

Title

The Impact of Social Belonging Interventions on Student Retention and Persistence in College

Abstract:

Students' transition to college has long been a topic of research and practical interest among scholars and higher education professionals across the United States. This proposal investigates the impact of randomized social belonging interventions on college student (N=3,134) retention and persistence at a large, Midwest university. The research described in this proposal is part of a large scale longitudinal study on the impact the College Transition Collaborative (CTC) Social Belonging Interventions have on student success and degree obtainment. Results from this study indicate that receiving a belonging intervention and the type of intervention students received (i.e., standard, customized, control) made a statistically significant impact on college student retention and persistence the first two years of college.

Introduction:

Studies have been conducted in search of finding best practices to improve academic outcomes, foster engagement, increase student retention and graduation rates, and promote resilience and grit among entering college students. This study is part of a large scale longitudinal study on the impact social belonging interventions have on student success and degree obtainment. The CTC longitudinal research study on belonging involves multiple institutions across the country; the focus of this study is the retention and persistence of one incoming student cohort at one large, research granting institution in the Midwest. This study explores the effects of CTC interventions on fall 2015 incoming undergraduates' retention and persistence in college. The specific purpose of this study is to investigate if those interventions influence first year retention (fall 2016) and persistence (fall 2017) of students who entered college in fall 2015 after controlling students' ethnicity/race, Estimated Family Contribution (EFC), first generation status, gender, number of credits at entry to college, high school Grade Point Average (GPA), and American College Testing (ACT). Social belonging interventions involved students reading related intervention materials online and responding to both open-ended and closed-ended questions related to their anticipated experience in college. Students' anticipated and self-reported growth in their sense of belonging was measured, as well as their academic success (i.e., GPA) and progress towards degree obtainment (i.e., retention, persistence, and graduation outcomes).

Theoretical Framework:

Creating the conditions necessary to foster student success in college is not a one-size-fits-all proposition. The needs of entering college students vary across a number of factors, including age, race, ethnicity, socioeconomic background, academic preparedness, and generation status. College and university administrators charged with improving student success are constantly on alert to research, evaluate, and implement best practices designed to improve student outcomes. The proliferation of many best practices are often grounded in a variety of theoretical constructs.

The results of belonging research and interventions should be encouraging for higher education professionals, and in consideration of Astin's (1970a, b) Input-Environment-Output conceptual model, the possibility of such an intervention to influence student input such as sense of belonging has a great deal of potential for impacting student success and academic

performance. Astin's (1970a, b) model has often been cited as an important framework for higher education administrators seeking to improve student success. This model asserts that student outcomes (i.e. college GPA, retention, and graduation) are affected by both the college environment (i.e. support services available and utilized) and students' respective inputs (i.e. students' demographic characteristics and academic performance prior to college).

Although many of these student inputs are static, Means and Pyne (2017) found that sense of belonging is dynamic and malleable, and it appears as though timely and thoughtful interventions can influence students' sense of belong and other mindsets. As a first step in influencing mindsets and improving outcomes for students, Han, Farruggia, and Moss (2017) suggest that institutions identify students with low levels of belonging and self-efficacy, and deliver interventions to promote a stronger sense of belonging and more self-efficacious beliefs. Although their study did not include analysis related to first-generation students, the results of Han, Farruggia, and Moss's study (2017) certainly suggest that a strong academic mindset and self-efficacy is correlated with academic performance.

Walton and Cohen (2011) published their findings of a randomized trial intervention aimed at fostering a stronger sense of social belonging among entering college students, particularly among socially marginalized and underrepresented student groups. Grounded in related psychological research which suggests that social isolation and loneliness are detrimental to individuals' well-being, intellectual achievement, and physical health, their objective was to normalize experiences of social adversity and isolation by presenting them as common and temporary, and to "encourage nonthreatening interpretations of adversity" (p. 1448). The results of this study seem to indicate that this intervention shielded underrepresented students from the effects of adversity and social isolation, thereby resulting in improved academic performance, improved self-reported health, and improved well-being of underrepresented students compared to non-marginalized students and marginalized students who did not participate in the intervention.

Wolf, Perkins, Butler-Barns, and Walker (2017) conducted a quasi-experiemental pilot study at a small Midwest community college to investigate the impact of social belonging interventions on student retention and achievement (i.e., grade point average). While lacking a randomized, control sample and investigating community college students, this study utilized a brief social belonging intervention that were observed to have an impact on student success and achievement complementary to Walton and Cohen's (2011) findings. In essence, Walton and Cohen (2011) and Wolf, Perkins, Butler-Barnes, and Walker (2017) utilized brief interventions to increase students' sense of belonging and these social belonging interventions were found to "shore up belonging [to] promote performance and well-being long after their delivery" (Walton & Cohen, 2011, p. 1450-1451).

The results of these studies highlight the possibility of designing interventions to influence student input such as sense of belonging which shows promise for impacting student success and academic performance.

Method:

The purpose of this study is to understand the effects of CTC social belonging interventions on fall 2015 incoming undergraduates' first two years of college (retention and persistence). The following research question guides the study: How do interventions influence students' retention and persistence after controlling students' ethnicity, EFC, generation status, gender, number of credits at entry to college, high school GPA, and ACT?

The fall 2015 incoming undergraduate cohort contained 3,134 students, of these 1,444 students did not receive any social belonging interventions during their pre-college orientation (e.g., Missing). A randomized stratified (i.e., ethnicity/race, gender, and first-generation) sampling method was used to assign the remaining 1,690 students to one of three social belonging intervention conditions (i.e., standard, customized, and control) during their pre-college orientation to the university. Interventions involved students reading related intervention materials and responding to both open-ended and closed-ended questions related to their anticipated experience in college during orientation to the university.

The standardized condition (n=561) provided students with an intervention that was held constant across all institutional members of the research collaborative. The customized condition (n=556) provided students with a university-specific intervention that was contextualized to each particular institution. The control condition (n=573) provided students with generalized version of transition to college materials that would ordinarily be received during university orientation. The standardized and customized interventions are “online reading and writing activities in which students learn from stories from older students about common challenges in the transition to college and how they can overcome these challenges” (“College Transition Collaborative”, n.d., p. 5).

Results:

Of 3,134 students entering college fall 2015, 60.8% are female and 39.2% are male. 24.2% are first-generation college students and 75.8% are continual generation college students. 80.3% are White and 19.7% are Students of Color (e.g. Black, Hispanic, American Indian, Asian, Hawaiian, and 2 or more race/ethnicities). Table 1 shows the descriptive statistics on high school GPA, EFC, number of credits at entry to college, and ACT of the 2015 incoming cohort.

Table 2 shows the number and percentage of participants retained the first year (2016 retained) and the second year (2017 retained) by intervention groups and retention status. Of students entering college fall 2015, 75.1% (n=2355) were retained the first year and 68.6% were retained through their second year of college. The table also shows that 80.6% of students in the customized group are retained the first year, the highest percentage in the four groups. The table also shows that 74.3% of students in the standard group are retained the second year (2017 retained), the highest percentage in the four groups.

Tables 3, 4, and 5 illustrate first (2016 retained) and second (2017 retained) retention by gender, ethnicity/race, and first generation status by condition. The standard condition appears to have the largest impact on the fall 2016 and 2017 retention of males (86.3%; 78.9%), white (80.8%; 76.7%), and first generation students (76.2%; 69.2%). While the retention rates of female and students who are not first generation was higher in fall 2016 for the customized condition (79.1%; 83.5%), for fall 2017 the standard condition retention rates were highest for both groups (72.3%; 76.1%). The retention rates for students of color for both fall 2016 and 2017 was highest within the customized condition (81.0%; 75%).

A binomial logistic regression was performed to ascertain the effects of interventions after controlling for students’ ethnicity, EFC, first generation status, gender, number of credits at entry to college, high school GPA, and ACT on the likelihood that students were retained the first year. The logistic regression model was statistically significant, $\chi^2(10) = 228.688$, $p < .0001$. The model explained 10.4% (Nagelkerke R^2) of the variance in retention 2016 and correctly classified 74.9% of cases. Of the eight predictor variables five were statistically significant ($p < 0.05$): gender, high school GPA, first generation, number of credits at

entry to college, and intervention. Regression coefficients indicates that missing intervention (control group as the reference group) decreases the likelihood of retention (see Table 6).

Binomial logistic regression was performed to ascertain the effects of CTC Belonging interventions after controlling for ethnicity, EFC, first generation status, gender, number of credits at entry to college, high school GPA, and ACT on the likelihood that students were retained the second year. The logistic regression model was statistically significant, $\chi^2(10) = 234.729$, $p < .0001$. The model explained 10.1% (Nagelkerke R^2) of the variance in retention in 2016-2017 academic year and correctly classified 68.9% of cases. Of the eight predictor variables five were statistically significant ($p < 0.05$): gender, high school GPA, first generation, number of credits at entry to college, and intervention. Regression coefficients indicates that missing intervention (control group as the reference group) decreases the likelihood of retention (see Table 7).

For both fall 2016 and 2017, the missing intervention generated an Odds Ratio of 0.653 and 0.714 (respectively), which indicates that for students in the control groups, their odds of being retained is about 1.5 (fall 2016) and 1.3 (fall 2017) times higher than that of students who received no intervention.

Discussion:

In summary, no statistically significant effect of customized and standard interventions (control group as reference group) on students' retention in either the first or second year is found based on the binomial logistic regression analysis. However, compared to students who received controlled intervention, the likelihood of being retained for students who did not received any intervention had statistically significant decreased in both years. In addition, the descriptive statistics show more students in customized and standard groups are retained than the control and missing intervention group in the two academic years. Furthermore, it appears that while more students within the customized intervention were retained in the first year (80.6%), students who received the standard condition had the highest rate of second year retention (74.3%). Results also indicate that retention rates of students within different groups (i.e., gender, ethnicity/race, first generation) were highest within the standard and customized conditions. Additional analysis of fall 2015 cohort data and replicating these analyses with additional cohorts is planned to investigate the impact of intervention type on retention, persistence, and degree obtainment.

This study aims to advance the research and understanding of the impact of pre-college interventions and the relationship and influence of sense of belonging on academic outcomes of college students and lay the foundation for future longitudinal and cohort investigations of the impact that CTC Belonging Interventions have on the success and degree obtainment of different student groups (i.e., ethnicity/race, gender, first generation status). It offers insight on important and wide-ranging issues related to fostering and encouraging a sense of belonging among students who are often marginalized on college campus. Given this research and the positive effects of this type of intervention, university administrators should give strong consideration to implementing these types of initiatives and messaging strategies, and use them to complement other important work regarding fostering inclusive communities.

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Tables

Table 1

Descriptive Statistics on High School GPA, EFC, Number of Credits at Entry to College, and ACT (N = 3134)

	Minimum	Maximum	Mean	Std. Deviation
High School GPA	1.851	5	3.323	0.526
EFC	0	735,065	16,099.149	27,947.314
Number of credits at entry to college	0	74	5.8	11.011
ACT	14	35	22.644	3.640

Table 2

Percentage of Participants by Condition and Retention Status (N = 3134)

Condition	N	2016 Retained		2017 Retained	
		n	%	n	%
Missing (1)	1444	1012	70.1	916	63.4
Standard(2)	561	444	79.1	417	74.3
Customized(3)	556	448	80.6	405	72.8
Control (4)	573	451	78.7	411	71.7
Total	3134	2355	75.1	2149	68.6

Table 3

Percentage of Participants Retained 2016 and 2017 by Condition and Gender

Condition	Female				Male			
	2016 Retained		2017 Retained		2016 Retained		2017 Retained	
	n	%	n	%	n	%	n	%
Missing	545	71.0	497	64.7	467	69.1	419	62.0
Standard	293	75.9	279	72.3	151	86.3	138	78.9

Customized	291	79.1	60	70.7	157	83.5	145	77.1
Control	298	78.0	275	72.0	153	80.1	136	71.2
Total	1427	74.9	1311	68.9	928	75.4	838	68.1

Table 4

Percentage of Participants Retained 2016 and 2017 by Condition and Ethnicity/Race

	White				Students of Color			
	2016 Retained		2017 Retained		2016 Retained		2017 Retained	
Condition	n	%	n	%	n	%	n	%
Missing	826	73.2	753	66.8	186	58.9	163	51.6
Standard	374	80.8	355	76.7	70	71.4	62	63.3
Customized	367	80.5	330	72.4	81	81.0	75	75.0
Control	376	79.8	345	73.2	75	73.5	66	64.7
Total	1943	77.2	1783	70.8	412	66.9	366	59.4

Table 5

Percentage of Participants Retained 2016 and 2017 by Condition and First Generation Status

	First-Generation				Not First-Generation			
	2016 Retained		2017 Retained		2016 Retained		2017 Retained	
Condition	n	%	n	%	n	%	n	%
Missing	212	63.7	185	55.6	800	72.0	731	65.8
Standard	109	76.2	99	69.2	335	80.1	318	76.1
Customized	103	72.0	92	64.3	345	83.5	313	75.8
Control	100	71.9	90	64.7	351	80.9	321	74.0
Total	524	69.1	466	61.5	1831	77.1	1683	70.8

Table 6

Coefficients for Variables Predicting Retention 2015-2016 (N=3134)

<i>Variable</i>	<i>B</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Odds Ratio</i>
<i>Missing Intervention</i>	-.427	12.266	1	<.001	.653
<i>Standard Intervention</i>	.015	.010	1	.921	1.015
<i>Customized Intervention</i>	.119	.609	1	.435	1.126
<i>Gender (Male)</i>	.287	9.740	1	.002	1.332
<i>First Gen. (Non)</i>	.326	11.124	1	.001	1.385
<i>HS_GPA</i>	.938	79.086	1	<.001	2.555
<i>Credits Entry</i>	.016	8.969	1	.003	1.016
<i>EFC</i>	.000	1.915	1	.166	1.000
<i>ACT</i>	-.013	.723	1	.395	.987
<i>Ethnicity (White)</i>	.187	3.100	1	0.078	1.205
<i>Constant</i>	-2.084	34.050	1	<.001	.124

Table 4

Coefficients for Variables Predicting Retention 2016-2017 (N=3134)

<i>Variable</i>	<i>B</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Odds Ratio</i>
<i>Missing Intervention</i>	-.337	9.034	1	.003	.714
<i>Standard Intervention</i>	.132	.916	1	.339	1.141
<i>Customized Intervention</i>	.063	.214	1	.644	1.065
<i>Gender (Male)</i>	.198	5.392	1	.020	1.219
<i>First Gen. (Non)</i>	.344	13.994	1	<.001	1.411
<i>HS_GPA</i>	.898	83.082	1	<.001	2.455
<i>Credits Entry</i>	.011	6.090	1	.014	1.011
<i>EFC</i>	.000	1.359	1	.244	1.000
<i>ACT</i>	-.005	.120	1	.729	.995

<i>Ethnicity (White)</i>	<i>.189</i>	<i>3.538</i>	<i>1</i>	<i>.060</i>	<i>1.208</i>
<i>Constant</i>	<i>-2.491</i>	<i>56.012</i>	<i>1</i>	<i><.001</i>	<i>.083</i>