Correlates of College Student Engagement: An Internal Replication

Timothy K. Daugherty, Kristen N. Hoffner, and Alexandra J. Light

Psychology Department, Missouri State University, Springfield, MO, USA

ARTICLE INFO

ABSTRACT

Though being behaviorally active in the classroom is associated with attractive outcomes, many college students are disengaged. This study examines potential correlates of classroom engagement. Across two waves of data collection, with the second wave providing an internal replication challenge, three variables were consistently related to active classroom engagement. Higher self-esteem, less texting while driving, and lower externally oriented thinking predicted self-report of classroom engagement. Together, the three variables accounted for sixteen percent of the variance in engagement. Adding a fourth variable, gender, led to twenty percent of the variance in engagement being explained.

1. Introduction

High percentages of success in life are attributed, in popular aphorisms, to "just showing up." In the college classroom, however, what students actively do after they show up appears to make a profound difference, and the present study seeks to identify variables that are consistently related to such classroom engagement. When college students are behaviorally active in the classroom, learning and personal development may be enhanced (Wilcox, McQuay, Blackstaffe, Perry, & Hawe, 2016). Classroom engagement influences development of cognitive skills (Kim & Lundberg, 2015), academic achievement (Handelsman, Briggs, Sullivan, & Towler, 2005; Zumbrunn, McKim, Buhs, & Hawley, 2014) and retention and graduation (Braxton, Jones, Hirschy, & Hartley, 2008). Yet, many college students are disengaged in classrooms, and instructors struggle to find ways to connect with them (Broeckelman-Post, Johnson, & Schweback, 2016).

The problem appears to have roots going back to at least secondary school. In high schools, perhaps 40-60% of students are frequently disengaged – not attentive, not effortful, and not interested (National Research Council, 2004). Conner and Pope (2013) suggest that these self-described "robo-students" are often simply "going through the motions" or "doing school" (p. 1426). If anything, the problem of disengagement might accelerate in college. Fritschner (2000) observed 32 college classes multiple times and found that, on average, approximately 20% of the students account for 80% of the classroom discussion activity and that less than a third of students ever participate in a given session.

For the present study, active academic engagement is defined as the self-report of often speaking up in class – asking questions, answering questions, and making comments (Harris, Hines, Kelly, Williams, & Bagley, 2014; Reason, Terenzini, & Domingo, 2006). Several putative correlates are explored in each of two waves of data collection, with the second wave treated as an internal replication. The scholarship of teaching and learning may be particularly susceptible to replication issues (see Ionnidis, 2005), given the relative flexibility in designs

---

http://dx.doi.org/10.17220/ijpes.2020.01.001

and measures and given that the complexity of the learning environment is difficult to fully represent in a study. Thus, this internal replication seeks to identify reliable correlates from among the putative candidates reviewed in the following paragraphs.

1.1. Gender

By the time students reach college, males are more likely than females to be behaviorally active in the classroom, but the relationship between gender and academic engagement appears to be influenced by developmental context. Kindermann (2007) studied students in 6th grade and found, across all social groups, the female students were more active academically than the male students. Roorda, Koomen, Spilt, and Oort (2011) conducted a meta-analysis and reported that among preschool to high school students, females were more academically engaged than males. However, the pattern appears to be different in college. Brint, Cantwell, and Hanneman (2007) found that male college students were more academically engaged than female college students across a range of degree programs. Kim and Sax (2009) studied student-faculty interactions in college and similarly found that males interacted and engaged more with faculty during lectures (though the effect went in the other direction for one-to-one interactions beyond the classroom). Eddy, Brownell, and Wenderoth (2014) found that, even in college classes in which female students outnumbered male students, the female students participated at a lower rate than the male students. We predict, in the present study, that male college students will be more actively engaged in the classroom than female college students.

1.2. Race

As with gender, racial identity may have a complex relationship with engagement. Minority student enrollment in college has increased dramatically since the 1960s (Fischer, 2007), but minority students may still find themselves far outnumbered in many classrooms. In some cases, they are placed in a potentially uncomfortable position of being the spokesperson or representative for an assumed set of experiences (Howard-Hamilton, 2000). Lleras (2008) found that minority students were perceived by their high school teachers to be less engaged than non-Hispanic White students, but the size and trajectory of the gap varied somewhat with the diversity of the student body. In college, the relationship between race and engagement may vary by race and features of the environment (Kirkpatrick-Johnson, Crosnoe, & Elder, 2001) and may interact with other variables like gender and type of institution (Wood, 2014). In a review of the literature, Rovai, Gallien, and Wighting (2005) suggest that minority students may be led to withdraw – at least mentally – from learning environments that are inconsistent with their expectations and needs. In the present study, we predict that majority-race students will report more active engagement in the classroom than will minority-race students.

1.3. Self-Esteem and Attachment

Researchers have observed academic correlates of low self-esteem, finding that individuals with low self-esteem tend to avoid oral participation in the classroom (Stoeckli, 2009). In an early study, Morrison and Thomas (1975) studied 78 college students and found that low self-esteem was associated with lower participation and distant chosen seating. The direction of causality is often assumed to be such that high self-esteem supports participation, but Brennan (1985) also found support for the possibility that participation contributes to the development of self-esteem. Whatever might be the nature of causation, we predict that active classroom engagement will be associated with self-esteem.

Weaver and Qi (2005) noted that active classroom participation "can be seen as signaling a student's attachment to the class and to others within it" (p. 575), and so it seems reasonable to explore the possible contribution of long-term attachment style to academic engagement. Strong attachment to parents seems, for example, to help students cope with some academic challenges (Kenny & Donaldson, 1991). Thus, we predict that secure attachment will be associated more active engagement in the classroom.

1.4. Alexithymia

Alexithymia is a multidimensional construct that includes difficulty identifying feelings, difficulty describing emotions to others, a restricted imagination, and an externally oriented way of thinking (Bagby, Parker, & Taylor, 1994). If emotional awareness and integrative habits of thinking are among the building blocks of

academic engagement, then alexithymia might inhibit academic success. Parker, Austin, Hogan, Wood, and Bond (2005) studied 707 students making the transition from high school to college and found that alexithymic students performed more poorly than non-alexithymic students in the first year of college. In a smaller study, Kerr, Johnson, Gans, and Krumrine (2004) found that alexithymia predicted fall-semester academic adjustment among 56 first-year college students. We predict that higher alexithymia will be associated with lower active classroom engagement.

1.5. Executive Functioning and Mindfulness

Executive cognitive functioning and mindfulness are integrally connected to academic performance. Executive functions comprise "cognitive abilities for adaptive functioning, allowing for behavior that is more goal-oriented, flexible, and autonomous" (Spinella, 2005, p. 650). Mindfulness refers to "being attentive to and aware of what is taking place in the present'' (Brown & Ryan, 2003, p. 822). Both constructs have also been correlated with a problematic behavior among college students and others: texting while driving. Hayashi, Foreman, Friedel, and Wirth (2018), for example, found lower levels of self-reported cognitive functioning among those who reported engaging in dangerous driving behaviors, including texting while driving. Those who report texting while driving have lower reported mindfulness than those who do not (Feldman, Greeson, Renna, & Robbins-Monteith, 2011). Texting while driving, furthermore, appears to be a harbinger of other behavioral deficits; Seiler (2015) found that texting while driving predicted inattentive behaviors in meetings and at work. Thus, a simple self-report of texting behavior is predicted to be correlated with academic disengagement in the classroom.

In the present study, data were collected in two waves. Rather than immediately combining the wave data into one set for analyses, we sought to treat the second wave as a replication attempt. The procedure and sampling method were similar, and, therefore, trustworthy results should accrue similarly in the second wave. It was anticipated that active engagement would be more evident in male students, majority race students, students with high self-esteem, students with secure attachment styles, students scoring lower in alexithymia, and students who text less while driving.

2. Method

2.1. Participants

The first-wave sample included 220 college students (136 female, 84 male), with an average age of 19.1 years (SD = 0.81). 84.5% of the first-wave sample identified as non-Hispanic Caucasian. The second-wave sample included 331 college students (180 female, 151 male), with an average age of 19.1 years (SD = 1.02). 85.8% of the second-wave sample identified as non-Hispanic Caucasian. All participants provided informed consent and completed an online protocol delivered through Qualtrics survey software.

2.2. Measures

The protocol included a measure of active engagement, the Toronto Alexithymia Scale (Bagby et al., 1994), a short-form of the Trent Relationship Scales Questionnaire (Scharfe, 2016), the Single-Item Self Esteem measure (Robins, Hendin, & Trzesniewski, 2001), a measure of texting while driving, and single items for measuring self-reported demographic variables.

2.2.1. Engagement Status

Engagement status was measured with a single, self-report item. On a scale from 1 ("Not true of me") to 7 ("True of me"), participants responded to the following statement: "I speak up in my college classes (often asking questions, answering questions, or making comments)." Based on responses, participants were divided into the Passive Group (responses 1 or 2) and Active Group (responses 5, 6, or 7).

2.2.2. Toronto Alexithymia Scale

The Toronto Alexithymia Scale (TAS; Bagby et al., 1994) is self-report scale with twenty items arrayed across three factorially derived subscales: difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented thinking (EOT). The TAS has been found to have strong reliability (internal and retest) and to be maintain its psychometric properties when administered online (Bagby, Ayearst, Morariu, Watters,

& Taylor, 2014). The total scale has an internal consistency of .80 when administered online, with the subscale scores having internal consistencies ranging from .55 to .82 (Bagby et al., 2014).

2.2.3 Trent Relationship Scales Questionnaire

The Trent Relationship Scales Questionnaire (T-RSQ; Scharfe, 2016) includes forty items selected to cover four attachment styles: secure, fearful, preoccupied, and dismissing. Scharfe (2016) found support for both the reliability and construct validity of the full T-RSQ. Concerned about the impact of lengthy scales on participant compliance, we shortened the scale to twelve items (three items per attachment style). Thus, the secure attachment variable in this study was calculated by adding the responses from three items, after reverse-scoring the one reverse-coded item. The original ten-item scale has an internal consistency of .77 (Scharfe, 2016), and that figure likely forms an upper estimate for the internal consistency of the shortened scale.

2.2.4 Single-Item Self Esteem

The Single-Item Self Esteem measure (SISE; Robins, Hendin, & Trzesniewski, 2001) measures self-esteem with one item; participants respond to the statement, "I have high self-esteem," on a scale from 1 (not very true of me) to 5 (very true of me). While not necessarily a good choice with young children, the SISE has been found to have construct validity findings that are "nearly identical" to the most commonly administered scale, the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Test-retest reliability for the SISE is .75 (Robins et al., 2001).

2.2.5 Texting while Driving

Texting while driving was measured with a single self-report item. Students were asked to respond on a five-point scale from "never" to "every time I drive" to the question, "How often do you text while driving?"

2.3 Data Analysis

We performed chi-square tests and independent sample t-tests to examine our hypotheses in each wave of data. Consistently significant results across the two waves were considered to be indications of replicable correlates of engagement. To examine the independence of and overall contribution of the identified variables, we conducted a binary logistic regression with engagement level as the dichotomous dependent variable and stepwise introduction of the identified variables. All statistical analyses were conducted with IBM's SPSS (version 24).

3. Results

Results from the initial sets of analyses of each data wave are shown in Tables 1 and 2. Table 1 presents the crosstabulations and chi-square statistics for engagement status in terms of gender and race. Table 2 presents the descriptive statistics and t-test results for the alexithymia factors, secure attachment, self-esteem, and texting behavior broken down by engagement status.

In the first wave, the passive group included 101 students and the active group included 40 students. Engagement level was not significantly related to gender ($\chi2(1) = 2.47$, $p = .084$) or race ($\chi2(1) = .00$, $p = .584$). Active students, however, differed significantly from passive students by indicating higher self-esteem (t (139) = 3.22, $p = .001$), more secure attachment (t (139) = 2.77, $p = .003$), less inclination to text while driving (t (139) = 2.87, $p = .003$), and lower levels of two factors in alexithymia – externally-oriented thinking (t (139) = 2.56, $p = .006$) and difficulty describing feelings (t (139) = 2.46, $p = .008$). The third alexithymia factor, difficulty identifying feelings, did not differ significantly between the groups (t (139) = 0.71, $p = .240$).

In the second wave, the passive group included 143 students and the active group included 66 students. As in the first wave, engagement level was not significantly related to race ($\chi2(1) = .863$, $p = .241$), but the active group was more likely to be male ($\chi2(1) = 3.53$, $p = .042$). Active students differed significantly from passive students by indicating higher self-esteem (t (207) = 3.13, $p = .001$), less inclination to text while driving (t (207) = 2.85, $p = .003$), and lower levels of externally-oriented thinking (t (207) = 1.70, $p = .045$). However, difficulty identifying feelings (t (207) = .34, $p = .368$), difficulty describing feelings (t (207) = .23, $p = .411$), and secure attachment (t (207) = .42, $p = .337$) did not distinguish the two groups in the second wave.

Table 1. Crosstabulations of Gender and Race by Engagement with Chi-Square Results in Each Wave

	Passive	Active	χ2	p value[a]
Wave 1				
Gender			2.47	.084
Female	65	20		
Male	36	20		
Race				
Majority	86	34	0.00	.584
Minority	15	6		
Wave 2				
Gender			3.53	.042
Female	87	31		
Male	56	35		
Race				
Majority	121	59	0.86	.241
Minority	22	7		

[a] Fisher's Exact One-Sided Significance

Table 2. Independent Sample t-tests in Each Wave

	Passive		Active			
	Mean	SD	Mean	SD	*t* value	*p* value
Wave 1						
Alexithymia – DDF	2.95	0.93	2.53	0.94	2.46	.008
Alexithymia – DIF	2.33	0.87	2.21	0.89	0.71	.240
Alexithymia – EOT	2.48	0.54	2.21	0.62	2.56	.006
Secure Attachment	1.44	0.84	1.87	0.80	2.77	.003
Self-Esteem	4.16	1.33	4.98	1.42	3.22	.001
Texting Behavior	3.49	1.40	2.73	1.47	2.87	.003
Wave 2						
Alexithymia – DDF	2.84	0.89	2.81	0.91	0.23	.411
Alexithymia – DIF	2.29	0.81	2.25	0.87	0.34	.368
Alexithymia – EOT	2.52	0.47	2.39	0.54	1.70	.045
Secure Attachment	1.58	0.76	1.63	0.81	0.42	.337
Self-Esteem	3.89	1.58	4.64	1.68	3.13	.001
Texting Behavior	3.41	1.50	2.77	1.47	2.85	.003

Thus, three variables were consistently found across two waves to be significantly related to engagement level. To examine the independence of and overall contribution of these variables, we conducted a binary logistic regression with engagement level as the dependent variable and stepwise introduction of self-esteem, texting while driving, and externally oriented thinking. In binary logistic regression, the dependent variable is binary rather than continuous (as in simple or multiple linear regression) and the predictor variables can be either continuous or categorical. Results are shown in Table 3. All three variables made significant contributions to the prediction of engagement; the resulting model was statistically significant (χ^2 (3) = 43.11, p < .001) and explained a little over 16% of the variance in engagement (Nagelkerke R^2 = .164). The overall classification success of the model was 73.4% (almost a four-point rise over chance-level prediction at 69.7%). Higher levels of self-esteem, lower levels of externally oriented thinking, and less texting while driving predicted a higher likelihood of active engagement. Estimate plots of each predictor with the dependent variable are consistent with a linear relationship, and intercorrelations among the predictors are low (r < .20).

Table 3. Binary Logistic Regression Analysis Predicting Active Versus Passive Engagement with Stepwise Introduction of Three Variables

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Self-Esteem	.365	.085	13.308	1	<.001	1.441
Texting While Driving	-.333	.086	14.868	1	<.001	.717
Externally Oriented Thinking	-.628	.242	6.725	1	.010	.534
Model	χ^2 (3) = 43.11, p < .001		Nagelkerke R^2 = .164			

Since the statistical tests for gender approached significance in each wave, a second binary logistic regression was run with gender as a fourth variable (a dichotomous factor: male or female). All four variables made significant contributions to the prediction of engagement level and entered the prediction equation per the forward stepwise procedure; the resulting model was statistically significant (χ^2 (4) = 53.21, p < .001) and explained 20% of the variance in engagement (Nagelkerke R^2 = .200). The overall classification success of the model was 74.6% (almost a five-point rise over chance-level prediction at 69.7%, and a little over one-point rise occurs with the addition of gender). Higher levels of self-esteem, lower levels of externally oriented thinking, less texting while driving, and male gender predicted a higher likelihood of active engagement.

Table 4. Binary Logistic Regression Analysis Predicting Active Versus Passive Engagement with Stepwise Introduction of Four Variables

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Self-Esteem	.346	.087	15.984	1	<.001	1.414
Texting While Driving	-.368	.089	17.233	1	<.001	.692
Externally Oriented Thinking	-.779	.254	9.386	1	.002	.459
Gender (dichotomous factor)	.828	.264	9.858	1	.002	2.289
Model	χ^2 (3) = 43.11, p < .001		Nagelkerke R^2 = .164			

4. Discussion

Across two waves of data collection, three variables were consistently related to active academic engagement. Higher self-esteem, lower externally oriented thinking, and less texting while driving predicted engagement (self-report of speaking up often in class – asking questions, answering questions, and making comments). Together, the three variables accounted for sixteen percent of the variance in engagement. Adding a fourth variable, gender, led to twenty percent of the variance in engagement being explained.

Given that engagement in the classroom is related to a number of positive academic and personal outcomes (Braxton et al., 2008; Handelsman et al., 2005; Kim & Lundberg, 2015; Wilcox et al., 2016; Zumbrunn et al., 2014), identifying variables that are consistently connected to engagement might be an important step toward

facilitating targeted interventions by instructors. Already, a number of researchers are exploring engagement-eliciting pedagogy (e.g., Downs & Wilson, 2015), but those efforts may be enhanced by greater understanding of learner characteristics (Rocca, 2010). The scholarship of teaching and learning is catalyzed when our starting points are not only theoretically logical but also predictably impactful. Concerns about the replicability of research findings could be a barrier to establishing engagement-eliciting pedagogy. The present study detects relatively trustworthy relationships by treating data waves as an internal replication. Though not perfect, this approach seems more reasonable than potentially highlighting chance relationships magnified by the power of large samples and null hypothesis testing.

Classroom disengagement appears to be common, both in secondary school (National Research Council, 2004) and college (Fritschner, 2000). In the present study, the passive group of students was more than twice the size of the active group of students. Based on the present findings, we would argue for renewed attention to developing gender-sensitive classroom strategies that strengthen self-esteem, encourage mindful self-regulation, and promote deep learning.

Significant methodological limitations, however, mark the present study, and next steps include replication under different conditions. Though the samples were large, all participants were drawn from one university in one section of one country, and so it is not clear that these results will necessarily generalize to other settings. As noted by Heoa, Leppisaarib, and Lee (2018), the learning culture may have distinct features from one country to another. Even within a country, students coming from different national and cultural backgrounds may have different expectations and inclinations (Hsu & Huang, 2017). Furthermore, this study's reliance on self-report for all variables leaves open the possibility that shared method variance may have inflated or distorted relationships. Relationships, on the other hand, might have been obscured by the use of a single self-reported item for measuring active engagement (see Schwarz, 1999) and by the use of an abbreviated version of the T-RSQ.

The present study explained a maximum of twenty percent of the variance in active engagement. In addition to other person variables to be identified in future research, predictors of engagement are also likely to come from the environment (the classroom, peers, instructor, pedagogical structures, etc.). Future research should examine diverse students in multiple national and cultural contexts, using varied measurement techniques. The present study examined monotonic relationships, but future research may need to consider curvilinear possibilities like the findings of Hu and Kuh (2002), whose results suggested that male gender might be associated with the extremes of engagement (extremely low or extremely high). Sure-footed and culturally specific efforts to identify reliable correlates of active engagement might hasten the development of pedagogies that promote student learning and development.

References

Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale-I: Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, *38*, 23–32. doi: 10.1016/0022-3999(94)90005-1

Bagby, R. M., Watters, C., Ayearst, L. E., Morariu, R. A., & Taylor, G. J. (2014). The internet administration version of the 20-item Toronto Alexithymia Scale. *Psychological Assessment*, *26*, 16–22. doi: 10.1037/a0034316.supp

Braxton, J. M., Jones, W. A., Hirschy, A. S., & Hartley, H. V., III. (2008). The role of active learning in college student persistence. *New Directions for Teaching and Learning*, *115*, 71–83. doi: 10.1002/tl.326

Brennan, A. (1985). Participation and self-esteem: A test of six alternative explanations. *Adolescence*, *20*, 445–466.

Brint, S., Cantwell, A. M., & Hanneman, R. A. (2008). The two cultures of undergraduate academic engagement. *Research in Higher Education, 49*, 383-402. doi: 10.1007/s11162-008-9090-y

Broeckelman-Post, M., Johnson, A., & Schweback, J. R. (2016). Calling on students using notecards: Engagement and countering communication anxiety in large lecture. *Journal of College Science Teaching, 45*, 27-33. doi: 10.2505/4/jcst16_045_05_27

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*, 822–848. doi: 10.1037/0022-3514.84.4.822

Conner, J., & Pope, D. (2013). Not just robo-students: Why full engagement matters and how   schools   can promote it. *Journal of Youth & Adolescence*, *42*, 1426–1442. doi: 10.1007/s10964-013-9948-y

Downs, C. T., & Wilson, A. L. (2015). Shifting to active learning: Assessment of a first-year biology course in South Africa. *International Journal of Teaching and Learning in Higher Education*, *27*, 261–274. Retrieved from https://eric.ed.gov/?id=EJ1082860

Eddy, S. L., Brownell, S. E., & Wenderoth, M. P. (2014). Gender gaps in achievement and participation in multiple introductory biology classrooms. *CBE - Life Sciences Education*, *13*, 478–492. doi: 10.1187/cbe.13-10-0204

Feldman, G., Greeson, J., Renna, M., & Robbins-Monteith, K. (2011). Mindfulness predicts less texting while driving among young adults: Examining attention- and emotion-regulation motives as potential mediators. *Personality and Individual Differences*, *51*, 856–861. doi: 10.1016/j.paid.2011.07.020

Fischer, M. J. (2007). Settling into campus life: Differences by race/ethnicity in college involvement and outcomes. *Journal of Higher Education, 78*, 125–161. doi: 10.1080/00221546.2007.11780871

Fritschner, L. M. (2000). Inside the undergraduate college classroom: Faculty and students differ on the meaning of student participation. *Journal of Higher Education*, *71*, 342–362. doi: 10.2307/2649294

Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A measure of college student course engagement. *Journal of Educational Research*, *98*, 184–192. doi: 10.3200/JOER.98.3.184-192

Harris, P., Hines, E., Kelly, D., Williams, D., & Bagley, B. (2014). Promoting the academic engagement and success of black male student-athletes. *The High School Journal, 97*, 180-195. doi: 10.1353/hsj.2014.0000

Hayashi, Y., Foreman, A. M., Friedel, J. E., & Wirth, O. (2018). Executive function and dangerous driving behaviors in young drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, *52*, 51–61. doi: 10.1016/j.trf.2017.11.007

Heeok, H., Leppisaari, I., & Lee, O. (2018) Exploring learning culture in Finnish and South Korean classrooms. *The Journal of Educational Research*, *111*, 459-472. doi: 10.1080/00220671.2017.1297924

Howard-Hamilton, M. F. (2000). Creating a culturally responsive learning environment for African American students. *New Directions for Teaching and Learning* (No. 82, pp. 55-65). San Francisco: Jossey-Bass. doi: 10.1002/tl.8205

Hsu, C. F., & Huang, I. T. (2017). Are international students quiet in class? The influence of teacher onfirmation on classroom apprehension and willingness to talk in class. *Journal of International Students*, *7*, 38–52. Retrieved from https://eric.ed.gov/?id=EJ1125721

Hu, S., & Kuh, G. D. (2002). Being (dis)engaged in educationally purposeful activities: The influences of student and institutional characteristics. *Research in Higher Education*, *43*, 555. doi: 10.1023/A:1020114231387

Ioannidis, J. P. A. (2005). Why most published research findings are false. *PLoS Medicine*, *2*, e124. doi: 10.1080/09332480.2019.1579573

Kenny, M. E., & Donaldson, G. A. (1991). Contributions of parental attachment and family structure to the social and psychological functioning of first-year college students. *Journal of Counseling Psychology*, *38*, 479–486. doi: 10.1037/0022-0167.38.4.479

Kerr, S., Johnson, V. K., Gans, S. E., & Krumrine, J. (2004). Predicting adjustment during the transition to college: Alexithymia, perceived stress, and psychological symptoms. *Journal of College Student Development*, *45*, 593–611. doi: 10.1353/csd.2004.0068

Kim, Y. K., & Lundberg, C. A. (2016). A structural model of the relationship between student–faculty interaction and cognitive skills development among college students. *Research in Higher Education*, *57*, 288–309. doi: 10.1007/s11162-015-9387-6

Kim, Y., & Sax, L. (2009). Student-faculty interaction in research universities: differences by student gender, race, social class, and first-generation status. *Research in Higher Education, 50*, 437-459. doi: 10.1007/s11162-009-9127-x

Kindermann, T.A. (2007). Effects of naturally existing peer groups on changes in academic engagement in a cohort of sixth graders. *Child Development, 78*, 1186-1203. doi: 10.1111/j.1467-8624.2007.01060.x

Kirkpatrick-Johnson, M., Crosnoe, R., & Elder, G. H. (2001). Students' attachment and academic engagement: The role of race and ethnicity. *Sociology of Education, 74*, 318-340. doi: 10.2307/2673138

Lleras, C. (2008). Race, racial concentration, and the dynamics of educational inequality across urban and suburban schools. *American Educational Research Journal, 45*, 886-912. doi: 10.3102/0002831208316323

Maxwell, S. E., Lau, M. Y., & Howard, G. S. (2015). Is psychology suffering from a replication crisis? What does "failure to replicate" really mean? *American Psychologist*, *70*, 487–498. doi: 10.1037/a0039400

Morrison, T. L., & Thomas, M. D. (1975). Self-esteem and classroom participation. *Journal of Educational Research*, *68*, 374–377. doi: 10.1080/00220671.1975.10884805

National Research Council. (2004). Engaging schools: Fostering high school students' motivation to learn. Washington, DC: The National Academies Press. Retrieved from https://www.nap.edu/read/10421

Parker, J. D. A., Austin, E. J., Hogan, M. J., Wood, L. M., & Bond, B. J. (2005). Alexithymia and academic success: Examining the transition from high school to university. *Personality and Individual Differences*, *38*, 1257–1267. doi: 10.1016/j.paid.2004.08.008

Reason, R. D., Terenzini, P. T., & Domingo, R. J. (2006). First things first: Developing academic competence in the first year of college. *Research in Higher Education*, *47*, 149–175. doi: 10.1007/s11162-005-8884-4

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, *27*, 151–161. doi: 10.1177/0146167201272002

Rocca, K. A. (2010). Student participation in the college classroom: An extended multidisciplinary literature review. *Communication Education*, *59*, 185–213. doi: 10.1080/03634520903505936

Roorda, D. L., Koomen, H. M. Y., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research, 81*, 493–529. doi: : 10.3102/0034654311421793

Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton, NJ: Princeton University Press.

Rovai, A. P., Gallien, L. B., Jr, & Wighting, M. J. (2005). Cultural and interpersonal factors affecting african american academic performance in higher education: A review and synthesis of the research literature. *Journal of Negro Education*, *74*, 359–370. Retrieved from https://www.jstor.org/stable/40026735

Scharfe, E. (2016). Measuring what counts: Development of a new four-category measure of adult attachment. *Personal Relationships, 23*, 4–22. doi: 10.1111/pere.12105

Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist*, *54*, 93–105. doi: 10.1037/0003-066X.54.2.93

Seiler, S. J. (2015). Hand on the wheel, mind on the mobile: An analysis of social factors contributing to texting while driving. *CyberPsychology*, *Behavior & Social Networking*, *18*, 72–78. doi: 10.1089/cyber.2014.0535

Spinella, M. (2005). Self-rated executive function: Development of the executive function index. *International Journal of Neuroscience, 115*, 649–667. doi: 10.1080/00207450590524304

Stoeckli, G. (2009). The role of individual and social factors in classroom loneliness. *Journal of educational Research*, *103*, 28–39. doi: 10.1080/00220670903231169

Weaver, R. R., & Qi, J. (2005). Classroom organization and participation: College students' perceptions. *Journal of Higher Education*, *76*, 570-601. doi: 10.1353/jhe.2005.0038

Wilcox, G., McQuay, J., Blackstaffe, A., Perry, R., & Hawe, P. (2016). Twenty percent of the variance between students in academic engagement is explained by grade level, gender, family affluence, anxiety, and social support. *School Psychology Forum*, *10*, 397–409. Retrieved from https://www.nasponline.org/publications/periodicals/spf/volume-10/volume-10-issue-4-(winter-2016)/twenty-percent-of-the-variance-between-students-in-academic-engagement-is-explained-by-grade-level-gender-family-affluence-anxiety-and-social-support

Wood, J. L. (2014). Apprehension to engagement in the classroom: perceptions of Black males in the community college. *International Journal of Qualitative Studies in Education*, *27*, 785–800. doi: 10.1080/09518398.2014.901575

Zumbrunn, S., McKim, C., Buhs, E., & Hawley, L. R. (2014). Support, belonging, motivation, and engagement in the college classroom: A mixed method study. *Instructional Science: An International Journal of the Learning Sciences*, *42*, 661–684. doi: 10.1007/s11251-014-9310-0