

## **A Comparative Analysis of Student Motivation in Traditional Classroom and E-Learning Courses**

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Multivariate analysis of variance was used to determine if there were differences in seven measures of motivation between students enrolled in 12 e-learning and 12 traditional classroom university courses ( $N = 353$ ). Study results provide evidence that e-learning students possess stronger intrinsic motivation than oncampus students who attend face-to-face classes on three intrinsic motivation measures: (a) to know, (b) to accomplish things, and (c) to experience stimulation. There were no differences in either three extrinsic motivation measures or amotivation. Additionally, graduate students reported stronger intrinsic motivation than undergraduate students in both e-learning and traditional courses. However, there was no evidence of motivational differences based on ethnicity. Recommendations for further research are provided.

Carnevale (2005) reported the results of a 2004 study that showed about 937,000 students in the U.S. were enrolled in e-learning courses at the end of 2004. By 2006, more than 1.2 million students are expected to be taking such courses, representing about 7% of the 17-million students enrolled at degree-granting institutions. Distance learners are typically older than traditional students with the average age over 25 years old. They are more likely to be female and married, are apt to have higher incomes, and tend to have family and job responsibilities that restrain them from attending traditional oncampus classes (Ashby, 2002). Feasley (1983) observed that distance education students mostly seek to satisfy specific life goals, for example, job-related training, as well as their own intellectual curiosity. In a study of undergradu-

ate distance learners, Becker (as cited in Perdue, 2003) found that students expected their distance program would have increased interaction with instructors and learners, require less campus time, be more flexible, and be more engaging due to the use of media. Such findings suggest both external and internal sources of motivation for choosing distance learning.

Over the past decade there have been a number of studies examining student persistence and achievement among adult distance learners. Financial cost, disruption to family life, and a lack of employer support were reported by Merisotis and Phipps (1999) as contributors to higher distance education dropout rates. These results are consistent with previous research that identifies monetary costs and family problems as deterrents to adult participation in education (Darkenwald & Valentine, 1985) and social cognitive theory that posits structural barriers (i.e., inadequate resources) are impediments to personal agency (Bandura, 1997). Zielinski (2000) and others reported that feelings of isolation and lack of direct teacher contact in distance learning environments can result in the belief that the student does not belong to a scholarly community, which may also contribute to student attrition. Moreover, weaker student motivation can account for the increased attrition rate among distant learners.

Motivation is an important variable related to adult distance learner success and is often cited in the professional distance education literature (Moore & Kearsley, 2005). Knowles (1980) theorized the primacy of motivational processes in successful adult learning. Research into characteristics of distance learners (Terrell & Dringus, 1999) reported that such students are more likely to have an independent learning style, manifest self-directed behavior, and possess an internal locus of control, although findings regarding achievement and persistence in the distance classroom have been inconclusive (Gibson, 2003).

Merisotis and Phipps (1999), in a review of the distance education literature, suggested that the most important factors influencing student success are student motivation, the nature of the learning tasks, learner characteristics, and the instructor. Threlkeld and Brzoska (1994), in writing about distance education, noted that "maturity, high motivation levels, and self-discipline have been shown to be necessary characteristics of successful, satisfied students" (p. 53). Indeed, a few studies (Oxford, Young, Ito, & Sumrall, 1993; Schwittman, 1982) reported student motivation as the single most important predictor of student success in distance education. A meta-analysis of distance education empirical literature conducted by Bernard et al. (2004) identifies the need to explore more fully, student motivational dispositions in distance education. Accordingly, the present research examines student motivation. The goal is to identify the motivational characteristics of online learners and to identify differences, if any, between distance and oncampus learners.

## LITERATURE REVIEW

There are many constructs of importance in understanding motivational processes: outcome expectancies (Feather, 1982; Vroom, 1964), attributions (Miller, Brickman, & Bolen, 1975), goal directedness (Covington, 2000), intrinsic versus extrinsic motivation (Deci, 1975), locus of control (Rotter, 1966), self-efficacy (Bandura, 1977), volition (Kuhl & Fuhrmann, 1998), self-regulation (Zimmerman, 2002), and self-control (Rosenbaum, 1989). A common thread that runs through many of these constructs is the identification of internal and external sources of motivation, for example, internal and external attribution and intrinsic and extrinsic motivation. The present research focuses on intrinsic and extrinsic motivation to explain engagement in adult education.

A fundamental premise of expectancy value theory is that people engage in specific activities due to the perceived value of likely consequences (Atkinson, 1982; Vroom, 1964). When given the choice between multiple options, expectancy value theory posits that people will select the behavior, which they believe will result in the greatest combination of success and value. Consistent with this theory, learning goals are adopted because of the value of anticipated outcomes that result from goal attainment. According to Bandura (1997), such outcomes can be personal (e.g., pleasure), self-evaluative (i.e., the self-satisfaction from behaving in a manner consistent with self-standards), or social (e.g., respect from others, money). Desired personal and self-evaluative outcomes are related to intrinsic motivation; desired social outcomes are related to extrinsic motivation.

Deci and Ryan (1985) proposed cognitive evaluation theory, which posits that intrinsic motivation is maximized when individuals feel competent and self-determining in dealing with their environment. They define intrinsic motivation as “the doing of an activity for its inherent satisfactions rather than for some separable consequence” (Ryan & Deci, 2000, p. 56). This definition is in contrast to the meaning of extrinsic motivation, which involves the performance of an activity in order to attain some separable outcome, such as a diploma or license, or to satisfy external needs, for example, promotion or pay raise, workplace requirements, praise, family expectations, or rewards.

To clarify the distinction between intrinsic and extrinsic motivations, Deci (1975) described salient aspects of rewards, namely that they can be controlling and/or informational. If a teacher gives a reward to a student and the controlling aspect of the reward is considered dominant, then intrinsic motivation decreases, since the learner will perceive the teacher to be externally manipulating his or her performance. If, however, the learner perceives the reward as purely informative, the reward will affect their perception of their own competence. If the information implies ability, intrinsic motivation increases. If it implies a lack of ability, intrinsic motivation declines.

Bandura (1997) provided a compelling argument that perceptions of capability (i.e., self-efficacy) mediate the causal path from outcome expectancies to motivation. Thus, motivation is maximized when an agent expects specific outcomes from an activity, these outcomes are highly valued, and activity is perceived as doable. In general, a person does not engage in self-perceived futile endeavors regardless of the relationship between a successful performance and resultant outcomes.

The majority of the research on the effects of the learning environment on intrinsic motivation has focused on autonomy (Ryan & Deci, 2000). Ponton (1999) defined learner autonomy as “the characteristic of the person who independently exhibits agency in learning activities” (pp. 13-14). Research provides evidence that students whose behavior is mostly internally regulated (or autonomous) have more interest, confidence, excitement, persistence, better performance, and show a better conceptual understanding of the material than students who are mostly externally controlled (Deci & Ryan, 2000; Grolnick & Ryan, 1987). Studies also show that autonomy-supportive teachers catalyze in their students greater intrinsic motivation, curiosity, and the desire for challenge (Deci, Nezlek, & Sheinman, 1981; Ryan & Grolnick, 1986). Students who are overly controlled lose initiative and do not learn as well, especially when learning is complex or requires conceptual and creative processing (Benware & Deci, 1984; Grolnick & Ryan, 1987). However, there is a dearth of research investigating the relationship between various forms of motivation and the manifestations associated with adult autonomous learning (i.e., resourcefulness, initiative, and persistence; Ponton, Carr, & Derrick, 2004).

A number of classroom-based studies have examined the role of strong teacher-centered environments on autonomy, motivation, and learning (Grolnick & Ryan, 1987; Miserandino, 1996). These studies indicated that controlling environments reduce a student’s sense of autonomy, decrease intrinsic motivation, and result in poorer attitudes and performance in the classroom. In other words, extrinsic motivation through contingent rewards can sometimes conflict with intrinsic motivation. The result is either increased extrinsic motivation, in which activity continues subject to the continuance of external rewards and/or coercion, or a state of amotivation develops where persistence becomes less likely because the perceptions of incompetence lead to a sense of futility.

Klesius, Homan, & Thompson (1997) concluded that distance education is more likely to be perceived positively when students need the course content, enjoy little or no travel to the instruction site, and are intrinsically motivated. Intrinsic motivation was found to be a significant predictor of persistence and achievement in distance education (Coussement, 1995; Fjortoft, 1996). The novelty effect of the use of a new technology such as e-learning systems can help create curiosity and increase motivation to learn (Egan &

Gibb, 1997). Motivated by the curiosity and demand for knowledge rather than by external reinforcements, learners are more likely to become involved in distance education more deeply and thus experience and enjoy the knowledge acquisition processes to a greater extent (Klesius et al.; Hardy & Boaz, 1997). This assertion warrants the continued investigation of various motivational constructs and their relationship with desirable learning outcomes.

## METHODOLOGY

### Participants

Participants in the present study consisted of 353 volunteer students from three universities who were enrolled in either traditional classroom courses, 172 (48.7 %), or e-learning courses, 181 (51.3 %). All three universities were located in the same urban area of Virginia and are fully accredited by the Southern Association of Colleges and Schools. A total of 24 courses was sampled, 12 online and 12 face-to-face courses from the three universities, with each university contributing both e-learning and traditional students. Course selection was based on two criteria: (a) similarity of content between the traditional classroom and e-learning courses and (b) use of experienced full-time faculty who had reputations as excellent classroom or online teachers. All professors were personally contacted by one of the researchers and agreed to participate in the study. Students were asked by their professors to volunteer for the study and were told that volunteering or not volunteering would not influence their course grade. The overall student volunteer rate was 84 %, with the traditional classroom volunteer rate slightly higher than that of the e-learning courses. Ninety-five (26.9 %) student volunteers attended a state university, 115 (32.6 %) attended a private Christian university, and 143 (40.5 %) attended a private secular university. The sample consisted of 301 (85.3 %) females and 52 (14.7 %) males. The higher percentage of females is consistent with the typical enrollment in the teacher education courses that were sampled.

### Setting

The semester-long undergraduate and graduate courses examined by the present study were conducted on the main university campus in a traditional classroom or delivered at a distance by the Internet using the Blackboard.com<sup>SM</sup> e-learning system. E-learning participants were widely dispersed throughout the US, although most resided in the eastern part of the country. Students enrolled in traditional courses either lived in campus dormitories or commuted to campus. There was no online component for the traditional courses and the e-learning courses had no face-to-face sessions. All three universities offered both traditional and e-learning courses. Typical titles of undergraduate courses were teaching methods, geometry for

teachers, and classroom management. Graduate courses included school law and middle school administration.

### **Instrumentation**

The 28 item Academic Motivation Scale – College (AMS-C 28) was used to measure intrinsic, extrinsic, and amotivation in college students (Vallerand et al., 1992). This instrument, along with demographic questions regarding gender, ethnicity, and age, was administered to all study participants during the final three weeks of the semester so that students would have substantial exposure to their respective courses.

Each item on the AMS-C 28 consists of a statement in response to the question “Why do you go to college?” One item is “Because I experience pleasure and satisfaction while learning new things.” Item responses are based on a 7-point Likert-scale ranging from 1 (Does not correspond at all) to 7 (corresponds exactly). Twelve of the items measure intrinsic motivation, twelve measure extrinsic motivation, and four measure amotivation. The intrinsic and extrinsic scales consist of three subscales each. The three intrinsic motivation subscales are: (a) to know, (b) to accomplish things, and (c) to experience stimulation. Intrinsic motivation to know is defined as engaging in an activity for the pleasure and the satisfaction that one experiences while learning, exploring, or trying to understand something new (Vallerand & Fortier, 1998). Motivation to accomplish things focuses on engaging in a given activity for the pleasure and satisfaction experienced while one is attempting to surpass oneself or to accomplish or create something (Vallerand et al., 1992); thus, the focus is on the process of accomplishing and not on the end result. Finally, intrinsic motivation to experience stimulation occurs when one engages in an activity in order to experience pleasant sensations associated mainly with one’s senses, for example, sensory and aesthetic pleasure (Vallerand et al., 1992).

The three extrinsic motivation subscales, listed in order from highest to lowest self-determination, are: (a) identified regulation, (b) introjected regulation, and (c) external regulation. Identified regulation is the most self-determined type of extrinsic motivation. It occurs when the student engages in learning because he or she has personally decided to do so and because that activity has value related to his or her goals (Vallerand et al., 1992). Introjected regulation is an ego-form of motivation that is driven by a perception of what others might think. It can also involve actions that are carried out based on contingencies, for example, adopting behavior to avoid guilt or anxiety. Consequently, internalization may not fully occur. Motives that are only partially internalized may be experienced as internally coercive if the motive conflicts with other aspects of the self. External regulation, the most extreme form of extrinsic motivation, is based on pressure or rewards that come from the social environment, such as career advancement or passing a course (Vallerand et al.).

The final scale generated by the AMS-C 28 measures amotivation. According to Vallerand et al. (1992), amotivation is the state of lacking an intention to act. Amotivation can result from not valuing a behavior (Ryan, 1995), not feeling competent regarding the behavior (Deci, 1975), or not believing it will yield a desired outcome (Seligman, 1975).

Scales can range as follows: intrinsic and extrinsic motivation, from low of 12 to a high of 84; each of the six intrinsic and extrinsic subscales as well as the amotivation scale, from a low of 4 to a high of 28. Vallerand et al. (1992) provided evidence of instrument validity and identified the overall scale's internal consistency reliability as .86 based on coefficient alpha. In the present study, overall AMS-C 28 reliability was .91. The reliability coefficients for the intrinsic motivation, extrinsic motivation, and amotivation scales were .93, .89, and .91 respectively.

### **Design and Analysis**

The present study employed a causal-comparative design to respond to the following research question: Are the population means for higher education student scores on motivation the same or different based on type course (e-learning, traditional), student status (undergraduate, graduate), and ethnicity (African American, Caucasian, other)? Dependent measures were the seven subscales generated by the AMS-C 28: the three intrinsic motivation subscales, the three extrinsic motivation subscales, and amotivation. Multivariate analysis of variance (MANOVA) was used to analyze the data. Specific procedures used are described in the results section.

## **RESULTS**

Percent composition of traditional classroom and e-learning groups by gender, by age, by student status, and by ethnicity are displayed in Table 1. Chi-square contingency table analysis revealed no differences in the demographic makeup of the traditional classroom and e-learning groups based on gender, Pearson  $\chi^2(1, N = 353) = .25, p = .62$ , age, Pearson  $\chi^2(2, N = 353) = .69, p = .71$ , and student status, Pearson  $\chi^2(1, N = 353) = 2.84, p = .09$ . However, there was a greater proportion of African American students in the traditional classroom group than in the e-learning group, Pearson  $\chi^2(2, N = 353) = 14.43, p = .001$ , Cramers'  $V = .20$ . Consequently ethnicity was included in the analysis to determine if this imbalance confounded study results.

The pooled means (with standard deviations in parentheses) for the dependent measures are 57.89 (15.10) for intrinsic motivation, 62.60 (14.38) for extrinsic motivation, and 6.02 (4.57) for amotivation. Pooled descriptive statistics for the intrinsic motivation subscales are 21.95 (4.88) for to know, 20.05 (5.86) for to accomplish, and 15.89 (6.13) for to stimulate. The extrinsic motivation subscales are 22.77 (4.89) for identified regulation, 19.55

**Table 1**  
Demographic Percentages

Characteristic	Face-to-face %	Online %	Total %
Gender			
Female	84.3 %	86.2 %	85.3 %
Male	15.7 %	13.8 %	14.7 %
Age			
Under 30	52.3 %	55.8 %	54.1 %
30-40	27.3 %	27.1 %	27.2 %
Over 40	20.3 %	17.1 %	18.7 %
Student status			
Undergraduate	65.1 %	56.4 %	60.6 %
Graduate	34.9 %	43.6 %	39.4 %
Ethnicity			
African American	34.9 %	23.2 %	28.9 %
Caucasian	59.9 %	60.2 %	60.1 %
Other	5.2 %	16.6 %	12.0 %

(6.32) for introjected regulation, and 20.28 (6.11) for external regulation. Means and standard deviations for dependent variables disaggregated by the two independent measures, type course and student status, are displayed in Table 2. Similarly, descriptive statistics disaggregated by type course and ethnicity are displayed in Table 3. Intercorrelations are reported in Table 4.

A three-way MANOVA was conducted to determine the effect of type course (e-learning, traditional), student status (undergraduate, graduate), and ethnicity (African American, Caucasian, other) on the seven dependent measures (the three intrinsic motivation subscales, the three extrinsic motivation subscales, and amotivation). Significant main effects were found between the two course types, Wilks's  $\lambda = .94$ ,  $F(7, 336) = 2.94$ ,  $p = .005$ ,  $\eta^2 = .06$ , and the two student statuses, Wilks's  $\lambda = .95$ ,  $F(7, 336) = 2.62$ ,  $p = .012$ ,  $\eta^2 = .05$ . The ethnicity main effect was not significant, Wilks's  $\lambda = .93$ ,  $F(14, 672) = 1.68$ ,  $p = .055$ ,  $\eta^2 = .03$ . Significant first order interaction effects were found for type course x student status, Wilks's  $\lambda = .96$ ,  $F(7, 336) = 2.11$ ,  $p = .043$ ,  $\eta^2 = .04$ , and for ethnicity x student status, Wilks's  $\lambda = .91$ ,  $F(14, 672) = 2.20$ ,  $p = .007$ ,  $\eta^2 = .04$ . The type course x ethnicity interaction was not significant, Wilks's  $\lambda = .98$ ,  $F(14, 672) = 1.40$ ,  $p = .15$ ,  $\eta^2 = .03$ . The second order type course x student status x ethnicity interaction was also not significant, Wilks's  $\lambda = .98$ ,  $F(7, 336) = .95$ ,  $p = .47$ ,  $\eta^2 = .02$ .

Post hoc ANOVA was conducted on each dependent measure following significant MANOVA effects. For the course type main effect, the e-learning group scored higher than the traditional group on all three intrinsic motivation subscales: to know,  $F(1, 342) = 9.39$ ,  $p = .002$ ,  $\eta^2 = .03$ , to accom-



**Table 2**  
Means and Standard Deviations (in Parentheses) for Type Course  
and Student Status ( $N = 353$ )

Variable	Undergraduate	Graduate
<b>Traditional classroom students (<math>n = 172</math>)</b>		
Intrinsic motivation		
Intrinsic – To know	20.26 (5.34)	22.13 (4.51)
Intrinsic – To accomplish things	18.07 (6.53)	19.33 (5.89)
Intrinsic – To experience stimulation	13.76 (6.19)	15.60 (6.09)
Extrinsic motivation		
Extrinsic – Identified regulation	22.42 (4.40)	21.90 (5.13)
Extrinsic – Introjected regulation	19.42 (6.31)	18.50 (6.67)
Extrinsic – External regulation	20.41 (5.57)	20.25 (6.45)
Amotivation	6.10 (4.19)	5.32 (3.30)
<b>E-learning students (<math>n = 181</math>)</b>		
Intrinsic motivation		
Intrinsic – To know	22.50 (4.46)	23.51 (4.34)
Intrinsic – To accomplish things	21.26 (5.16)	21.82 (4.74)
Intrinsic – To experience stimulation	16.85 (6.48)	17.90 (4.54)
Extrinsic motivation		
Extrinsic – Identified regulation	23.71 (5.15)	22.72 (4.92)
Extrinsic – Introjected regulation	20.71 (5.94)	19.04 (6.41)
Extrinsic – External regulation	21.44 (6.16)	18.61 (6.24)
Amotivation	7.03 (5.78)	5.14 (3.89)
<p><b>Note:</b> The total intrinsic and extrinsic motivation scales can each range from a low of 12 to a high of 84. All remaining scales can each range from a low of 4 to a high of 28.</p>		

plish things,  $F(1, 342) = 7.83, p = .005, \eta^2 = .02$ , and to experience stimulation,  $F(1, 342) = 13.15, p < .001, \eta^2 = .04$ . Differences in the three extrinsic motivation and amotivation measures were not significant. For the student status main effect, the graduate group scored higher than the undergraduate group on intrinsic to know,  $F(1, 342) = 6.53, p = .011, \eta^2 = .02$ , and intrinsic to experience stimulation,  $F(1, 342) = 5.30, p = .022, \eta^2 = .02$ . However, the undergraduate group scored higher on extrinsic external regulation,  $F(1, 342) = 4.05, p = .045, \eta^2 = .01$ .

For the type course x student status interaction effect, significant interactions were observed only for extrinsic external regulation,  $F(1, 342) = 4.03, p = .046, \eta^2 = .01$ , and amotivation,  $F(1, 342) = 5.96, p = .015, \eta^2 = .02$ . Although the e-learning group scored higher than the traditional group on external regulation in both the undergraduate and graduate subpopulations, the differences narrowed considerably in the graduate subpopulation. Moreover, although the e-learning group scored higher on amotivation than the tradition-

**Table 3**  
Means and Standard Deviations (in Parentheses) for Type Course  
and Ethnicity ( $N = 353$ )

Variable	African American	Caucasian	Other
<b>Traditional classroom students (<math>n = 172</math>)</b>			
Intrinsic motivation			
Intrinsic – To know	21.73 (4.79)	20.65 (5.14)	18.44 (6.67)
Intrinsic – To accomplish things	19.17 (5.85)	18.09(6.56)	19.00 (6.91)
Intrinsic – To experience stimulation	15.37 (6.49)	13.92 (5.94)	13.44 (7.00)
Extrinsic motivation			
Extrinsic – Identified regulation	22.92 (4.23)	22.01 (4.79)	20.33 (5.20)
Extrinsic – Introjected regulation	20.15 (6.47)	18.45 (6.42)	19.56 (5.98)
Extrinsic – External regulation	22.32 (4.94)	19.43 (6.08)	17.89 (6.33)
Amotivation	7.02 (5.24)	4.98 (2.34)	7.56 (5.59)
<b>E-learning students (<math>n = 181</math>)</b>			
Intrinsic motivation			
Intrinsic – To know	22.14 (4.52)	23.53 (4.36)	21.90 (4.28)
Intrinsic – To accomplish things	20.64 (5.06)	22.17 (4.66)	20.30 (5.68)
Intrinsic – To experience stimulation	17.07 (5.71)	17.32 (5.24)	17.60 (7.41)
Extrinsic motivation			
Extrinsic – Identified regulation	22.50 (6.12)	23.65 (4.86)	23.00 (4.07)
Extrinsic – Introjected regulation	19.21 (5.26)	20.13 (6.50)	20.50 (6.34)
Extrinsic – External regulation	20.21 (6.78)	20.15 (5.81)	20.40 (7.63)
Amotivation	7.93 (7.35)	5.65 (4.50)	5.80 (2.22)
<b>Note:</b> African American, $n = 102$ ; Caucasian, $n = 212$ ; other, $n = 39$ . The total intrinsic and extrinsic motivation scales can each range from a low of 12 to a high of 84. All remaining scales can each range from a low of 4 to a high of 28.			

al group among undergraduates, the opposite was true for graduate students.

Finally, for the ethnicity x student status interaction effect, significant interactions were observed only for amotivation,  $F(2, 342) = 7.54, p = .001, \eta^2 = .04$ . That is, although African American students scored higher on amotivation in undergraduate versus graduate courses, amotivation scores were similar for undergraduate and graduate Caucasian students, and amotivation was higher for graduate students who classified their ethnicity as other than for undergraduate students so classified.

## DISCUSSION

The present study addressed the following research question. Are the population means for higher education student scores on motivation the same or different based on type course (e-learning, traditional), student sta-

**Table 4**  
Intercorrelations Between Variables

Variable	1	2	3	4	5	6	7	8	9
1. Intrinsic Total	–	.89	.92	.88	.61	.55	.66	.31	-.19
2. Intrinsic – To know		–	.77	.65	.52	.53	.49	.30	-.31
3. Intrinsic – To accomplish things			–	.69	.62	.53	.70	.30	-.21
4. Intrinsic – To experience stimulation				–	.49	.43	.56	.23	ns
5. Extrinsic Total					–	.85	.81	.84	-.19
6. Extrinsic – Identified regulation						–	.54	.64	-.32
7. Extrinsic – Introjected regulation							–	.45	ns
8. Extrinsic – External regulation								–	ns
9. Amotivation									–

*Note.* All intercorrelations are significant,  $p < .01$ , except as noted by ns (not significant).

tus (undergraduate, graduate), and ethnicity (African American, Caucasian, other)? Study results are discussed starting with differences between e-learning and traditional classroom courses.

**Type Course**

The e-learning group exceeded the traditional group on all three intrinsic motivation measures: to know, to accomplish things, and to experience stimulation. There were no differences between these two groups on either the three extrinsic motivation scales or amotivation. These results suggest that e-learning students are more intrinsically motivated than traditional students. That is, in contrast to oncampus classroom students, e-learners report learning to be more pleasurable and they have greater satisfaction with the process of learning. These results suggest the student’s subjective or perceived task value of e-learning may be an important consideration. As Eccles (1983) argued, both positive and negative factors influence perceived task value, and for online students the positive factors can be substantial. The factors commonly regarded as relevant to the task value of online learning are its importance or relevance, its intrinsic value, and its convenience. Moreover, Bures, Abrami, and Amundsen (2000) found that students who believe that technology will help them learn are more likely to be satisfied and will be more active online.

The results of the present study do not suggest that traditional classroom students do not desire the same personal or self-evaluative outcomes as e-learning students but rather the differences exist in the perceived probability of likely outcomes and perceived levels of capability for the different

learning environments. Such differences may be attributable to the types of students who would self-select e-learning as their educational mode of choice. According to Rogers' (1995) diffusion of innovation theory, the characteristics of those quick to embrace new innovations (i.e., the innovators and early adopters who together make up the first 15 % of adopters) are different from those who adopt the innovation later. These earlier adopters tend to have a greater ability to deal with uncertainty, higher intelligence, greater comfort with change, and a more favorable attitude toward science and technology. Individuals on the diffusion curve also differ socially with early adopters having more social participation and a more highly interconnected personal network than later adopters. Most appropriate to this study, Rogers reported that earlier adopters "have higher aspirations (for formal education, occupations, and so on)" (p. 274) and that they more actively seek information about the innovations themselves. Such patterns are consistent with the findings of online learners manifesting higher intrinsic motivation levels, although the question remains whether such differences will continue as e-learning becomes more common and the majority (and laggards) embrace the medium. Only through additional research can the weight of these differences be fully understood.

Studies directed at supporting the hypothesized differences in self-efficacy should also include measurements of the influence of the four sources of efficacy information: (a) performance accomplishments, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological/emotive arousals (Bandura, 1977). These sources of efficacy information may help explain the differences in intrinsic motivation between e-learning and traditional students due to different experiences, and influence instructional design in a manner that strengthens self-efficacy beliefs and, thus, facilitates intrinsic motivation.

If future research confirms that online pedagogy fosters higher levels of academic intrinsic motivation, faculty interested in promoting lifelong learning may use this information for instructional design. The continuum of structured education may transition from primarily face-to-face instruction to blended and even primarily online instruction. Future research must be conducted to support this hypothesized relationship between academic intrinsic motivation and lifelong learning as well as the appropriate time scales, for example, from kindergarten to 12th grade, or from baccalaureate to doctoral studies, or content scales, for example, from a beginning course in life science to an advanced biology course, or from a seminar at the beginning of the semester to independent work at the end of the semester for specific subject matter, associated with this pedagogical transition. In addition, the present investigation can be extended to determine specifically if observed levels of intrinsic motivation are different for varying faculty members. Such differences may offer insight into specific instructional strategies that may be more effective in promoting intrinsic motivation as

well as influence the design of future intervention experiments.

While the present results suggest that both online and face-to-face students are equally goal oriented (as evidenced by nonsignificant differences in extrinsic motivation), the online learners are more learning and/or activity oriented. Thus, this result is consistent with Houle's observation of orientation overlap. Houle (1961) recognized that adult learners can exhibit varying degrees of three learner orientations that include engagement in learning activities because (a) such activities represent the path to realizing specific goals (i.e., goal-orientation), (b) learning is personally gratifying (i.e., learning orientation), and (c) such activities are socially gratifying (i.e., activity orientation). Heckhausen and Kuhl (1985) "define [a] goal as the molar endstate whose attainment requires actions by the individual pursuing it" (pp. 137-138); thus, all three learner orientations represent goal-directedness with differential ideated goals. Heckhausen and Kuhl further noted that "goals rest on three levels of endstates with an ascending hierarchical order" (p. 138) as follows:

On the first-order level the endstates are the activities themselves: the interest in, or the enjoyment of, doing something repetitively or continuously, because it provides excitement... On a second-order level the endstate is an action outcome with characteristics that are required or preset and that are inherently valuable. Finally, at the third-order level, the endstate refers to desirable consequences that might arise from an achieved outcome. (p. 138)

The three levels of endstates coincide with Houle's typology and reinforce the important role of motivation in understanding adult participation in learning or any other agentic activity. The principles from Grow's (1991) staged self-directed learning model may also be used to guide instructional design. The present results suggest that online instructors may want to design their courses more from a facilitator perspective rather than from a teacher perspective.

### **Student Status**

The graduate student group scored significantly higher than the undergraduate group on two intrinsic motivation variables: to know and to experience stimulation. However, the undergraduate group scored higher than the graduate group on extrinsic external regulation. All remaining differences were not significant. The observed differences between undergraduate and graduate students may be explained by the large proportion of high school graduates that enroll in college.

According to the National Center for Education Statistics (2003), 65% of 16-24 year-olds who graduated from high school (or earned a GED) enrolled in college within one year of graduation. While still not compulsory, the

norm is for students to continue from high school to baccalaureate studies; thus, societal expectations and rewards (i.e., extrinsic motives) rather than personal or self-evaluative outcomes (i.e., intrinsic motives) may explain undergraduate participation and account for their stronger external regulation motivation. However, graduate school is still viewed as more optional than undergraduate school with large reductions in the number of students at this level. Thus, the significantly stronger intrinsic motivation in graduate versus undergraduate students is expected. Because students who felt competent in their ability to complete an undergraduate degree are more likely to consider graduate work, the development of motivational orientation through academic self-efficacy is an important outcome to encourage.

### **Ethnicity**

There were no significant differences between African American, Caucasian, and students who classified their ethnicity as other. These results are consistent with several studies in the literature that examined motivation from childhood through late adolescence and failed to show motivational differences based on ethnicity (Gottfried, Flemming, & Gottfried, 2001; Newman, 1990). The present study provides evidence that no motivational differences exist by ethnicity in a population of higher education adult students.

### **Limitations**

Interpretations of these findings are limited by the delimitations of the present study; that is, only 24 courses at three universities located in the same urban area of Virginia were sampled. Additional samples from other settings are needed for increased population validity. Measurement of motivation was performed using self-report instruments and convenience sampling where it is unknown how many online courses were completed by the online participants before measurement. Moreover, although no attrition occurred among study participants during the semester they were measured, no information is available regarding longer term persistence of students and program/degree completion.

As an *ex post facto* study, variables such as learning tasks, learner characteristics, course design, and pedagogy were not controlled and nonequivalent traditional classroom and e-learning groups of participants were analyzed. However, chi-square analysis revealed no significant differences in the makeup of the traditional and e-learning groups based on gender, age, and student status. Although the traditional group contained a larger proportion of African American participants, the MANOVA ethnicity main effect for the seven dependent measures was not significant. Additionally, participant scores on the dependent measures were similar across the three universities sampled in the present study. Therefore, the traditional classroom and e-learning groups were similar across a variety of demographic variables.

## CONCLUSIONS AND RECOMMENDATIONS

E-learning students manifested significantly stronger intrinsic motivation than traditional classroom students on all three intrinsic motivation measures: (a) to know, (b) to accomplish things, and (c) to experience stimulation. One possible explanation of these findings is that more intrinsically motivated students self-select online versus traditional classroom courses where self-selection can apply to both new and continuing students. Since less than 6 % of higher education students are enrolled in online courses, they are more likely to be innovators and early adopters in Rogers' (1995) diffusion of innovations categories and thus have different characteristics than the mainstream. This possibility is consistent with reports that individuals who choose distance over traditional education are different from their oncampus counterparts (Feasley, 1983) and may be more internally motivated by factors such as intellectual curiosity.

Consistent with expectancy value theory (Atkinson, 1982; Vroom, 1964), which posits that people engage in specific activities due to the perceived value of likely consequences, e-learning students may choose distance over traditional education because of a stronger perceived correlation between anticipated educational experiences and personal and/or self-evaluative outcomes. In addition, because of the mediating role of self-efficacy in path analytic models of expectancy value theory, e-learning students may also perceive themselves to be more capable of performing to self-satisfying levels in the online environment than those students in traditional classroom courses. This latter conclusion, of course, should be supported with future self-efficacy research in academic environments similar to the present investigation; however, the mediating role of self-efficacy has been supported with research in other domains of functioning (Bandura, 1997).

Another possible explanation for the stronger intrinsic motivation of e-learning students is that online instruction facilitates increasing levels of intrinsic motivation thereby explaining the differences between the two groups. This view is consistent with research (Zhang, 1998) that suggests the e-learning medium provides a learning environment that "emphasizes intrinsic motivation and self-sponsored curiosity and creative situated learning" (p. 4). This rationale is consistent with cognitive evaluation theory (Deci & Ryan, 1985), which posits that intrinsic motivation is maximized when individuals feel competent and self-determining in dealing with their environment. They pointed out that "interpersonal events and structures (e.g., rewards, communications, feedback) that conduce toward feelings of competence during action can enhance intrinsic motivation for that action because they allow satisfaction of the basic psychological need for competence" (Ryan & Deci, 2000, p. 58).

The e-learning instructor plays a crucial role in maintaining and sustaining students' motivational level by planning structures and facilitating inter-

personal events. Additional research is needed to confirm the role of e-learning pedagogy, computer-mediated communication, and course design in nurturing intrinsic motivation. Moreover, learning outcomes that include reduced attrition, deeper information processing, and increased levels of student success, task value, and better well-being tend to covary with intrinsic motivation (Vallerand, Fortier, & Guay, 1997). Consequently research is also needed to determine if better educational outcomes accompany the stronger intrinsic motivation noted in online courses. However, a considerable body of research in the form of comparison studies suggests no significant difference between a variety of distance education and traditional course educational outcomes (Russell, 1999). Nonetheless, several studies found differences in completion or student satisfaction, although various measures of achievement were often the same, or nearly the same, between the two types of courses compared. Perhaps the reason for the lack of research evidence regarding superior educational outcomes in online learning rests with other learning related variables, such as sense of community, which may be weaker in e-learning environments thereby offsetting the value of increased student intrinsic motivation. Clearly additional research is required.

It is possible that the 12 e-learning courses sampled in the present study are examples of high quality courses. Bernard et al. (2004) reported large variability in the quality of distance education programs. In particular, they noted that “a substantial number of [distance education programs] provide better achievement results, are viewed more positively, and have higher retention rates than their classroom counterparts. On the other hand, a substantial number of [distance education programs] are far worse than classroom instruction in regard to all three measures” (p. 406). Perhaps if other courses were sampled the outcomes would be different. Consequently research to confirm and extend the findings of the present study is needed.

Graduate students reported stronger intrinsic motivation than undergraduate students. Consequently, they were more likely to pursue educational programs for the pleasure and the satisfaction that one experiences while learning, exploring, or trying to understand something new (Vallerand & Fortier, 1998). Graduate students, having experienced undergraduate education, may be more likely to pursue advanced degrees for the inherent satisfaction or challenge rather than for the perceived need for an advanced degree. Undergraduate students, on the other hand, are more likely to be motivated by external factors, such as the perceived need for a college education based on pressures from family and the job market.

This study suggests several implications for practice, provided future research supports the present findings. Due to higher levels of intrinsic motivation present in e-learners versus traditional learners, course designers should vary the construction of these two types of courses to better match the motivational needs of the students. E-learning courses should incorporate methods



better suited to the self-regulated learner such as allowing the student a greater role in determining learning objectives, defining learning activities and time-lines, and reflecting on how well self-selected objectives have been met. For traditional learners with less intrinsic motivation, course designs may also be more traditional with the educator providing greater external control. While certainly these suggestions for practice exist on a continuum (i.e., not all e-learners have greater intrinsic motivation than traditional learners), the present results suggest that instructional methods more suited for self-directed learners represent a better approach in facilitating successful e-learning.

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