

Does College Environment Have the Same Effect on All Students?

Relationship among High School Engagement, College Environment, and First-year Engagement

Yiran Dong

James S. Cole

Indiana University – Bloomington

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## **Abstract**

Studies have shown that precollege behaviors and attributes are related to academic performance, engagement, and experiences in college. The positive relationship between institution's emphasis on engagement and college engagement has also been well demonstrated. This study investigated how the relationship between high school and first-year college engagement is moderated by institutional emphasis. Results showed that higher level of high school engagement and higher institutional emphasis both lead to higher first-year engagement. More interestingly, institutional emphasis has greater influence on students who highly internally engaged in high school. The implication of these results has also been discussed.

## Introduction

First year college students enter our campuses with a diversity of backgrounds, experiences, beliefs, motivations, and expectations (see Pascarella & Terenzini, 2005). One common finding from studies that have investigated pre-college student characteristics and their experiences is that they often are important predictors of academic engagement in their first year of college. For instance, Astin and Lee (2003) found that precollege characteristics of hours spent studying in high school, academic ability, leadership ability, and developing a meaningful philosophy of life predicted 61 percent of the variance in time spent studying in college. Given these results, these researchers questioned: “How much of the level of engagement observed among students at a given institution should be attributed to institutional policies and practices, and how much should be attributed to the characteristics of the students when they enroll?” (p. 670). Research in behavioral consistency however, is scant. The research available has shown that there is often a consistency of behaviors across time and situations. For instance, Funder and Colvin (1991) investigated the “behavioral consistency” of college students at three different points in time. A total of 62 behaviors were recorded (“high enthusiasm and high energy level”, “reserved and unexpressive”, “exhibits social skills”, etc). Overall these researchers found that many (but not all) of these 62 behaviors to be moderately to highly consistent across the three points in time and situations. This study will investigate the consistency of behaviors from high school to the first year of college.

Though we expect there is a certain level of stability in engagement from high school to college, it is not clear if all forms of engagement are equally stable. There are likely many reasons for behavioral *inconsistency*, however one possible explanation that certain behaviors are not stable across time are the psychological antecedents. There are many psychological factors

that can influence behaviors (see Pintrich & Schunk, 2002). One such factor is the degree to which behaviors are externally regulated. We can broadly dichotomize behaviors based on the degree of external regulation. A theory that helps to explain this “regulatory style” is Self-Determination Theory (Deci & Ryan, 2002).

### *Self-Determination Theory*

Self-Determination Theory (SDT) claims that three innate psychological needs motivate human behavior: relatedness, competence, and autonomy (Deci & Ryan, 2002). Relatedness refers to one’s sense of feeling connected to other individuals and/or groups of people (e.g., a community). Competence refers to one’s feeling of confidence to interact effectively in one’s own environment. Autonomy concerns the source (locus) of behavior as being either internal (e.g., freely choosing to participate in a task as a result of interest) or external (e.g., required participation in a task). Cumulatively, the human desire to satisfy these needs is what energizes, sustains, and directs behavior (Deci & Ryan, 2002). According to SDT, it is through interaction with nurturing and supportive factors in our social environment that these three psychological needs (relatedness, competence, and autonomy) are fostered and enhanced.

According to SDT, the need for competence and autonomy are particularly sensitive to changes in the social environment (Ryan & Deci, 2000). Social factors can either enhance or undermine feelings of competence and autonomy within an individual. For example, teachers who provide students with positive performance feedback shortly after the completion of an academic task will undoubtedly help to enhance the students’ sense of competence. Perceptions of autonomy are also particularly sensitive to one’s environment. For instance, teachers who have highly regulated and structured classrooms may well undermine a student’s sense of

autonomy if students in such a classroom find they have little opportunity to exercise choice or make decisions regarding their learning. Therefore the social environment plays a key role in one's quest to satisfy the need for autonomy and competence.

In education settings and activities, external regulation is the reality. Students engage in a variety of activities ranging from the boring or uninteresting (e.g., taking a test) to the exciting (e.g., building a rocket in science class) (Baines & Stanley, 2003; Cole, 2007). Organismic Integration Theory (OIT), a sub-theory within SDT, specifically explains an individual's motivation to participate in activities that hold no inherent interest or appeal and/or that are externally regulated (Deci et al., 1994; Deci & Ryan, 2002; Joussemet, Koestner, Lekes, & Houliort, 2004). According to the theory humans tend to internalize externally regulated events when participating in an uninteresting or externally regulated activity (Deci & Ryan, 2002). A person participating in such activities at the behest of others will tend to internalize the regulation of the activity to the extent that they feel a sense of relatedness of the significant other, a sense of competence in completing the task, and perceive at least some autonomy (Deci & Ryan, 2002).

Organismic Integration Theory claims that this process of internalization follows a continuum of levels that are influenced by social factors (Figure 1). There are six primary levels of internalization. The lowest level is amotivation. This level is characterized by the absence of any intention to act or engage in an activity. Amotivation can result from many factors including perceiving a complete lack of control regarding outcomes, low sense of efficacy, and/or low value for the outcome of the task (Deci, 1975; Deci & Ryan, 2000). The lowest level of motivated behavior is external regulation. This level is characterized by the lowest levels of autonomy and self-determination where individuals are motivated solely by external

contingencies such as to receive a reward or avoid punishment. The next level of internalization is introjected regulation. Introjected internalization is characterized by low levels of self-determination and largely external locus of causality. Individuals accept some value in the activity, but do not fully identify with the activity or believe in its utility. According to SDT, the source of introjected regulation is mostly external, with some mild internal feelings such as guilt or obligation. Identified regulation is a highly-self determined form of motivated behavior, which involves the individual having higher value for the activity. At this level, individuals now perceive the personal importance and value of a task and will perceive a largely internal locus of causality. Individuals experiencing identified regulation recognize that the task is externally regulated, but they have adopted the goals, values, and importance of the task as their feelings toward the task. As a result, individuals experiencing identified regulation perceive a high amount of autonomy and self-determination. The final level of extrinsic motivation is integrated regulation. According to Ryan and Deci (2002), “integrated regulation provides the basis for the most autonomous form of extrinsically motivated behavior” (p. 18) and involves the individual perceiving the locus of causality as being entirely internal. At this level, individuals have fully adopted the values, goals, and importance of this task as being their own. As a result, integrated regulation is nearly indistinguishable from intrinsically motivated behavior. Intrinsically motivated behaviors are performed for the inherent interest, joy, or satisfaction of the activity. This type of motivation is entirely self-determined and autonomous, with no externally contingencies (e.g., grades, feedback). Given that students engage in academic assignments, rarely is intrinsic motivation involved in educational settings. Even for those academic activities with high levels of autonomy (e.g. the student can choose to write the paper on any topic of interest), the activity itself is externally regulated and is done at the request of the teacher. In



perceived competence and relatedness) will be minimal. Likewise, those behaviors that are likely the result of introjected, identified, or integrated regulation we call **internally regulated engagement (IRE)**. Not to be confused with intrinsic motivation, internally regulated engagement includes those behaviors that are still externally required, but where the student has varying levels of autonomy as to how they engage in that activity. For example, students can choose (which indicates autonomy) to study more or fewer hours, or to form study groups with students outside of class time. Social factors play an increasingly important role that facilitates these types of behaviors.

Thus, the research questions for this study are:

1. How consistent are completely externally and internally regulated engagement behaviors between high school and the first year of college?
2. How social factors influence college completely externally and internally regulated engagement behaviors, when controlling behavior consistency?

## **Method**

### *Data Sources*

The data for this study are from the 2009 administration of the *Beginning College Survey of Student Engagement* (BCSSE) and the 2010 administration of the *National Survey of Student Engagement* (NSSE). BCSSE measures entering first-year students' pre-college academic and co-curricular experiences, as well as their interest in and expectations for participating in educationally purposeful activities during the first-year of college. NSSE is administered annually by the Center for Postsecondary Research at Indiana University. NSSE collects data

from hundreds of thousands of first-year and senior students enrolled at baccalaureate colleges and universities regarding their student participation in programs and activities that promote their learning, personal, and professional development. NSSE does not collect data regarding student learning per se, but rather collects data regarding the processes that contribute to student learning and academic success.

### *Sample*

The sample for this study includes a total of 17,222 first-year, full-time students enrolled at one of the 79 baccalaureate-granting colleges and universities in the United States that completed BCSSE during the summer of 2009 and then NSSE in the spring of 2010. Of the students in the sample, 68% were female and 32% male. Of the institutions, 46% were private, 17% Doctoral universities, 22% Master's Colleges, 20% Masters medium or small, 16% Baccalaureate Colleges-Arts & Sciences, and remaining types of institutions were 25%.

### *Variables*

*Internally regulated engagement (IRE)* was measured twice. Pre-college IRE was measured by 9 questions in BCSSE and first year IRE was measured by 9 very similar questions in NSSE that asked students how often they voluntarily engaged in meaningful educational activities. For example, on the BCSSE survey students were asked how many hours they spent in typical week during high school preparing for class. Near the end of their first year of college these same students were then asked on the NSSE survey how many hours they spent in typical week during their first year preparing for class. The internal reliability of the IRE scales are acceptable (Cronbach's alpha= 0.70 for pre-college IRE, Cronbach's alpha= 0.68 for first-year IRE). *Completely externally regulated engagement (CERE)* was also measured twice. Five

questions in BCSSE and 8 questions in NSSE that asked students how often they engaged in required educational activities. For example, on the BCSSE survey students were asked how much assigned reading they completed. This same question is asked again on the NSSE survey regarding assigned reading during the first year. The internal reliability of the CERE scales are acceptable (Cronbach's alpha= 0.63 for pre-college CERE, Cronbach's alpha= 0.59 for first-year CERE). *College environment* was measured by 7 environmental items in NSSE survey.

Examples include the extent to which the institution emphasizes “spending a significant amount of time studying” and “providing the support you need to thrive socially.” Internal consistency of this scale is 0.81. Three NSSE questions measured students’ *perceived quality of relationship* with peers, faculty members and administrative personnel and offices. Internal consistency of this scale is 0.71. The NSSE survey also asked about *student background information* like gender, race, and SAT/ACT score. *Information about institutions* (e.g. school type and enrollment size) was also included in the data set.

### *Analytic Procedures*

This dataset is multilevel in nature since students are nested within institutions. In other words, it is very likely that students from the same institution are correlated in terms of their first-year IRE/CERE levels. As a consequence, linear regression models with first-year IRE/CERE as dependent variable and all the student and institution level variables as independent variables are not appropriate since the independency of residuals assumption will be violated. Thus, we used hierarchical linear modeling (HLM) (Raudenvush & Bryk, 2002) to estimate student and the institutional effects on level of first-year IRE/CERE. SAS 9.2® PROC MIXED is used to fit all the models. Sometimes the Newton-Raphson algorithm used in

estimating the hierarchical linear model does not perform well when covariates are on different scales. To improve the stability of the estimates, we standardized all the continuous variables and used the standardized scores in subsequent analysis. As consequence, the unstandardized coefficients in all the tables represent the effect size. In the base model, we only entered the first year IRE/CERE score as outcome and determined the variation between and within institutions. At the institution level in the first step, we controlled for enrollment size, control (public, private), and institution's average SAT/ACT score. At the student level in the second step, we controlled for student incoming characteristics: gender, SAT/ACT score, and pre-college IRE/CERE level. In the final step, we included first-year experience variables: college environment and quality of relationship.

## **Results**

Table 1 presents the relationships between pre-college IRE, college environment, and quality of relationship and first-year IRE after taking into account both student and institutional characteristics. From the base model, about 5% of the variance in the level of first-year IRE was explained by institutional characteristics and the remaining 95% was explained by student characteristics. Adding the institutional characteristics in step 1 explained approximately 40.4% of the between institution variance. Being private institution had significant positive effect on first year IRE. In the second step, we included the student level characteristics before college with account 21.8% variance in the student level. The effect size for pre-college IRE is 0.46. The SAT/ACT score and male are negatively related to first-year IRE. Adding student experience variables in step 3 added additional 12% variance explained at the student level. The final model explained 33.8% variance at the student level and 72% of the variance at the

institution level. The effect of pre-college IRE drops slightly but still the most significant factor. Institution environment has the second largest positive effect followed by quality of relationship. The effect of private institution drops a lot (from 0.22 to 0.10) after adding student level variables.

The coefficients in Table 1 are effect sizes so they are comparable to one another. The most significant effect on first-year IRE level is precollege IRE level (.41). However, the cumulative effect of student's college experience (perceived environment and quality of relationship) is 0.39 and is almost of the same importance as pre-college behavior. At the institution level, private schools were more advantageous than their peers in their students' IRE level.

Table 2 presents the relationships between pre-college CERE, college environment, and quality of relationship and first-year CERE after taking into account both student and institutional characteristics. All together, all the variables explained 20.1% variance of college CERE at student level and 46.4% of the variance at the institution level. Interestingly, the most influential factor on first-year CERE is the school type (coefficient for PRIVATE is 0.30). Pre-college CERE is the second significant factor. However, the cumulative effect of student's college experience (perceived environment and quality of relationship) is 0.32 and is even more important than school type and pre-college CERE.

## **Discussion**

According to theory on regulated behaviors, we distinguished two types of student engagement behaviors. Completely externally regulated engagement (CERE) behaviors are required behaviors, while internally regulated engagement (IRE) are externally expected, but at

the same time driven largely by students' own volition. The purpose of this study is to investigate the consistency of these two kinds of engagement behaviors between high school and the first year of college. Also of interest is how college environmental emphasis and on-campus quality of relationship influence first year CERE and IRE.

Our results showed that both CERE and IRE behaviors are consistent between high school and first year of college. More interestingly, we found IRE behaviors are more stable than CERE behaviors (effect size of high school IRE is higher than the effect size of high school CERE). One explanation is that CERE is less stable because those behaviors are required by institutions and/or teachers. As students entering new institutions and meeting new teachers, their CERE level will change as the requirements change. On the other hand, IRE behaviors are largely driven by students' own violations. Although CERE could be influenced by environmental factors (as discussed later), result shows that engagement behaviors with some extent of internal locus of control do exhibit a considerable level of stability.

Secondly, we found campus environmental emphasis has similar and important impact on both CERE and IRE behaviors. As school's emphasis increases 1 standard deviation, CERE/IRE level will increase about 0.25 standard deviations. This result, together with results from other studies (e.g. Reason, .etc. 2006), demonstrates the important inhibitory or facilitatory role school environment plays in influencing engagement behavior. Furthermore, quality of relationship on campus is found to be an important predictor for IRE behaviors but not for CERE behaviors. In other words, a friendly campus environment fosters IRE behaviors but doesn't closely relate to required engagement behaviors. One important implication of this result is that to facilitate internal regulated engagement (studying, working with groups outside of class, etc), institutions

should continue to focus efforts at building positive, supportive opportunities for students to develop relationships with faculty, peers, and other campus staff.

Another finding of this study is that our models have more predictive ability for IRE behaviors than for CERE behaviors. We explained more than one third of the variance within institutions for IRE with only three important factors (high-school IRE, college environment, and quality of relationship). On the other hand, only one fifth within institution variance is explained by our CERE model. Future studies could try to find other factors that may influence first year CERE behaviors. For instance, students from different major fields may have different CERE levels since some majors may require more engagement than others. Also, full-time and part-time students are very likely to exhibit different CERE behaviors.

Interestingly though, students enrolled at private institutions reported significantly higher correlations with external engagement compared to their peers at public institutions. It maybe those students attending private institutions are finding themselves in situations with more externally driven academic expectations.

All together, we found the distinction between the completely externally and internally regulated engagement behaviors is meaningful since their stability and mechanisms of being influenced by various factors are different. Also, it should be heralded by institutions as good news that they have the opportunity to shape their students behaviors in many ways. The continued efforts and dedication of resources of campuses in their efforts to provide an engaging environment are warranted.

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**Table 1. The effect size and significance level for student and institutional characteristics and the variance explained for each model in college internally regulated engagement**

Independent Variables	Base Model	Step 1 Inst Chars	Step 2 Student Chars & pre-college engagement	Step 3 Environment and quality of relationship
Intercept				
Intercept 2	.06	-0.12**	-0.13***	-0.09**
Private		0.22***	0.17**	0.10*
Size(FY enrollment)		-0.06	-0.05	-0.05
SAT/ACT Average		-0.05*	-0.03	-0.06**
Gender(Male)			-0.07***	-0.09***
SAT/ACT score			-0.05***	-0.03***
Pre-college IRE			0.46***	0.41***
Environment				0.23***
Quality of relationship				0.16***
<i>Variance Component</i>				
Total Variance	1	0.98	0.77	0.64
Variance within institutions	0.95***	0.95***	0.74***	0.63***
Variance between institutions	0.05	0.03	0.02	0.01
Variance between explained		40.4%	52.2%	72.0%
Variance within explained		0.0%	21.8%	33.8%
<i>Model fit index</i>				
-2 Res log likelihood	45684.4	45684.4	36231.6	31849.3
AIC	45688.4	45688.4	36235.6	31853.3
BIC	45693.1	45693.1	36240.4	31858.0

DV: College internally regulated engagement (IRE), ^p<.1, \* p<.05, \*\*p<.01, \*\*\*p<.001

**Table 2. The effect size and significance level for student and institutional characteristics and the variance explained for each model in college completely externally regulated engagement**

Independent Variables	Base Model	Step 1 Inst Chars	Step 2 Student Chars & pre-college engagement	Step 3 Environment and quality of relationship
Intercept				
Intercept 2	0.05	-0.20***	-0.23***	-0.16**
Private		0.39***	0.37***	0.30***
Size(FY enrollment)		0.01	0.01	0.01
SAT/ACT Average		-0.08**	-0.04	-0.05*
Gender(Male)			0.02	0.0001
SAT/ACT score			-0.09***	-0.08***
Pre-college CERE			0.27***	0.23***
Environment				0.23***
Quality of relationship				0.09***
<i>Variance Component</i>				
Total Variance	1	0.96	0.86	0.77
Variance within institutions	0.92***	0.92***	0.82***	0.73***
Variance between institutions	0.08	0.05	0.04	0.04
Variance between explained		40.5%	44.0%	46.4%
Variance within explained		0.0%	10.5%	20.1%
<i>Model fit index</i>				
-2 Res log likelihood	44432.7	44408.4	37111.3	33917.5
AIC	44436.7	44412.4	37115.3	33921.5
BIC	44441.4	44417.1	37120.2	33926.3

DV: College completely external regulated engagement (CERE), ^p<.1, \* p<.05, \*\*p<.01, \*\*\*p<.001