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Personality and universal design for learning in management education

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Abstract

Purpose – This paper aims to improve the understanding of student readiness for universal design for learning (UDL), thereby reducing a barrier to its adoption by management faculty. It explores how students' personality (conscientiousness and openness to experience) affects their readiness to embrace UDL and investigate how that relationship is mediated by self-directed learning (SDL).

Design/methodology/approach – Analysis uses survey data from students in management courses. From these data are created multi-item constructs and control variables. A mediated regression model that uses bootstrapping to estimate parameters and standard errors generates the results.

Findings – The findings were that SDL is strongly related to student readiness for UDL and that SDL fully mediates the relationship between conscientiousness and UDL. Openness to experience, however, directly relates to UDL without any mediation.

Research limitations/implications – This research applies only to one institution and two management courses. The methodology used in this study is limited to one part of the UDL model, which is a measure of student readiness to engage in choice. Future research can extend this model to other courses and institutions and other parts of the UDL model.

Practical implications – These findings provide insight into the student characteristics that enable them to gain empowerment and motivation from the UDL approach. Implementation of UDL in management education may require learning management strategies that accommodate student readiness for UDL. This study makes progress in identifying student characteristics that explain this readiness.

Social implications – UDL can improve management education by making it more accessible to students with different personalities and learning styles.

Originality/value – This study developed a method for analyzing the applicability of UDL in management education. It also devised and implemented a new survey measure for student readiness for UDL.

Keywords Conscientiousness, Self-directed learning, Management education, Universal design for learning, Openness to experience

Paper type Research paper

Introduction

The relationship between personality and learning is well established (De Raad & Schouwenburg, 1996; Kim, 2018). Watanabe, Tareq, and Kanazawa (2011) explored two

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perspectives: interactionist and mediational. The interactionist perspective asserts that personality traits interact with the situation, which leads to certain learned behaviors (George & Zhou, 2001). For the mediational perspective, personality affects learning through other variables (Tabak, Tziner, Shkoler, & Rabenu, 2021). We follow the mediational approach, investigating how personality associates with student acceptance of universal design for learning (UDL) and the role of self-directed learning (SDL) as a mediator.

UDL holds that instruction tailored to student characteristics improves learning and motivation (Gordon, Meyer, & Rose, 2016). The concept accommodates learner variability in content design and delivery (representation), student demonstration of knowledge (expression) and student motivations (engagement). Some UDL literature focuses on accommodating students with documented learning disabilities (Cook & Rao, 2018; Hall, Cohen, Vue, & Ganley, 2015). More recent research extends UDL to learning styles (Fidaldo & Thormann, 2017; Thousand, Villa, & Nevin, 2015) and allowing all students to choose assessment formats to accommodate diagnosed and undiagnosed learning issues (Flanagan & Morgan, 2021). Such flexible assessments should improve student motivation (Mimms, 2022; Spencer, 2011). UDL also has its drawbacks. For example, Johnson-Harris and Mundschenk (2014) note that UDL requires professors to tailor goals, teaching methods and materials to student characteristics (Meo, 2008), which may reduce assessment validity. Therefore, research that demonstrates student readiness and appreciation of UDL could demonstrate that the benefits of UDL could be worth the costs.

The purpose of this article is to explore how personality may impact learning preferences. We use the five-factor model (Barrick & Mount, 2005; Chamorro-Premuzic & Furnham, 2003) to study personality and focus on conscientiousness and openness to experience as its relevant and empirically supported factors with respect to student learning (Watanabe et al., 2011). We apply these personality factors to SDL, which is a behavioral pattern that is both "a process of learning in which the individual establishes elements of control over their own learning" (Linkous, 2021, p. 2). In it, students control learning objectives and the means for meeting them (Khalid, Bashir, & Amin, 2020; Knowles, 1975; Morris, 2019). SDL is central to studies in active learning and student-centered education (Grandinetti, 2013; Guglielmino, 1978).

Theoretical background and hypotheses development

We follow the theoretical model in Figure 1. Personality variables are on the left affect the mediator SDL. SDL in turn affects student readiness for UDL. The model includes controls for gender, age, program of study, expected overall GPA, expected grade in course and professor who taught the course.

Conscientiousness

Conscientiousness is a tendency for self-discipline, duty and meeting outside expectations. It implies a solid work discipline (Digman, 1990; Schouwenburg, 1995) as well as time management and organization skills. It associates with goal setting, self-efficacy and intrinsic motivation (Entwistle & Tait, 1996). Conscientiousness has been linked to commitment to learning goals, designing a plan of study and stronger learning goal orientation (Chamorro-Premuzic & Furnham, 2003; Klein & Lee, 2006; Lee & Klein, 2002).

Conscientiousness and SDL both associate with control over the learning process. Because conscientious individuals have organization and time management skills, they are also more likely to make plans, set individual goals and expect positive outcomes from the learning process. SDL similarly asserts that students take control over their learning and self-evaluate their progress. This research suggests that the trait of conscientiousness associates with SDL behaviors:

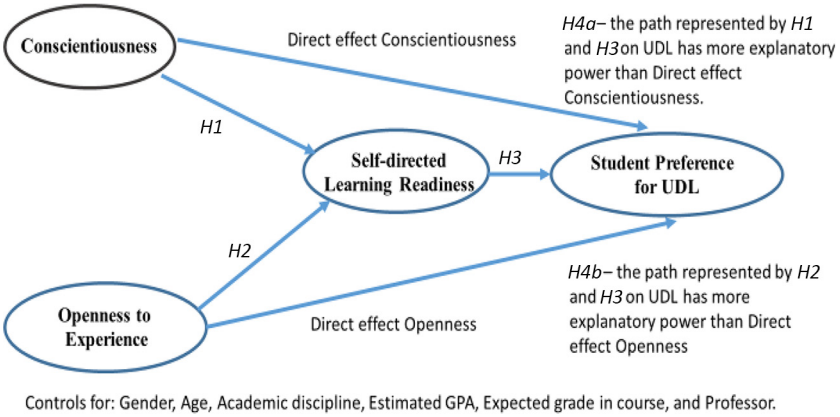

Figure 1. Relationships tested in the theoretical model

H1. Students who are high in conscientiousness are more likely to perceive themselves as having self-directed learning behaviors.

Openness to experience

Openness to experience refers to the willingness to try new things, creativity, appreciation for art and curiosity (Feist, 1998; Klein & Lee, 2006; McCrae & Costa, 1997). Research has connected it with critical questioning, evaluation and analytical argumentation (Blickle, 1996; Schouwenburg, 1995). Individuals high in openness to experience can link current content to previously learned content and seek a deeper understanding (Entwistle & Tait, 1996).

Openness to experience also associates with students' belief that one can learn, adapt and absorb new knowledge, which is likely to lead to intentionally planning, organizing and preparing for academic activities (Kirwan, 2014). These individuals are likely to cope with novel processes, uncertain situations or mastering new tasks. Hence, we expect that openness to experience will associate with SDL:

H2. Students who are high in openness to experience are more likely to perceive themselves as having self-directed learning behaviors.

Self-directed learning readiness and universal design for learning

In many SDL models, learners are viewed as independent agents who choose to engage with the course materials and instructors and use different strategies to achieve their learning goals (Abrami, Bernard, Bures, Borokhovski, & Tamim, 2011; Knowles, 1975; Linkous, 2021). Learners' desire for control comes with awareness of their learning goals, which derive from the practical learning that will help with career development and other personal interests (Hiemstra, 2003; Morris, 2019). SDL facilitates reflection on the learning process and incorporating it holistically into learners' lives (Sawatsky, Ratelle, Bonnes, Egginton, & Beckman, 2017). This self-awareness applies not only to learning content but also to learning methods, timing and other aspects of the learning process.

Our measure of UDL readiness deals with learners' choice of final exam format. Given that SDL suggests an awareness of the format that would best fit a student's learning style, it seems natural to hypothesize that self-directed learners would value that choice, suggesting a link between SDL and UDL:

H3. Students who perceive themselves as ready for self-directed learning are more likely to prefer UDL and multiple means of engagement.

Mediation by self-directed learning readiness

Two theories of learning are the behavioralist and the constructivist. The behavioralist theory holds that student learning is guided by set goals determined by faculty that are linked to desirable skill development (Murtonen, Gruber, & Lehtinen, 2017). As students learn, they develop a filing cabinet of desirable behaviors that become a complex system of manipulable understandings. There is little emphasis put on unbundling the "black box" of motivations and experiences that are within each learner. Rather, the theory focuses only on exposing students to lessons and measuring that they learn. Think of higher-level math as an example. Students can begin studying concepts like derivatives without much of a connection to real-world phenomena. By learning more complex concepts determined by faculty, students achieve learning goals. Academic success for student depends on discipline, focus and commitment.

By contrast, there is the constructivist perspective on learning, which is "based upon the premise that learners construct meanings in their minds and integrate new knowledge into their mental constructs" (Steiner, 2014, p. 319). Constructivist learning is a well-researched topic that incorporates learners' past experiences, values and social context into learning. One key difference between constructivist and behavioralist learning is that the former unbundles the learning process, incorporating individualized mental constructs that affect the perceived relevance of the learned material either through active learning or social interaction. According to the constructivist perspective, SDL can serve as a precursor for student readiness for UDL.

Conscientiousness suggests planning, organizing, time management and academic achievement (De Raad & Schouwenburg, 1996). It seems that this personality trait would lead to success under either the behavioralist or constructivist theory of learning. But, Morris (2019) argues that the constructivist approach is a necessary condition for SDL and by extension to readiness for UDL. Perhaps, conscientiousness without SDL can be an unquestioning learner able to succeed in a teacher-centered learning environment. Only when SDL is present might conscientiousness lead to readiness for UDL. This reasoning suggests our first hypothesis of mediation:

H4a. Readiness for self-directed learning is a mediator of the relationship between conscientiousness and preference for UDL.

Students high in openness to experience tend to be creative, flexible and able to cope with novel situations and uncertainty (Feist, 1998; McCrae & Costa, 1997). These students are likely to be open in all facets of life in addition to learning (Kirwan, 2014). Or from the behavioralist view, students could be open to new learning in a nonquestioning way, simply learning what faculty have to offer. Openness to experience is not necessarily inclusive of SDL. Only through the lens of SDL should these students be ready for UDL:

H4b. Readiness for self-directed behavior is a mediator of the relationship between openness to experience and preference for UDL.

Control variables

We included control variables for gender, age, program of study, expected overall GPA, expected grade in course and professor because they have been found to affect student learning and SDL. Gender can affect SDL in ways such as maturity and participative learning (Schweder & Raufelder, 2019). Age may affect self-direction due in part to emotional development (Brockett & Hiemstra, 1991). Program of study can control for teaching philosophy typical of different programs (Dockrell, Runciman, Kemp, McDonald, & Thomas, 1987). Expected overall GPA controls for its positive effect on SDL (Deyo, Huynh, Rochester, Sturpe, & Kiser, 2011). Expected grade in course reflects discipline-specific knowledge. We control for professor (Johnson-Harris & Mundschenk, 2014) and course because the context of our survey can affect the results.

Methodology

Participants

Data were drawn from an AACSB-accredited business college of a large liberal arts university with a Carnegie classification of Master's Colleges and Universities. Undergraduate student survey respondents came from classes in Principles of Management and Organizational Behavior. They were juniors and seniors who have a major in business. Two professors taught these classes during fall 2018, spring 2019 and fall 2019 semesters. Students could choose between earning extra credit points by taking our survey or writing a short paper. Most students took the survey. A total of 377 survey responses were collected. Of these, 314 had complete responses for all variables.

Variables and measures

The dependent variable that measures student readiness for UDL is "prefer student choice." It measures the extent to which students prefer control over the format of their final exam. UDL holds that student learning improves with engagement and empowerment (Fornauf & Erickson, 2020; Spencer, 2011).

We combined five survey items using principal components analysis: "I prefer that we have a choice of taking the final in various formats," "I like the idea of having choices in assessments in my courses," "I would prefer to leave it up to the professor to determine the format for the final exam," "I believe students should decide on the format of a final assessment" and "The professor should determine for all students the format for the final assessment." These Likert items used a scale from 1 = strongly disagree to 7 = strongly agree, with the third and fifth items reverse scored. Exploratory factor analysis and the scree plot show a unidimensional solution. Cronbach's alpha is 0.83, an acceptable level of reliability.

SDL was measured by 12 items. Six were from the scale for SDL readiness (Guglielmino, 1978), e.g. "I'm looking forward to learning for the foreseeable future" and "If there is something I have decided to learn, I can find time to learn it, no matter how busy I am." Six were from the self-rating scale of SDL (Williamson, 2007), e.g. "I can identify my areas of knowledge deficit," "I can evaluate the appropriateness and usefulness of the information that I have studied" and "I prefer course material that really challenges me so I can learn new things." These items were adapted to be appropriate for our students. The 12 items formed a unidimensional construct as indicated by the scree plot, with a Cronbach's alpha of 0.83, which shows acceptable reliability.

Conscientiousness and openness to experience were measured using an international standard scale of 10 items, each developed from work by Goldberg (1992). Cronbach's alpha for conscientiousness is 0.82 and for openness to new experiences is 0.76. Both indicated acceptable reliability.

We measured control variables as follows. Gender was a dummy variable (1 = self-reported male gender and 0 = all others). Age had four categories (1 for students aged 19 or 20, 2 for 21-year-olds, 3 for 22-year-olds and 4 for ages 23 or higher). Program of study was a dummy variable (1 for management students and 0 for all others). Expected overall GPA had four categories (1 = GPAs of 3.5 and above, 2 = 3.25 to 3.5, 3 = 3.0 to 3.25 and 4 = below 3.0). Expected grade in course was classified as 1 = A, 2 = A−, 3 = B+, 4 = B and 5 = below B. To control for professor and course, we included a dummy variable. One professor taught only the Principles of Management, and the other taught Organizational Behavior.

Procedures

We distributed the survey online through SurveyMonkey. Responses were downloaded to Excel and loaded onto SPSS 25.0.0.1. To avoid specification error, all parameter estimates used a bootstrap procedure with 2,000 samples (Efron & Tibshirani, 1993; Wood, 2005).

We used path analysis to compare the indirect and direct effects of the mediated models between personality traits, SDL behaviors and the UDL readiness (Edwards & Lambert, 2007). We considered using a more holistic method such as structural equations modeling but opted against it for reasons of small sample size (Schumacker & Lomax, 2016), model simplicity and likelihood of violating multivariate normality (Foldnes & Grønneberg, 2021).

To estimate parameters for hypotheses testing, we used the following three equations:

(1) $\mathbf{M} = \mathbf{a_o} + \mathbf{a_1} * \mathbf{X} + \mathbf{e_M}$, where **M** was the mediator, $\mathbf{a_o}$ was the intercept, $\mathbf{a_1}$ was the effect between **X** and **M** and $\mathbf{e_M}$ was the disturbance term.

(2) $\mathbf{Y} = \mathbf{b_o} + \mathbf{b_1} * \mathbf{X} + \mathbf{b_2} * \mathbf{M} + \mathbf{e_Y}$, where **Y** was prefer student choice, $\mathbf{b_0}$ was the intercept, $\mathbf{b_1}$ was the effect between **X** and **Y** controlling for **M**, $\mathbf{b_2}$ was the effect between **M** and **Y** and $\mathbf{e_Y}$ was the disturbance term.

(3) $\mathbf{Y} = \mathbf{c_0} + \mathbf{c_1} * \mathbf{X} + \mathbf{e_{Y2}}$, where $\mathbf{c_0}$ was the intercept, $\mathbf{c_1}$ was the total effect between **X** and **Y** without controlling for **M** and $\mathbf{e_{Y2}}$ was the disturbance term.

We estimated all three of these equations on the same samples, which enabled estimation of the direct effects of personality on prefer student choice, $\mathbf{c_1}$, and on SDL, $\mathbf{a_1}$, and the indirect effects, $\mathbf{a_1}*\mathbf{b_2}$, and their associated standard errors, significance level and 95% confidence intervals. We repeated the set of three equations: once for **X** = conscientiousness and again for **X** = openness to experience.

Results

The means, standard deviations and correlation data are in Table 1. Correlations show that the four variables constructed from survey items are moderately correlated.

Tables 2 and 3 show tests of hypotheses. All models had significant explanatory power. Variance inflation factors showed that multicollinearity is not a concern. At the bottom of each table are the parameter estimates for the indirect effect, $\mathbf{a_1}*\mathbf{b_2}$, as well as the difference between the total effect and the controlled effect between personality variables and prefer student choice.

Table 2 shows tests for *H1* that conscientiousness affects SDL. Model 1 shows a high degree of significance (0.36, [0.24, 0.47]***). *H1* is strongly supported.

Table 1. Descriptive statistics and correlations for all variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Prefer student choice	−0.06	1.04	0.83								
2. Self-directed learning	−0.01	0.99	0.15**	0.83							
3. Conscientiousness	0.01	1.00	0.11*	0.31***	0.82						
4. Openness to experience	−0.03	1.01	0.19***	0.38***	0.33***	0.76					
5. Gender	0.55	0.50	−0.14**	0.10*	−0.14**	0.16**	1.00				
6. Age	2.84	1.00	−0.10*	0.15**	−0.07	0.05	0.14**	1.00			
7. Program	0.46	0.50	0.05	−0.02	0.06	0.12*	0.12*	−0.09	1.00		
8. Self-reported GPA	2.46	1.12	0.05	−0.02	−0.27***	−0.07	0.20***	0.22***	0.04	1.00	
9. Expected course grade	3.03	1.36	0.02	−0.05	−0.21***	−0.09*	0.13**	0.18**	0.07	0.35***	1.00
10. Professor	0.39	0.49	−0.02	−0.19***	−0.07	0.04	0.06	−0.09	0.44***	0.16**	0.24***

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$, one tailed. Prefer student choice refers to the measure of student readiness for UDL. Cronbach's alpha is on the diagonal for constructed variables. $N = 314$

Table 2. Bootstrap regression results for conscientiousness

Predictors	Model 1 DV: Self-directed learning Coefficient	95% CI	Model 2 DV: Prefer student choice Coefficient	95% CI	Model 3 DV: Prefer student choice Coefficient	95% CI
Self-directed learning			0.17	[0.05, 0.30]**		
Conscientiousness	0.36	[0.24, 0.47]***	0.06	[−0.06, 0.18]	0.11	[−0.00, 0.21]
Control variables						
Intercept	−0.50	[−0.88, −0.12]**	0.19	[−0.25, 0.62]	0.16	[−0.26, 0.58]
Gender	0.27	[0.07, 0.48]**	−0.35	[−0.58, −0.11]**	−0.32	[−0.53, −0.11]**
Age	0.13	[0.02, 0.23]*	−0.13	[−0.23, −0.02]*	−0.12	[−0.22, −0.02]*
Program	0.07	[−0.15, 0.29]	0.08	[−0.17, 0.34]	0.14	[−0.11, 0.38]
Self-report GPA	0.03	[−0.08, 0.14]	0.09	[−0.02, 0.19]	0.10	[0.00, 0.20]*
Expected course grade	0.00	[−0.09, 0.09]	0.03	[−0.06, 0.11]	0.02	[−0.06, 0.10]
Professor	−0.32	[−0.59, −0.05]*	−0.03	[−0.28, 0.23]	−0.13	[−0.37, 0.10]

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. DV = dependent variable; INT = intercept. 95% CI with 2,000 resampling via bias-corrected bootstrapping. Indirect effect (product of coefficient for conscientiousness from Model 1 and coefficient for self-directed learning from Model 2) is 0.06; 95% CI is [0.01, 0.11]*. Total effect – controlled effect of conscientiousness on prefer student choice, difference between the coefficients for conscientiousness in Models 2 and 3, is 0.05, 95% CI is [−0.11, 0.21]. Prefer student choice refers to the measure of student readiness for UDL

Table 3. Bootstrap regression results for openness to experience

Predictors	Model 1 DV: Self-directed learning Coefficient	95% CI	Model 2 DV: Prefer student choice Coefficient	95% CI	Model 3 DV: Prefer student choice Coefficient	95% CI
Self-directed learning			0.12	[−0.01, 0.25]		
Openness to experience	0.37	[0.28, 0.45]***	0.21	[0.07, 0.35]**	0.25	[0.12, 0.38]***
Control variables						
Intercept	−0.27	[−0.61, 0.07]	0.19	[−0.23, 0.59]	0.19	[−0.19, 0.57]
Gender	0.08	[−0.13, 0.28]	−0.41	[−0.638, −0.19]***	−0.41	[−0.61, −0.20]***
Age	0.12	[0.01, 0.23]*	−0.14	[−0.25, −0.04]**	−0.13	[−0.23, −0.03]*
Program	0.09	[−0.12, 0.30]	0.10	[−0.14, 0.34]	0.16	[−0.07, 0.40]
Self-report GPA	0.01	[−0.09, 0.11]	0.10	[0.00, 0.21]*	0.11	[0.01, 0.21]*
Expected course grade	−0.00	[−0.08, 0.08]	0.05	[−0.03, 0.13]	0.04	[−0.04, 0.12]
Professor	−0.42	[−0.68, −0.16]**	−0.13	[−0.37, 0.11]	−0.20	[−0.43, 0.02]

Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. DV = dependent variable; INT = intercept; Prefer student choice measures student readiness for UDL. 95% CI with 2,000 resampling via bias-corrected bootstrapping. Indirect effect (product of coefficient for openness to experience from Model 1 and coefficient for self-directed learning from model 2) = 0.05, 95% CI is [−0.00, 0.10]. $p = 0.075$. Total effect – controlled effect of openness to experience on prefer student choice, difference between the coefficients for openness to experience in models 2 and 3, is 0.04, 95% CI is [−0.15, 0.23]

Table 3 shows tests for *H2* that openness to experience associates with SDL. The first model shows a positive and significant coefficient (0.37, [0.28, 0.45]***). *H2* is also strongly supported.

The second model in Table 2 shows a test for *H3* that SDL affects prefer student choice (our UDL measure). The coefficient for SDL is positive and significant (0.17; [0.05, 0.30]**). Table 1 shows a strong bivariate correlation between SDL and UDL. A regression of only the control variables and SDL on UDL (not shown) shows a positive and very significant coefficient for SDL (0.20; [0.08, 0.32]***). These tests indicate support for *H3*.

Tests for *H4a*, the mediation effect of SDL on the relationships between conscientiousness and UDL, are in Models 1–3 of Table 2. The indirect path, conscientiousness to SDL to UDL, is more significant than the direct path between conscientiousness and UDL. Table 2 at the bottom shows that the indirect effect, $\mathbf{a_1{*}b_2}$, is positive and significant (0.06, [0.01, 0.11]*). The controlled effect between conscientiousness and UDL is not significant (0.06, [−0.06, 0.18]). The coefficient for conscientiousness in Model 3 is only marginally significant (0.11, [−0.00, 0.21], $p = 0.053$). These results show full mediation. There is no significant association between conscientiousness and UDL unless SDL mediates the relationship.

Tests for *H4*b, the mediation effect of SDL on the relationship between openness to experience and prefer student choice, are in Models 1–3 of Table 3. The indirect effect, $\mathbf{a_1{*}b_2}$, shows no significant effect (0.06, [−0.00, 0.10], $p = 0.075$). The controlled effect between openness to experience and UDL is significant (0.21, [0.07, 0.35]**). The total effect openness to experience shown in Model 3 is very significant (0.25, [0.12, 0.38]***). Inclusion of SDL did not significantly decrease the association between openness to experience and UDL. These results show no support for *H4*b.

Discussion and future research

Our findings confirm our hypotheses that learners high in conscientiousness and openness to experience perceive themselves as ready to engage in SDL and that SDL was significantly associated with readiness for UDL. We also found that SDL fully mediates the impact of conscientiousness on UDL. These findings support the mediational perspective described at the start of this article, which suggests that students who have conscientiousness also need to have SDL behaviors to be ready for UDL.

For openness to experience, there was no mediation effect of SDL. Openness to experience fully substituted for the effect of SDL on UDL. Only openness to experience is required for student acceptance of UDL.

In our research design, we used the mediational approach, which holds that personality affects student learning only through another variable. Our results related to conscientiousness support this approach. SDL fully mediated the relationship between conscientiousness and UDL readiness.

But the same did not hold for openness to experience. Students with this personality factor showed a willingness to try UDL with no mediation. But this result may not have any implication to the mediational model as we do not measure actual learning. Further research is needed to investigate student preference for UDL and its implications for learning. We might expect these students to have improved performance on the exam only if they were high in SDL.

Some students high in openness to experience may be willing to try new exam formats even if they do not have a high degree of SDL. Openness to experience could imply a willingness to try UDL just because students are flexible, not because they think they will improve learning. Consistent with behavioralist learning, students may simply be thinking of faculty offering a choice in final exam format as a new faculty-led learning experience.

An extension of our research would be to investigate the fit between student personality; learning behaviors; choice; and outcomes such as motivation, satisfaction and learning. An initial step would be to allow at least some students the choice of instructional mode. Researchers could then test whether UDL affects these learning outcomes.

We can extend the research to other courses, student groups (underclassmen, graduate students), programs of study and institutional contexts. Only then can we demonstrate a robust model with general application. For example, Evans, Williams, King, and Metcalf (2010) note the challenges of implementing UDL in rural schools. UDL success is also affected by instructor presence. Johnson-Harris and Mundschenk (2014) suggested that teachers' characteristics, including attitudes and personalities, be modeled in the study. These noted effects are not considered here.

Our analysis does show that student readiness for UDL may vary considerably. Our research contributes to efforts to explain student readiness and potential success of UDL and helps programs to manage UDL implementation. Because some students seem ready to try UDL, it may be worthwhile to take the next steps to incorporate some UDL practices in management curricula.

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