is a large public university in Muscat, the capital city of Oman. The university has rigorous admissions requirements and students represent a homogeneous sample of undergraduates from Oman. These two samples represent populations distinct from the sample in the study to be replicated. Was and Greve sample students from a large Midwestern university in the U.S. The population of that university is mostly white (74%) and typical of a large Midwestern university. Although the two samples in the current study could be considered convenience samples (in that we were able to obtain the samples as two authors were faculty at the universities), the two samples allowed us to attempt replication of previous research with distinct samples of undergraduate students.

### Literature Review

An initial study was conducted by Was and Greve (2021) of more than 600 undergraduates at a large state university in the Midwest of the U.S. They reported two important findings. First, a factor analysis determined that in the 3 x 2 goal orientation framework proposed by Elliot et al. (2011) the standard by which students measure competence (*self, other, task*) was more important than the tendency to set either approach or avoidant goals. Put differently, a model that only had three factors related to competence standards, but was not divided by valence, was a better fit to the data. Second, Was and Greve found students response to the shutdown of their university differed by the goal orientations students self-reported from both volition and social perspectives. Results of structural equation modeling suggested that task-oriented students (students setting task-based goals) were more resilient to the disruptive circumstances caused by the transition to all online courses and the shutdown of the university's campus. The current study was designed to replicate and extend the findings of Was and Greve. The specific aims were to: (a) determine if the three-factor model proposed by Was and Greve would replicate with unique undergraduate samples and (b) to examine how students with different goal orientations responded to the shutdown of their universities due to the pandemic.

#### *Goal Orientation Theories.*

Theories of goal orientation state that students adopt distinct orientations in terms of the types of goals they set in academic settings. Early theories of goal orientations in academic settings focused on the distinction between mastery and performance goals. This bifurcation of goals suggests that students who set mastery goals set goals related to learning material, mastering new skills, and successfully completing the task at hand. Performance-oriented students set goals related to demonstrating ability and performing better than others. This bifurcation of goals orientations has been the central focus of achievement motivation research (e.g., Ames, 1992; Ames & Archer, 1988; Harackiewicz & Elliot, 1993; Maehr, 1984; Nicholls, 1984).

From an achievement goal theory perspective (i.e., goal orientation theory), a goal is that to which effort is directed. When students set academic goals, they are determined by their achievement orientations, and this orientation affects their experiences with success or failure to obtain these goals. Achievement goal frameworks have evolved from an early focus regarding the differences between mastery goals and performance goals (e.g., Ames, 1992; Ames & Archer, 1988; Harackiewicz & Elliot, 1993; Maehr, 1984; Nicholls, 1984; see Was, 2006 for a review). Mastery-oriented students - those who set mastery goals - focus on learning the material and mastering the tasks at hand. Within the mastery goal orientation, Elliot (1999) proposed a distinction between task-referential vs. past-referential mastery goals. For example, a student with a past-referential orientation measures current achievement against their own past performance. Put differently, past performance is the standard by which achievement is measured. The student with a task-referential orientation measures achievement by whether they have fully understood the task at hand or completed the task successfully. The referential dimension was later incorporated into a new model of goal by Elliot et al. (2011).

In contrast to mastery-oriented students, performance-oriented students - those setting performance goals, are concerned with demonstrating ability. The competency standard adopted by performance-oriented students is relative achievement compared to that of others. Students adopting performance goals attempt to appear competent by outperforming others or they attempt to avoid appearing incompetent by not performing worse than others, often having an excuse for poor performance (Conroy et al., 2009; Dweck, 1986; Dweck & Leggett, 1988; Lepper, 1988).

Goals are also oriented on a second dimension: valence. Elliot (1999) proposed a valence dimension that contrasted approach vs. avoidant orientations. Approach goals focus on approaching achievement tasks with a focus on success and

avoidant goals focus on avoiding achievement tasks to elude potential failure. According to Elliot (1999), the valence of a goal determines both the affective responses to success and failure and the achievement related behaviors in which the student engages.

Elliot et al. (2011) reconceptualized achievement goals by proposing a 3 (competence standards) x 2 (valence) goal model. In previous models of goal orientation, measures of competence were either skill development, learning, and accumulation of knowledge (mastery goals) or norm referenced comparison to the achievement of others (performance goals), whereas in the 3 x 2 model standards of competence are categorized as *task*, *self*, and *other*. Like Elliot's model (Elliot, 1999), the valence dimension defines an approach/avoidance dimension in which one's goals are related to striving for success (approach goals) or avoiding failure (avoidance goals). Was and Greve (2021) employed the 3 x 2 model in their examination of the impact of the 2020 shutdown on student volition and social engagement. Below, we describe the findings of Was and Greve regarding the impact of pandemic shutdown in relationship to students' achievement goal orientations, the academic affective, and behavioral outcomes.

As the alternate name "absolute" implies, task-based goals focus on task performance. Often task-based goals are described as an absolute measure of success. Put differently; a student uses successful task completion as the referent for success: one either successfully completes the task, or they do not. Successful task completion is the measure of goal accomplishment. The measure of competence is inherent in the task and thus task-based goals internally provide feedback (Elliot et al., 2011). Task-inherent feedback promotes self-regulation. Was and Greve (2021) hypothesized and found that task-oriented students setting task-based goals reported sustained effort and saw themselves as being successful (sustained or better grades) following the transition to online classes compared to the self-reports provided by self and other oriented students. Put differently, students who self-reported being able to maintain their grades and continue to exert academic effort post shutdown, were more task-oriented. Was and Greve also reported that task-oriented students were less likely to miss social interactions with classmates and teachers in the classroom. This was likely due to the use of task performance as the achievement referent rather than a normative comparison of themselves to their peers.

Whereas task-based goals focus on the successful completion of the task, self-referent goals rely on comparing one's current performance to one's past performance as the measure of achievement. Self-referent goals represent a complexity not found in task-based goals. To successfully apply self-referent goals, one must keep past performance in mind, be able to compare it to current performance and predict whether future performance will be the best of the three. Following the shutdown, students were likely able to continue monitoring their progress due to the use of learning management systems in place at the university. Therefore, although self-referent goals may be more complex than the goals based on the other referents, students were able monitor their progress as compared to previous work. However, Was and Greve (2021) found that students setting self-referent goals were more likely to report missing the social interactions with their peers and instructors found in face-to-face courses. Regarding volition, according to, Was and Greve self-oriented students' grades did not fall following shutdown because they were able to monitor their progress and they reported their volition did not suffer.

Other-referent goals are norm-referenced and reflect a comparison of achievement to that of other people. These comparisons can either be direct to individuals or more indirect, as in the comparison to a representation of a composite of people (e.g., classmates). In the previous investigation, students setting other-referent goals did not expect the transition to all virtual learning to have a significant impact on their grades, nor did they report changes in their effort invested in courses following the shutdown. However, the students setting other-referent goals did self-report missing the opportunity to directly compare themselves with others and the lack of direct feedback from instructors and classroom interactions. They also reported the lack of interaction with peers and instructors was a negative outcome of the pandemic related shutdown of the university.

### *The Current Study*

The goals of the current study were to: (a) replicate the , Was and Greve (2021) finding that a three-factor model better represents undergraduate students' goal orientations than the 3 x 2 factor model proposed by Elliot et al. (2011) in both North American and Middle East college student populations, and (b) to more closely examine the finding that students who set task-based goals are more resilient to external factors that disrupt typical academic progress, such as the interruptions experienced during the COVID-19 pandemic within these two college populations. To these ends, we surveyed two samples of undergraduate students inquiring as to whether their university's choice to move all classes online in March 2020 impacted their achievement goals and how their achievement related behaviors were affected. One sample was acquired from undergraduates in a large university in the Rocky Mountain region of the U.S. with a more diverse undergraduate student population. The university is a designated Hispanic-Serving Institution. The second sample was acquired from a university in the Sultanate of Oman representing a culturally distinct sample.

## Methodology

### North American Participants

The university's institutional review board (IRB) approved the methods for this study (IRB protocol number 17288-1), and all ethical standards of the American Psychological Association were followed. Our goal was to survey 250 participants while maintaining a cohort of students who experienced the transition to virtual learning in the Spring of 2020. Two hundred-eighty-one undergraduates from an introductory psychology course at a university in the Rocky Mountain region of the United States participated in this study. Participants included 198 (70%) female, 73 (26%) male, 2 (<1%) non-binary, 2 (<1%) non-conforming, 3 (1%) transgender, and 3 (1%) participants who did not indicate gender. The median age of participants was 21 with a range of 18 - 56. The mean self-reported GPA was 3.11 ( $SD = 0.97$ ). The ethnic origin distribution of the sample is as follows: European = 111 (40%), Hispanic or Latinx = 88 (31%), African = 25 (9%), Asian = 23 (8%); Middle Eastern = 6 (2%), Indigenous = 3 (1%) and 24 (9%) declined to answer.

### Middle East Participants

The university in Oman does not allow the collection of data regarding race or ethnicity, as the government does not reinforce the identification of this type of diversity. At the time of data collection, the university did have an established institutional review board, as students are expected to participate in research. The first author's university did provide IRB approval (protocol # 20-223) and all ethical standards of the American Psychological Association were followed in the treatment of participants and collection of the data. One hundred-sixty-five undergraduates enrolled in an introductory psychology course in Oman participated in exchange for partial course credit. Participants identified as 89 (54%) female, 72 (44%) male, and 4 (2%) participants did not respond. Median age of participants was 20 with a range of 18 - 25. The mean self-reported GPA was 2.79 ( $SD = 0.68$ ).

### Measures

Goal orientations were assessed using the 44-item goal orientations questionnaire from Elliot et al. (2011). Please refer to the Open Science Framework (OSF) Supplemental Materials for the full questionnaire (Was, 2023). The questionnaire contained items that reflect the six combinations that result from the two valences (approach and avoid) and the three standards for defining competence (task-based, self-referent, and other-referent): task-approach (e.g., *To get a lot of questions right...*), task-avoidance (e.g., *To avoid incorrect answers on the exams...*), self-approach (e.g., *To perform better on the exams...*), self-avoidance (e.g., *To avoid doing worse on the exams...*), other-approach (e.g., *To outperform other students on the exams...*), and other-avoidance goals (e.g., *To avoid doing worse than other students...*). We asked participants to respond to the goal orientation items concerning goals they may have had before the shift to online course delivery. For example, an item from the first section would say, *"Before going online, my goal was to complete assignments correctly."* Participants rated these statements on a Likert-type scale of 1 (*not true of me*) to 7 (*completely true of me*).

We included the 11 additional items used by Was and Greve (2021) to examine students' experience following the campus shutdown. These items asked students about the effort put into their coursework (Effort: 3 items, *I am working less hard now that courses are online than when they were face-to-face* - reverse scored- *I am working harder now that classes are online than when they were face-to-face*, and *I am spending more time studying for my classes now that they are online*). Higher self-reported scores on this scale indicated that the participant spent more time on their coursework. Three items were created to capture participants expectations for their grades following the move to online learning (Grades: 3 items, e.g., *I expect to get better grades now courses are online* - reverse scored; *I expect to get worse grades now that courses are online*; and *if it is an option, I will take the pass/fail option for at least one of my courses now that they are online*). Higher scores on this scale indicated that the participant expected their grade to go down following the move to online learning. We also captured experiences related to the lack of classroom social interaction (Social, 6 items e.g., *I miss the face-to-face interaction now that courses are online*). Higher scores on this scale indicated that participants missed the social interaction with faculty and peers following the move to online learning. Participants rated these statements on a Likert-type scale of 1 (*not true of me*) to 7 (*completely true of me*).

For the Oman sample, we did not translate the survey, nor did we translate the 11 extra items.

We chose not to translate the measures as the course that participants were enrolled in was taught in English. In addition, this course is offered only to students who are in the 2<sup>nd</sup> year of their program study. These students completed the foundation year and must have proficiency in English before enrolled in the program.

### Procedure

As previously stated, the aims of the current study were: (a) to determine if the results of Was and Greve (2021) are robust and replicable across unique samples and (b) to examine the effect of different goal orientations on students' responses to the shutdown the same methodology was used with both samples. Therefore, for the sake of brevity, we present the procedure and analytic strategy used with both samples below, and then subsequently present the unique

results of each sample individually. It is important to note, that both universities from which the current data were sampled moved all courses online or to virtual formats in the Spring of 2020.

All participants were emailed a link to a survey. The survey consisted of a consent form, in which participants needed to choose an "I agree" or an "I disagree" statement. Agreeing participants answered demographic questions including age, gender, ethnicity (this was not asked of the Oman sample), class rank, GPA, and how many online, hybrid, and flipped classes (the *flipped class* option was not presented to the Oman sample) they had taken. Participants then completed the goal orientation questionnaire and the 11 experience items. It took participants approximately 20 minutes to complete the survey.

### Analytic Strategy

To determine if the 3 x 2 framework or the 3-factor framework of goal orientations better represents the types of academic goals that undergraduates set, we used confirmatory factor analysis (CFA) and structural equation modeling (SEM) to compare the two models in both samples. Fit indexes (CFI, RMSEA,  $\chi^2$ ) were used to determine model fit and a  $\chi^2$  difference test was used to determine which of the models better fit the data. We also used SEM to determine if resulting goal structures in the better fitting model were predictive of the impact of the universities' shut-down on students' effort, grade expectations, and social experiences. To extend the results of, Was and Greve (2021) our predictive models include indirect paths from the goal orientations to expected grades through social experiences and effort. We constructed our hypothesized model in this manner as we suspect that if students missed the social experiences of being in face-to-face classrooms and/or they reported a reduction in effort during virtual classes, these in turn would relate to lower grade expectations.

## Findings/Results

### North American Sample

Nineteen of the 281 (7%) participants either skipped or chose not to respond to one item. Therefore, correlations were calculated using pairwise deletion, and for the CFA and SEM models we estimated the means and intercepts for the missing values. Means, and standard deviations of total on each of the three competence factors (*Task*, *Other*, and *Self*) and the outcome (endogenous) variables (*Grades*, *Social*, and *Volition*), as well as internal consistency (Cronbach's alpha), zero-order Pearson correlations, and disattenuated correlations among the scale scores are displayed in Table 1.

Of note are the moderately significant correlations among the competency standards ( $r = .65$  and  $.32$  between Task-Self and Task-Other respectively). Among the outcome variables, the grades were negatively correlated with Volition ( $r = -.29$ ,  $p < .01$ ), suggesting that participants that expected to work harder would also expect their grades would improve. Grades also moderately correlated with Social ( $r = .41$ ,  $p < .01$ ) suggesting that the more participants missed

the social interaction of being in face-to-face courses the more they expected their grades to suffer. Social and Volition also negatively correlated ( $r = -.26$ ,  $p < .01$ ), suggesting that the more participants missed the social interaction, the less effort they put into their coursework.

Table 1. Means, Standard Deviations, and Correlations Among Scale Scores of the U.S. Sample.

	<i>M (SD)</i>	<i>Task</i>	<i>Self</i>	<i>Other</i>	<i>Grades</i>	<i>Social</i>	<i>Volition</i>
<b>Task</b>	5.50 (1.03)	.82	.65**	.32**	-.06	-.05	-.04
<b>Self</b>	5.51 (.97)	.80	.81	.41**	-.02	.05	-.13*
<b>Other</b>	5.03 (1.34)	.39	.50	.84	-.03	.07	-.04
<b>Grades</b>	3.54 (1.47)	-.09	.03	-.05	.53	.41**	-.29**
<b>Social</b>	5.14 (1.56)	-.06	.06	.08	.55	.85	-.26**
<b>Volition</b>	4.35 (1.56)	-.05	-.17	-.05	-.48	-.34	.70

Note. Diagonal italicized values are Cronbach's alpha internal consistency estimates. Scores above the diagonal are zero-order correlations and scores below the diagonal are disattenuated correlations. \*Pearson correlations  $p < .05$ , \*\*Pearson correlations  $p < .01$ .

### Replication of the 3-Factor Structure

The next step in our analytic approach was to test whether the 3-factor structure reported by, Was and Greve (2021) or the 3 x 2 factor structure proposed by Elliot et al. (2011) better represented the data from the current sample. Analyses of statistical assumptions of CFA indicate that the data for all variables were normally distributed. Although the observed variables tended to have a slight negative skew - skewness ranged from  $-.21$  ( $se = .15$ ) to  $.19$  ( $se = .15$ ) - these values are within a tolerable range. Kurtosis estimates for the observed values were tolerable ranging from  $-1.18$  ( $se = .29$ ) to  $3.23$  ( $se = .29$ ). Preliminary analyses also indicated that the data were appropriate for factor analyses. Bartlett's test of sphericity was significant,  $X^2(231) = 2219.41$ ,  $p < .001$ , the KMO measure of sampling adequacy =  $.89$ , and the diagonal values of the anti-image correlation matrix ranged from  $.83$  to  $.94$ .

CFA results of the comparison of the 3 (competence standards) x 2 (valence) framework and the 3-factor (competence standards) indicate that the 3-factor model, CFI = .902; RMSEA = .059;  $\chi^2(206) = 407.74$ , was a better fit to the data than the 3 x 2 factor model CFI = .827; RMSEA = .080;  $\chi^2(200) = 556.331$ ,  $\chi^2_{\text{difference}}(6) = 148.59$ ,  $p < .001$ .

Based on these results we ran the predictive SEM with the three competence standards as exogenous factors. Figure 1 presents the results of the predictive model. Although the model includes several non-significant parameters, the data was an adequate fit to the model,  $\chi^2(263) = 466.39$ ,  $p < .001$ ;  $\chi^2/df = 1.77$ ; CFI = .90; RMSEA = .053 90% CI [.45, .60].

Regarding the predictive relationships between competency standards and outcome variables, results of this analysis suggest participants in this sample who set *task-based* goals were less likely to have negative experiences related to the social aspects of the shut-down due to COVID,  $b = -.26$ ,  $p = .037$ , than students who set self-referent or other-referent goals. Participants who reported negative responses to the lack of social contact due to the shutdown also reported expecting the shutdown to have a negative impact on their grades. Participants reporting that their volition suffered also reported expectations for lower grades. Overall, the results suggest that participants setting task-based goals were less likely to suffer negative responses to the lack of social interaction caused by the transition to all virtual learning environments. The results also suggest that participants experiencing negative reactions in terms of both the social aspects and their volition were more likely to expect the transition to virtual learning to have a negative impact on their grades.

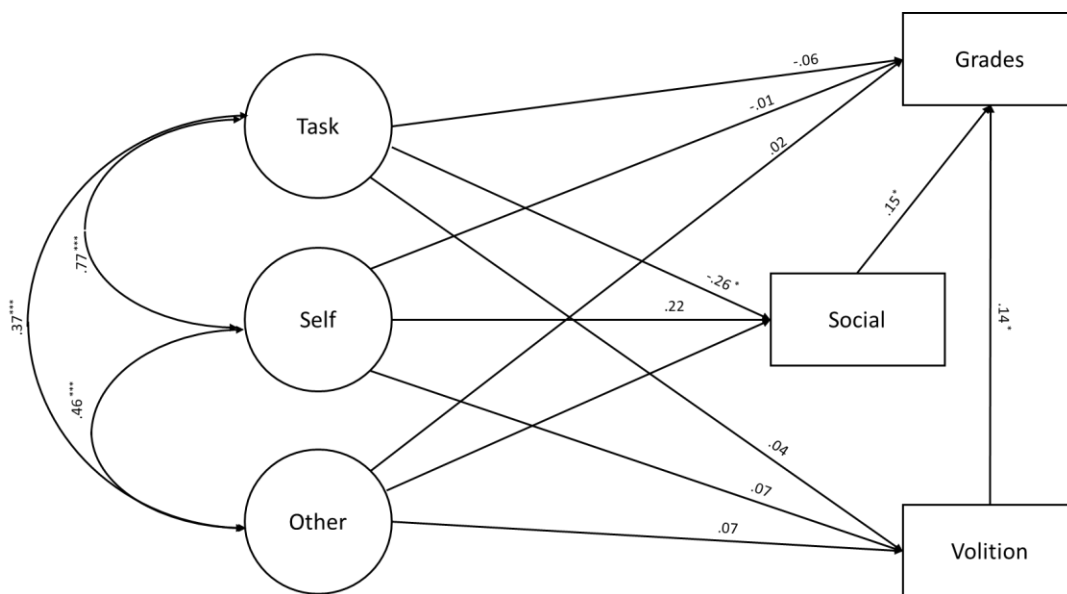


Figure 1. Three Factor Goal Model Predicting Outcome Variables in the U.S. Sample

Middle East Sample

Six of the 165 (4%) recruited participants were missing either the goal orientation questions or the questions regarding their experience of the shut-down. Therefore, their data was excluded from the analysis. Six other participants skipped or chose not to respond to one item. Therefore, correlations were calculated using pairwise deletion and for the CFA and SEM models we estimated the means and intercepts for the missing values.

Means, and standard deviations of total on each of the three factors (*Task*, *Other*, and *Self*) and the outcome (endogenous) variables (*Grades*, *Social*, and *Volition*), as well as internal consistency (Cronbach’s alpha), zero-order Pearson correlations, and disattenuated correlations among the scale scores are displayed in Table 2.

Table 2. Means, Standard Deviations, and Correlations Among Mean Scale Scores of the Middle East Sample

	<i>M (SD)</i>	<b>Task</b>	<b>Self</b>	<b>Other</b>	<b>Grades</b>	<b>Social</b>	<b>Volition</b>
<b>Task</b>	5.50 (1.03)	.82	.65**	.32**	-.06	-.05	-.04
<b>Self</b>	5.51 (.97)	.80	.81	.41**	-.02	.05	-.13*
<b>Other</b>	5.03 (1.34)	.39	.50	.84	-.03	.07	-.04
<b>Grades</b>	3.54 (1.47)	-.09	.03	-.05	.53	.41**	-.29**
<b>Social</b>	5.14 (1.56)	-.06	.06	.08	.55	.85	-.26**
<b>Volition</b>	4.35 (1.56)	-.05	-.17	-.05	-.48	-.34	.70

Note. Diagonal italicized values are Cronbach’s alpha internal consistency estimates. Scores above the diagonal are zero-order correlations and scores below the diagonal are disattenuated correlations. \*Pearson correlations  $p < .05$ , \*\*Pearson correlations  $p < .01$ .

Of note are the strong correlations among the competency standards ( $r_s = .83$  and  $.61$  between Task-Self and Task-Other respectively). Among the outcome variables, the grades were moderately correlated with social ( $r = .25$ ,  $p < .01$ ) suggesting that the more participants missed the social interaction of being in face-to-face courses the more they expected their grades to suffer. Social and Volition also negatively correlated ( $r = -.29$ ,  $p < .01$ ), suggesting that the more participants missed the social interaction, the less effort they put into their coursework.

### Replication of the 3-Factor Structure

Analyses of the statistical assumptions of CFA indicate that the data for all variables are normally distributed. Although the observed variables tended to have a negative skew - skewness ranged from 1.69 ( $se = .19$ ) to  $.35$  ( $se = .19$ ) - the values are within a tolerable range. Kurtosis estimates for the observed values were tolerable ranging from  $-1.44$  ( $se = .38$ ) to  $2.30$  ( $se = .38$ ). Preliminary analyses also indicated that the data were appropriate for factor analyses. Bartlett's test of sphericity was significant,  $X^2(231) = 1789.46$ ,  $p < .001$ , the KMO measure of sampling adequacy =  $.92$ , and the diagonal values of anti-image correlation matrix ranged from  $.88$  to  $.95$ .

CFA results of the comparison of the 3 (competence standards)  $\times$  2 (valence) framework and the 3-factor (competence standards) indicate that the 3-factor model CFI =  $.888$ ; RMSEA =  $.078$ ;  $\chi^2(206) = 410.488$ , was a better fit to the data than the 3  $\times$  2 factor model CFI =  $.838$ ; RMSEA =  $.09$ ;  $\chi^2(200) = 494.818$ ,  $\chi^2_{\text{difference}}(6) = 84.33$ ,  $p < .001$ . However, the 3-factor model suggests that in this sample the task-based and self-referent orientations may not be unique factors as the factor correlation was large,  $r = .96$ . However, we did not hypothesize a two-factor model and therefore did not test the fit of that model.

We ran the predictive SEM with the three competence standards as factors. Figure 2 presents the results of the predictive structural equation model. Although the model includes several non-significant parameters, the data was an adequate fit to the model,  $\chi^2(264) = 481.94$ ,  $p < .001$ ;  $\chi^2/df = 1.83$ ; CFI =  $.88$ ; RMSEA =  $.07$  90% CI[.04, .06]. Results of this analysis indicate that in this sample task-based goals led to less negative experiences related to the social aspects of the shut-down due to COVID,  $B = -12.89$ ,  $SE = 4.77$ ,  $p = .028$  and self-referent goals were

related to more negative experiences related to social aspects,  $B = 10.49$ ,  $SE = 6.39$ ,  $p = .044$ . Marginal effects suggest that other-referent goals led to negative experiences related to the effort following the shut-down due to COVID,  $B = 1.63$ ,  $SE = .89$ ,  $p = .068$ , and self-referent goal were related to poorer grade expectations,  $B = .08$ ,  $SE = .04$ ,  $p = .055$ .

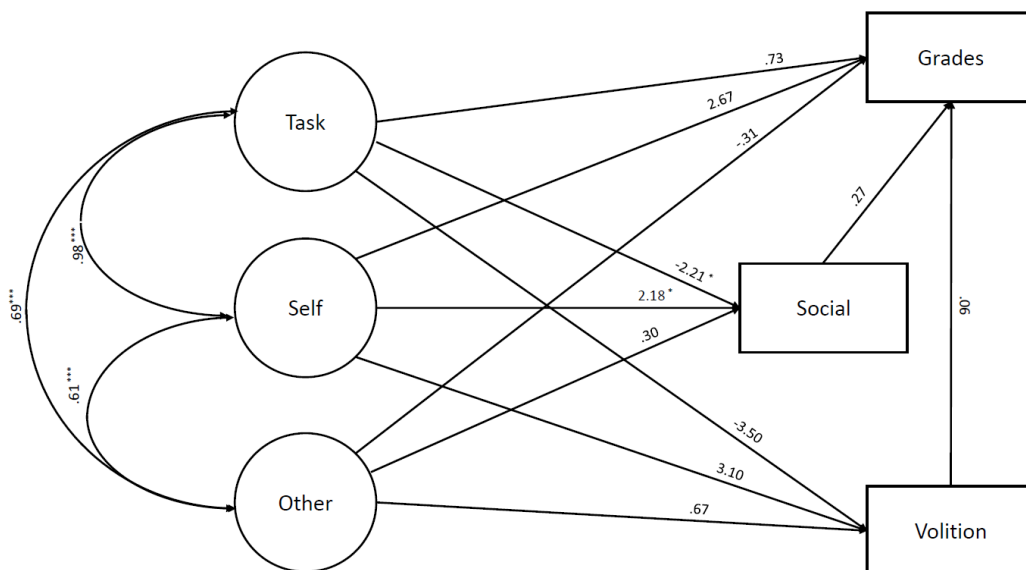


Figure 2. Three Factor Goal Model Predicting Outcome Variables in the Oman Sample

### Discussion

The goal of the current investigation was to replicate and extend the findings of Was and Greve (2021) who found that a model representing three competence standards better represents the goal orientations of undergraduate students than the 3  $\times$  2 factorial model proposed by Elliot et al. (2011). The data collected from the two distinct samples support the findings of Was and Greve in that the 3-factor model based solely on competence standards was a better representation of the types of goals students set than a model that includes a valence dimension.

The second finding also replicates the previous study in that students who set task-based goals were more resilient to external factors that disrupt typical academic progress, such as the interruptions experienced during the COVID-19

pandemic. This finding is aligned with other findings regarding task-based goals. For example, Diseth (2015) found that task-based goals were positively associated with important aspects of motivation including behaviors and achievement. Usán et al. (2019) also found that task-oriented students demonstrated more adaptive behaviors and more positive academic outcomes compared to the other orientations. Usán Supervía and Salavera Bordás (2020) also found that task-orientation was positively related to academic efficacy and performance, and negatively related to academic burnout. We conclude that task-based goals protect students from the possible negative impacts of disruptions to their normal learning routines. We believe that during the pandemic shutdown and move to online learning, students setting task-based goals or a with a task-orientation were more easily able to self-regulate their behavior.

#### *Consistencies and Inconsistencies With the 3-Factor Structure*

In terms of the 3 x 2 framework proposed by Elliot et al. (2011) compared to the three-factor results of Was and Greve (2021), the results of the CFAs in the current investigation suggest that the 3-factor model, based on competency standards was a better fit to the data of both samples than the 3 (competency standards) by 2 (valence) model proposed by Elliot et al. Although this may seem to conflict with the results of Elliot et al. and support those of Was and Greve, we do not feel that the results of Was and Greve and the current results conflict with Elliot's proposed structure. In Elliot et al.'s analysis, they found that task-avoidance and self-avoidance goals emerged from both approach and avoidance temperaments. Put differently, they posited that task-avoidance and self-avoidance goals both represent a combination of favorable (task-based and self-referent standards) and less favorable (avoidance) goal components. This might explain why the three-factor model rather than the 3 x 2 factor model better represents the data in the current study and that of Was and Greve. We suggest that the valence components represent a weaker influence on student goals than the competency standards. Thus, the results of the current study support the conclusion that the competency standards represent a more salient aspect of student goals.

The valence dimension of the 3 x 2 framework may not have emerged in the current samples due to the salience of competence standards caused by the pandemic, which caused the transition to online learning. Put differently, participants may have responded to the items on the goal orientation question to a greater degree based on competency standards and to a lesser degree on valence because the former may have been more salient in the context of the shutdown. Self-oriented students might have been more attuned to their self-standards in the absence of the classroom. Other-oriented students might have been more focused on the absence of their instructors and classmates, and task-oriented students were likely attuned to the more task-based nature of their courses in the online environment.

Elliot et al. also proposed that circumstances contribute to the discrepancy between task-based and self-referent goal adoption. It seems reasonable, as Elliot and colleagues proposed, that students may be more likely to adopt task-based goals in classrooms using an absolute grade distribution whereas self-referent goal pursuit may be adopted in achievement settings where intrapersonal improvement is emphasized. It is possible that in the current study, as well as that of Was and Greve (2021), the quick and unexpected transition to all online course work forced instructors to generate tasks for students to complete and to assign grades based on completion of tasks rather than mastery of skills. This is one possible explanation for the resilience of students setting task-based goals. Many instructors likely resorted to assigning tasks when forced to quickly move their courses online. Students setting task-based goals were thus poised to do well in this context.

The results of the SEMs from the two samples did not perfectly replicate. One possible reason for the discrepancies is how the Omani students responded to the transition to the shutdown. Behforouz et al. (2021) reported that Omani students who had not taken online courses prior to the pandemic shutdown, were motivated to learn via online courses and this was stronger for female students compared to males. More generally, Al-Harthy and Aldhafri (2014) found that Omani undergraduates who scored high on a measure of task-value regarding their courses, also scored highly on measures of self-efficacy. Schunk (1981) found that high self-efficacy leads to greater involvement in achievement activities and higher achievement. This may explain the association between task-orientation and volition found in the Omani sample that was not present in the US sample.

Little research regarding the effect of the transition to online course delivery during the pandemic on student motivation has focused on the 3 x 2 goal orientation framework proposed by Elliot et al. (2011). However, the results of the current investigation do align with under studies and fit well into the literature. For example, Ritchie et al. (2021) found that student self-efficacy decreased following the transition to online course delivery. We contend that students with task-oriented goals might have not been affected to the same degree as other students, but this was not investigated by Ritchie et al.

#### **Conclusion**

The analyses of the two samples in this investigation did not completely replicate the findings that students who set task goals were less likely to have concerns regarding their grades after the move to online courses. In the first sample, students setting task-based goals were less likely to have negative experiences related to the loss of the social aspect of face-to-face courses. This finding is like that of Was and Greve (2021) in that students setting task-based goals in their example were also less likely to report that they missed the social interactions found in face-to-face course. However, in



the first sample, students setting task-based goals did not report an expected increase in their grades. In the second sample, other-oriented students (those who use others – peers, professors – as competence standard) were more likely to report putting forward less effort into their studies while classes were online.

### Recommendations

Future research may further examine the structure of the goal orientations. In the Oman sample, task-based and other-referent goals were highly correlated. The question remains if this is unique to this sample or if this would also replicate within other cultures or other populations. Future research may also investigate if these findings replicate under other life circumstances in education contexts (e.g., transferring to another university) or in other life contexts (e.g., starting a new job).

#### *Implications for Theory and Practice*

These results have important implications for both theory and practice. Including the work of Was and Greve (2021) there are now three distinct samples of data that suggest that competence standards are theoretically robust factors which undergraduate students use to set goals, whereas approach and avoidance as valences may not be as impactful. From an applied perspective we propose that task-oriented goals do provide a buffer against unforeseen circumstances that would otherwise disrupt students' progress toward academic achievement.

### Limitations

We recognize that there are two specific limitations to our study. First, the timing of our data collection was temporally farther from the actual shutdown than the data collected by Was and Greve (2021). Was and Greve reported that their data was collected before the end of the Spring semester 2020. Thus, they collected their data during the semester that the campus closed. Our data was collected across the 2020-2021 academic year, and therefore, students may not have been as much in the impact of the shutdown as students whose university had just transitioned to online learning.

The second limitation is the composition of our samples. Although our goal was to examine the impact of the transition to online learning in a more diverse sample and a culturally unique sample, both samples are weighted heavily toward females. Our samples may not generalize to samples that have a more even distribution of genders.

### Ethics Statements

The study involving human participants was reviewed and approved by the Kent State University, Metropolitan State University, and Sultan Qaboos University review boards. The participants provided their written informed consent to participate in this study. All American Psychological Association ethical standards were followed.

### Authorship Contribution Statement

Greve: Conceptualization and drafting manuscript. Richmond: Conceptualization and Editing/reviewing. Beziat: Editing/reviewing. Davis: Data collection and analysis. Moore: Data collection and analysis. Was: Conceptualization, drafting manuscript, supervision and final approval.

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