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Does Self-directed Learning Readiness Predict Undergraduate Students' Instructional Preferences?

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Does Self-directed Learning Readiness Predict Undergraduate Students' Instructional Preferences?

Abstract

Self-directed learning is a process by which students take the lead, with or without the help of others, in determining their learning needs and managing their learning strategies and outcomes. Relatedly, self-directed learning readiness (SDLR) looks at the attitudes, abilities, and personality characteristics necessary for self-directed learning. In study one, we shortened, and slightly modified, the SDLR scale (Fisher et al., 2001) to make it more applicable for broader use among undergraduate university students and to examine its factor structure and reliability. In a sample of 194 students, the three-factor structure of this scale (self-management, desire to learn, and self-control) was confirmed with acceptable reliability. In study two, we examined whether the modified SDLR subscales predicted a preference for a teacher-directed or student-directed class format in a sample of 256 undergraduate students. We conducted a series of four multiple linear regressions to examine whether the three dimensions of SDLR were predictive of four classroom preference styles (knowledge construction, teacher direction, cooperative learning, and passive learning). While three of these analyses were statistically significant with small to medium-effect sizes, the results minimally supported our hypotheses. We discuss whether these results indicate a lack of relationship between SDLR and teaching style or whether these results may be characteristic of the sample.

L'apprentissage auto-dirigé est un processus par lequel les étudiants et les étudiantes prennent l'initiative, avec ou sans l'aide d'autrui, pour déterminer leurs besoins en matière d'apprentissage et pour gérer leurs stratégies d'apprentissage et leurs résultats. Sur le même sujet, l'aptitude à l'apprentissage auto-dirigé s'intéresse aux attitudes, aux aptitudes et aux caractéristiques personnelles nécessaires pour l'apprentissage auto-dirigé. Dans la première étude, nous avons raccourci et légèrement modifié l'échelle de l'aptitude à l'apprentissage auto-dirigé (Fisher et al, 2001) afin de la rendre plus applicable à une utilisation plus large parmi les étudiants et les étudiantes du premier cycle universitaire et pour examiner sa structure de facteurs et sa fiabilité. Dans un échantillon de 194 étudiants et étudiantes, la structure à trois facteurs de cette échelle (auto-gestion, désir d'apprendre et maîtrise de soi) a été confirmée avec une fiabilité acceptable. Dans la seconde étude, nous avons examiné si les sous-échelles de l'aptitude à l'apprentissage auto-dirigé permettaient de prédire une préférence pour un format de cours dirigé par un professeur ou une professeure ou pour un format de cours auto-dirigé, dans un échantillon de 256 étudiants et étudiantes du premier cycle. Nous avons mené une série de quatre régressions linéaires multiples afin d'examiner si les trois dimensions de l'aptitude à l'apprentissage auto-dirigé permettaient de prédire les quatre styles de préférences de salle de classe (construction des connaissances, direction par l'enseignant ou l'enseignante, apprentissage en coopération et apprentissage passif). Alors que trois de ces analyses ont été statistiquement significatives dans les cas d'effets petits ou moyens, les résultats soutenaient de façon minimale nos hypothèses. Nous discutons la question de savoir si ces résultats indiquent une absence de rapport entre l'aptitude à l'apprentissage auto-dirigé et le style d'enseignement ou si ces résultats pourraient être caractéristiques de l'échantillon.

Keywords

self-directed learning readiness, learning environment, student-centered, instructor centered, undergraduate students; aptitude à l'apprentissage auto-dirigé, environnement d'apprentissage, centré sur l'étudiant, centré sur l'instructeur, étudiants du premier cycle

Learning is a life-long process and entails the ability and desire to continually gain knowledge and skills. Self-directed learning (SDL) requires the learner to take responsibility for, and manage, their own learning needs (Abd-El-Fattah, 2010; Fisher et al., 2001; Knowles, 1980). However, not all learners are able to successfully manage their own learning, and self-directed learning abilities can vary amongst individuals. Individuals who are strong self-directed learners are able to identify learning goals, formulate plans to meet these goals, implement learning strategies, and evaluate the degree to which they have achieved these goals. Self-directed learning readiness (SDLR), which refers to the degree to which one is prepared to be accountable for their own learning and learning needs, is a skill that can be taught (Fisher et al., 2001). One's level of SDLR is thought to exist on a continuum and is impacted by one's abilities, attitudes, and personality traits, but it can be improved through experience and practice with autonomous learning activities (Fisher et al., 2001). Thus, it should be a desirable goal for teachers to promote the skills of self-directed inquiry among their students.

While teaching approaches can be varied, they can be broadly classified as teacher- or student-centered (Serin, 2018). In a teacher-centered learning approach, which has been the more traditional approach, the teacher is the active provider of knowledge while the students are the passive receivers of this knowledge. This type of learning relies heavily on textbooks and lectures with the teacher overseeing the learning while the students generally sit passively listening and taking notes. Alternatively, in a student-centered learning approach, which is the more favoured approach currently, the students play an active role in their learning and the teacher's role is more of a facilitator, helping students to construct and consolidate their knowledge. The students actively participate in their learning by relating the content to their previous knowledge and discussing it with others. In this approach, students can work individually, in pairs, or in groups (Zohrabi et al., 2012), with cooperative learning enabling students to deepen their understanding through student-to-student discussion and interaction, which gets students more involved in the class activities (Ameliana, 2017). In relating this to SDLR, it would suggest that those who are high in self-directed learning readiness would likely prefer a more student-centered approach, while those who are low in self-directed learning readiness would prefer a more teacher-centered approach.

In addition to the approach of the teacher to guide student learning, the student also plays an important role in the learning process. Garrison (1997) has proposed a model of self-directed learning that brings together three dimensions of learning that focus on the learner: self-management, self-monitoring, and motivation. To become a strong self-directed learner, the learner must engage with the learning tasks and assume personal responsibility for the management of the learning process (self-management), to find meaning in, and be reflective of, the learning process (self-monitoring), and foster the motivation to initiate, progress on, and complete the task and meet the learning outcomes (Garrison, 1997). Teachers can support the development of these self-directed learning skills through flexibility, choice, supportive and timely feedback, and the provision of resources, all of which supports a collaborative learning atmosphere between learner and teacher (Garrison, 1997), and is aligned with a student-centered learning approach.

Importance of Self-Directed Learning

With the rapid proliferation of new information, self-directed learning is a necessary tool for survival on multiple fronts, such as personal and professional skills, the development of the organizations that individuals are part of and work for, and the growth of the communities and

countries in which they reside (Guglielmino, 2013). For this reason, it is vitally important for educational institutions to prepare students to be self-directed in their learning (Boyer et al., 2014). In fact, self-directed learning has been argued to be a fundamental competence for adults (Morris, 2019a, 2019b). Students who are proactive and are strong self-directed learners are likely to be well prepared for the workforce because they can anticipate the needs of their workplace and formulate a learning plan to obtain the skills that will make them more valuable for the company that they work for (Boyer et al., 2014). For teachers to best prepare students for an unknown future, they must teach their students to engage in self-directed learning, which all students may not be willing to embrace. Students who prefer highly structured assignments experience high rates of anxiety when presented with a high self-directed learning project as opposed to students who prefer low structure (Guglielmino, 2013). Conversely, students who prefer self-directed learning projects may experience increased anxiety in situations with higher levels of teacher direction (Fisher et al., 2001).

It has been argued that a consequence of the dominant pedagogical model within education systems is that learners become used to the repetitive patterns of a teacher-directed learning process that dictates how they should perceive, think, judge, feel and act, which sets them up for failure in being able to adapt to changing environments and can derail their motivation (Morris, 2019a, 2019c). For this reason, it may be beneficial for instructors to assess a student's SDLR so that they can better prepare their students for more self-directed learning opportunities; failing to assess whether a student is ready for a self-directed learning project may be setting them up for failure. Therefore, by identifying students who are low in SDLR, educators can help them learn self-directed learning skills (Smedley, 2007), and by fostering these skills in all learners, they will be empowered to adapt and thrive within a complex and ever-changing society.

Measuring Self-Directed Learning Readiness

The evaluation of SDLR has been of particular interest in the field of nursing, and several measures exist to assess SDLR (Cadorin et al., 2017). One common measure is the Self-Directed Learning Readiness Scale (SDLRS) developed by Fisher and colleagues (2001). This scale consists of 40 items that are scored into three dimensions of SDLR: self-management (13 items), self-control (15 items), and desire for learning (12 items). Although initially developed for use with nursing students, we felt that this measure had potential to be applicable to a wider population and sought to expand the applicability of this measure to assess SDLR among undergraduate students. Furthermore, in an effort to reduce survey burden among students, and to reduce some of the repetitiveness of the items in the SDLRS, we also aimed to shorten this measure.

Purpose of the Present Study

The overall purpose of this study was to modify the SDLRS (Fisher et al., 2001) for use in a general undergraduate student population and examine whether there was a relationship between SDLR and instructional preferences. In the first study, we shortened and slightly modified the SDLRS and then examined its factor structure and reliability. After achieving acceptable psychometrics properties for the modified version of the SDLR, we conducted a second study to examine whether SDLR was a predictor of preference for one of four instructional styles: cooperative learning, knowledge construction, teacher-directed, and passive learning (Baeten et al., 2016). Fisher et al. (2001) found that individuals with greater SDLR experienced more anxiety

in environments with more teacher direction compared to student direction; therefore, we hypothesized that SDLR would be positively related to preferences for student-centered instructional techniques (i.e., cooperative learning and knowledge construction) and would be negatively related to preferences for teacher-centered instructional techniques (i.e., teacher directed and passive learning). As SDLR is primarily associated with active learning, we anticipated that individuals with higher SDLR levels would prefer learning environments where they can take more control of their learning (Zohrabi et al., 2012).

Study One

We chose to use the SDLRS (Fisher et al., 2001) to assess self-directed learning readiness. The SDLRS consists of three subscales that are consistent with the three dimensions of Garrison's (1997) theory of self-directed learning: self-monitoring, self-control, and desire for learning. There is a total of 42 items in this measure that was initially developed for a nursing population. We wanted to shorten the scale and revise some of the items for greater applicability among a more general undergraduate student sample. We therefore reduced the scale to 27 items and made modifications to the wording of seven of these items (Items 2, 3, 4, 5, 6, 17, and 24; see Table 1 for revised items). We removed items from the original scale that had low original factor loadings, that had highly similar wording to other items (e.g., we removed the item "I prefer to set my own learning goals" because there was already an item "I prefer to set my own goals") or had language that we thought may be too high level (e.g., I am methodical). Because of these changes, we first conducted a study to examine the factor structure and reliability for this modified version of the SLDRS.

Method

Participants

Ethics approval was received from Kwantlen Polytechnic University (KPU) REB. All participants were recruited using convenience sampling through the university's subject pool in the psychology department. A total of 192 students completed the survey. There were 162 females (84%) and 30 males (16%), with an average age of 22 years ($SD = 4.55$). There was a mix of students across all four years of study: 38 year-one students (20%), 73 year-two students (38%), 36 year-three students (19%), and 45 year-four students (23%).

Materials

Participants completed the 27-item modified version of the SDLRS (Fisher et al., 2001). Each item is responded to on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The items in the scale are averaged into three subscales: Self-Management (SM), which has 10 items that measures one's ability to coordinate the stages of a task, Desire to Learn (DL), which has eight items that addresses one's ambition to take ownership of their learning, and Self-Control (SC), which has nine items that assesses one's ability to remain disciplined in the learning process (Chakravarthi & Vijayan, 2010). For each subscale, higher scores indicated greater levels of the construct.

Procedures

Data was collected anonymously and online using Qualtrics. After providing electronic consent, participants were given access to the survey items. Participants were eligible to receive bonus credit for an applicable course for their participation.

Analyses

As the changes we made to the original SDLRS were to shorten it and make minor modifications to the wording of a few items, we felt it was appropriate to conduct a confirmatory factor analysis (CFA) to assess its factor structure. A CFA allows us to confirm if the three subscales in the original SDLRS could be replicated with our modified SDLRS. To run the CFA, we used Mplus version 8 and a weighted least squares estimator (WLSMV), as this estimator accounts for the ordered categorical nature of the data. Less than 1% of the data were missing. Model fit for the CFA was assessed using Chi square, the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), the comparative fit index (CFI), and the Tucker-Lewis index (TLI). Acceptable model fit was achieved if the chi square was nonsignificant, RMSEA was $\leq .08$ ($\leq .05$ is ideal), SRMR was $\leq .08$ ($\leq .05$ is ideal), and CFI and TLI were $\geq .90$ ($\geq .95$ is ideal; Anunciacao, 2018; Hu & Bentler 1999; Yu, 2002). At least three of the five fit statistics needed to indicate acceptable model fit for the model to be accepted.

Results

Prior to running the CFA, we examined the assumptions of sphericity and sampling adequacy and found that both assumptions were met: Bartlett's test of Sphericity was significant ($p < .001$) and KMO was .88. The results of the fit statistics for the CFA were as follows: χ^2 (321) = 619.99, $p < .001$; RMSEA = .07; CFI = .93; TLI = .92, and SRMR = .07, indicating that all statistics except for chi-square supported acceptable model fit for the three-factor model. As seen in Table 1, all factor loadings were also above a minimum threshold of .40 (Stevens, 1992), ranging from .52 - .83, which demonstrated that all items were acceptably correlated with their associated factor. Coefficient alpha for each scale was as follows: SM = .89, DL = .84, and SC = .86, indicating an ideal level of reliability (i.e., internal consistency should be .80 or higher; Furr & Bacharach, 2014). Figure 1 shows the distribution of scores for each subscale.

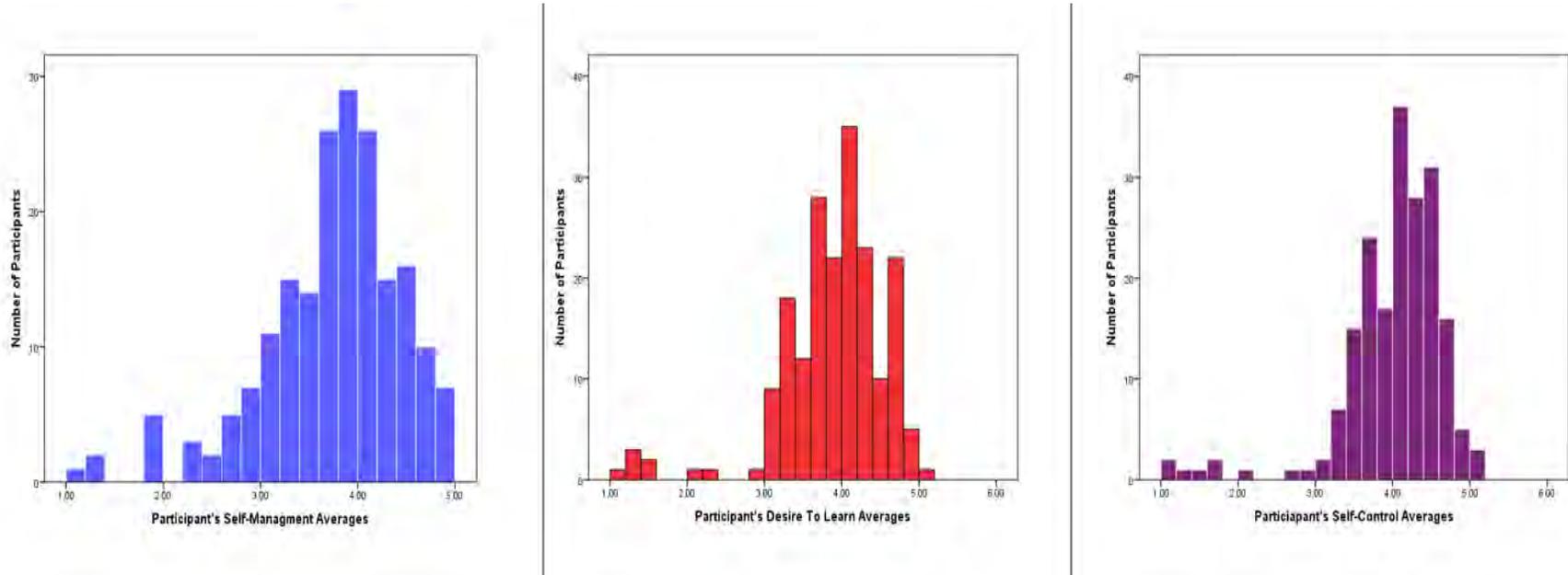
Table 1*Factor Loadings for the Three Subscales of the Modified Self-Directed Learning Readiness Scale*

Items	Self- Management	Desire to Learn	Self-Control
1: I am self-disciplined	.65		
4: I am able to plan my own learning	.80		
6: I am efficient in my learning	.76		
9: I am systematic in my learning	.65		
13: I can be trusted to pursue my own learning	.79		
14: I am organized	.62		
17: I like to direct the course of my learning	.67		
18: I prioritize my work	.72		
20: I manage my time well	.74		
27: I set specific times for my study	.57		
3: I like to critically evaluate new ideas		.57	
7: I enjoy learning new information		.83	
8: I learn from my mistakes		.77	
10: I enjoy studying		.55	
12: I enjoy a challenge		.52	
19: I like to gather the facts before I make a decision		.64	
21: I am open to new ideas		.63	
25: I have a need to learn		.74	
2: I have high personal standards			.57
5: I take responsibility for my own decisions/actions			.73
11: I can find out information for myself			.56
15: I evaluate my own performance			.60
16: I am in control of my life			.60
22: I am aware of my own limitations			.59
23: I am able to focus on a problem			.69
24: I prefer to set my own goals			.78
26: I like to make decisions for myself.			.61

Note. Adapted from “Development of a self-directed learning readiness scale for nursing education” by M. Fisher, J. King, and G. Tague, (2001), *Nurse Education Today*, 21(7), 516-525. <https://doi.org/10.1054/nedt.2001.0589>. Copyright © 2001 Harcourt Publishers Ltd. Adapted with permission from Elsevier.

Figure 1

Distribution of Means for Each Subscale of the Modified Self-Directed Learning Readiness Scale



Study Two

The goal of study two was to explore whether the three dimensions of SDLR (SM, DL, SC) were predictive of student instructional preferences as measured by the Instructional Preferences Scale (IPS; Baeten et al., 2016). Of the four dimensions of instructional preferences we assessed, two of these dimensions reflected a teacher-centered classroom (passive learning and teacher direction), and two reflected a student-centered classroom (knowledge construction and cooperative learning; Baeten et al., 2016). We hypothesized that SDLR would be moderately and positively correlated with the two student-centered preferences and moderately and negatively correlated with the two teacher-centered preferences of the IPS.

Method

Participants

Ethics approval was received from KPU's REB. A total of 256 students were recruited using convenience sampling for in-class ($n = 71$) and online recruitment through the university's subject pool ($n = 185$). The sample consisted of 208 females (81%), 47 males (18%), 1 individual who identified as other (1%), and had an average age of 22 years ($SD = 4.05$). There was a mix of students across all years of study: 60 year-one students (23%), 113 year-two students (44%), 50 year-three students (20%), 26 year-four students (10%), and six year-five students (2%).

Materials

Participants completed the 27-item modified version of the SDLRS (Fisher et al., 2001), as described in study one. Coefficient alpha for the three subscales were as follows: SM = .90, DL = .81, SC = .83. Participants also completed the 40-item IPS which consists of four subscales: Knowledge construction (KC), Teacher direction (TD), Cooperative learning (CL), and Passive learning (PL; Baeten et al., 2016). There are 13 items in the KC scale, with a higher score indicating a greater preference for interaction with learning materials via selecting, interpreting, and applying that information ($\alpha = .76$). There are 11 items in the TD scale, with a higher score indicating a greater preference for teachers to provide help on selecting, interpreting, and applying class materials ($\alpha = .82$). There are 10 items in the CL scale, with a higher score indicating a greater preference for cooperative learning with fellow students on the class materials ($\alpha = .89$). Finally, there are six items in the PL scale, with a higher score indicating a greater preference for more traditional teacher-based learning (i.e., 3-hour lecture; $\alpha = .80$). The KC and CL scales represent student-focused preferences and the TD and PL represent teacher-focused preferences. For each scale, participants responded to the items on a 5-point scale ranging from 1 (not at all) to 5 (to a large extent).

Procedures

The data was collected through a mix of in-person and online approaches. For the in-person recruitment, students from three of the second author's classes were invited to participate in this study and an anonymous paper version of the survey was collected by the other two authors of this study. For the online data, participants completed the study anonymously on Qualtrics. After

providing electronic consent, they were given access to the survey items. All participants were eligible to receive bonus credit for an applicable course for their participation.

Analyses

We conducted four multiple linear regression analyses to determine if the three dimensions of the modified SDLRS (SM, DL, SC) would predict each of the four subscales of the IPS: KC, TD, CL, PL. These analyses were conducted in SPSS version 26. For each of the regression models, we evaluated the model by looking at the R^2 value and the statistical significance of the predictors. We then converted the R^2 value to f^2 , which is a measure of effect size, and represents the ratio of the proportion of the variance that is accounted for by the predictors to the proportion of the variance that is unaccounted for by the predictors. Although the interpretation of the values is context dependent, a rule of thumb is that it can be interpreted as: .02 = small, .15 = medium, and .35 = large (Cohen, 1988).

Results

We first inspected the data for outliers and influential points by examining the standardized residuals and Mahalanobis distance, Cook's, and leverage values. Cases were flagged if the standardized residuals were greater than three, Mahalanobis distance was greater than 14, Cook's was greater than one, and leverage was greater than .05 (Field, 2017). This revealed a total of 10 outliers which were removed from the data, resulting in a final sample of $n = 246$ for this analysis. For each model, we then assessed the assumptions of normality, linearity, homoscedasticity, and multicollinearity, with all assumptions being met.

Descriptive statistics and correlations among the scales are presented in Table 2. Overall, three of the four regression analyses were statistically significant with small to medium-sized effects: PL: $F(3, 242) = 6.06, p = .001, f^2 = .08$ (small effect); KC: $F(3, 242) = 16.55, p < .001, f^2 = .20$ (medium effect); TD: $F(3, 242) = 6.06, p < .001, f^2 = .09$ (small effect). The results for the CL variable just missed the cut-off for statistical significance, $F(3, 242) = 2.16, p = .052, f^2 = .03$. However, the small effect size also suggests that the predictors do not meaningfully predict a preference for a cooperative learning classroom environment. As seen in Table 3, for the PL model, the only statistically significant predictor was SM; for the KC model, the only statistically significant predictor was DL; and for the TD model, the only statistically significant predictor was SC. Ultimately, Table 3 provides minimal support for our hypotheses that SDLR would score highly with student centered techniques (e.g., KC and CL).

Table 2

Means, Standard Deviations, and Correlations for the Instructional Preferences and Self-Directed Learning Readiness Scales

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1) Passive Learning	2.49	0.84	—	.38*	.02	.30*	.24*	.08	.09
2) Knowledge Construction	3.39	0.63	—	—	.05	.38*	.28*	.40*	.33*
3) Teacher Direction	4.00	0.56	—	—	—	.35*	.18*	.23*	.26*
4) Cooperative Learning	3.39	0.83	—	—	—	—	.12*	.17*	.15*
5) Self-Management	3.89	0.65	—	—	—	—	—	.58*	.69*
6) Desire to Learn	4.01	0.53	—	—	—	—	—	—	.64*
7) Self-Control	4.15	0.49	—	—	—	—	—	—	—

Note: * = $p < .05$

Table 3

Multiple Regression Analysis Results for the Prediction of Teaching Preferences

Measures	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	f^2
Passive Learning						.08
Self-Management	.47	.12	.35	3.98	<.001	
Desire to Learn	-.06	.13	-.04	-0.48	.632	
Self-Control	-.22	.16	-.13	-1.38	.168	
Knowledge Construction						.20
Self-Management	.02	.08	.02	0.22	.826	
Desire to Learn	.37	.09	.31	3.99	<.001	
Self-Control	.16	.11	.12	1.38	.170	
Teacher Direction						.09
Self-Management	-.02	.08	-.03	-.31	.757	
Desire to Learn	.13	.09	.12	1.47	.143	
Self-Control	.23	.11	.20	2.16	.032	
Cooperative Learning						.03
Self-Management	-.01	.11	-.01	-0.07	.947	
Desire to Learn	.21	.13	.13	1.56	.120	
Self-Control	.11	.16	.07	0.69	.491	

Note. *B* = the unstandardized regression coefficients. β = the standardized regression coefficients.

As there was only one significant predictor in each of the three statistically significant models, and because the dimensions of the modified SDLRS were highly correlated, we conducted

post-hoc simple linear regression analyses where each of the dimensions of the modified SDLRS was used as a single predictor in predicting each subscale of the IPS, for a total of 12 simple linear regressions (see Table 4). The results for predicting the PL subscale of the IPS were consistent with the results of the multiple linear regression model in that only the SM subscale was statistically significant. For the remaining subscales of the IPS, the modified SDLRS subscales were each statistically significant predictors, except for the SM subscale in the CL model. These results suggest that the subscales of the modified SDLRS may share substantial variance such that when they are put together into a regression model only one of the subscales achieves statistical significance.

Table 4
Simple Regression Analysis Results for the Prediction of Teaching Preferences

Measures	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	<i>f</i> ²
Passive Learning						
Self-Management	.31	.08	.24	3.87	<.001	.06
Desire to Learn	.13	.10	.08	1.27	.210	.01
Self-Control	.15	.11	.09	1.40	.163	.01
Knowledge Construction						
Self-Management	.27	.06	.28	4.59	<.001	.09
Desire to Learn	.47	.07	.40	6.81	<.001	.19
Self-Control	.42	.08	.33	5.51	<.001	.12
Teacher Direction						
Self-Management	.16	.05	.18	2.89	.004	.03
Desire to Learn	.25	.07	.23	3.75	<.001	.05
Self-Control	.29	.07	.26	4.20	<.001	.08
Cooperative Learning						
Self-Management	.15	.08	.12	1.82	.071	.01
Desire to Learn	.27	.10	.17	2.70	.007	.03
Self-Control	.25	.11	.15	2.30	.022	.02

Note. *B* = the unstandardized regression coefficient. β = the standardized regression coefficient.

Overall Discussion

In study one, we shortened the previous SDLRS (Fisher et al., 2001) from the original 42 to 27 items and adapted some of the items to apply to a more general undergraduate student population. A CFA and reliability analysis provided support for the three-factor structure of this scale and showed acceptable preliminary validity evidence for our modified version of the SDLRS. These results suggest that this scale has the potential to examine the overall readiness of students to engage in self-directed learning tasks.

We then used the modified SDLRS in the second study to assess the relationship between SDLR and instructional preferences. Against expectations, our results showed only partial support

for our hypotheses that self-directed learning readiness would predict student preferences for a teacher-centered or student-centered classroom. We did find partial support for our hypothesis that the three dimensions of SDLR would be positively related to the student-focused instructional styles. Those who were higher in their desire to learn favored KC classrooms that encouraged students to be active in the construction of their knowledge through selecting, interpreting, and applying information provided to them. When running each SDLR dimension individually with the KC dimension, each of the three SDLR predictors was significant, with the DL dimension showing the highest correlation. As these three predictors were strongly correlated amongst themselves, their shared variance likely explains why only the DL dimension was significant in the multiple regression model.

Surprisingly, none of the SDLR dimensions were related to cooperative learning in the multiple regression analysis; however, two of the dimensions were predictive of cooperative learning when examined individually (desire to learn and self-control). However, the small effect sizes found in the simple regression and the small bivariate correlations suggest that this relationship is fairly weak. Perhaps this is because group work is a fairly large component of the learning process at this particular university, and in a previous qualitative study conducted at this university, the authors found that students sometimes hold negative views about working in groups (Charmchi et al., 2018). Rusticus and Justus (2019) also found that differences in goals, motivations, and workload distributions can make it challenging for students to manage their learning and their schedules when they have multiple individuals that are being factored into the process. Therefore, those who are high in self-directed learning readiness may not prefer activities that involve working with others because it limits their ability to control their learning. More research is needed to fully explore this.

Also contrary to our hypothesis that the dimensions of SDLR would be negatively related to the teacher-centered instructional styles (passive learning and teacher direction), we found two positive correlations: one between SM and PL and one between SC and TD in the multiple regression. When ran individually, all the dimensions of SDLR were significant with the TD. We surmise that these findings may be related to the experience of students (e.g., novice versus advanced). Perhaps novice students (first years) are more in favour of letting instructors lead discussions and lecture on various topics, as many first years are still in the process of adopting to academia and are more familiar with teacher direction (Baeten et al., 2016). Research has shown that familiarity breeds liking (Van Dessel et al., 2017) and perhaps students are more familiar with teacher-centered approaches and thus favour them because that is what they are used to. Unlike the novice students, advanced students (e.g., fourth years) may relish in the ability to work with peers or independently with the material due to their own mastery. Future research is needed to examine how year or study or previous experience with instructional techniques may impact SDLR.

Overall, SDL is an important skill for educators to develop in their students as it can help promote the continuance of lifelong learning and better equip students for the workforce and to adapt to a fluid and dynamic society (Boyer et al., 2014). This study has provided some food for thought about the relationship between SDLR and teaching preferences. On the one hand, these results seem to suggest that a students' level of SDL is generally not related to their preferences for teaching style. This is a finding that is inconsistent with a study by Dynan and colleagues (2008), who found a relationship between SDLR and the classroom environment (structured versus unstructured). However, while both samples involved undergraduate students, the majority of Dynan et al.'s sample (60%) were found to be average or low in SDLR. Comparatively, our sample

scored quite high on the three scales of SDLR (3.9 to 4.2 out of 5). This begs the question as to whether this was truly a sample of students who were high on SDLR, or whether this may reflect some socially desirable responding. Additionally, the fairly low variability on these scales in our sample could also potentially account for the lack of relationship between SDLR and instructional preferences and there may be a need to repeat this study in a more variable sample.

Alternatively, our results could indicate that the relationship between SDLR and classroom preferences is complex and dependent on the factors that make up SDLR rather than SDLR in and of itself. For instance, the control-based aspects of SDLR may lead to a preference for structured and standardized learning environments whereas the desire for learning aspect of SDLR may lead to a preference for flexible and dynamic learning environments. Thus, individuals who prefer structured and standardized learning environments may prefer these environments as they help manage other factors such as perfectionism and fear of failure. Nonetheless, SDLR is a valuable skill for development in both educational and professional settings (Guglielmino, 2013), and it may be beneficial for instructors to use this scale to assess their student's self-directed learning readiness before assigning a self-directed project to determine how best to facilitate the development of their student's self-directed learning readiness skills. This may further lead students to experience more confidence in their ability to self-direct their learning and will help increase their motivation to manage and control their learning.

Limitations

The study is not without some limitations. First, we modified the SDLRS to shorten it and make it more applicable to a general undergraduate population. While the confirmatory factor analysis confirmed that this modified version still maintained its three-factor structure, with each subscale having acceptable reliability, more validity evidence is needed for this scale. Second, all data was collected from a single university from students who were primarily in arts programs. Additional research is needed to examine whether these results generalize to other settings and contexts. Third, our sample scored quite high on the modified SDLRS suggesting a highly homogeneous sample which could potentially contribute to the lack of strong correlations in the regressions. Fourth, all data was collected through self-report, which has limitations related to both socially desirable responding and it may also not truly represent their actual behaviours. Finally, the strong correlations between the three subscales of the modified SDLRS may have resulted in their effects in the multiple regression being underestimated (i.e., masking effect). When the SDLRS dimensions were assessed individually through simple regression analyses, more of these dimensions were predictive of instructional preferences.

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