Exploring the Student Engagement Instrument and Career Perceptions with College Students

Tabitha Grier-Reed[1], James Appleton[2], Michael Rodriguez[1], Zoila Ganuza[1] & Amy L. Reschly[3]

[1] University of Minnesota, Minneapolis, Minnesota, United States

[2] Gwinnett County Public Schools, Suwanee, GA, United States

[3] University of Georgia, Athens, GA, United States

Correspondence: Tabitha Grier-Reed, Department of Postsecondary Teaching and Learning, University of Minnesota, 178 Pillsbury Dr. SE, Minneapolis, MN 55455, United States. Tel: 1-612-624-2089. Email: grier001@umn.edu

Abstract

The Student Engagement Instrument (SEI) is a relatively new inventory designed to measure cognitive and affective engagement in school for middle and high school students. We explored the reliability and validity of the SEI for 122 college students. Results provided evidence for adequate to good reliability and validity--indicating a good fit between the data and a 4-factor structure based on Teacher-Student Relationships, Peer Support at School, Future Aspirations and Goals, and Family Support for Learning. Two factors representing affective engagement (Peer Support at School and Teacher-Student Relationships) emerged as important predictors of career perceptions in our college student sample. Peer Support at School also predicted college GPA. Facilitating continuity in the operationalization and measurement of student engagement across secondary and post-secondary settings, findings also highlight the potential importance of student engagement to career development.

Keywords: student engagement, career decision self-efficacy, self-defeating career thoughts, college students

1. Introduction

1.1 The Problem

Even though an increased number of high school graduates are being accepted into college, fewer than half are attaining a degree (The Bill and Melinda Gates Foundation, 2004). As the national unemployment rate approaches 10% (United States Department of Labor, 2009), keeping students in school and facilitating educational and career decision-making are imperative for institutions of higher education. Both student engagement and career decision self-efficacy have been linked to persistence in college (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Peterson, 1993a; 1993b). Hence, the current study explored the relationship between student engagement and career perceptions. Moreover, the current research extended its operationalization of student engagement across secondary and postsecondary settings. Although the notion of student engagement garners considerable interest at all levels of education, how the construct is operationalized and measured at postsecondary levels is typically different from how the construct is operationalized and measured at secondary levels. To address this disconnect, we adapted the Student Engagement Instrument (SEI; a measure validated for use with students in grades 6-12) (see Betts, Appleton, Reschly, Christenson, & Huebner, 2010) for college students and explored the reliability and validity of the instrument.

The process by which students become motivated and committed to working hard and persisting in school is of great interest to educators from elementary to postsecondary levels. Historically, several constructs have been employed in the effort to understand this process. Of these, student engagement has recently emerged as a promising "meta-construct" in the field of education that unites numerous lines of research and related constructs into a theoretical model (Fredricks, Blumfeld, & Paris, 2004). Although different definitions and models of engagement currently exist, engagement is generally viewed as a malleable, multidimensional construct rooted in students' behavior and emotion or affect. Agreement exists that engagement is affected by important contexts,

such as home, school, and peer groups and is a mediator between these contexts and important outcomes, such as high school completion (Christenson, Reschly, Appleton, Berman, Spanjers, & Varro, 2008a).

1.2 The Importance of the Problem

Theoretical and empirical underpinnings of the engagement construct in education are rooted mainly in the elementary and secondary school literature. Engagement is the primary theoretical model for understanding student dropout and school completion and underlies prevention and intervention efforts to address these phenomena (Christenson et al., 2008a). In his seminal theoretical work on engagement and school completion, Finn (1989) described the developmental progression of increasing opportunities and greater expectations needed to successfully engage students in the school environment. Furthermore, he described the cycles of engagement and disengagement that begin early in students' educational careers and culminate years later in either dropout or school completion (Finn, 1989).

In fact, it is possible to identify those students who are more likely to dropout and those who will complete high school based on their engagement in the early elementary school grades given variables such as behavior, attendance, and attachment to school (Alexander, Entwisle, & Horsey, 1997; Barrington & Hendricks, 1989; Ensminger & Slusarcick, 1992). Engagement variables measured in middle and high school predict, with increased precision, dropout and completion rates (Balfanz, Herzog, & Mac Iver, 2007; Finn & Rock, 1997; Reschly & Christenson, 2006) and are highlighted as the basis for high school reform initiatives (National Research Council & the Institute of Medicine, 2004). In addition, student engagement in high school has been connected to attainments in higher education, where attendance, participation in class and extracurricular activities, and the completion of course assignments are linked to students' likelihood of entering and persisting in postsecondary settings (Finn & Owings, 2006).

At the collegiate level, student engagement is linked to participation in educationally purposeful activities (Kuh, 2004; Kuh, Linnenbrink, & Pintrich, 2003; Zhao & Kuh, 2004) and has been measured by the National Survey of Student Engagement or the NSSE (2007). The construct is based in the seven principles of undergraduate education identified by Chickering and Gamson (1987): faculty-student contact, cooperation with other students, active learning, and prompt feedback, time on task, high expectations, and respect for diverse ways of knowing. The NSSE measures students' engagement in each of these areas (Kuh, 2004), and has been positively linked to grades and persistence for a racially diverse sample during the first two years of college (Kuh et al., 2008). Even though pre-college characteristics such as ACT or SAT scores matter, when college experiences are taken into account, the influence of these pre-college characteristics is attenuated (Kuh et al., 2008). Student engagement, on the other hand, maintains a positive effect on grades whether students are in their first year or their last year of college and also predicts persistence into the second year of school (Kuh et al., 2008).

Faculty-student contact has been identified as especially important, where active, collaborative learning techniques that emphasize higher-order thinking have been associated with higher levels of student engagement (Umbach & Wawrzynski, 2005). Moreover, engaging in academic activities or with faculty members outside of the classroom has been connected to higher levels of academic competence (Reason, Terenzini, & Domingo, 2006). Along with grades, gains in critical thinking have also been associated with higher levels of student engagement (Carini, Kuh, & Klein, 2006).

1.3 Relevant Scholarship

At the secondary level, the SEI has been developed to address the need for a theoretically-driven, empirically sound measure of engagement (Appleton, Christenson, Kim, & Reschly, 2006). The theoretical model upon which the SEI is based grew out of work with an empirically supported dropout prevention program for high school students, Check & Connect (Christenson et al., 2008b). The authors proposed 4 subtypes of student engagement: academic, behavioral, cognitive, and affective/psychological (Appleton et al., 2006; Christenson et al., 2008a). Signs of two forms of engagement, academic and behavioral, are readily observed and typically easy to find in school or district extant records. Academic and behavioral engagement are indicated by such variables as credit accrual, time on task (academic), class participation, extracurricular activities, and homework completion (behavioral). Cognitive and affective engagement is internal, less readily observable forms of engagement that require students' own reports for accurate measurement. Cognitive and affective engagement is represented by indicators such as self-regulation, interest, perceived relevance to the future (cognitive), belonging, and relationships with teachers and peers (affective). The SEI was designed to assess student perceptions of cognitive and affective engagement (Appleton et al., 2006).

The original validation study of the SEI was conducted with a diverse sample of 9th graders. Thirty-five items, which loaded onto 6 factors, were retained. The cognitive engagement factors were: Control and Relevance of

School Work, Future Aspirations and Goals, and Extrinsic Motivation. The affective engagement factors were: Teacher-Student Relationships, Peer Support for Learning and Family Support for Learning. The SEI subscales were correlated as expected with measures of academic performance such as GPA and behavior (Appleton et al., 2006). Indicating a high level of stability for the SEI factors across a wide-range of students, a more recent study provided support for the use of the first 5 subscales on the instrument (removing the 6th subscale of Extrinsic Motivation) and strong evidence for the invariance of the factor structure involving those 5 subscales across samples and grades 6-12 (Betts et al., 2010).

1.4 Hypothesis and Research Design

In an effort to foster continuity in how student engagement is measured across secondary and postsecondary settings, we examined the psychometric properties of the SEI with college students. Adapting items on the instrument as needed, we piloted the SEI with a group of 122 college students and gathered evidence for its reliability and validity. This included the instrument's relationship to career perceptions. Specifically, we focused on the SEI, career decision self-efficacy, and self-defeating career thoughts.

To measure convergent validity or correlations with similar constructs related to engagement in one's education, major, and career, we included analyses of correlations between the SEI and two instruments: The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF; Betz & Taylor, 2001) and the Career Thoughts Inventory (CTI; Sampson, Peterson, Lenz, Reardon, & Saunders, 1996). Both the CDSE-SF and CTI have been normed on college student samples. The CDSE-SF measures students' level of career decision self-efficacy, and the CTI measures their level of self-defeating career thoughts.

Given that both student engagement and career decision self-efficacy have been linked to academic persistence and future aspirations and goals, we examined whether high levels of career decision self-efficacy were also linked to high levels of engagement in school (Finn & Owings, 2006; Peterson 1993a; 1993b). Research in this area is scant, and our paper is the first, to our knowledge, to address this question even though the concept of career decision self-efficacy has gained increasing attention. Career decision self-efficacy has been deemed important for women, minorities, people with disabilities, and any group lacking in efficacy information (Betz, Hammond, & Multon, 2005).

With theoretical underpinnings in Bandura's (1982) theory of self efficacy, career decision self-efficacy focuses on belief in one's ability to complete career-related tasks in the process of educational and career decision-making. As with student engagement, career decision self-efficacy has been linked to desirable behavioral and academic outcomes in educational settings. For example, a study of college women found that higher levels of career decision self-efficacy were linked to more willingness to engage in nontraditional occupations (Nevill & Schlecker, 1988). Moreover, in studies of college students identified as at-risk career decision self-efficacy has been linked to academic persistence, career aspirations, and grades (Peterson, 1993a; 1993b). In turn, we expected that high levels of career decision self-efficacy would correspond with high levels of student engagement. Given the SEI (where low scores indicate high levels of engagement) and the CDSE-SF (where high scores indicate high levels of efficacy), we hypothesized negative correlations across the two instruments.

Dysfunctional thinking regarding one's major and career direction can interfere with educational decision-making. Self-defeating career thoughts have also been linked to educational outcomes. For example, dysfunctional career thoughts have been positively correlated with inability to choose a major, career indecision, and depression in college student samples and negatively correlated with positive outcomes such as successful adjustment to having a disability (Vernick, 1999).

We explored whether self-defeating, dysfunctional career thoughts are also linked to students' level of engagement in school. To some degree all three constructs (career decision self-efficacy, self-defeating career thoughts, and student engagement) provide an indicator of whether students perceive that they are on track and actively able to pursue career and educational prospects. We expected that high levels of engagement would correspond with low levels of self-defeating career thoughts. Given that high scores on the SEI are associated with low levels of student engagement and high scores on the CTI are associated with high levels of confusion, anxiety, and conflict we hypothesized positive correlations across these two instruments. Finally, we examined whether, as indicated with high school students, the SEI correlated with GPA (Appleton et al., 2006) and whether the 5-factor model of the SEI validated with high school students also seemed appropriate for college students (Betts et al., 2010).

2. Methods

2.1 Participants

Participants in the sample were 122 undergraduates enrolled in introductory level social science and career

courses in the College of Education and Human Development at a large university in the Midwestern United States. Sixty-three percent of those reporting in the sample were women (n=77), and 37% were men (n=45). Of those reporting, the racial/ethnic composition was 53% White (n=63), and 47% students of color (n=56). Specifically, 22% were Asian American/Pacific Islander students (n=26), 12% African American (n=14), and 7% Latino/Hispanic (n=8). In addition, 3% of reporting students identified as African Immigrant (n=3), and 4% identified as multiracial or other, e.g., Arab, Indian, Middle-Eastern, Egyptian (n=5). Of those reporting their year in school, freshmen (n=76) comprised 66%, sophomores (n=13) 11%, juniors (n=7) 6%, and seniors (n=19) 17%.

2.2 Procedures

We conducted the current study in accord with the policies of the participating university and with the approval of the institutional review board. All students included in the research were provided with informed consent prior to participating in the study. Our research team recruited students, provided informed consent, and administered the SEI, CDSE-SF, and CTI in intact social science and career classes at the beginning of the semester during the 2007-2008 academic year. We collected data from career classes during the first class meeting and from social science classes within the first 2 weeks of the semester. Due to the relatively high sum total of items across the SEI, CDSE-SF, and CTI, we counterbalanced the instruments to help control for fatigue.

2.3 Measures

2.3.1 Student Engagement Instrument

A relatively new inventory, the Student Engagement Instrument (SEI) includes a total of 33 items and is designed to measure the cognitive and affective engagement of students in school (Appleton, Christenson, & Furlong, 2008). Originally designed for middle and high school students, the SEI was normed on a diverse sample of 1,931 9th graders (Appleton et al., 2006). Validations of the SEI support the use and reliability of 5 factors (Betts et al., 2010): Teacher-Student Relationships (TSR – 9 items), Control and Relevance of School Work (CRSW – 9 items), Peer Support at School (PSS – 6 items), Future Aspirations and Goals (FG – 5 items), and Family Support for Learning (FSL – 4 items). Note: Further item examinations suggest Peer Support at School (PSS) is a more accurate factor label than the 2006-utilized Peer Support for Learning (PSL).

These 5 factors/subscales of the SEI are scored on a 4-point scale (i.e., strongly agree, agree, disagree, strongly disagree), where low scores indicate a high level of student engagement. The SEI subscales have correlated as expected with measures of academic performance, (e.g., GPA, reading and math achievement) and behavior (e.g., school suspensions) (Appleton et al., 2006). Internal consistency reliability estimates across the 5 factors in the normative high school sample ranged from .76 to .88 (Appleton et al., 2006).

To adapt the SEI for college students, some wording on the instrument was adjusted. For example, the phrase "school" or "high school" was replaced with the words "college/university", and "adults" and "teachers" were replaced by "faculty and staff" or "professors" across 13 items. Rather than original SEI items such as "My teachers are there for me when I need them", the adapted version included slightly amended items such as "My professors are there for me when I need them".

2.3.2 Career Decision Self-efficacy Scale-short Form

Originally called the Career Decision-Making Self-Efficacy Scale, the Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) measures students' confidence in their ability to engage in career and educational decision-making and has been validated for use with college students (Betz et al., 2005; Betz & Taylor, 2001). The CDSE-SF is composed of 25 rating-scale items in which respondents indicate their level of confidence in completing a career-related task (e.g., selecting a major from a list of potential majors) on a 5-point scale, where 1 indicates no confidence and 5 indicates complete confidence. High scores on the CDSE-SF indicate high levels of career decision self-efficacy. Self-appraisal (SA), Occupational Information (OI), Goal Selection (GS), Planning (P), and Problem Solving (PS) are the 5 CDSE-SF subscales; each contains 5 items (Betz & Taylor, 2001). Based on a diverse sample of 1,832 college students, norming studies indicated that internal consistency reliability estimates for CDSE-SF subscales ranged from .78 to .87 with total scale estimates ranging from .94 to .95 (Betz et al., 2005).

2.3.3 Career Thoughts Inventory

The Career Thoughts Inventory (CTI) is designed to measure dysfunctional thoughts that interfere with effective career decision-making and problem-solving and has been validated for use with college students. The CTI total score is a global indicator of self-defeating career thoughts (e.g., "No field of study or occupation interest me."). The instrument contains a total of 48 items. Using a 4-point scale (where 0 indicates Strongly Disagree and 3

indicate Strongly Agree) high scores on the CTI indicate high endorsement of dysfunctional career thoughts. The 3 CTI construct scales—Decision-Making Confusion (DMC), Commitment Anxiety (CA), and External Conflict (EC)—comprise 29 items on the instrument. The DMC subscale (14 items) measures the extent to which decision-making confusion affects an individual's ability to make career decisions (e.g., "I'll never find a field of study or occupation I really like."). The CA subscale (10 items) measures the anxiety an individual experiences when faced with career decisions (e.g., "My interests are always changing."). The EC subscale (5 items) measures conflict between self-perception and perception of others in career decision-making (e.g., "I know what job I want, but someone's always putting obstacles in my way."). (Sampson et al., 1996)

Based on a normative college sample of 595 diverse students, test-retest reliability for the CTI total score was reported as .86 across a 4-week interval. Test-retest reliabilities for the DMC, CA, and EC scales were reported as .82, .79, and .74, respectively. Internal consistency reliability for the total score was reported as .96, and internal consistency reliabilities for the DMC, CA, and EC scales were reported as .94, .88, and .77, respectively. (Sampson et al., 1996)

2.4 Plan of Analysis

A total of 9 scales, including the 3 CTI subscales, 5 CDSE-SF subscales, and the CDSE-SF total scale, were included as our career perception variables. A Multivariate Analysis of Variance (MANOVA) was included to consider mean differences on each of the SEI subscales as a function of race/ethnicity and gender. Zero-order correlations provided a preliminary view of relationships between the SEI and career perception variables. Alpha coefficients were calculated to estimate internal consistency reliability for the SEI, and we also included item discrimination correlations.

In addition, we included a confirmatory factor analysis (CFA). CFA provides strong construct-related evidence regarding the factor structure of a measure. A means for testing data-model fit, CFA assesses the usefulness of simpler versus more complex factor structures. The factor structure, based on factors expected from prior research was assessed through CFA with Mplus 5.2 (Muthén & Muthén, 2009). This provides for a test of the fit to observed data of a given factor structure, an important step to defend the meaningfulness of scores on the SEI in our college sample. Typical indices of fit include the RMSEA, which provides a parsimony correction, indicating the extent to which the model fits reasonably well in the population. For good fit, the RMSEA should be less than .10 (Brown, 2006). Mplus also provides a comparative fit index, the CFI, indicating fit relative to a more restricted baseline model. The CFI should be greater than .90 for a good fit (Brown). Further analyses included Ordinary Least Squares (OLS) regression to examine the individual influence of each SEI subscale on student GPA, the CDSE-SF total scale, and the CTI subscales.

3. Results

A MANOVA was used to check for mean differences on the 5 SEI subscales by gender or race/ethnicity (i.e., White or student of color). Box's Test provided support for the assumption of equal covariances. Using Pillai's Trace, the multivariate tests failed to indicate any significant main effect for gender $F(5, 111) = 1.96$, $p = .09$, $\eta_p^2 = .08$, or race/ethnicity $F(5, 111) = 1.47$, $p = .20$, $\eta_p^2 = .06$, or their interaction $F(5, 111) = 1.32$, $p = .26$, $\eta_p^2 = .06$. Given these results, in subsequent analyses we did not divide the sample by gender or race/ethnicity.

Subsequent zero-order correlations were computed for the 5 subscales of the adapted SEI, the 5 subscales of the CDSE-SF, and the 3 subscales of the CTI. Within-SEI correlations (.23 to .58) were generally stronger than those between the SEI and other measures (.08 to .38). As depicted in Table 1 and expected, all SEI subscales produced positive Pearson r values with every other SEI subscale. Moreover, all Pearson r values of the SEI with the CDSE-SF were in the expected negative direction, and all Pearson r values of the SEI with the CTI were in the expected positive direction. We found adequate to good internal consistency reliability for the 5 SEI subscales (TSR $\alpha = .85$, CRSW $\alpha = .78$, PSS $\alpha = .82$, FG $\alpha = .79$, and FSL $\alpha = .79$) and for the SEI total scale score ($\alpha = .91$). In addition, we found that item discrimination correlations ranged from .29-.72, where items with discrimination values above .20 generally contribute to the overall measure.

Table 1. Zero order correlations across the SEI, CDSE-SF, and CTI

		Student Engagement Instrument (SEI)					Career Decision Self-Efficacy - Short Form (CDSE-SF)					Career Thoughts Inventory (CTI)		
		TSR	CRSW	PSS	FG	FSL	SA	OI	GS	P	PS	DMC	CA	EC
SEI	Teacher-Student Relationships (TSR)	1												
	Control and Relevance of School Work (CRSW)	.58*	1											
	Peer Support at School (PSS)	.53*	.49*	1										
	Future Aspirations and Goals (FG)	.33*	.52*	.36*	1									
	Family Support for Learning (FSL)	.23	.24	.43*	.38*	1								
CDSE-SF	Self-Appraisal (SA)	-.21	-.16	-.35*	-.14	-.21	1							
	Occupational Information (OI)	-.26	-.24	-.31*	-.09	-.11	.77*	1						
	Goal Selection (GS)	-.18	-.20	-.30	-.15	-.17	.85	.70*	1					
	Planning (P)	-.26	-.17	-.30	-.09	-.13	.77*	.81*	.79*	1				
	Problem-Solving (PS)	-.29	-.25	-.37*	-.19	-.19	.81*	.75*	.80*	.81*	1			
CTI	Decision-Making Confusion (DMC)	.26	.16	.17	.25	.12	-.69*	-.54*	-.70*	-.62*	-.61*	1		
	Commitment Anxiety (CA)	.27	.14	.15	.09	.08	-.58*	-.50*	-.65*	-.64*	-.57*	.75*	1	
	External Conflict (EC)	.38*	.21	.32*	.23	.26	-.43*	-.37*	-.44*	-.40*	-.35*	.56*	.56*	1
	Scale Mean	1.94	1.95	1.85	1.32	1.43	3.56	3.44	3.38	3.45	3.33	.91	1.41	1.02
	Scale Standard Deviation	.34	.40	.40	.38	.46	.75	.82	.88	.78	.81	.58	.53	.61

*p < Bonferroni-corrected alpha level of .0006

The fit indices for the 5-factor CFA model were not in the acceptable-fit range. The CFI = .893 and the RMSEA = .117. The limited fit appeared to be a function of one subscale, the CRSW, with uniformly lower factor loadings. A four factor model, excluding CRSW, resulted in fit statistics within the acceptable fit range. The CFI = .944 and the RMSEA = .094. It is difficult to determine if this finding was simply a function of the small sample size or an indicator of less meaningfulness of CRSW as an independent subscale among college students. Correlations among the five subscales, adjusted for measurement error through the CFA (a latent-trait correlation) are reported in Table 2. See Table 3 for the factor loadings of the four and five factor models.

Table 2. Confirmatory factor analysis correlations and reliabilities

	TSR	CRSW	PSS	FG	FSL
TSR	.85	*	.72	.41	.37
CRSW	.77	.78	*	*	*
PSS	.72	.68	.82	.50	.54
FG	.41	.71	.49	.79	.57
FSL	.38	.32	.54	.58	.79
# Items	9	9	6	5	4

Note. Values in the lower triangle are based on 5-factor model; values in the upper triangle are based on 4-factor model (CRSW was excluded as indicated by *); underlined values in the diagonal are coefficient alpha.

Table 3. Four and five-factor loadings for Confirmatory Factor Analysis

	Items	Five-Factor Model		Four-Factor Model			Items	Five-Factor Model		Four-Factor Model	
		Loadings	SE	Loadings	SE			Loadings	SE	Loadings	SE
TSR	SEI03	.93	.05	.90	.05	FG	SEI08	.73	.06	.70	.06
	SEI05	.62	.09	.62	.08		SEI11	.80	.07	.83	.07
	SEI10	.62	.06	.65	.06		SEI17	.76	.08	.82	.07
	SEI13	.71	.06	.73	.06		SEI19	.79	.06	.76	.06
	SEI16	.81	.05	.79	.05		SEI30	.69	.07	.68	.07
	SEI21	.82	.05	.80	.05						
	SEI22	.80	.05	.82	.05						
	SEI27	.64	.08	.67	.07						
	SEI31	.79	.05	.78	.05						
CRSW	SEI02	.45	.07			FSL	SEI01	.90	.05	.91	.05
	SEI09	.48	.06				SEI12	.86	.05	.86	.05
	SEI15	.58	.07				SEI20	.95	.05	.94	.04
	SEI25	.70	.06				SEI29	.63	.06	.62	.06
	SEI26	.66	.06								
	SEI28	.76	.05								
	SEI33	.62	.06								
	SEI34	.58	.07								
	SEI35	.66	.05								
PSS	SEI04	.60	.08	.60	.07						
	SEI06	.71	.05	.73	.05						
	SEI07	.76	.05	.78	.05						
	SEI14	.98	.04	.89	.04						
	SEI23	.88	.04	.89	.04						
	SEI24	.70	.06	.74	.06						

Ordinary Least Squares regression was used to examine the individual influence of the 4 SEI subscales validated via the CFA on the variables of GPA, CDSE-SF Total Scale, and the subscales of CTI-CA, CTI-DMC, and CTI-EC (Table 4). Given that low scores on the SEI indicate high levels of engagement, we hypothesized a

negative slope between the SEI and the GPA and CDSE-SF variables; we hypothesized a positive slope between the SEI and CTI variables. Collectively, the SEI subscales significantly predicted college GPA. Yet, of these subscales, only PSS was generated a significant negative slope coefficient. The SEI subscales also significantly predicted CDSE-SF Total Scale, but again only PSS generated a significant negative slope coefficient. As a collective, the SEI subscales failed to attain significance in predicting CTI-CA; however, TSR alone was a significant predictor of CTI-CA generating a positive slope coefficient. The collective SEI subscales also significantly predicted CTI-DMC and CTI-EC, where again only TSR generated a significant positive slope coefficient. Appropriateness of these models was assessed according to Gelman and Hill's (2007) criteria for theoretically-guided selection of predictors and linearity of relationship between predictors and outcomes.

Table 4. Ordinary least squares regression models, Coefficients, and statistical tests

Outcome	Predictor(s)	R^2	β	Squared-Semi-partial Correlation	F	p
GPA	4 SEI subscales (model)	0.10			(4, 112) = 3.207	0.016*
	TSR		0.162	0.02		0.131
	PSS		-0.353	0.08		0.002**
	FG		-0.101	0.01		0.328
	FSL		0.063	0.00		0.540
CDSE_SF Total Scale	4 SEI subscales	0.14			(4, 117) = 4.601	0.002**
	TSR		-0.103	0.01		0.318
	PSS		-0.291	0.05		0.009**
	FG		0.006	0.00		0.950
	FSL		-0.031	0.00		0.751
CTI-CA	4 SEI subscales (model)	0.06			(4, 116) = 1.809	0.132
	TSR		0.254	0.04		0.021*
	PSS		-0.018	0.00		0.875
	FG		-0.015	0.00		0.884
	FSL		0.010	0.00		0.921
CTI-DMC	4 SEI subscales (model)	0.10			(4, 117) = 3.262	0.014*
	TSR		0.205	0.03		0.053
	PSS		-0.003	0.00		0.975
	FG		0.184	0.03		0.065
	FSL		0.003	0.00		0.977
CTI-EC	4 SEI subscales (model)	0.18			(4, 116) = 6.352	<.001***
	TSR		0.276	0.05		0.007**
	PSS		0.098	0.01		0.364
	FG		0.049	0.00		0.607
	FSL		0.132	0.01		0.174

* *p* < .05   ** *p* < .01   *** *p* < .001

4. Discussion

This study was undertaken to examine the reliability and validity of the Student Engagement Instrument (SEI) and its contribution to understanding career perceptions in college students. An engagement measure displaying sound psychometric properties across secondary and postsecondary students can be useful for the consistency it provides in monitoring motivated persistence across learning environments en route to important long-term

outcomes. In the current study, SEI subscale values did not appear to be the systematic result of either gender or race/ethnicity or an interaction of the two.

Aligning with norm sample data, results indicated adequate to good internal consistency reliability (Appleton et al., 2006), and inter-correlations among SEI subscales tended to be stronger than correlations between the SEI and other instruments. Moreover, Pearson r correlations between the SEI and CDSE-SF and the SEI and CTI were all in the expected directions. Additionally, the range of SEI subscale inter-correlations (.23 to .58) was in line with those of the original validation sample (.28 to .51) (Appleton et al.).

As reported in the normative high school sample, the SEI significantly predicted GPA; however, in our college student sample only the Peer Support at School (PSS) scale stood out in terms of GPA. This finding is in line with research highlighting the importance of peers in postsecondary settings. Dennis, Phinney, and Chuateco (2005) have asserted the importance of peer support in college adjustment, and Kim (2009) has identified the importance of peer networks in academic adjustment and persistence in the first years of school, especially for first-generation, minority, and immigrant college students. In our study, the SEI also significantly predicted career decision self-efficacy, where higher levels of peer support were predictive of higher levels of career decision self-efficacy.

Teacher-Student Relationships (TSR) also stood out, where the TSR scale significantly predicted commitment anxiety and external conflict. External conflict is based in sudents' perceptions of feeling blocked or unsupported by others. Taken together these findings underscore the importance of attending to relationships in education to engage students in school and improve their perceptions about career. Interestingly, these two SEI factors (TSR and PSS) resemble 2-3 items on the widely used NSSE (2007) exploring students' relationships with other students and faculty. Building upon the NSSE, the SEI has the potential to bridge the disconnect between the operationalization and measurement of student engagement in middle and high school and at university levels.

With respect to the factor structure, we did not find a good fit between the 5 factors validated in the high school sample and the data from our college sample. In turn, we eliminated the Control and Relevance of School Work (CRSW) scale and found an acceptable fit based on 4 SEI factors—Teacher-Student Relationships, Peer Support at School, Future Aspirations and Goals, and Family Support for Learning. Given that the college students scored consistently high on this scale, CRSW did not discriminate as well as the other factors. This may be due in part to the small sample size and/or the difference between secondary and postsecondary contexts, where high schools are likely to have more variability in academic engagement. For example, not all students who attend high school pursue a 4-year college degree. Hence, the college student sample may have been less variable than the original SEI validation sample in their perceptions of the relevance of school to their future. Moreover, given that higher education contexts tend toward more independence, freedom, and autonomy than high school contexts, the college student sample may have uniformly perceived more control over their school work than the high school sample. Less variability in the college student sample may have lead to a restriction of range that limited the ability of CRSW to discriminate in this population.

To some degree all three constructs included in this study (student engagement, career decision self-efficacy, and self-defeating career thoughts) provide an indicator of whether students perceive that they are on track and actively able to pursue career and educational prospects. Grier-Reed and Ganuza (2009) have suggested a logical connection between engagement and career decision self-efficacy, stating that students who feel connected to school also seem more likely to exhibit high expectations of success and control in their educational and career decision-making. This idea seems to bear out in the current study. Just as it has been assumed that engagement and efficacy are positively correlated (Appleton et al., 2006; Jimerson, Campos, & Greif, 2003), we found that higher levels of student engagement corresponded to higher levels of career decision self-efficacy. Likewise, just as it has been suggested that engagement may be negatively correlated with cognitive dimensions impeding efficacy (Skinner, Furrer, Marchand, & Kindermann, 2008), we found that lower levels of engagement corresponded with higher levels of self-defeating career thoughts.

Given that both career decision self-efficacy and engagement have been linked to persistence in college students, better understanding the linkages between these constructs may lead to career programs with active ingredients that can significantly improve retention.

In other words, as insight into the connection between student engagement and career development is cultivated, research may inform practice. For instance, exploring components of affective engagement such as faculty and peer support in effective career interventions may be fruitful.

Explicit focus on the connection between student engagement and career development in college settings may also advance institutional policy focused on retaining students. For instance, the role of Peer Support at School

(and other SEI factors) on students' career perceptions may be examined across different types of residential settings (e.g., away from home, at home) and across different types of institutions (e.g., 2-yr, 4-yr, technical school). It may be, for example, that the predictive utility of Peer Support at School is reduced for a student residing at home while that of Family Support for Learning is increased.

Several limitations should be noted in this exploratory study of the SEI with college students. For instance, the sample may be construed as one of convenience, limiting the generalizability of the conclusions herein. In addition, the small sample size is a limitation. Even though we included ethnically diverse participants, due to the small numbers all students of color were put into one group which may have masked differences among the various ethnic groups. We recommend future research that includes a larger sample size and more than the 2 levels (White and student of color) for race/ethnicity. Moreover, it is possible that the construct of engagement for college students may include factors/content not addressed by SEI items. Hence, further study of the SEI that also includes responses to the NSSE is recommended. Longitudinal data and a larger sample size may better position future researchers to explore the factor structure of the SEI with college students.

To facilitate continuity in the operationalization of student engagement across secondary and postsecondary settings, we adapted the SEI--originally developed for middle and high school students--to a college student sample and provided initial, exploratory evidence for its validity and reliability. Interestingly, it was primarily the affective components of engagement (associated with peer support and faculty-student relationships) that stood out in terms of GPA and career perceptions in the college student sample. The use of CFA enabled us to explore the factor structure of the SEI for college students, and indicated an acceptable fit for the use of 4 factors (Teacher-Student Relationships, Peer Support at School, Family Support for Learning, and Future Aspirations and Goals).

Future research exploring the SEI with college students is needed, and we recommend additional research in this vein. First, this line of research can improve continuity in how engagement is defined and measured across secondary and postsecondary settings. Second, this research can advance understanding of the importance of engagement to different facets of the student experience like career development, which may contribute to innovations in career and education practices that better retain students in school and prepare them for future employment. Given the current economic uncertainty, cost of higher education, rapidly changing world of work, and reduced job prospects, retaining students in school and empowering them to effectively engage in educational and career decision-making should be a priority.

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