Motivation and Self-Regulation in Online Courses: A Comparative Analysis of Undergraduate and Graduate Students

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Abstract

This study provides a comparative analysis of undergraduate and graduate students' academic motivation and self-regulation while learning online. Participants ($N = 82$) completed a survey that assessed several experiential, motivational, and self-regulatory factors. As hypothesized, graduate students reported higher levels of critical thinking than undergraduates. Moreover, after controlling for experiential differences, logistic regression analyses indicated that graduate student membership was predicted by higher levels of critical thinking, lower levels of procrastination, and lower intentions to enroll in future online courses. Implications for online instructors and suggestions for future research are discussed.

Background

Online learning[1] has become the format-of-choice for numerous postsecondary institutions eager to provide students with the opportunity to learn from a distance (Bernard et al., 2004; Larreamendy-Joerns & Leinhardt, 2006; Moore & Kearsley, 2005; Tallent-Runnels et al., 2006). Evidence of the explosive growth in online learning is not difficult to find. For instance, a recent survey of 2,200 U.S. colleges and universities by the Sloan Consortium (2006) found that 96% of large institutions (greater than 15,000 total enrollments) have some online offerings; 62% of Chief Academic Officers rated learning outcomes in online education as the same or superior to traditional, face-to-face instruction; 58% of schools identified online education as a critical long-term strategy; and overall online enrollment increased from 2.4 million in 2004 to 3.2 million in 2005.

As online learning has grown, so too has interest in students' academic motivation and self-regulation (Greene & Azevedo, 2007). Self-regulated learners are generally characterized as active participants who efficiently control their own learning experiences in many different ways, including organizing and rehearsing information to be learned; monitoring their thinking processes and seeking help when they do not understand; and holding positive motivational beliefs about their capabilities and the value of learning (Boekaerts, Pintrich, & Zeidner, 2000; Schunk & Zimmerman, 1998). Self-regulated learning (SRL)—sometimes referred to as academic self-regulation—has also been described as an active, constructive process whereby students set goals for their learning based on past experiences and the contextual features of the current environment (Pintrich, 2000). These learning goals then become the standards against which academic progress is compared (Greene & Azevedo, 2007). It is important to note, however, that academic self-regulation is not an all-or-nothing phenomenon. Instead, students are self-regulating to the extent that they are cognitively, motivationally, and behaviorally involved in their own learning activities (Zimmerman, 2000).

Recently, several scholars (e.g., Azevedo, 2005; Dabbagh & Bannan-Ritland, 2005; Dabbagh & Kitsantas, 2004) have suggested that to be successful in highly autonomous online learning situations, students may require well-developed SRL skills to guide their cognition and behavior. Moreover, some researchers (Greene & Azevedo, 2007; Pintrich, 2003; Schunk, Pintrich, & Meece, 2008) have indicated that there may be important developmental differences in students' self-regulatory skills, differences that warrant further empirical investigation. For example, Greene and Azevedo (2007) have encouraged researchers to ask whether there might be a developmental progression within SRL. In their words, "research in this area would perhaps not only allow us to more clearly examine individual phenomena in SRL but also provide clues as to how good SRL behaviors might be taught" (Greene & Azevedo, 2007, p. 364). What's more, such developmental differences, if they do exist, could have important educational implications for instructors, determining, for example, the cognitive demands of learning activities faculty design, as well as type and level of scaffolding they provide during instruction.

[1] Online learning is commonly referred to as online education, Web-based learning, or Web-based education (Zhao, Lei, Yan, Lai, & Tan, 2005).

Purpose of the Study

The purpose of the present study was to begin exploring potential developmental differences in academic self-regulation, as described by several scholars in the field of academic motivation (e.g., Greene & Azevedo, 2007; Pintrich, 2003; Schunk et al., 2008). In particular, this study was designed to determine if there are experiential, motivational, and self-regulatory differences between undergraduate and graduate students enrolled in several online courses. We hypothesized that graduate students would exhibit more adaptive SRL profiles than their undergraduate counterparts, due, in part, to their greater experience as learners at the university level. Ultimately, identifying such differences could help faculty as they attempt to employ effective online teaching strategies for students who may have varying levels of academic motivation and diverse self-regulatory capacities.

Method

Participants

Participants for this study included a convenience sample of 82 students from a large public university in the northeastern United States. Of these students, 39 (48%) were undergraduates and 43 (52%) were graduate students. Participants were enrolled in several different courses delivered completely online through WebCT. The sample included 39 women (48%) and 43 men (52%). The mean age of the undergraduate participants was 22.9 years (SD = 2.5; range 19-29), and the mean age of the graduate students was 31.2 years (SD = 9.0; range 21-56).

Overall, participants reported a wide range of educational experience. In particular, undergraduates reported the following: High School (n = 3, 8%), Some College (n = 23, 59%), 2-Year College Degree (n = 8, 20%), and 4-Year College Degree (n = 5, 13%). In contrast, graduate students reported the following: 4-Year College Degree (n = 16, 37%), Master's Degree (n = 26, 61%), and Professional Degree (n = 1, 2%). In terms of experience with online learning, 36 undergraduates (92% of undergraduates) reported that they had completed one or more online courses in the past, whereas only 23 graduate students (53% of graduates) reported the same level of experience with online learning.

Procedures and Instrumentation

During the last four weeks of the semester, participants completed an anonymous, online survey. The first part of the survey was composed of 32 items; all items employed a 7-point Likert-type response scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). The items in this section were further subdivided into six subscales, and all of the variables derived from this part of the survey were created by computing means of the items associated with a particular subscale (see Appendix for a list of subscale items). The six subscales included the following:

Motivational Beliefs (adapted from the Motivated Strategies for Learning Questionnaire [MSLQ]; Pintrich, Smith, Garcia, & McKeachie, 1993):

1. *Task Value* – students' judgments of how interesting, useful, and important the course content was to them (6 items, α = .92);
2. *Self-Efficacy for Learning and Performance* – students' perceptions of expectancy for success and confidence in their ability to perform the learning tasks (7 items, α = .91);[2]

SRL Strategies (adapted from the MSLQ; Pintrich et al, 1993):

3. *Elaboration* – students' use of elaboration strategies (e.g., paraphrasing and summarizing; 5 items, α = .87);
4. *Critical Thinking* – students' use of critical thinking strategies (e.g., applying previous knowledge to new situations or making critical evaluations of ideas; 5 items, α = .87);

Motivational Engagement (adapted from Wolters, 2003, 2004):

5. *Procrastination* – students' level of academic disengagement or tendency to put off getting started on the work required for their online course (5 items, α = .90); and,
6. *Choice* – students' intentions to enroll in future online courses (4 items, α = .88).

The second part of the survey was composed of background and demographic items, including two individual items that assessed students' online technologies experience and previously completed online courses.

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[2] The definition of self-efficacy used to develop the MSLQ's self-efficacy scale is a bit broader than other measures, which usually limit themselves to assessing confidence in one's ability to attain designated types of performances and do not include expectancy for success (see discussion in Duncan & McKeachie, 2005).

Results

Descriptive Statistics

Table 1 presents descriptive statistics for the eight variables measured in the present study. As indicated, five of the six subscale variables (i.e., task value, self-efficacy, elaboration, critical thinking, and choice) had means slightly above the midpoint of the response scale (5.63, 5.87, 5.62, 5.14, and 4.57, respectively) and standard deviations ranging from 0.92 to 1.73. Additionally, all five variables showed a slight negative skew. On the other hand, descriptive statistics for the procrastination variable indicated a mean just below the midpoint of the response scale (3.32) and a standard deviation of 1.61. The frequency distribution for the procrastination variable had a slight positive skew.

Group Comparisons: T *Tests*

Independent samples *t* tests were conducted to explore differences between undergraduate and graduate students on the eight variables measured. To control the type I error rate, a Bonferroni adjustment was used (alpha = .05/8 = .008). Results from these analyses, also presented in Table 1, revealed statistically significant group differences on four of the eight variables. As hypothesized, graduate students reported higher levels of critical thinking than undergraduates ($p < .008$; $d = -0.68$). Undergraduates, by contrast, reported having completed more online courses in the past ($p < .001$; $d = 1.38$); more experience with online technologies ($p < .008$; $d = 0.61$); and greater intentions to enroll in additional online courses in the future ($p < .008$; $d = 0.84$). Effect sizes for the four statistically significant findings were moderate to large (Cohen, 1988).

Table 1
Means (Standard Deviations) and Independent Sample t *and Cohen's* d *Statistics for the Eight Measured Variables*

Variable	Overall (N = 82)	Group		*t*-Statistic	Cohen's *d*
		Undergraduate (n = 39)	Graduate (n = 43)		
Experience					
Online Tech. Experience	5.98 (1.25)	6.36 (1.31)	5.63 (1.09)	2.76*	0.61
No. Completed Online Courses	3.37 (3.29)	5.13 (3.96)	1.77 (1.07)	5.13*	1.38
Motivational Beliefs					
Task Value	5.63 (1.16)	5.81 (1.16)	5.47 (1.14)	1.35	0.30
Self-Efficacy	5.87 (0.92)	5.65 (0.99)	6.06 (0.82)	-2.02	-0.46
SRL Strategies					
Elaboration	5.62 (1.23)	5.46 (1.36)	5.76 (1.09)	-1.11	-0.25
Critical Thinking	5.14 (1.28)	4.71 (1.33)	5.53 (1.10)	-3.03*	-0.68
Motivational Engagement					
Procrastination	3.32 (1.61)	3.75 (1.64)	2.92 (1.50)	2.42	0.53
Choice	4.57 (1.73)	5.28 (1.56)	3.93 (1.64)	3.80*	0.84

Note. Bonferroni adjustment was used to control for inflation of type I error associated with multiple comparisons: alpha = .05/8 = .008. Cohen's $d = (M_2 - M_1) / \sqrt{[(\sigma_1^2 + \sigma_2^2)/2]}$. The online technologies variable was measured on a 7-point Likert-type response scale ranging from 1 (*extremely inexperienced*) to 7 (*extremely experienced*). The number of completed online courses ranged from 1 to 17. The remaining variables were measured on a 7-point, Likert-type agreement scale.
*$p < .008$.

Group Comparisons: Logistic Regression

Logistic regression was used to investigate the unique contribution of these differences in predicting students' group membership (undergraduate = 0, graduate student = 1). Using a hierarchical method, the independent variables were grouped into four construct sets and entered into the equation as follows: Step 1, experiential variables (online technologies and online learning experience); Step 2, motivational beliefs (task value and self-efficacy); Step 3, SRL strategies (elaboration and critical thinking); and Step 4, motivational engagement (procrastination and choice).

Table 2 provides a summary of the hierarchical logistic regression. As indicated, model fit statistics improved with the addition of each construct set. In the final model, 93.9% of students were correctly classified (-2 log likelihood = 21.00; χ^2 (8) = 92.48, $p < .001$), and the likelihood ratio R-square (i.e., the proportional reduction in deviance produced by final model when compared to the null model; Menard, 2000) was large (.81). Additionally, four variables were statistically significant predictors of group membership: online technologies experience (b = -3.48, $p < .05$), online learning experience (b = -1.99, $p < .05$), procrastination (b = -1.59, $p < .05$), and choice (b = -1.24, $p < .05$). The critical thinking variable approached statistical significance (b = 2.81, p = .058).

Table 2
Model Summaries for the Hierarchical Logistic Regression Predicting Group Membership (undergraduate = 0; graduate = 1)

	Step 1			Step 2			Step 3			Step 4		
Variables	*b*	*SE*	OR	*b*	*SE*	OR	*b*	*SE*	OR	*b*	*SE*	OR
Experience												
Online Tech. Experience	-1.34**	0.41	0.26	-1.85**	0.58	0.16	-2.26**	0.69	0.15	-3.48*	1.66	0.03
No. Completed Online Courses	-1.27***	0.31	0.28	-1.43***	0.37	0.24	-1.61***	0.45	0.20	-1.99*	0.80	0.14
Motivational Beliefs												
Task Value				-0.69	0.44	0.50	-1.24	0.67	0.29	-2.71	1.48	0.07
Self-Efficacy				1.67**	0.55	5.31	1.04	0.74	2.83	2.82	1.73	16.70
SRL Strategies												
Elaboration							-0.57	0.76	0.95	-1.01	1.76	0.37
Critical Thinking							1.63*	0.70	5.11	2.81[a]	1.48	16.67
Motivational Engagement												
Procrastination										-1.59*	0.69	0.21
Choice										-1.24*	0.53	0.29
Fit Statistics												
-2 Log Likelihood	60.67			47.82			37.04			21.00		
Model Likelihood Ratio χ^2	52.81***			65.66***			76.44***			92.48***		
Block Likelihood Ratio χ^2	52.81***			12.85**			10.78**			16.04***		
Model Likelihood Ratio R^2	.48			.58			.67			.81		
% Correctly Classified	86.6			86.6			89.0			93.9		

Note. b = unstandardized regression coefficient; OR = odds ratio.
[a]Wald χ^2 test for the critical thinking variable approached statistical significance (p = .058).
*$p < .05$. **$p < .01$. ***$p < .001$.

Next, a logistic regression was conducted using only the four statistically significant variables, as well as the critical thinking variable, as predictors of group membership. Table 3 presents results from this more parsimonious, five-predictor model. As indicated, 91.5% of students were correctly classified (-2 log likelihood = 29.10; χ^2 (5) = 84.38, $p < .001$), and the likelihood ratio R-square was large (.74). Moreover, all five variables were statistically significant predictors of group membership: online technologies experience (b = -2.73, $p < .01$), online learning experience (b = -1.71, $p < .01$), critical thinking (b = 1.74, $p < .01$), procrastination (b = -0.89, $p < .05$), and choice (b = -0.82, $p < .05$).

Results from the final model with five predictors indicated that the odds of graduate student membership were higher as one's use of critical thinking strategies increased, and lower as one's online technologies experience, number of completed online courses, tendency to procrastinate in one's current online course, and intentions to enroll in future online courses increased. In others words, after controlling for experiential differences, graduate students were more likely to use critical thinking strategies during online learning; whereas undergraduates were more likely to procrastinate in their online courses and, paradoxically, were more likely to report wanting to take more online courses in the future.

Table 3
Model Summary for the Logistic Regression Model with Five Independent Variables Predicting Group Membership (undergraduate = 0; graduate = 1)

				Model Fit Statistics			
Variable	*B*	*SE*	OR	-2 Log Likelihood	Likelihood Ratio χ^2	Likelihood Ratio R^2	% Correctly Classified
Online Tech. Experience	-2.73**	0.86	0.07				
No. Completed Online Courses	-1.71**	0.54	0.18				
Critical Thinking	1.74**	0.66	5.70	29.10	84.38***	.74	91.5
Procrastination	-0.89*	0.36	0.41				
Choice	-0.82*	0.34	0.44				

Note. b = unstandardized regression coefficient; OR = odds ratio.
*$p < .05$. **$p < .01$. ***$p < .001$.

Discussion

Findings from this comparative study reveal that undergraduate and graduate students learning online differ in a number of important ways. Taken together, results partially support the hypothesis that graduate students exhibit more adaptive SRL profiles. Specifically, though less experienced with online technologies and learning, graduate students reported greater use of critical thinking strategies and lower levels of procrastination. These latter characteristics are consistent with effective academic self-regulation (Pintrich, 1999; Wolters, 2003). Interestingly, undergraduates, who reported greater levels of procrastination in their current online courses, also expressed greater intentions to enroll in future online courses. This paradoxical finding was not anticipated and may warrant further investigation.

Implications for Online Instructors

Results from the present study suggest some preliminary implications for online instructional practice. In particular, findings indicate that, as Greene and Azevedo (2007) have suggested, there may be a developmental progression within academic self-regulation. With this result in mind, online instructors might consider providing their undergraduate and graduate students with differential support; that is, different types and amounts of regulatory guidance and scaffolding during online learning activities. Specifically, the following suggestions for online instructional practice are provided:

1. Provide explicit instructional support and structure. Although, as this study revealed, undergraduates may be more experienced with online technologies and learning, they may also require more explicit support and structure from the instructor, as indicated by their lower levels of critical thinking and greater tendency to

procrastinate. Examples of explicit support and structure include reflective prompting aimed at helping students self-monitor their understanding (Davis & Linn, 2000); clear and detailed syllabi and assignment instructions; and more intermediate assignment deadlines to facilitate task completion (Liu, Bonk, Magjuka, Lee, & Su, 2005). In general, these instructional tactics are designed to encourage learners to better regulate their own learning in online contexts (McLoughlin, 2002) and to discourage their use of maladaptive academic behaviors, such as procrastination.

2. Develop students' self-efficacy. Another approach to encouraging self-regulation and discouraging procrastination is to address students' self-efficacy for learning online. Research with college undergraduates in traditional classrooms has indicated that students with higher self-efficacy tend to procrastinate less often than others (Wolters, 2003). Thus, although undergraduates in the present study reported similar levels of self-efficacy as graduate students, interventions aimed at promoting self-efficacy in online settings may be an effective means of reducing procrastination. Two instructional strategies that have been known to enhance students' self-efficacy for learning in both traditional and online contexts include helping learners identify and set challenging, proximal goals (Locke & Latham, 1990; Dabbagh & Kitsantas, 2004) and providing students with timely, honest, and explicit performance feedback (Bandura, 1997; Bangert, 2004; Wang & Lin, 2007).

3. Encourage collaboration and co-regulation. Many models of self-regulation support the idea of external regulation from teachers and peers as they provide modeling of and scaffolding for regulatory behaviors (Boekaerts et al., 2000). In a collaborative online environment, this type of external regulation might be particularly effective. For example, by requiring students to work together toward a mutual goal, online instructors can encourage students to provide regulatory support for one another in the form of project planning, monitoring, and reflecting (Winters & Azevedo, 2005). This type of collaborative regulation has been called *co-regulation* (Corno & Randi, 1999), and research in traditional and hypermedia learning environments has revealed that, "under these circumstances, students' individual self-regulatory processes are mediated by the collaborative context in which they are learning" (Winters & Azevedo, 2005, p. 193).

Of course, simply placing students in groups does not guarantee collaboration and co-regulation (Johnson & Johnson, 1999). Instead, the learning environment must be intentionally designed to promote effective group behaviors and to discourage maladaptive activities such as *free-riding* and *social loafing* (Kreijns, Kirschner, & Jochems, 2003). Although a discussion of specific techniques for promoting effective collaboration is beyond the scope of this article, these instructional methods have been detailed elsewhere in the computer-supported, collaborative learning literature (see, for example, Hiltz, 1997; Johnson & Johnson, 1999).

4. Scaffold online discussions. A primary goal of online discussions is to encourage students to challenge, reform, and synthesize their current views of knowledge through in-depth interactions with others (Garrison, Anderson, & Archer, 2001). However, findings from numerous studies of online discussion forums have indicated that students' interactions are often quite shallow, and "rarely developed into a higher level of communication where negotiation, co-construction, and agreement occurred" (Tallent-Runnels et al., 2006, p. 100). One possible explanation for students' shallow participation in online discussions is lack of guidance from the instructor. Thus, as Christopher, Thomas, and Tallent-Runnels (2004) have argued, online instructors, like their counterparts in traditional classrooms, must take greater responsibility for organizing and scaffolding their students' learning within these online discussions.

In the present study, undergraduates reported lower levels of critical thinking than graduate students. This finding suggests that online instructors may need to provide additional scaffolding for these students in an effort to enhance their use of critical thinking skills and other deep processing strategies. This type of supplemental scaffolding in online contexts has been described by some as enhanced *teaching presence* (Anderson, Rourke, Garrison, & Archer, 2001; Garrison et al., 2001; Shea, Swan, Li, & Picket, 2005). For example, during online discussions, enhanced teaching presence might include some of the following teacher behaviors: setting the climate for learning by modeling appropriate discussion posts; focusing the discussion on specific issues; encouraging, acknowledging, and reinforcing student contributions; identifying areas of agreement/disagreement and seeking consensus and understanding; adding information from diverse sources to a string of student posts; critically evaluating posts and requesting clarification and elaboration where necessary; and diagnosing and correcting students' misunderstandings (Anderson et al., 2001; Shea et al., 2005). Ultimately, teaching practices such as these that facilitate productive discourse may be necessary if online learners—particularly undergraduates—are expected to engage their classmates in meaningful interactions, develop higher levels of critical thinking, and realize other educationally worthwhile learning outcomes (e.g., reduced procrastination, improved persistence, and overall satisfaction with online learning; Christopher et al., 2004; Liu et al., 2005; Shea et al., 2005; Whipp, 2003).

Limitations and Future Directions

One major limitation of the present study was the relatively small convenience sample utilized. Although significant differences were found in respondents' experience and components of their academic self-regulation, the nature of the sample limits the extent to which these findings can be generalized to other university students. For instance, it is possible that these results are unique to the individuals surveyed and the specific online contexts investigated here (Shadish, Cook, & Campbell, 2002). Future research should include larger, more diverse samples to improve the external validity of these findings.

Another limitation was the non-experimental nature of the present investigation. Specifically, it is unclear whether the higher levels of critical thinking reported by graduate students actually represents a developmental difference in these students when compared to undergraduates. Instead, these differences could have been the result of different course requirements; that is, by their very nature, graduate courses may simply require students to utilize more critical thinking strategies to successfully complete online learning activities. On the other hand, undergraduate courses may not require this type of cognitive processing, thus allowing undergraduates to get away with using more shallow processing strategies, such as rehearsal and rote memorization. If this is the case, then differences observed in the present study may be less about developmental differences in self-regulation and more about dissimilarity in the requirements inherent to graduate and undergraduate courses. That said, Christopher et al. (2004) found that higher level discussion prompts (i.e., prompts that modeled a high level of critical thinking) had no effect on the level of graduate students' responses, as coded using a rubric developed from Bloom's Taxonomy of Learning. Clearly, more controlled research is needed to further clarify the differences detected here.

Finally, most of the instructional recommendations provided in this article require more empirical testing in online environments to validate their efficacy. Future studies that utilize experimental designs might be especially useful in exploring whether online interventions, such as adaptive scaffolding during online discussions, can differentially impact undergraduate and graduate students' use of critical thinking and other deep processing strategies. The use of alternative research methods, such as content analysis of online discussion boards, could be particularly useful in exploring these relations.

Conclusion

Notwithstanding methodological limitations, results from the present study suggest that undergraduate and graduate students come to online courses with different levels of online experience and exhibit different levels of self-regulation while learning online. Moreover, these findings suggest that faculty should closely consider their online audience, as students' experience, motivational beliefs, and self-regulatory competence should determine, in large part, the type and amount of structure, support, and scaffolding teachers provide during online instruction.

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Appendix

Survey Instrument

All subscales utilized the following response scale:

completely disagree 1	mostly disagree 2	tend to disagree 3	neutral 4	tend to agree 5	mostly agree 6	completely agree 7

Motivational Beliefs (adapted from the MSLQ; Pintrich et al., 1993)

Task Value

Students' judgments of how interesting, useful, and important the course was to them.

Items:

1. I think I will be able to use what I learn in this course in other courses.
2. It is important for me to learn the course material in this class.
3. I am very interested in the content area of this course.
4. I think the course material in this class is useful for me to learn.
5. I like the subject matter of this course.
6. Understanding the subject matter of this course is very important to me.

Self-Efficacy

Students' perceptions of expectancy for success and confidence in their ability to perform the learning tasks.

Items:

1. I believe I will receive an excellent grade in this class.
2. I'm certain I can understand the most difficult material presented in the readings for this course.
3. I'm confident I can learn the basic concepts taught in this course.
4. I'm confident I can understand the most complex material presented by the instructor in this course.
5. I'm confident I can do an excellent job on the assignments in this course.
6. I'm certain I can master the skills being taught in this class.
7. Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.

Self-Regulated Learning Strategies (adapted from the MSLQ; Pintrich et al, 1993)

Elaboration

Students' use of elaboration strategies (e.g., paraphrasing and summarizing).

Items:

1. When I study for this class, I pull together information from different sources, such as readings, online discussions, and my prior knowledge of the subject.
2. I try to relate ideas in this subject to those in other courses whenever possible.
3. When reading for this class, I try to relate the material to what I already know.
4. I try to understand the material in this class by making connections between the readings and the concepts from the online activities.
5. I try to apply ideas from course readings in other class activities such as online discussions.

Critical Thinking

Students' use of critical thinking strategies (e.g., applying previous knowledge to new situations or making critical evaluations of ideas).

Items:

1. I often find myself questioning things I hear or read in this course to decide if I find them convincing.
2. When a theory, interpretation, or conclusion is presented in the online discussions or in the readings, I try to decide if there is good supporting evidence.

3. I treat the course material as a starting point and try to develop my own ideas about it.
4. Whenever I read an assertion or conclusion in this class, I think about possible alternatives.
5. I try to play around with ideas of my own related to what I am learning in this course.

Motivational Engagement (adapted from Wolters, 2003, 2004)

Procrastination

Students' level of academic disengagement or tendency to put off getting started on the work required for their online course.

Items:

1. I often find excuses for not starting the work for this course.
2. I delay studying for this course, even when it is important.
3. I postpone doing the work for this class until the last minute.
4. I promise myself I will do something for this course, then put it off anyway.
5. I frequently put off getting started on the readings and assignments for this course.

Choice

Students' intentions to enroll in future online courses.

Items:

1. I look forward to taking more online courses in the future.
2. I won't take another online class unless it is required. (reverse coded)
3. I plan to avoid taking any class that involves online learning. (reverse coded)
4. If I had a choice, I would take an online course rather than a traditional face-to-face course.