International Journal of Teaching and Learning in Higher Education
http://www.isetl.org/ijtlhe/

2022, Volume 33, Number 2, 168-179
ISSN 1812-9129

Trickle Down Engagement: Effects of Perceived Teacher and Student Engagement on Learning Outcomes

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Research has primarily focused on the engagement of the student in the classroom (Austin, 1993; Schunk & Mullen, 2012; Tinto, 1993), often without consideration of the engagement of the teacher (Frenzel, Goetz, Lüdtke, Pekrun, & Sutton, 2009). However, we predict that teachers' subjective experiences "trickle down" and ultimately impact the subjective experiences and performance of their students. Consistent with our Trickle-Down Engagement Model Hypothesis, we found undergraduate students' perceptions of their instructor's engagement were associated with their own engagement in the classroom (Studies 1 & 2; Ns = 195 and 210, respectively), and students' increased classroom engagement was associated with more engagement while studying (which, in turn, predicted higher quiz scores; Study 1) as well as with higher final grades (Study 2). Our results suggest there are relatively simple changes teachers can make to their own pedagogy that may improve their own subjective experiences within the classroom and, consequently, trickle down to and improve their students' subjective experiences and performance.

Teaching well is a wonderful and engaging experience for the teachers. But, teaching well is no easy task. Teaching faculty manage a host of demanding responsibilities within a finite limit of effort and time. Faculty often play a zero-sum game to prioritize their responsibilities of teaching, mentoring, advising, research, service, and/or administrative duties by pitting them against each other, and potentially leading to burnout (see Harrison, 1999; Leisyte, enders, & De Boer, 2009). How they prioritize these responsibilities relates to implicit or explicit messages about how these responsibilities are valued at their institutions (e.g., Hardré & Kollman, 2012). For example, faculty may perceive research to be their primary responsibility (e.g., Serwo, 2000). They may also perceive efforts to strengthen teaching as less valued (e.g., Backes-Gellner & Schlinghoff, 2010): activities that are admired, but not required. These perceptions, combined with other factors, such as being ill-prepared to teach, bored with the class content, and/or frustrated with students' lack of motivation, poor preparation, and negative (or ambivalent) attitudes toward course content may lead to negative perceptions of teaching (Friedman, 1995; van Horn, Schaufeli, & Enzmann, 1999). Consequently, faculty may experience a self-fulfilling prophecy such that their negative perceptions of teaching lead to negative subjective experiences in their classes. These negative experiences may then inadvertently affect the subjective experiences of the students within the class, interfering with their engagement.

While we cannot solve the issues in higher education referenced above, we sought to develop empirically supported suggestions to create positive subjective experiences for faculty and, consequently, students within the classroom. Prior research has primarily focused on the engagement of the *student* in the classroom (e.g., Austin, 1993; Carini, Kuh, & Klein, 2006; Greene, Miller, Crowson, Duke, & Akey, 2004; Hughes & Pace, 2003; NSSE, 2017; Pekrun & Linnenbrink-Garcia, 2012; Schunk & Mullen, 2012; Tinto, 1993; Trowler, 2010), often without any consideration of the engagement of the *teacher* (e.g., Frenzel et al., 2009, see also Eagan, Herrera, Garibay, Hurtado, & Chang, 2011; Hartman, Widner, & Carrick, 2013; Prince, Felder, & Brent, 2007). However, we believe that the teachers' subjective experiences, both positive and negative, may "trickle down" to impact, for better or worse, the subjective experiences of students in the classroom. We examined students' perceptions of faculty engagement in teaching in relation to both students' engagement in learning and students' academic performance (e.g., grades). We predicted whether students' perceptions of faculty experiences in the classroom (i.e., whether the faculty member is perceived to be engaged in the content and or teaching) would impact students' experiences (i.e., engagement in learning) and performance via a process we refer to as *Trickle-Down Engagement* (Saucier, 2019a).

Student Engagement

The experiences and engagement of students in the classroom have been common topics of interest in the scholarship of teaching and learning (SoTL) literature (e.g., Schaufeli, Salanova, González-Romá, & Bakker, 2002; Steele & Fullagar, 2009; Wang & Degol, 2014). For instance, to examine the outcomes of student engagement, SoTL research has often focused on faculty use of active and collaborative learning techniques (e.g., Chi & Wylie, 2014; Freeman et al., 2014; Prince, 2004), faculty culture (e.g., expectations for student contact outside the classroom; Komarraju, Musulkin, & Bhattacharya, 2010;

Seidel & Tanner, 2013; Umbach & Wawrzynski, 2005), and faculty use of new and innovative teaching techniques that can be used to better engage students (e.g., Chickering & Gamson, 1987; Kuh, Laird, Umbach, 2004; McKeachie, 2013). Despite this focus, however, a substantial portion of the SoTL literature has tended to more broadly explore the topic of student engagement and, as a result, this construct has evolved considerably over the last several years (Reschly & Christenson, 2012). Perhaps because of this, there are numerous definitions and measurements for engagement throughout the SoTL literature (see Sinatra, Heddy, & Lombardi, 2015).

We examined engagement through a multidimensional definition using self-reports. We operationally defined engagement as the cognitive, affective, physiological, and behavioral involvement in a task (e.g., Fredricks, Blumenfeld, & Paris, 2004; Rupayana, 2010; Sinatra et al., 2015; Skinner & Belmot, 1993; Steele & Fullagar, 2009). Prior research using similar operational definitions of engagement demonstrates a host of beneficial outcomes related to student engagement. For instance, researchers have found positive relationships between self-report measures of engagement and achievement (e.g., Greene, et al., 2004; Pekrun & Linnenbrink-Garcia, 2012), critical thinking and grades (e.g., Carini et al., 2006), self-efficacy (e.g., Schunk & Mullen, 2012), persistence (e.g., Hughes & Pace, 2003), student activism and a sense of connectedness to peers, faculty, and/or institutions (e.g., NSSE, 2017; Trowler, 2010), and student retention (e.g., Austin, 1993; Tinto, 1993).

While the literature demonstrates the benefits of student engagement, not every class is engaging. Put simply, some classes are relatively boring, for students and faculty alike. An investigation into the issue of classroom boredom within higher education found that 59% of students reported their lectures were boring about half the time, whereas 30% of students reported most of their lectures were boring (Mann & Robinson, 2009). Such boredom may inspire student disengagement, which is associated with reduced motivations to attend class (Mann & Robinson, 2009), diminished academic achievement (Fogelman, 1976; Maroldo, 1986), heightened school dissatisfaction (Gjesme, 1977), lower academic scores and grade point averages (Mikulas & Vodanovich, 1993), and reduced motivation to participate in class (Massingham & Herrington, 2006). Indeed, it appears that if students believe that the content and/or the professor is boring, their motivation, and consequently their learning and grades, are likely to suffer (Pekrun, Hall, Goetz, & Perry, 2014).

Further, because motivation can affect students' performance in the classroom, student motivation has also received considerable attention in the SoTL literature (e.g., Ames, 1992; Skinner & Belmont, 1992). Specifically, researchers have sought to explore why students are either extrinsically motivated (e.g., students' motivation to go to class because they want good grades) or intrinsically motivated (e.g., students' motivation to go to class because they are genuinely interested in learning the material). Intrinsic motivation has been linked to positive outcomes for college students (e.g., attending class, participating in classroom discussions, being cognitively engaged, experiencing pleasure in what they are doing, high achievement; Lei, 2010), and many faculty want their students to be more intrinsically motivated in their classes. However, faculty realize many students tend to be more extrinsically motivated. Unfortunately, extrinsically motivated behaviors tend to be perceived as relatively boring (Ryan & Deci, 2000a) and such behaviors may be performed with resentment and/or resistance (Ryan & Deci, 2000b).

Fortunately, faculty may address the general lack of engagement associated with extrinsic motivation. According to self-determination theory (Deci & Ryan, 1985; 2008; Ryan & Deci, 2000a; 2017), individuals' social environments influence their motivation. Some students may behave extrinsically (e.g., coming to class, completing assignments) because these behaviors have been prompted, modeled, or valued by important individuals with whom the student may feel, or want to feel, attached to (e.g., faculty members). Still relevant to self-determination theory, Deci, Eghrari, Patrick, & Leone (1994) demonstrate that participants who were told that doing a given activity is important were especially likely to believe that the task was useful and even enjoyable. Taken together, and with respect to trickle-down engagement, faculty who express genuine interest in the topic they are teaching, and effectively communicate that interest to students, are likely to positively impact their students' motivation and engagement (see Deci & Ryan, 2008).

Teachers' Engagement

Although an abundance of research has examined the subjective experiences of students, relatively little research has examined the subjective experience of teachers within higher education settings, perhaps those at research institutions (cf., Frenzel et al., 2009). Instead, most efforts in this domain have investigated teaching and mentoring in research lab settings (e.g., Eagan et al., 2011; Hartman et al., 2013) and using research in the college classroom (e.g., McKeachie, 1990; Prince et al., 2007). Research has examined teacher engagement at primary and secondary schools, which shows teacher engagement is necessary for effective teaching (Klassen, Yerdelen, & Durksen, 2013). Further, research involving secondary-education instructors shows a significant link between the emotional experiences of teachers and the emotional

experiences of their students (e.g., Becker, Goetz, Morger, & Ranellucci, 2014). More specifically, teachers' enjoyment within the classroom appears to be positively related to their students' enjoyment (Frenzel et al., 2018). Although these findings are consistent with our *Trickle-Down Engagement Hypothesis*, research needs to investigate these links between teachers' and students' subjective experiences in higher education. Given the dependence, we hypothesize between faculty's and students' subjective experiences in educational contexts (see also Cotten & Wilson, 2006; Endo & Harpel, 1982; Komarraju et al., 2010), and the positive (e.g., improved grades, critical thinking, self-efficacy, retention) and negative (e.g., diminished achievement, dissatisfaction, lower grades) outcomes associated with motivation and engagement, is an important domain for research.

In particular, we believe teachers' engagement is a variable that should be measured, understood, and, most importantly, maximized (Saucier, 2019a, 2019b). We investigated the effects of students' perceptions of faculty engagement in teaching on both students' engagement in learning and students' academic performance. Also applying the perspective of positive psychology that indicates positive emotions allow for individuals to thrive in a given environment (see Fredrickson, 2001; Sheldon & King, 2001), we hypothesized students' perceptions of faculty as engaged in teaching would "trickle down" to optimize the students' own engagement and learning (i.e., *Trickle-Down Engagement Hypothesis*). As such, we examined the relationships between students' perceived levels of their teachers' classroom engagement, students' own levels of classroom engagement, and students' performance on content learning objectives.

Study 1

In Study 1, we collected student data in a single class over the course of a semester. Students completed measures of their own engagement and perceptions of their instructor's engagement. We additionally collected scores from weekly in-class quizzes. Our specific hypotheses were: 1) higher levels of perceived instructor engagement would be associated with higher levels of student engagement in the classroom, 2) higher levels of student engagement in the classroom would be associated with higher levels of student engagement in studying for the quizzes, and 3) higher levels of student engagement in studying would be associated with higher quiz scores. These specific hypotheses carry our overarching Trickle-Down Engagement Hypothesis that when students perceive their instructor is more engaged in teaching, they will be more engaged and more successful in learning.

Method

Participants. Undergraduate students (N = 195) at a large state Midwestern University in a large introductory psychology course participated in exchange for course credit. This course was taught by an award-winning tenured full professor of psychological sciences with over 35 years of teaching experience who was not a member of our research team. Of the 195 students enrolled in the course, we obtained demographic data from 168 participants. The majority were White (81.5%), female (67.9%), and first-year students (75.0%). Their ages ranged from 17 to 51 (M = 18.93, SD = 2.97).

Procedure and Measures. All materials and procedures were approved by our university's Institutional Review Board. Two research assistants visited during the first week of class to ask the students to participate. The instructor introduced the researchers and explained to the students that the researchers sought to better understand how teachers' and students' perceived engagement relate to learning outcomes in college courses and that these data could be used to improve teaching and learning at the university. The researchers informed students that, by agreeing to participate in the study, they would be asked to provide quick and easy feedback on their engagement throughout the semester. The researchers made it clear that participation was voluntary, and they were interested in aggregated data and would not examine individual students' responses. The researchers then distributed and collected the consent forms and thanked students for their attention. Data collection started during the second week of classes. For this course, classes were held on Tuesdays and Thursdays and student data was collected using iClickers (digital polling devices). Prior to our first data collection, the instructor read the following to give the students a definition of engagement:

> Please consider the following definitions of student and teacher engagement and respond to the questions using your best and honest judgment. A student who is engaged in the material is enthusiastic about the material, interested in the material, enjoys learning the material, and is generally psychologically invested in the material. A student who is engaged in the material pays close attention, actively thinks about the content, stays on task, and participates in the learning activities. A teacher who is engaged in the material is enthusiastic about the material, interested in the material, enjoys teaching the material, and is generally psychologically invested in the material. Keep in mind that your engagement and your teacher's engagement is bound to differ from time to time depending on several factors including, but not limited to, the topics being covered in class.

Table 1
Relationshipis Between Perceived Engagement and Quiz Scores

Predictor → DV	*b* [95% CI]	Model	*N*	R^2
	Study 1			
Instructor Engagement → Student Engagement	0.52*** [0.39, 0.67]	2	1,134	.48
Student Engagement → Study Engagement	0.17*** [0.11, 0.23]	2	1,375	.47
Study Engagement → Quiz Score	0.41*** [0.27, 0.56]	1	1,619	.42
	Study 2			
Instructor Engagement → Student Engagement	0.57*** [0.46, 0.68]	2	797	.70
Student Engagement → Study Engagement	0.43*** [0.35, 0.52]	2	795	.63
Study Engagement → Quiz Score	0.53*** [0.29, 0.76]	1	778	.72

Note. Coefficients are unstandardized; brackets contain the lower limit and upper limit for 95% confidence intervals (CI); the model number indicates the best fitting model: model 1 = random intercepts, model 2 = random intercepts and random slopes; *N* = total number of observations in the model.
*** $p < .001$

At the start of class on each Tuesday before their weekly quiz over the content of the previous week, students completed one item that measured their engagement in studying the course material for the quiz using a 1 (Very Unengaged) to 5 (Very Engaged) scale: *Overall, how engaged were you in studying the material for this quiz*? At the end of class on each Thursday, students completed two items that measured their own engagement that week in class as well as their perceptions of their teacher's engagement that week in class on a 1 (Very Unengaged) to 5 (Very Engaged) scale: *Overall, how engaged were you during this week's lecture? Overall, how engaged was your instructor during this week's lecture*? At the end of the semester, the instructor thanked the students for participating in the study and provided them contact information for follow up questions.

Results and Discussion

Aggregating across all time points and students, students' average perception of their instructor's engagement was high, approaching the maximum score on the five-point scale ($M = 4.78$, $SD = 0.51$). Students' average perceptions of their own engagement was also high ($M = 4.07$, $SD = 0.90$), their perceived engagement in studying for their quizzes was moderate ($M = 3.78$, $SD = 0.96$), and their average performance on quizzes was 74% correct ($M = 14.80$ out of 20, $SD = 2.83$).

To analyze the relationships between students' self-reports of perceived instructor engagement, self-engagement, engagement in studying, and quiz scores, we used linear mixed models because these models account for the fact that we had multiple observations over time from the same students. Due to the fact that we collected data from students during classes, missing data was to be expected and students were probably more likely to attend classes that had quizzes. Thus, the number of observations for each of our models varied. However, linear mixed models are robust to missing data points.

For each of our three hypotheses, we tested two random effects models: models with random intercepts (model 1), and models with random intercepts and random slopes (model 2). We reported the parameters from the better fitting models (indicated in parentheses after the reported effects), based on significant increases in Akaike information criteria (AICs). In cases where model 1 was the better fit, this indicates the intercepts varied significantly across students, but that the slopes did not. In cases where model 2 was the better fit, this indicates both the intercepts and slopes varied significantly across students.

Table 1 contains the results of these models. Our first hypothesis was confirmed by our finding that the more students perceived that their instructor was engaged in teaching, the more they reported being engaged in the classroom. Our second hypothesis was confirmed by our finding that the more students reported being engaged in the classroom, the more they reported being engaged in studying for the quizzes. Our third hypothesis was confirmed by the finding that the more students reported being engaged in studying for the quizzes, the higher their quiz scores were.

Another interesting finding was the significant variability among students in the relationship between perceived instructor engagement and students' engagement in the classroom, and in the relationship between students' engagement in the classroom and

their engagement in studying for the quizzes. This was evidenced in model 2 (which included the slope random effect) being the better fit for both analyses. This suggests there may be individual differences that moderate the strength of the relationship between instructor engagement and student engagement in the classroom, and in the strength of the relationship between student engagement in the classroom and their engagement in studying outside of class. Thus, the potential for instructors' engagement to positively affect students' engagement and learning outcomes may be stronger for some students.

Overall, our results support our overarching Trickle-Down Engagement Hypothesis. When students perceived their instructor was engaged in teaching, they reported being more engaged in the classroom. Students' engagement in the classroom related to more engagement in studying for quizzes, which in turn predicted better objective learning outcomes. These findings suggest the engagement of the instructor is important to the process of teaching and learning.

Study 2

In Study 2, we sought to replicate our findings from Study 1 in a new sample of students with a different instructor and different measures of student learning outcomes (exam scores and final grades instead of quiz scores). Additionally, we tested a mediational model where we hypothesized higher levels of students' perceptions of their instructor's engagement would be associated with higher final grades, and that this relationship would be mediated by students' self-reports of their own engagement.

Method

Participants. Undergraduate students (N = 210) at a large state Midwestern University in a large section of introductory psychology participated in exchange for course credit. This course was taught by a different instructor than in Study 1, but who was also an award-winning tenured full professor of psychological sciences with over 25 years of teaching experience and who was not a member of our research team. Of the 210 students enrolled in the course, we obtained demographic data from 192 participants. The majority were White (71.3%), female (68.1%), and first-year students (75.6%). Their ages ranged from 17 to 45 (M = 18.65, SD = 2.17). The procedures for recruiting students were the same as in Study 1.

Procedure and Measures. Students were surveyed prior to each of the four exams during the semester and their exam scores were collected for each exam. Students read the following before completing the survey at each data collection point:

> We are interested in your perceptions of your own engagement in class and your instructor's engagement in class. Please consider the following definitions of student and teacher engagement and respond to the questions using your best and honest judgment. A student who is engaged in the material is enthusiastic about the material, interested in the material, enjoys learning the material, and is generally psychologically invested in the material. A student who is engaged in the material pays close attention, actively thinks about the content, stays on task, and participates in the learning activities. A teacher who is engaged in the material is enthusiastic about the material, interested in the material, enjoys teaching the material, and is generally psychologically invested in the material. Keep in mind that your engagement and your teacher's engagement is bound to differ from time to time depending on several factors including, but not limited to, the topics being covered in class.

Students then responded to the following items on a 1 (Very Unengaged) to 9 (Very Engaged) scale that measured their levels of engagement in the lectures tested for each exam (i.e., *Overall, how engaged were you during the lectures for this exam*?), their perceptions of their instructor's engagement in the lectures tested for each exam (i.e., *Overall, how engaged was your instructor during the lectures for this exam*?), and their engagement in studying the material for each exam (i.e., *Overall, how engaged were you in studying the material for this exam*?). Students final letter grades were also collected and coded as: F = 0, D = 1, C = 2, B = 3, and A = 4. At the end of the semester, the instructor thanked the students for participating in the study and provided them contact information for follow up questions.

Results and Discussion

Aggregating across all time points and students, students' average perceptions of their instructor's engagement was high (M = 8.17, SD = 0.87). Students' average perceptions of their own engagement was moderate (M = 6.67, SD = 1.29), their perceived engagement in studying for their exams was moderate (M = 6.35, SD = 1.34), their average performance on exams was 75% correct (M = 37.47 out of 50, SD = 5.84), and the average grade in the class was between a C and a B (M = 2.63, SD = 1.26).

To test our hypotheses about the relationships between perceived instructor engagement, student self-reported engagement, and exam scores, we used the same mixed linear modelling approach as in Study 1. Missing data was less of an issue in Study 2 because students completed their ratings of

Table 2
Student Engagement Mediated the Relationship Between Instructor Engagement and Final Grade

		Consequent						
		M Student Engagement				*Y* Final Grade		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X-Instructor Engagement	*a*	.71 [.54, .89]	.09	<.001	*c'*	.18 [01, .36]	.09	.040
					c'	.003 [-.19, 20]	.10	.979
M Student Engagement		——	——	——	*b*	.25 [.12, .39]	.07	<.001
Intercept	*i*	.84 [-.61, 2.29]	.26	.257	*i*	.92 [-.48, 2.32]	.19	.195
Model Summary		$R^2 = .24$ $F(1, 206) = 63.50, p < .001$				$R^2 = .08$ $F(2, 205) = 9.44, p < .001$		

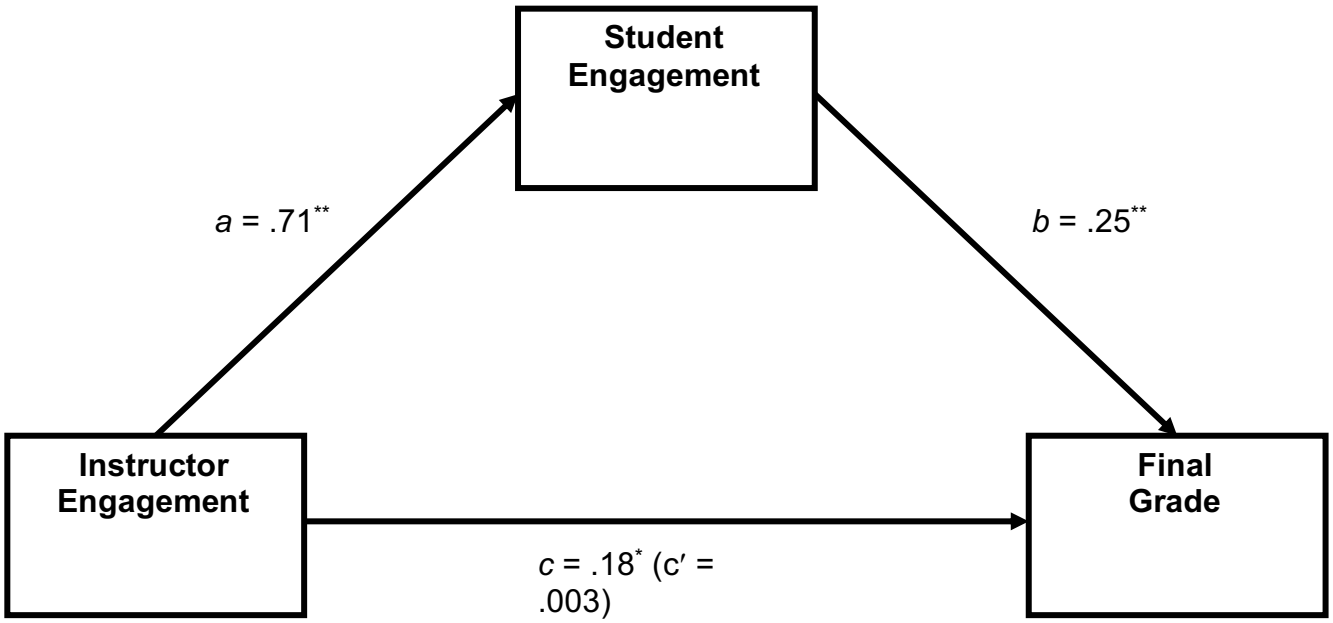
Note. Coefficients are unstandardized; brackets contain the lower limit and upper limit for 95% confidence intervals for the effects. Students' perceptions of their instructor's engagement were entered as the antecedent predictor which significantly predicted students' reports of their own engagement (*a* path) and students' final grades (*c* path). Students' reports of their own engagement predicted their final grades (*b* path) and fully mediated the path between students' perceptions of their instructor's engagement and students' final grades (non-significant *c'* path). The indirect effect of students' perceptions of their instructor's engagement on students' final grades through students' reports of their own engagement (*a* x *b* = .18) was also significant as indicated the fact that the 95% confidence interval, obtained using bias-corrected bootstrapping of 1,000 samples, did not contain zero (lower limit = .09, upper limit = .30).

engagement on exam days. Still, some missing data occurred due to student errors in filling out the identifiers on the survey that we needed to match their exam score with their survey data.

Table 1 contains the results of these models. Replicating the results of Study 1, model 2 (random intercepts, random slopes) fit better for the relationship between perceived instructor engagement and students' engagement in the classroom, and for the relationship between students' engagement in the classroom and their engagement in studying. Results supported our hypotheses. Higher levels of perceived instructor engagement were associated with higher levels of students' self-reported engagement. Higher levels of students' self-reported engagement in the classroom were associated with higher levels of students' engagement in studying for the exams. Higher levels of students' engagement in studying for their exams were associated with higher exam scores. These findings replicated those of Study 1—providing additional support for our overarching Trickle-Down Engagement Hypothesis that the more students perceive their instructors are engaged in teaching, the more students will engage and be successful in learning.

We tested our hypothesis that students' perceptions of their instructor's engagement would predict students' final grades in the course, and this effect would be mediated by students' engagement in the classroom. We averaged students' perceptions of their instructor's engagement and students' self-reports of their own engagement over the four time points and used ordinary least squares path analysis (Hayes, 2013) to construct our mediation model. Our results are displayed in Table 2 and Figure 1. These findings support our overarching Trickle-Down Engagement Hypothesis. When students perceived their instructor was engaged in the course, students were more engaged themselves, and achieved better learning outcomes. Although these data are correlational, our findings provide initial evidence to suggest that instructors' who demonstrate their passion for the content may be able to increase students' engagement and learning.

Figure 1
Path model of student engagement mediating the relationship between perceived instructor engagement and final grade.



$^{*}p < .05$, $^{**}p < .01$

General Discussion

The college classroom can be a boring place. Students may disengage from learning, and they may do so because they perceive their teachers to disengage from teaching. But the converse is also true: the college classroom can be an exciting place in which students engage in learning because they perceive their teachers to engage in teaching. This simple assertion is the foundation for our Trickle-Down Engagement Hypothesis that predicted that when students perceive their teachers to be more engaged in teaching, then students would be more engaged in learning, and the students' performances on academic assessments would improve. Across two studies, our results supported our Trickle-Down Engagement Hypothesis. As students perceived their teachers to be more engaged in the content, the students' own engagement, and their academic performances, increased.

These studies provide empirical support for our *Trickle-Down Engagement Model.* However, these findings may not be completely surprising to experienced teachers. McKeachie (2013) notes that the enthusiasm of the lecturer is important in helping students motivate to learn and argues that lecturers should be excited about the content they teach. Murray (1991) reports that enthusiastic teachers move around their classrooms more, make more eye contact with their students, use more hand gestures, and use more vocal variation while they teach. Others argue that if faculty believe the content they are teaching is boring, their students will agree and be less motivated to learn (Pekrun et al., 2014). But while our results may be somewhat unsurprising to good teachers, our research confirms this prior speculation using longitudinal methods over the course of an entire semester in two large introductory courses at a research institution. We showed that our Trickle-Down Engagement Model explains the connection between teacher engagement, student engagement, and student learning in actual classrooms.

Interestingly, while the evidence across our two studies converge to support our Trickle-Down Engagement Model, there was variability in the relationships between students' perceptions of their instructor's engagement and the students' own engagement in Study 1. This variability suggests individual differences may moderate the process and experience of trickle-down engagement. For example, students who are more highly interested, or more highly disinterested, in the content of the course might not be as impacted by how engaged they perceived their instructor to be in teaching. Future research should examine these and other potential moderators of trickle-down engagement.

From our findings, we recommend that teachers be palpably engaged in the material they are teaching. Our research was not experimental, and we did not manipulate the teachers' levels of demonstrated engagement. However, our results do clearly show that students' perceptions of their teachers' engagement are related to the students' own levels of engagement as well as to their performance in the course. There appears to be some value in teachers' making their engagement in the material easily perceived by their students, possibly by explicitly stating their own interest and engagement in the material, articulating the value they see in the material, and/or their enjoyment in teaching the material to their class.

One obstacle we see to faculty's engagement is the lack of intrinsic motivation they may have in the material they teach, or for teaching in general, particularly when they see research as a higher priority than teaching and when they had little choice in the decision to teach or structure their classes (see Eimers, 1997; Martinek, 2018). When individuals are extrinsically motivated to teach, they may find the experience less inherently enjoyable, as demonstrated by a wealth of psychological literature (e.g., Deci, Koestner, & Ryan,1999; Eisenberger & Cameron, 1996; Ryan & Deci, 2000b). Our results may lead some teachers to believe they can increase student engagement by *pretending* to be engaged in their own material. This is not what we recommend. Instead, we recommend teachers develop intrinsic interests in what they are teaching, and demonstrate their consequent engagement in their classrooms in authentic and genuine ways. If we behave in ways that are inconsistent with who we are as individuals, it is likely that our students will see through us and, as a result, we will fail to facilitate meaningful learning (Cranton, 2001). Therefore, we believe it is necessary to be genuinely interested in the content we teach in order for this interest (and engagement) to trickle down to our students. One of the inspirations we use in our own teaching is to realize how the concepts we teach have been born from the intrinsic and arduous efforts of others. It is not an exaggeration to say that scholars have spent careers discovering the topics we teach in class. Recognizing and respecting their commitment, and discussing their commitment in our classes, may be a simple way to remind ourselves how essentially interesting these topics are. It may also be valuable to discuss topics outside our own interests with colleagues engaged in these topics, and to let them show us their inherent value. Given the ubiquitous opportunities to engage in discussions like these over academic listservs, social media, etc., our initial perception of a topic as unengaging may be easily overcome.

Our research is limited because it was conducted in large, introductory psychology lecture classes. However, large lecture classes may be harder to engage than smaller discussion-based or seminar classes. We were also fortunate that experienced professors courageously agreed to let us survey their students throughout the semester, but their experience and willingness to participate may make these results less generalizable for teachers with less experience and self-efficacy. Future research should replicate these results in other teaching settings and with teachers of more diverse levels of experience.

Another possible limitation of our research may have been our initial assumption that our Trickle-Down Engagement Hypothesis is predominately unidirectional. At the primary and secondary education levels, there is evidence suggesting that students' emotional and behavioral experiences in the classroom may actually *trickle up* and affect the subjective experience of their teachers (e.g., Frenzel, Becker-Kurz, Pekrun, Goetz, & Lüdtke, 2018; Hagenauer, Hascher, & Volet, 2014; Nurmi & Kiuru, 2015). We do not disagree with the likelihood that students' behaviors in the classroom (for better or worse) can have a meaningful impact on their teachers' subjective experiences. Indeed, research has even shown links between student disrespect and inattentiveness and teacher burnout (e.g., Friedman, 1995). Despite these findings, it is important to recognize that, as educators, we cannot control how our students decide to engage (or disengage) in our classes. However, *we* can control how *we* decide to engage (or disengage) within our own classes. If we initiate the engagement process in our classes, we may collect engagement returns on that investment from our students' consequent engagement then increasing our own. Future research should even attempt to identify the student behaviors that positively enhance teachers' subjective experiences.

We believe that teachers intentionally and explicitly engaging in their teaching will produce benefits beyond the results we report in these two studies. For instance, we believe their palpable engagement will have more benefits for their students, such as by making them appear more accessible and approachable to their students (see Cotten & Wilson, 2006). Further, we believe that teachers will have more positive subjective experiences in the classroom when they prioritize their own engagement in their content and in the experience of teaching in general. When we recognize the classroom to be an oasis away from the myriad other professional and personal responsibilities we must manage, and perceive teaching as an opportunity to enjoy intellectual conversations with developing scholars about the disciplines we love, then teaching becomes one of the most valued experiences we as faculty enjoy. When we "engage the sage", we may better inspire our students' engagement and promote their learning.

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