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Development and Validation of the Student Readiness to Change Scale

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Studies have found that most college students have ineffective study habits. Despite this fact, students may feel hesitant or even hostile to changes in study routines. To assist academic advisors in facilitating study-habit improvement in students, we developed the Student Readiness to Change Scale (STRETCH). This scale measures students' readiness to change in three domains: recognition of the need to change, a desire to change, and the perceived ability to change. We devised five Likert scale items for each domain, making 15 items in total. We distributed the scale to a sample of 103 college students and received 94 completed responses. Analyses of the results found that the STRETCH scale had both internal consistency (α = .79) and content validity (CVRs ranged from .50 to .94). Principal-component analyses revealed that, with the exception of four of the items, the items loaded onto three main components.

Keywords: readiness to change, study habits, academic performance, psychometric scale development, college students, academic advisement, academic counseling

At some point in their college career students face one inescapable fact: Effective studying is essential to academic success. However, students often have difficulty changing long-held study habits that are ineffective (Yuksel, 2012). For this reason, academic counselors typically offer study skills courses to help students improve their study habits.

In an effort to assist struggling students and their academic advisors, we developed the Student Readiness to Change Scale (STRETCH) to measure students' readiness to change their study habits. We propose that the new instrument will be useful to tutors, mentors, and academic counselors by identifying attitudes that may impede students in changing their study habits.

The central construct in the new scale is "readiness to change study habits," which refers to how amenable a student is to improving his or her study habits. Readiness to change has been explored mostly in contexts outside academics. Bradford (2012) applied it to couples therapy and relationships. The author noted that the Stages of Relationship Change Questionnaire (Schneider, 2004) was useful in assessing clients' readiness for intervention as well as in selecting an intervention. Similarly, our scale was designed to assist in determining whether students are ready to change their study habits and how best to help them achieve this change.

We operationally defined readiness to change as the total score from each of three domains: Recognition of the problem, desire to change, and perceived ability to change. The first domain addressed the extent to which a student perceives a need for improvement in his or her study habits. Desire to change referred to

how much the student wants to improve those habits. Lastly, perceived ability to change was defined as the student's perception of his or her capacity for study habit improvement.

Engle et al. (2010) discussed Ajzen's (1991) widely supported model of planned behavior in which three beliefs influence a person's intention to engage in such behavior. The first belief, attitude toward the planned behavior, expresses how one feels about engaging in the behavior. Our domain of desire to change is closely aligned with this belief. For example, if a student views studying in a positive light, he or she may be more likely to seek better study habits.

The second belief in the Ajzen model is subjective norms and refers to how a person is expected to act in her or his current social situation. The social expectations of students generally involve spending a lot of time studying and getting good grades. Students who view their current study habits as lacking when compared to these norms may recognize a problem with their study habits. Our domain of recognition of the problem is related to this belief except that recognition can be prompted by more than just social expectations.

The third belief in Ajzen's model is perceived behavioral control and points to the extent to which a person considers herself or himself able to behave in a certain way. This belief fits very nicely with our domain of perceived ability to change. That is, a student who feels in control of his or her study habits may also feel that he or she can improve them. In Ajzen's model, a combination of attitude, social expectations, and perceived control motivates planned be-

haviors. In our model, readiness to change is motivated by desire, recognition, and perceived ability. Students who want to change, perceive that they need to change, and consider themselves able to change will be readier for and more likely to change than those who feel little desire to change, see little need to do so, or sense being unable to change.

Other studies of readiness to change have involved domains similar to ours. Ouimet, Brown, Bédard and Bergeron (2010) measured speeders' readiness to reduce their driving speeds. They separated drivers into three groups: Those who were ignorant of a need to change, those who recognized a need, and those who both recognized and were willing to change. The researchers found that those in the last group drove at slower speeds than those in the other two groups. In another study, Knight, Richert, and Brownfield (2012) explored a person's perceived ability to change by looking at the role of clients in a client/therapist relationship. They asked clients what they thought about their personal ability to change and whether they understood how change in their personal life occurs. The researchers found that those who felt stronger about their ability to change were more successful in therapy.

Similar to Ouimet et al. (2010), we assert that students will be more likely to change their study habits when they recognize their academic shortcomings and want to improve. Lacking such recognition of the need or a desire to do better may keep them from being ready to change. In addition, like Knight et al. (2012), we think that the domain of perceived ability to change is also essential for readiness to change.

The STRETCH uses these three domains to measure students' readiness to change. Students' total scores on this scale may inform those who advise them of how ready the students are to change their study habits. We hypothesized that the STRETCH would reliably and validly measure readiness to change.

Method

Participants

We recruited 103 participants through Facebook (www.facebook.com), a social networking site, and through email (see Table 1). Nine participants did not complete the scale, leaving 94 participants. The average age of the participants was 21.9, and the sample consisted of 32 men and 62 women. The majority of respondents (93%) were Caucasian. The remaining participants were of another race or preferred not to answer the race question. Students' GPAs ranged from roughly 2.0 to 4.0. All participants were current college students, mainly upper class students. Although we neglected to ask which college they attended, we assumed that most attended Brigham Young University (BYU).

Item Construction

Initially, 53 items were constructed for use in the test, with 19 items addressing recognition, 17 addressing desire, and 17 addressing perceived ability. The 30 other students in our psychological testing class acted as subject matter experts, rating whether each of our items was essential for measuring its domain. Using their ratings, we calculated a Content Validity Ratio (CVR) for each of the items. CVRs range from -1 to 1, with 1 indicating that all experts rated the item as essential and -1 indicating that none did. Our CVRs

had a range of -.438 to .938, a mean of .335 and standard deviation of .344. We selected the five items in each domain which had the highest CVRs. Five of the items (2, 8, 10, 12, & 13) were negatively worded and reverse scored, and five demographic items were included along with one other item that measured face validity (see Appendix A). Scale items used a four-point Likert scale.

Test Administration

The scale was administered using Qualtrics (www.qualtrics.com) from October 1, 2012, through October 19, 2012. Participants were directed to the scale via a link on Facebook or in an email.

Statistical Analysis

Data analyses were performed using SPSS. Internal consistency between items was measured with Cronbach's alpha. The Pearson bivariate correlation between items was calculated to further establish reliability (see Table 4). We applied a factor analysis with a varimax rotation to identify principal factors.

Results

Content Validity

All 15 of the items (as evaluated by 30 classmates) had acceptable content validity well above the critical value of .333 (see Ayre & Scally, 2014). Item 4 had the lowest CVR at .50, indicating that 75% of the raters found the item essential. On our face validity item, 81% of the 94 participants were able to correctly identify the central construct of the scale.

Reliability

To measure how closely related the items in our scale were, we used Chronbach's alpha. This yielded a value of $\alpha = .79$ (see Table

which is above the acceptable level of .70 (see UCLA: Statistical Consulting Group, n.d.). Using a Pearson bivariate analysis, we found that 68 of 105 correlations were significant ($p < .05$; see Table 4).

Factor Analysis

We found three principal components (eigenvalues = 1.48, 2.57, and 4.15) that accounted for 59% of the variance (see Tables 5 & 6). Although we anticipated having three components to match our intended domains, our items did not load onto the components as cleanly as we had hoped. Items intended to address the first two domains loaded onto the first two components almost as we had anticipated (except for item 6), but for the third domain, three of the items had mixed loadings across components, indicating that they likely measured portions of the first two domains (see Table 5).

Discussion

To our knowledge, no other scale has been developed to measure students' readiness to change their study habits. The purpose of this study was to develop a scale that reliably and accurately does so. Nearly all of the items had superior content validity, meaning that, for the most part, they accurately assessed the three domains of a student's readiness to change. In addition, the scale has strong internal reliability ($\alpha = .79$).

Factor analysis showed that, with a few exceptions, the items loaded strongly on three components, as we expected (see Table 5). A fourth component also appeared, but the variance it accounted for could be attributed to mixed loadings on three of the items.

The first five items of the STRETCH were designed to measure the first domain: recognition of the problem. All five items loaded most strongly on the first component. Items 6-10 were designed to measure the second domain, desire to change. With the exception of item 6, they all loaded most strongly on component 2. Item six loaded most strongly on component 1, and will be replaced should the scale be revised.

The third domain, perceived ability to change, was measured using items 11-15. Items 11 and 12 loaded moderately on components 1 and 2, but item 13 failed to load on component 3 at all. In contrast, items 14 and 15 loaded strongly and exclusively on component 3. Items 14 and 15 asked the respondent to think about actual changes she or he could make to improve, but items 11 and 12 only referred to better study habits. Although item 13 failed to load on the third component, it had small loadings on the first two components. Items 11-13 will be rewritten or replaced should be scale be revised.

Because the CVRs were obtained from fellow students in a Psychological Testing course, the values may have been inflated beyond what they may have been had we obtained them from experts in the psychology of study habits. This represents a limitation to our scale's validity.

The main strength of our sample was that it was composed of college students whose GPAs ranged from roughly 2.0 to 4.0, which means they likely represented a wide range of study habit effectiveness. However, the STRETCH has limited generalizability at this point because of several characteristics of our sample. The convenience sample of only 94 students came mostly from one university.

Furthermore, our sample had far fewer freshmen and sophomores than upper class students, which may be problematic, as college freshmen and sophomores may be more in need of change in their study practices. A random sample from several universities with equal representation in each class would improve the scale's external validity.

After revision of the scale, the next step might be to test its performance in a real-world setting involving academic counselors and their students. Specifically, it may be of interest to use the scale to measure students' attitudes during their first and second college semesters in order to predict how well they will adapt to the academic demands of the remaining college years. Additionally, future studies using a revised version of this scale could look at the usefulness of specific domain scores in assisting advisors to pinpoint ways in which to help students become more ready to change.

References

Ajzen, I. (1991). Theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(1), 179-211.

Ayre, C., & Scally, A. J. (2014). Critical values for Lawshe's content validity ratio: Revisiting the original methods of calculation. *Measurement and Evaluation in Counseling and Development, 47*(1), 79-86.

Bradford, K. (2012). Assessing readiness for couple therapy: The Stages of Relationship Change Questionnaire. *Journal of Marital And Family Therapy, 38*(3), 486-501. doi: 10.1111/j.1752-0606.2010.00211.x

Engle, R. L., Dimitriadi, N., Gavidia, J. V., Schlaegel, C., Delanoe, S., Alvarado, I., ... Wolff, B. (2010). Entrepreneurial intent: A twelve-country evaluation of Ajzen's model of planned behavior.

International Journal of Entrepreneurial Behaviour & Research, 16(1), 35-57.

Knight, T. A., Richert, A. J., & Brownfield, C. R. (2012). Conceiving change: Lay accounts of the human change process. *Journal of Psychotherapy Integration, 22*(3), 229-254. doi: 10.1037/a0028871

Ouimet, M., Brown, T. G., Bédard, J., & Bergeron, J. (2010). Measuring of readiness to reduce driving speed: A pilot study. *Psychological Reports, 107*(3), 749-761. doi: 10.2466/13.20.PR0.107.6.749-761

Schneider, W. (2004). Transtheoretical model of change with couples. *Dissertation Abstracts International,* 64.

UCLA: Statistical Consulting Group. (n.d.). *What does Cronbach's alpha mean?* Retrieved from http://www.ats.ucla.edu/stat/spss/faq/alpha.html

Yuksel, S. (2006). Undergraduate students' resistance to study skills course. *College Student Journal, 40*(1), 158-165.

Table 1

Demographics

Question	*N*	%	*M*	*SD*
Age	-	-	21.9	3.8
Overall GPA	-	-	3.35	0.46
Year in School				
Freshman	13	13.8	-	-
Sophomore	14	14.9	-	-
Junior	30	31.9	-	-
Senior	25	26.6	-	-
Super-senior	12	12.8	-	-
Gender				
Male	32	34.0	-	-
Female	62	66.0	-	-
Race				
Caucasian	87	92.6	-	-
Asian	1	1.1	-	-
Hispanic	3	3.2	-	-
Other	2	2.1	-	-
Prefer not to answer	1	1.1	-	-
Total Respondents	94	100	-	-

Table 2

Item	CVR
1	0.69
2	0.69
3	0.69
4	0.50
5	0.56
6	0.94
7	0.81
8	0.75
9	0.63
10	0.69
11	0.88
12	0.56
13	0.56
14	0.63
15	0.63

Table 3

Cronbach's Alpha

Cronbach's **Alpha**	Cronbach's Alpha Standardized	No. of Items
.79	0.80	15

Table 4

Pearson Correlation Coefficients

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	.20	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-
3	.29*	.38*	1.00	-	-	-	-	-	-	-	-	-	-	-	-
4	.41*	.36*	.47*	1.00	-	-	-	-	-	-	-	-	-	-	-
5	.57*	.44*	.61*	.62*	1.00	-	-	-	-	-	-	-	-	-	-
6	.24**	.46*	.80*	.32*	.59*	1.00	-	-	-	-	-	-	-	-	-
7	-.12	.15	.09	-.22**	.01	.30*	1.00	-	-	-	-	-	-	-	-
8	-.29*	.03	-.04	-.36*	-.23**	.05	.39*	1.00	-	-	-	-	-	-	-
9	-.25**	.11	.21*	-.07	-.06	.24**	.21**	.25**	1.00	-	-	-	-	-	-
10	-.16	.09	.21*	-.19	0	.33*	.48*	.31*	.38*	1.00	-	-	-	-	-
11	.31*	.47*	.41*	.40*	.64*	.48*	.03	-.22**	-.02	.06	1.00	-	-	-	-
12	.11	.30*	.33*	.35*	.46*	.34*	-.05	-.33*	-.05	-.13	.58*	1.00	-	-	-
13	.06	.34*	.37*	.21**	.20	.36*	.23**	.09	.25**	.19	.35*	.28*	1.00	-	-
14	.15	.34*	.27*	.17	.40*	.30*	.27*	-.13	.02	.16	.50*	.26**	.25**	1.00	-
15	.04	.34*	.07	.26**	.27*	.18	.21**	-.09	.08	.14	.47*	.25**	.27*	.69*	1.00

* Significant at 0.01 level (2-tailed). ** Significant at 0.05 level (2-tailed).

Table 5

Component Matrix

Item	Component 1	Component 2	Component 3
1	0.57	-0.36	
2	0.51		0.38
3	0.85		
4	0.68	-0.34	
5	0.82		
6	0.78	0.42	
7		0.67	
8		0.67	
9		0.63	
10		0.75	
11	0.57		0.60
12	0.48		0.40
13	0.37	0.36	
14			0.83
15			0.89

Note. Entries are factor loadings: correlations of items with the principal components in a factor analysis.

Table 6

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %
1	4.77	31.8	31.8	4.77	31.8	31.8
2	2.63	17.5	49.3	2.63	17.5	49.3
3	1.51	10.0	59.4	1.51	10.0	59.4
4	1.05	7.0	66.3			
5	0.80	5.3	71.7			
6	0.79	5.2	76.9			
7	0.66	4.4	81.3			
8	0.53	3.5	84.9			
9	0.50	3.3	88.2			
10	0.48	3.2	91.4			
11	0.46	3.1	94.4			
12	0.27	1.8	96.2			
13	0.26	1.7	98.0			
14	0.18	1.2	99.2			
15	0.13	0.8	100.0			

Appendix A

STRETCH scale survey

Indicate your age.

Age ___

Please indicate your year in college (number of years in college, not number of credit-hours).

_ Freshman

_ Sophomore

_ Junior

_ Senior

_ Super-senior

Indicate your gender.

_ Male

_ Female

Race

_ Caucasian

_ African American

_ Asian

_ Hispanic

_ Pacific Islander

_ Other

_ Prefer not to answer

Indicate the number closest to your overall GPA.

GPA (rounded to the nearest .5) ___

For the following statements, please indicate your level of agreement with the sentence provided.

I feel my study habits are inadequate for college.

Agree Somewhat agree Somewhat disagree Disagree

I don't think I need to improve my study habits.

Agree Somewhat agree Somewhat disagree Disagree

I need to start studying more.

Agree Somewhat agree Somewhat disagree Disagree

Studying is a lower priority for me than it should be.

Agree Somewhat agree Somewhat disagree Disagree

I don't feel like I study enough.

Agree Somewhat agree Somewhat disagree Disagree

I want to improve my study habits.

Agree Somewhat agree Somewhat disagree Disagree

I am willing to work harder for better grades.

Agree Somewhat agree Somewhat disagree Disagree

I would not be willing to pass on social activities in order to study more.

Agree Somewhat agree Somewhat disagree Disagree

I am willing to go to bed earlier so I can focus better in my schoolwork.

Agree Somewhat agree Somewhat disagree Disagree

I am not willing to spend more time studying.

Agree Somewhat agree Somewhat disagree Disagree

I know I can study better than I do now.

Agree Somewhat agree Somewhat disagree Disagree

I can't study any better than I do now.

Agree Somewhat agree Somewhat disagree Disagree

I can't see myself being more studious than I am now.

Agree Somewhat agree Somewhat disagree Disagree

I know I can make the changes I need to study better.

Agree Somewhat agree Somewhat disagree Disagree

I can change my study habits.

Agree Somewhat agree Somewhat disagree Disagree

What do you think this test was measuring?

_____