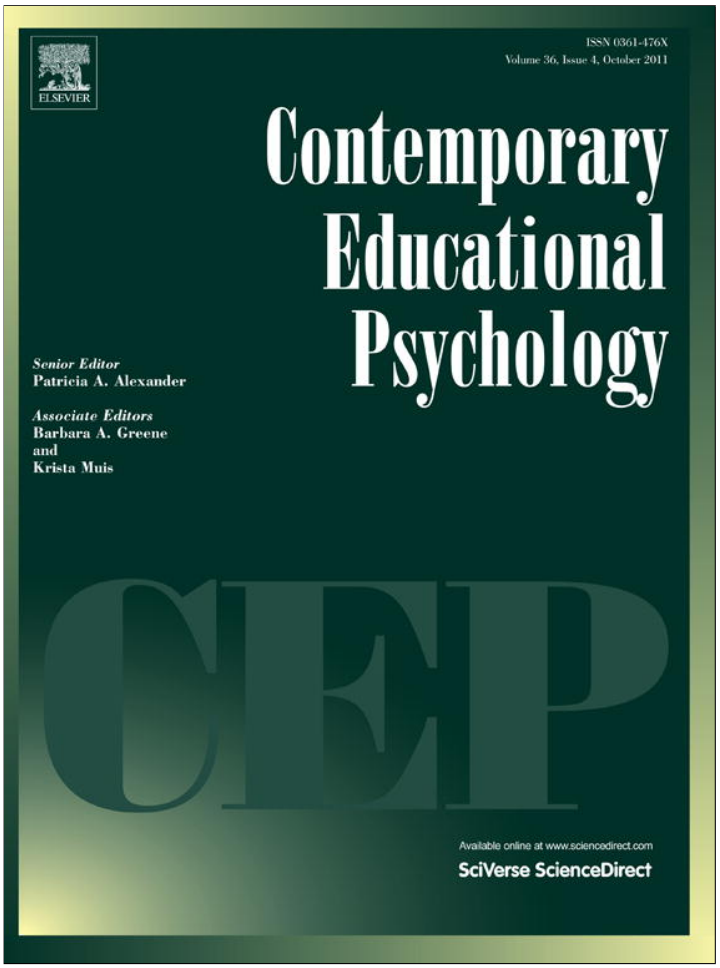

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Agency as a fourth aspect of students' engagement during learning activities

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ABSTRACT

While a consensus has emerged to characterize student engagement during learning activities as a three-component construct featuring behavioral, emotional, and cognitive aspects, we propose adding agentic engagement as an important new aspect, which we define as students' constructive contribution into the flow of the instruction they receive. High school students (237 females, 128 males) from Taiwan completed surveys of their classroom motivation and the four hypothesized aspects of engagement while grades were obtained at the end of the semester. Structural equation modeling analyses showed that agentic engagement was both a distinct and an important construct, one that was associated with students' constructive motivation, related to each of the other three aspects of engagement, and predicted independent variance in achievement. The discussion highlights the important, though currently neglected, ways that students contribute constructively into the flow of the instruction they receive, as by personalizing it and by enhancing both the lesson and the conditions under which they learn.

1. Introduction

Student engagement during learning activities is an important and heavily researched educational construct (Christenson, Reschly, & Wylie, 2011; Fredricks, Blumenfeld, & Paris, 2004; Jimerson, Campos, & Grief, 2003; National Research Council, 2004; Skinner, Kindermann, Connell, & Wellborn, 2009). It is an important educational outcome in its own right as a marker of students' positive functioning, but it is further important because it predicts highly valued outcomes, such as students' academic progress and achievement (Ladd & Dinella, 2009; Skinner, Zimmer-Gembeck, & Connell, 1998). Student engagement is also a well-understood construct, as a general consensus has emerged to characterize it as a 3-component construct featuring behavioral (on-task attention, effort, persistence, lack of conduct problems), emotional (presence of interest and enthusiasm, absence of anger, anxiety, and boredom), and cognitive (use of strategic and sophisticated learning strategies, active self-regulation) aspects (e.g., see Fredricks et al., 2004; Jimerson et al., 2003; National Research Council, 2004). Proximal influences on student engagement are also well understood. For instance, student engagement rises and falls in response to lessons that are challenging vs. too easy (Davidson, 1999; Turner, Thorpe, & Mayer, 1998) and to varying levels of a teacher's expression of warmth, provision of structure, and support for autonomy (Birch & Ladd, 1997; Murray & Greenberg, 2000; Reeve, Jang, Carrell, Jeon, & Barch, 2004; Skinner & Belmont, 1993; Skinner, Furrer, Marchand, & Kindermann, 2008; Wentzel, 1997), just as it is responsive to students' own motivational states, such as autonomy, competence, relatedness, and perceived control (Connell & Wellborn, 1991; Furrer & Skinner, 2003; Gottfried, 1990; Miserandino, 1996; Skinner et al., 1998, 2008).

Recognizing that engagement is responsive to proximal conditions, researchers generally emphasize the directional flow that teachers' high-quality relationships and instructional supports have on students' subsequent behavioral, emotional, and cognitive engagement during learning activities. That said, this same body of research also acknowledges that student engagement exerts a (bi-)directional effect on teachers' subsequent motivating style and instructional behaviors (Pelletier, Seguin-Levesque, & Legault, 2002; Pelletier & Vallerand, 1996; Skinner & Belmont, 1993). For instance, when students episodically display boredom, dispersed attention, and little effort, then teachers tend to change how they relate to those students (consciously or unconsciously) by lessening their support and heightening their control (Pelletier et al., 2002).

The reciprocal influence that student engagement has on teachers' interpersonal style is presumed to flow through teachers' awareness of, observations of, and reactions to students' behavioral, emotional, and cognitive engagement. While this is almost certainly true, it is also an incomplete understanding of these dynamic student–teacher interactions. In large, diverse, fluid, and multi-activity classrooms in which teachers are engrossed in instruction, teachers necessarily miss (are unable to monitor) a

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good deal of students' displays of engagement vs. disengagement. What is missing from an understanding of how students intentionally contribute into the instruction they receive is a direct (rather than inferential) path. To better understand this process of how students contribute constructively into the flow of instruction they receive, as by personalizing it and by enhancing both the lesson and the conditions under which they learn, we propose the concept of agentic engagement.

2. Agentic engagement

We define agentic engagement as students' constructive contribution into the flow of the instruction they receive. What this new concept captures is the process in which students intentionally and somewhat proactively try to personalize and otherwise enrich both what is to be learned and the conditions and circumstances under which it is to be learned. For instance, during the flow of instruction, students might offer input, express a preference, offer a suggestion or contribution, ask a question, communicate what they are thinking and needing, recommend a goal or objective to be pursued, communicate their level of interest, solicit resources or learning opportunities, seek ways to add personal relevance to the lesson, ask for a say in how problems are to be solved, seek clarification, generate options, communicate likes and dislikes, or request assistance such as modeling, tutoring, feedback, background knowledge, or a concrete example of an abstract concept.

To quantify this aspect of student engagement, one pioneering group of researchers developed the Hit-Steer Observation System (Fiedler, 1975; Koenigs, Fiedler, & deCharms, 1977). This system assesses the frequency of students' attempts to constructively influence the teacher (a "hit") as well as whether those influence attempts are successful or not in changing the teacher's subsequent behavior (a "steer"). A "hit" (influence attempt) reflects what students do, and it typifies agentic engagement. A "steer" reflects how teachers respond to students' suggestions and inputs, and it typifies a teacher's motivating style (autonomy supportive vs. controlling). When trained raters use the Hit-Steer Observation System to score students' classroom engagement, they find that students' influence attempts (and the ratio of these attempts to all influence attempts that occur during instruction—students' and teachers') (a) correlate positively with students' perception of an origin learning climate, (b) occur more frequently in the classrooms of autonomy-supportive rather than controlling teachers, and (c) correlate positively with students' academic achievement (Fiedler, 1975; Koenigs et al., 1977; Reeve, Jang et al., 2004).

3. Why agency needs to be added as a fourth aspect of student engagement

Students react to the learning activities teachers provide, and the existing concepts of behavioral engagement, emotional engagement, and cognitive engagement nicely capture the extent to which students react to teacher-provided learning activities. That is, a teacher might present a math problem for students to make sense of (e.g., find the volume of a cylinder) and students might react by paying attention or not, enjoying the activity or feeling anxious about it, and utilizing sophisticated or only superficial learning strategies. Such a linear model (teacher presents a learning activity → students to some degree engage themselves → students to some degree learn and profit from the experience) overlooks students' agentic involvement in the learning process (Bandura, 2006). In actuality, students not only react to learning activities but they also act on them—modifying them, enriching them (e.g., transforming them into something more interesting, personable, or optimally challenging), and even creating or requesting them in the first place, rather than merely reacting to them as a given. That is, students sometimes try to get ahead of the lesson-to-come so to offer input that might potentially guide its flow toward that which will be more personalized or more enriched (i.e., more challenging or more relevant to their needs, interests, and priorities). Therefore, a fuller (and more accurate) portrayal of what happens when the teacher presents students with a math problem is that students not only react with varying displays of behavioral, emotional, and cognitive engagement, but they also more or less act agentically to try to enrich the learning activity (look for an opportunity to make the task more enjoyable), modify it (make a suggestion, change the level of difficulty), personalize what is to be learned (communicate likes and dislikes, generate options), afford themselves greater autonomy (express a preference, offer input), and gain greater access to the means needed for better understanding (solicit resources, request assistance).

Current conceptualizations of student engagement that emphasize only students' behavioral, emotional, and cognitive involvement fall short of capturing the extent to which students contribute agentically into the on-going flow of the instruction they receive. It is one thing to try hard, enjoy, and enact sophisticated learning strategies when exposed to a learning activity, while it is another to contribute constructively into modifying what is to be learned or how it is to be experienced and learned. To the extent to which students act agentically, they initiate a process in which they generate for themselves a wider array of options that expand their freedom of action and increase their chances of experiencing both strong motivation (e.g., autonomy, self-efficacy) and meaningful learning (e.g., internalization, conceptual understanding) (Bandura, 2006).

4. Goals and hypotheses of the present study

The present study had three goals and five hypotheses. The first goal was to validate a new measure of agentic engagement. A valid measure would correlate positively with the other three aspects of engagement, with students' classroom motivational status, and with important educational outcomes. First, we proposed that agentic engagement would reflect lesson engaging, rather than lesson evading or lesson rejecting (from Hansen, 1989). Thus, *Hypothesis 1* predicted that agentic engagement would correlate positively and significantly with the other three previously-validated aspects of student engagement. While we did expect agentic engagement to correlate highly and positively with the other three aspects of engagement, we did not expect the observed intercorrelations to be so high as to preclude conceptualizing agentic engagement as a distinct construct (as per Hypothesis 4).

Second, we proposed that agentic engagement would reflect constructive aspects of students' motivation to learn. Thus, *Hypothesis 2* predicted that agentic engagement would be closely associated with students' underlying classroom motivation, as assessed in the present study by the extent of students' psychological need satisfaction during instruction. We focused on students' psychological need satisfaction because we conceptualized it as an exemplar of students' constructive classroom motivation (following Ryan & Deci, 2000) and because our program of research emerged out of the origin-pawn distinction (following deCharms, 1976, and his Hit-Steer Observation System).

Third, we proposed that agentic engagement would contribute positively to students' learning and performance. Thus, *Hypothesis 3* predicted that agentic engagement would predict academic achievement, operationally defined by students' grades. Importantly, Hypothesis 3 predicted that agentic engagement would

predict student achievement in a way that was above and beyond the variance in academic achievement explained by the behavioral, emotional, and cognitive aspects—that is, agentic engagement would predict independent or unique variance in achievement.

The second goal of the study was to test whether agentic engagement was a distinct engagement component. *Hypothesis 4* predicted that agentic engagement would function as a distinct aspect of engagement—one that was intercorrelated with (as per Hypothesis 1), yet was conceptually and statistically distinct from, its behavioral, emotional, and cognitive aspects. This prediction follows from our observation that researchers are increasingly recognizing that each aspect of engagement is distinct in important ways. For instance, the behavioral dynamics of engagement are different from its emotional dynamics in several important ways (e.g., antecedents, year-to-year developmental change; Skinner et al., 2008).

The third goal of the study was to test if agentic engagement was an important educational construct. Student engagement is important principally because it functions to connect students' motivation to important and highly-valued outcomes (e.g., achievement). Hence, agentic engagement should, just like the other three aspects of engagement, function as a mediator to explain the motivation-to-achievement relation. *Hypothesis 5* predicted that agentic engagement, as a latent variable, would mediate the effect that student motivation (i.e., psychological need satisfaction) might have on student achievement. Further, Hypothesis 5 predicted that agentic engagement would mediate the motivation-to-achievement relation even after including behavioral engagement, emotional engagement, and cognitive engagement as three additional and complementary mediators of this same motivation-to-achievement relation.

5. Method

5.1. Participants and procedure

Participants were 369 (65% females, 35% males) high school students (38% 10th grade, 51% 11th grade, 11% 12th grade) from a large, middle-class, urban high school in Taipei City, Taiwan. As part of a regularly scheduled study hall, students completed a consent form and 3-page survey administered at the beginning of the class period. Participation was voluntary, and scores were confidential and anonymous. We collected the questionnaire data eight weeks into the semester and the achievement data (semester grade) after the semester ended. Participants rated their learning experiences in general across all the classes they were currently taking. We were unable to obtain achievement data for four participants, leaving a final sample size of 365 students, 237 females and 128 males.

5.2. Measures

Participants self-reported the extent of their classroom engagement and psychological need satisfaction. For each measure, we began with a previously validated questionnaire (except for agentic engagement) and then translated that measure into Chinese through a professional English–Chinese translator, following the guidelines recommended by Brislin (1980). Separate English back-translations were carried out by two graduate students who were fluent in both languages and were native Chinese. Any discrepancies that emerged between the translators were discussed until a consensus translation was reached. In addition to the self-report measures, we obtained students' grades for the semester in which they completed the survey from their school records so that we could attain an objective measure of achievement.

5.2.1. Engagement

We assessed four aspects of student engagement—agentic engagement, behavioral engagement, emotional engagement, and cognitive engagement. All items for each of these four aspects of engagement appear in Table 1. For each measure, we used the same 1–7 bipolar response scale that ranged from "strongly disagree" to "strongly agree" with "agree and disagree equally" serving as the midpoint (4).

To assess *agentic engagement*, we could not rely on a previously validated measure because such a scale of this newly-proposed concept did not exist. We based the conceptual framework of our new measure on the Hit-Steer Observation System. The Hit-Steer Observation System is for classroom observational purposes, but the concept can be extended to questionnaire purposes. To translate this concept into a self-report scale, we inspected the classroom observation notes we had from two previous studies (Jang, Reeve, & Deci, 2010; Reeve, Jang et al., 2004) in which two teams of five raters each used the Hit-Steer Observation System during a total of 198 different hour-long classroom sessions involving a wide breadth of subject matters to observe, score, and take notes on the various ways that middle and high school students' attempted to contribute constructively into the flow of the instruction they received. From these notes, we identified the most frequent ways that students proactively and constructively engaged themselves into the flow of the day's instruction. The five items that emerged from this review reflected categories of behavior rather than specific instances of behavior, and these items are shown at the top of Table 1. In the present study, this five-item measure showed adequate internal reliability (*alpha* = .82).

To assess *behavioral engagement*, we used Miserandino's (1996) task involvement questionnaire that was based on Wellborn's (1991) items and conceptualization of behavioral engagement. This measure represents the first (principal) factor from her psychometric investigation of a larger "perceived behavioral engagement" questionnaire. In the present study, we removed the two

Table 1
Questionnaire items to assess the four aspects of engagement.

Items to assess agentic engagement
1. During class, I ask questions
2. I tell the teacher what I like and what I don't like
3. I let my teacher know what I'm interested in
4. During class, I express my preferences and opinions
5. I offer suggestions about how to make the class better

Items to assess behavioral engagement
1. I listen carefully in class
2. I try very hard in school
3. The first time my teacher talks about a new topic, I listen very carefully
4. I work hard when we start something new in class
5. I pay attention in class

Items to assess emotional engagement
1. I enjoy learning new things in class
2. When we work on something in class, I feel interested
3. When I am in class, I feel curious about what we are learning
4. Class is fun

Items to assess cognitive engagement
1. When doing schoolwork, I try to relate what I'm learning to what I already know
2. When I study, I try to connect what I am learning with my own experiences
3. I try to make all the different ideas fit together and make sense when I study
4. I make up my own examples to help me understand the important concepts I study
5. Before I begin to study, I think about what I want to get done
6. When I'm working on my schoolwork, I stop once in a while and go over what I have been doing
7. As I study, I keep track of how much I understand, not just if I am getting the right answers
8. If what I am working on is difficult to understand, I change the way I learn the material

reverse-scored items from her scale—"When I have a hard question or problem in class, I don't even try" and "When I'm in class, I just act like I'm working"—due to non-English speaking students' difficulty with these two items in past data sets (i.e., Jang, Reeve, Ryan, & Kim, 2009). In the present study, this five-item measure showed strong internal reliability (*alpha* = .94). We chose this particular scale because it represents behavioral engagement as an expression of students' on-task attention, lesson involvement, and effort (i.e., *task* involvement rather than school engagement or prosocial conduct, as is sometimes done for the assessment of behavioral engagement in other studies), because it is a near-equivalent to other widely used and validated behavioral engagement scales (Skinner, Kindermann, & Furrer, 2009), and because past research has shown the scale to be both reliable and valid in terms of its capacity to predict student achievement (Jang et al., 2009; Miserandino, 1996).

To assess *emotional engagement*, we used several of the positively-valenced items from Wellborn's (1991) conceptualization of students' emotional engagement. Items from our adapted measure did not reflect the entire range of positive and negative academic emotions students experience during task engagement but, rather, reflect those associated with energized emotional states (i.e., enjoyment, interest, curiosity, and fun). In the present study, this four-item measure showed adequate internal reliability (*alpha* = .78). We chose this particular scale because Skinner and her colleagues (2009) showed that their near-equivalent scale was distinct from, yet supplemental to, the behavioral aspect of engagement and because these researchers showed that their emotional engagement scale correlated both with students' constructive motivation (e.g., perceived control beliefs) and with important educational outcomes (e.g., achievement).

To assess *cognitive engagement*, we used Wolters' (2004) learning strategies questionnaire which is a briefer instrument derived from the widely-used Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie, 1993). This adapted measure features two subscales, one with items to assess the use of sophisticated (elaboration-based) learning strategies (items 1–4 in Table 1) and a second with items to assess the use of metacognitive self-regulation strategies such as planning, monitoring, and revising one's work (items 5–8 in Table 1). In the present study, this combined eight-item measure showed high internal reliability (*alpha* = .88). We chose this particular scale because scores from this measure have been shown to correlate with students' constructive motivational states (mastery goals, self-efficacy), with non-cognitive indices of engagement (effort, persistence), and with course grades (Wolters, 2004).

5.2.2. Psychological need satisfaction

We conceptualized the quality of students' motivation as the extent of psychological need satisfaction they reported experiencing during instruction. To assess students' perceived autonomy, perceived competence, and perceived relatedness (following self-determination theory; Ryan & Deci, 2000), we used the Activity-Feelings States (AFS; Reeve & Sickenius, 1994). The AFS offers the stem, "During class, I feel:" and lists 14 items. Four items assessed perceived autonomy: "free"; "I'm doing what I want to be doing"; "free to decide for myself what to do"; and "I do this with my full personal endorsement" (*alpha* = .84). Three items assessed perceived competence: "capable"; "competent"; and "my skills are improving" (*alpha* = .83). Three items assessed perceived relatedness: "I belong and the people here care about me"; "involved with close friends"; and "emotionally close to the people around me" (*alpha* = .85). [The remaining four items assessed perceived pressure, which was not included in the present study's focus on students' constructive motivation.] Each item featured a 1–7 bipolar response scale that ranged from "strongly disagree" to "strongly agree" with "agree and disagree equally" serving as the midpoint. We used participants' scores on the AFS scales to serve as three separate indicators of the latent variable, "Psychological need satisfaction." Past research has provided reliability and validity evidence for each AFS scale in that each scale produces scores that are sensitive to classroom variables known to affect psychological need satisfaction (e.g., teachers' motivating styles), correlates highly with other corresponding measures of psychological need satisfaction (e.g., Basic Needs Scale; Gagne', 2003), and predicts student outcomes such as classroom engagement and course grades (Hardre & Reeve, 2003; Jang et al., 2009; Reeve, Nix, & Hamm, 2003).

5.2.3. Achievement

To assess academic achievement, we used the actual school record of each student's overall semester grade, scored at the end of the semester on a 100-point scale.

5.3. Data analyses

We tested Hypotheses 1–3 with standard statistical methods (zero-order correlations, multiple regression), while we tested Hypotheses 4 and 5 with structural equation modeling (using LISREL 8.8; Joreskog & Sorbom, 1996). For Hypothesis 4, we used both exploratory and confirmatory factor analyses to test the factor structure and underlying measurement model of the 22-item engagement questionnaire (five items for agentic engagement, five items for behavioral engagement, four items for emotional engagement, and eight items for cognitive engagement). For Hypothesis 5, we tested the structural model to evaluate the hypothesized engagement mediation model (i.e., Motivation → Engagement → Achievement).

To evaluate model fit for Hypotheses 4 and 5, we relied on the chi-square test statistic and multiple indices of fit (as recommended by Kline (2011)), including the standardized root-mean-square residual (*SRMR*; Hu & Bentler, 1999), the root-mean-square error of approximation (*RMSEA*; Steiger, 1990) and the comparative fit index (*CFI*; Bentler, 1990). In general, statistical values that indicate a good fit are .08 or less for the *SRMR* and *RMSEA* and .95 or more for the *CFI*, though it is further important that the set of indicators confirm one another to show a good overall collective fit (Hu & Bentler, 1999; Kline, 2011). When multiple models are compared (as with Hypothesis 4), the Akaike information criterion is further used such that the lower the AIC value, the better the fit is.

6. Results

Prior to testing our hypotheses, we explored for possible gender and grade level effects on our assessed measures. Gender predicted behavioral engagement, $t(363) = 2.64$, $p < .01$ [*Ms*, 5.12 (females) vs. 4.79 (males)], but it did not predict any of the other seven measures. Grade level predicted two measures: agentic engagement, $F(2, 362) = 5.68$, $p < .01$ [*Ms*, 3.77 (10th grade) vs. 3.63 (11th grade) vs. 3.06 (12th grade)] and achievement, $F(2, 362) = 3.22$, $p < .05$ [*Ms*, 73.6 (10th grade) vs. 69.9 (11th grade) vs. 69.7 (12th grade)]. Table 2 shows the descriptive statistics and intercorrelation matrix for gender, grade level, and the eight measured variables—four engagement scales, three psychological need satisfaction scales, and achievement. As can be seen in the table, correlations among all of the assessed variables were positive, significant, and in the expected direction.

6.1. Agentic engagement's relation to other aspects of engagement, student motivation, and achievement

Agentic engagement correlated positively and significantly with the other three aspects of engagement (see Table 2), thereby

Table 2
Descriptive statistics for and intercorrelations among all the measures.

Variable	1	2	3	4	5	6	7	8	9	10
1. Gender[a]	–	−.12*	−.05	.14**	.07	.04	.03	−.05	.08	.01
2. Grade level[b]		–	−.15**	.02	−.09	.00	−.08	−.10	−.09	−.12*
3. Agentic engagement			–	.36**	.46**	.48**	.35**	.43**	.35**	.48**
4. Behavioral engagement				–	.42**	.59**	.25**	.40**	.32**	.41**
5. Emotional engagement					–	.42**	.43**	.49**	.57**	.47**
6. Cognitive engagement						–	.32**	.49**	.32**	.50**
7. Perceived autonomy							–	.60**	.61**	.38**
8. Perceived competence								–	.64**	.42**
9. Perceived relatedness									–	.42**
10. Achievement										–
M	–	–	3.61	5.01	4.10	4.30	4.88	5.00	5.08	71.3
SD	–	–	1.24	1.16	1.14	1.05	1.22	1.23	1.32	13.9

$N = 365$.
[a] Gender scored as 0 for males, 1 for females.
[b] Grade level scored as 1 for 10th grade, 2 for 11th grade, and 3 for 12th grade.
* $p < .05$, two-tailed.
** $p < .01$, two-tailed.

supporting Hypothesis 1 and the notion that agentic engagement overlaps meaningfully with the other three previously-validated aspects. Agentic engagement also correlated positively and significantly with all three measures of psychological need satisfaction, thereby supporting Hypothesis 2 and the notion that agentic engagement was associated with students' constructive motivational status. Agentic engagement further correlated positively and significantly with achievement, thereby supporting Hypothesis 3 and the notion that the new agentic engagement measure possessed predictive validity for a key student outcome.[1]

To extend Hypothesis 3 to a test as to whether agentic engagement could explain independent (i.e., unique) variance in student achievement, the achievement measure was regressed simultaneously on the four measures of engagement (plus gender and grade level, which were added as control variables). Collectively, the four components significantly and rather substantially predicted achievement, $F(6, 358) = 36.29$, $p < .01$ ($R^2 = .38$). More importantly (for Hypothesis 3), after controlling for the contributions from the other three engagement components, agentic engagement explained independent variance in achievement, $F(1, 358) = 16.17$, $p < .01$ (*beta* = .21; change $R^2 = .031$). Further, the extent of its unique contribution compared relatively favorably to the extent of unique contribution made by each of the other three components: behavioral engagement, $F(1, 358) = 3.47$, $p < .07$ (*beta* = .10; change $R^2 = .005$); emotional engagement, $F(1, 358) = 19.30$, $p < .01$ (*beta* = .22; change $R^2 = .035$); and cognitive engagement, $F(1, 358) = 20.57$, $p < .01$ (*beta* = .25; change $R^2 = .035$).

6.2. Four distinct aspects of engagement

Hypothesis 4 predicted that agentic engagement would be a distinct aspect of engagement. To assess this, we first conducted an exploratory factor analysis and then used a series of confirmatory factor analyses to compare all possible models of how the various aspects of engagement might combine to define a best-fitting structure.

Table 3 shows the results from the exploratory factor analysis, using the 22 items listed in Table 1. As expected, four factors emerged, based on eigenvalue >1, and these four factors accounted for 66.6% of the total variance in the questionnaire. All factor loadings .30 or greater are shown in the table. Three cross-loadings emerged, and all three involved items from the cognitive engagement scale cross-loading onto the behavioral engagement scale. This suggests that while the four items assessing elaboration-based learning strategies (items 1–4) assessed cognitive engagement—or at least an aspect of engagement that was statistically distinct from its behavioral, emotional, and agentic aspects, three of the four items assessing metacognitive self-regulation strategies (items 5–8) reflected behavioral engagement as much as they reflected cognitive engagement.[2] Crucial to the purposes of the present paper, however, all five items from the agentic engagement scale loaded as hypothesized (see factor 2), did not cross-load onto any other engagement factor, and no item from the other three aspects of engagement cross-loaded onto the agentic engagement factor.

Table 4 shows the set of statistics used to evaluate the fit of the 12 possible models, using confirmatory factor analysis. The 12 possible models were as follows: (a) a single-factor model in which all 22 indicators listed in Table 1 loaded onto a single latent variable (i.e., engagement consists of one unitary factor), (b) all possible two-factor models, (c) all possible three-factor models, and (d) a four-factor model consisting of four separate latent factors (as characterized in Table 4). While none of the models fit the data according to the chi-square statistic (all *p*s < .01), the fit indices (*SRMR*, *RMSEA*, *CFI*, and *AIC*) collectively suggested that the four-factor model (model 12) adequately fit the data. Importantly, the four-factor model fit the data significantly better than did each of the other 11 alternative models, as it fit the data significantly better than did the one-factor model, ΔX^2 ($\Delta 6$ *df*) = 1292.52, $p < .01$, significantly better than all four two-factor models, range of ΔX^2's ($\Delta 5$ *df*) = 314.77 to 1212.01, *p*s < .01, and significantly better

[1] Item 1 on the agentic engagement scale ("During class, I ask questions.") might seem to assess a more reactive response to instruction than the more proactive responses assessed by items 2–5. To explore this further, we conducted supplemental analyses with versus without item 1, but the results observed with the four-item scale (that excluded item 1) were virtually identical to the results observed with the full five-item scale. This equivalency applied to the scale alpha coefficients, the correlations reported in Table 2, the exploratory and confirmatory factor analyses reported in Tables 3 and 4, and the mediation model illustrated in Fig. 1.

[2] Given that the items assessing metacognitive self-regulatory strategies loaded on both the cognitive and behavioral factors, we conducted a follow-up exploratory factor analysis that excluded these four items (items 5–8 from Tables 2 and 3). The factor analysis of the remaining 18 items showed a four-factor solution, as expected, and accounted for 71.2% of the total variance. Importantly, no cross-loadings emerged on either the behavioral or cognitive factors. The one cross-loading to emerge involved the "curiosity" item from the emotional engagement scale, as it cross-loaded .31 on the agentic engagement factor, though the item's primary loading continued to be on the emotional factor (.45). Overall, this follow-up analysis suggests that the reduced 18-item scale successfully and cleanly assessed four distinct aspects of engagement.

Table 3
Factor loadings from an exploratory factor analysis of all 22 items to assess the various aspects of student engagement.

Questionnaire item	Factor 1 (38.5%)	Factor 2 (12.1%)	Factor 3 (9.2%)	Factor 4 (6.8%)
Behavioral engagement items				
I listen carefully in class	.89			
I pay attention in class	.89			
The first time my teacher talks about a new topic, I listen very carefully	.89			
I try very hard in school	.86			
I work hard when we start something new in class	.84			
Agentic engagement items				
During class, I express my preferences and opinions		.91		
During class, I ask questions		.90		
I tell the teacher what I like and what I don't like		.89		
I let my teacher know what I am interested in		.68		
I offer suggestions about how to make the class better		.45		
Cognitive engagement items				
When doing schoolwork, I try to relate what I'm learning to what I already know			.85	
When I study, I try to connect what I am learning with my own experiences			.83	
I try to make all the different ideas fit together and make sense when I study			.83	
I make up my own examples to help me understand the important concepts I study			.71	
When what I am working on is difficult to understand, I change the way I learn the material			.68	
When I'm working on my schoolwork, I stop once in a while and go over what I have been doing	.47		.47	
As I study, I keep track of how much I understand not just if I am getting the right answers	.47		.45	
Before I begin to study, I think about what I want to get done	.48			
Emotional engagement items				
When I am in class, I feel curious about what we are learning				.88
When we work on something in class, I feel interested				.84
I enjoy learning new things in class				.78
Class is fun				.45
Factor intercorrelations				
1. Factor 1	–	.29	.44	.30
2. Factor 2		–	.36	.27
3. Factor 3			–	.25
4. Factor 4				–

than all six three-factor models, range of ΔX^2's ($\Delta 4$ *df*) = 61.91–1062.66, *ps* < .01.[3]

6.3. Agentic engagement as a mediator of the motivation-to-achievement relation

Hypothesis 5 predicted that agentic engagement would serve as a mediator to explain the effect that student motivation might have on academic achievement. Students' mid-semester motivation did predict their end-of-the-semester achievement, as shown in Table 2. That is, achievement correlated positively and significantly with perceived autonomy, perceived competence, and perceived relatedness (range of *r*'s = .38 to .42, all *p*'s < .01). A preliminary structural equation modeling analysis in which motivation (i.e., the latent variable of "psychological need satisfaction" which was composed of participants' three scores for perceived autonomy, perceived competence, and perceived relatedness), gender, and grade level were entered as predictors of achievement showed that the data fit the direct-effect motivation-to-achievement model well, X^2 (6) = 9.39, *ns*, *SRMR* = .021, *RMSEA* = .039, *CFI* = 0.99. Importantly, the magnitude of the direct effect of motivation on achievement was strong (*beta* = .45, *p* < .01) and accounted for 21% of the variance in student achievement (while neither gender nor grade level were individually predictive of achievement; *beta*s = −0.01, *ns*, and −.0.06, *ns*, respectively).

To test the prediction that engagement—and agentic engagement in particular—would mediate the motivation-to-achievement relation, we performed an analysis in which all four aspects of engagement were included as hypothesized mediators. We also allowed gender to predict behavioral engagement and grade level to predict agentic engagement, following the earlier exploratory analyses involving these two control variables (see Table 2). The four-mediator model fit the data fairly well, X^2 (328) = 978.25, *p* < .01, *SRMR* = .083, *RMSEA* = .073, *CFI* = .96, and, importantly, this model increased the proportion of explained variance in achievement to 30%.

Because we wanted to test if engagement mediated the motivation-to-achievement relation, we conducted an additional analysis in which we added psychological need satisfaction and grade level as two direct-effect predictors of achievement. We added the path from psychological need satisfaction to achievement to test if its direct effect dropped to nonsignificant after the inclusion of the four engagement mediators, and we added the path from grade level to achievement because it showed a significant zero-order correlation with achievement (see Table 2). Adding these two direct paths to the engagement mediation model did not produce a revised model that fit significantly better than the four-mediator model reported above, ΔX^2 ($\Delta 2$ *df*) = 2.98, *ns*., and the betas for both added paths were non-significant (*beta* = .08, *ns*, for

[3] To assess whether agentic engagement could be distinguished specifically from behavioral engagement, we compared a two-factor model that constrained the five AE items on one factor and the five BE items on a second factor against a one-factor model that constrained all 10 items on a single factor. The two-factor model fit significantly better than did the one-factor model, ΔX^2 ($\Delta 1$ *df*) = 915.24, *p* < .01. To assess whether agentic engagement could be distinguished specifically from emotional engagement, we compared a two-factor model that constrained the five AE items on one factor and the four EE items on a second factor against a one-factor model that constrained all 9 items on a single factor. The two-factor model fit significantly better than did the one-factor model, ΔX^2 ($\Delta 1$ *df*) = 200.25, *p* < .01. To assess whether agentic engagement could be distinguished specifically from cognitive engagement, we compared a two-factor model that constrained the five AE items on one factor and the eight CE items on a second factor against a one-factor model that constrained all 13 items on a single factor. The two-factor model fit significantly better than did the one-factor model, ΔX^2 ($\Delta 1$ *df*) = 677.69, *p* < .01. These analyses show that the data fit best when the agentic engagement items are kept separate to load on their own unique latent factor rather than when these same items are merged into a latent factor that includes the items from any other engagement scale.

psychological need satisfaction and *beta* = −.05, *ns*, for grade level). The R^2 for achievement did not increase, and none of the three fit indicators improved (*SRMR* = .083, *RMSEA* = .074, *CFI* = .96). Thus, collectively, the four aspects of engagement fully mediated the motivation-to-achievement relation.

The path from agentic engagement to academic achievement was individually significant in both models (*beta* = .13, $p < .01$). The path diagram showing the standardized parameter estimates in the four-mediator model that also includes the two direct, but not hypothesized, paths involving psychological need satisfaction and grade level appears in Fig. 1.[4] As can be seen in the figure, emotional engagement and cognitive engagement, like agentic engagement, explained independent variance in achievement, though, behavioral engagement, in these data, did not.[5]

7. Discussion

The present study pursued three goals—namely, to validate a new measure of agentic engagement, to test whether agency was a distinct engagement component, and to determine if agentic engagement was educationally important by assessing the extent to which it mediated the motivation-to-achievement relationship. Results supported all three goals, as agentic engagement (1) covaried with students' motivation, with other indices of engagement, and with achievement, (2) was conceptually and statistically distinct from the three other aspects of engagement, and (3) predicted student achievement even after taking out the variance in achievement that could otherwise be attributed to students' behavioral, emotional, and cognitive engagement.

Adding agency as a new aspect of student engagement is an important and worthwhile advance for two key reasons. First, agentic engagement explained unique and meaningful variance in students' achievement (as shown in Fig. 1). This means that, even after accounting for the contribution of the other three aspects of engagement (as well as psychological need satisfaction and grade level), there remained unexplained variance in students' achievement that agentic engagement was able to explain. Hence, a conceptualization of student engagement that includes agentic engagement is better able to explain achievement than is a conceptualization that excludes it. The reason why agentic engagement contributes uniquely to achievement is presumably because it is through intentional, proactive, and constructive acts that students find ways to improve their opportunity to learn by enriching the learning experience and by enhancing the conditions under which they learn.

Second, adding agency as a new aspect of engagement is important because it allows for a fuller portrayal of how students engage themselves in learning activities. Recognizing that students constructively contribute into the instruction they receive clarifies the picture of how students learn and profit from potential learning opportunities. Of course, students voice themselves in all sorts of ways—constructively but also defensively and counter-productively, as during lesson evading (e.g., turning to off-task interests and entertainments) and lesson rejecting (e.g., resisting a disliked teacher; Hansen, 1989). Students might also voice themselves in ways that seem to challenge the teacher's authority and imply a degree of teaching incompetence, as in "You are shouting at us and I don't think that kids should be shouted at. We don't deserve this and you shouldn't do it. No one likes it and stop it right now!" (Winograd, 2002, p. 358). So, it is important to center any discussion of agentic engagement on the construct's conceptual definition—students' *constructive* contribution into the flow of the instruction they receive.

Table 4
Fit indices associated with 12 models from the confirmatory factor analyses, using maximum likelihood estimation.

	X^2	*df*	*SRMR*	*RSMEA*	*CFI*	*AIC*
One-factor model						
Model 1: AE/BE/EE/CE[a]	1868.89	197	.16	.18	.70	2572.0
Two-factor models						
Model 2: AE + BE/EE/CE	891.14	196	.12	.11	.87	1113.5
Model 3: BE + AE/EE/CE	1056.15	196	.17	.12	.84	1329.6
Model 4: EE + AE/BE/CE	1788.38	196	.13	.17	.71	2487.2
Model 5: CE + AE/BE/EE	1684.19	196	.14	.17	.73	2349.3
Three-factor models						
Model 6: AE + BE + EE/CE	637.38	194	.087	.079	.92	757.6
Model 7: AE + EE + BE/CE	806.77	194	.11	.097	.89	978.9
Model 8: AE + CE + BE/EE	674.45	194	.11	.082	.91	791.4
Model 9: BE + EE + AE/CE	987.21	194	.16	.11	.86	1199.7
Model 10: BE + CE + AE/EE	659.60	194	.11	.081	.92	774.1
Model 11: EE + CE + AE/BE	1639.03	194	.14	.16	.74	2207.0
Four-factor model						
Model 12: AE + BE + EE + CE	576.37	191	.082	.073	.93	681.5

$N = 365$.
Note. X^2 = chi-square statistic; *df* = degrees of freedom; *SRMR* = standardized root-mean-square residual; *RSMEA* = root-square-mean error of approximation; *CFI* = comparative fit index; *AIC* = Akaike information criterion; AE = agentic engagement; BE = behavioral engagement; EE = emotional engagement; and CE = cognitive engagement.
[a] To read the models, when an engagement scale appears by itself (AE), the items from that scale were constrained to load only on that factor. When more than one engagement scale appears as a grouped set (AE/BE), the items from those scales were constrained to load onto one common factor. The + sign means separate factors; the / sign means a combined factor.

7.1. Agentic engagement within the student–teacher dialectical framework

One theoretical framework to conceptualize the mutual effects that teachers and students have on each other is the student–teacher dialectical framework within self-determination theory (SDT; Reeve, Deci, & Ryan, 2004). In this framework, (a) a teacher's motivating style (and classroom contextual factors more generally) affects students' motivation, (b) changes in students' underlying

[4] We also tested the alternative model that psychological need satisfaction might mediate the direct effect that the four aspects of engagement had on academic achievement. This alternative "reverse causation" model fit the data notably worse than did the hypothesized model, as it produced a higher X^2 value even though it featured fewer degrees of freedom (i.e., X^2 (326) = 1023.71, $p < .01$), and it explained only 26% of the variance in achievement. The reason this alternative model fit the data worse than did the hypothesized model (according to an examination of the modification indices from the gamma matrix) was because it failed to include the four otherwise direct and significant paths (unmediated by psychological need satisfaction) from each aspect of engagement to achievement.

[5] The nonsignificant path from behavioral engagement to achievement (*beta* = .01, *ns*) was surprising. We wondered if the reason why this path failed to reach statistical significance might be attributed to a potential multicollinearity problem with the cognitive engagement scale (i.e., notice the high *beta* = .62 covariance between the two mediators in Fig. 1). To pursue this possibility, we tested an alternative model that included only the four cognitive engagement items assessing learning strategies (items 1–4 in Tables 1 and 3) and therefore excluded the four items assessing metacognitive self-regulatory strategies (items 5–8 in Tables 1 and 3), because these latter items loaded as much on the behavioral factor as they did on the cognitive factor in the factor analysis reported in Table 2. This alternative model did fit the data fairly well, X^2 (233) = 600.39, $p < .01$, *SRMR* = .071, *RMSEA* = .063, *CFI* = .97, and it did decrease the covariance between the cognitive engagement and behavioral engagement latent variables (*beta* = .62 from Fig. 1 decreased to *beta* = .49). This reduced model did not, however, explain any additional variance in achievement (R^2 actually decreased to 29%). As suspected, the magnitude of the standardized betas for the four engagement mediators did somewhat increase in the reduced model (*betas* for the behavioral, emotional, cognitive, and agentic engagement latent variables predicting the achievement outcome increased from .13, .01, .19, and .26 in the original model, as shown in Fig. 1, to .15, .07, .27, and .31, respectively, in the reduced model), but the individual path from behavioral engagement to achievement remained nonsignificant, *beta* = .07, *ns* ($t = 1.54$).

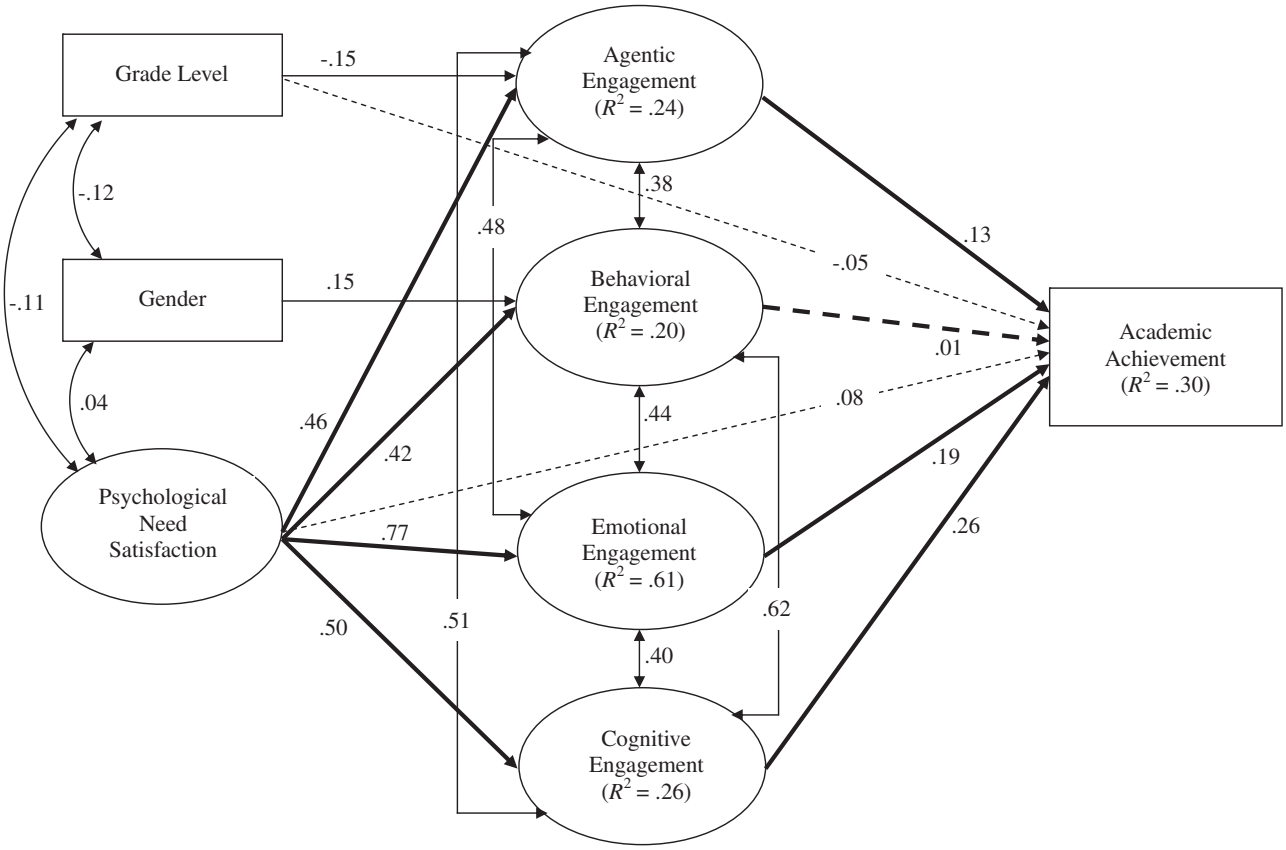

Fig. 1. *Standardized parameter estimates for the engagement mediation model of the motivation-to-achievement relation*. Bold lines represent hypothesized paths, while curved lines represent intercorrelations among the predictor variables. Solid straight lines represent significant paths, $p < .01$, while dashed lines represent non-significant paths. The numbers adjacent to the lines represent standardized parameter estimates. Ovals represent latent variables, while rectangles represent observed variables. For clarity of presentation, the 25 individual indicators for the five latent variables are not shown. The correlations of the disturbances among the four mediators are shown so to illustrate the extent of statistical overlap among the four aspects of engagement.

motivational states (e.g., interest, psychological need satisfaction, goals) are expressed through changes in students' engagement, and (c) changes in engagement in turn feedback to affect on-going changes in the teacher's motivating style toward the student. For instance, when teachers are autonomy supportive (rather than controlling) early in the semester, students' psychological need satisfaction and engagement increase by mid-semester, and teachers then adjust their motivating styles by the end of the semester in response to students' rising or falling engagement as they become significantly more autonomy supportive with engaged students but significantly more controlling with disengaged students (Jang, Kim, & Reeve, in preparation).

It makes sense to put student agency at the center of the student–teacher dialectic because students' agentic engagement can be conceptualized as the ideal complement to a teacher's autonomy-supportive motivating style. That is, agentic engagement involves students expressing opinions, communicating interests, and asking questions, while autonomy support involves creating the classroom conditions in which students feel free to express opinions, pursue interests, and ask questions. For instance, consider the following three items that appear on the Learning Climate Questionnaire, a measure widely used to assess students' perceptions of how autonomy-supportive their teachers are (e.g., Black & Deci, 2000; Jang et al., 2009): (1) My teacher listens to how I would like to do things; (2) My teacher tries to understand how I would like to do things before suggesting a new way to do them; and (3) My teacher encourages me to ask questions. These items pair up strikingly well to items 4, 3, and 1 from the agentic engagement measure shown in Table 1.

Agentic engagement is important not only to a SDT conceptualization of student motivation but to perhaps all major theories of student motivation. All motivation theories of interest to educational psychologists highlight the unobservable psychological processes that energize and direct students' observable effort, interest, and strategic involvements, and the concepts of behavioral engagement, emotional engagement, and cognitive engagement, respectively, correspond nicely to these three categories of observable motivated action. What adding the concept of agentic engagement can do for any view of student motivation is to draw greater attention to students' intentional, proactive, and origin-like motivated involvement in these same learning activities. While the present study focused on students' psychological need satisfaction, several agency-based motivational constructs seem especially ripe to benefit from attention to students' agentic engagement, including self-efficacy, personal goals, possible selves, individual interests, and a mastery goal orientation. For instance, Bandura (1997) argued that self-efficacy is the very foundation of human (i.e., student) agency.

7.2. Educational constructs similar to agentic engagement

We propose agentic engagement as a new educational construct—a newly-proposed fourth aspect of students' engagement during learning activities. Still, other programs of research have focused on similar student behaviors and classroom processes. Some of these behaviors are near-equivalents to the current concept of agentic engagement. One near-equivalent is student input using instructional technologies such as a personal response system (or "clickers") or classroom response systems (CRSs) in which students

press a button on a hand-held remote control device to communicate their answer to, or to express their opinion on, a teacher-prepared question projected on a screen (Mayer et al., 2009). While such student input does contribute constructively into the on-going flow of instruction, it is nevertheless reactive (rather than proactive). That said, a study using the Turning Point active response system (whole-class questions built into PowerPoint lecture slides) showed that students afforded this type of input did initiate a greater number of verbal responses (one likely manifestation of high agentic engagement) than did a control group of students (Harper, 2009).

Formative assessment is another near-equivalent concept. During formative assessment, teachers utter verbal prompts or hand out index cards asking, "Any suggestions?" Indeed, each of the five items listed in Table 1 to represent agentic engagement might serve well as an open-ended formative assessment (e.g., "Any questions?", "What about this class did you like or dislike?", and "Any suggestions about how we might make tomorrow's class better?"). Teachers elicit and obtain student feedback in a number of ways, and it is likely that each of these affords students an opportunity for agentic engagement (for a review of these student feedback techniques, see Richardson, 2005).

Other existing educational constructs overlap, yet are distinct from, our concept of agentic engagement. Instrumental help seeking (or "adaptive help seeking") involves students actively seeking out teacher-provided assistance (e.g., hints when stuck) so that they can complete an assignment (Karabenick, 1998; Karabenick & Newman, 2006; Pajares, Cheong, & Oberman, 2004). Unlike agentic engagement, instructional help seeking does not generally correlate with academic achievement, a finding that is likely due to its reactive nature. A somewhat similar construct is the use of behaviorally-oriented boredom-related coping strategies (Nett, Goetz, & Hall, 2011). Strategies such as "asking the teacher if we can do something else" seem to represent constructive contributions into the flow of instruction, at least from the student's point of view. The concept of "strategies for regulating motivation" is also similar (Wolters, 2003), as it, like the concept of agentic engagement, focuses on the process in which students take a purposive role in their own learning. Taking a purposive role in one's learning is a concept that is closely related to our concept of making an intentional, proactive, and constructive contribution into the flow of the instruction one receives.

The literature on student–teacher negotiations of classroom power is also related (e.g., Schrodt et al., 2008; Sproston, 2008), as the basic principle of negotiated power is that students need to be allowed by teachers to negotiate various aspects of the classroom curriculum and decision-making, such as rules and evaluations. Like similar literatures on responsive or authoritative teaching (Wentzel, 2002) and on constructivist approaches to teaching (Glaserfeld, 1989; Prawat, 1992), the focus is on what teachers need to do to empower (and engage) students in classroom activities. Thus, these literatures relate to the present concept of agentic engagement in that they may well predict teacher-related behaviors that facilitate relatively high levels of students' agentic engagement.

7.3. Assessment issues for future research

Perhaps the most pressing issue for future research is to more adequately assess the agentic engagement construct. In the present study, we created a brief measure based on our observations of students' actual classroom behavior that represented a student "hit" (an influence attempt) within the Hit-Steer Observation System (discussed in the Introduction). While adequate for the present purposes, it is conceivable that the agentic engagement construct is a richer one than we portrayed. A promising future research pursuit would be to explore ways that might more fully characterize the process in which students intentionally, proactively, and constructively contribute into the flow of instruction they receive.

To help advance that goal, we identify here what we believe to be five essential characteristics of agentic engagement: (1) It is proactive (occurs before or during, rather than after, the learning activity); (2) it is intentional (deliberate and purposeful); (3) it tries to enrich the learning opportunity (by making it more personal, interesting, challenging, or valued); (4) it contributes constructive input into the planning or on-going flow of instruction so that the student has a say in the conditions under which he or she learns; and (5) it does not connote teacher incompetence or ineffectiveness. Some possible items that may meet these criteria include the following: "I let the teacher know what I am thinking and needing"; "I make whatever we are learning as relevant to my life as possible"; "I speak up whenever I think I can add something important to the flow of the class"; "When a lesson is exciting and interesting, I let my teacher know that I like it"; and "When I need something, I'll ask the teacher for it instead of just suffering quietly."

Future improvements are needed not only for the assessment of agentic engagement, but for the assessment of cognitive engagement as well. In the present study, items assessing the metacognitive and self-regulatory aspects of cognitive engagement unexpectedly cross-loaded onto the behavioral factor (see Table 3). Further, when we used only the items assessing the use of sophisticated learning strategies, the cross-loadings disappeared (see footnote 2). This implies that it might be helpful to narrow the conceptualization of cognitive engagement down to the use of sophisticated learning strategies (e.g., elaboration, paraphrasing, summarizing) that enable deep and personally meaningful, rather than superficial, learning. Students' metacognition and self-regulation during learning activities are certainly important aspects of engagement, though they seem to reflect engagement's behavioral aspect as much as its cognitive aspect.

The theoretical effort to clarify the conceptual nature of cognitive engagement has been an ongoing debate (Pintrich, 2000, 2004; Pintrich & De Groot, 1990; Zimmerman, 2002), and the findings in the present study suggest that learning strategies tap uniquely into cognitive engagement while metacognitive self-regulatory strategies tap into a more general construct that confounds cognitive engagement with behavioral engagement. If future studies are to better understand how cognitive engagement uniquely contributes to students' positive outcomes, then they would be well advised to narrow their conceptual and operational definitions of cognitive engagement to include only the use of sophisticated learning strategies. That said, perhaps additional aspects of cognitive engagement that have not yet been the focus of research might be considered, including perhaps mental simulations as emphasized within the talent development literature (Ericsson, Krampe, & Tesch-Romer, 1993), critical thinking (Elliot, McGregor, & Gable, 1999), and the higher aspects of Bloom's taxonomy (analysis, evaluation, synthesis).

7.4. Limitations

We acknowledge four limitations and potential criticisms within our investigation. First, while we conceptualized agentic engagement as a class-specific phenomenon (or even as a learning activity-specific phenomenon), we actually assessed it in a way that collapsed students' engagement ratings across all their current classes. Assessing engagement this way was a necessary procedure in our study, however, because we knew in advance of the data collection effort that we would have access only to students' semester grades (not to their individual class grades). Because our top

concern going into the study was to test if agentic engagement could predict students' achievement, we decided to assess engagement at the same level as the achievement data. That said, we acknowledge that assessing student engagement (and achievement) at the classroom level is the better and more appropriate procedure, as it is entirely possible that a student might show strong engagement in one class and with one teacher yet show weak engagement in another class. Future research, therefore, would be best served by obtaining students' engagement and indices of achievement (grades, performance, learning, skill development, academic progress) at the class (or learning activity) level.

Second, our sample of participants included only high-school students from Taiwan. It is not yet clear how constructive agentic engagement might evidence itself to be when the setting changes to students of different grade levels and to students with different ethnic and cultural backgrounds. Indeed, an interesting question for future research would be to ask if agentic engagement is more predictive of student outcomes at one grade level rather than another. After all, those who study elementary students tend to focus disproportionally on the behavioral aspects of engagement (Alexander, Entwisle, & Dauber, 1993; Birch & Ladd, 1997), while those who study high school students focus disproportionally on the cognitive aspects of engagement (Greene, Miller, Crowson, Duke, & Akey, 2004). While we recognize this sample limitation as both real and important, our decision to sample students from an Eastern nation was actually an intentional one, as the prototypical classroom script in Chinese schools is highly teacher-centered and somewhat antagonistic to students' classroom agency (though the mean agentic engagement score in the present study was a respectable 3.61 on a 1–7 scale; see Table 2). While the generalizability of our findings to more diverse samples is in question, we nevertheless believe that future research will show that our data from secondary students in an Eastern nation actually underestimate the role that agentic engagement plays in students' learning and achievement.

Third, our study assessed only the positive face of engagement during instruction—engagement rather than disaffection. It is not clear how much of a limitation this omission was to the present study, because our positively-valenced measures did rather adequately explain the motivation-to-achievement relation. Still, other research has shown that the disaffected face of engagement is important to understanding how students behave, learn, and achieve during learning activities (Skinner, Kindermann, & Furrer, 2009). This observation raises the issue of how important it may be to conceptualize and assess the disaffected side of agentic engagement—that is, those occasions when students sit passively and simply take whatever instruction teachers provide them. It is not yet clear that students suffer from simply and unquestionably taking whatever instruction teachers provide, and it is not yet clear just what the opposite (disaffected face) of agentic engagement is.

Fourth, one argument against adding agency as an engagement component might be that some students are more vocal or more assertive than are others. Hence, agentic engagement might be too confounded with student characteristics such as extraversion. While this may be true, the same criticism applies in equal measure to the other three aspects of engagement. The observations that some students are more behaviorally active than are others, are emotionally happier and less anxious than are others, and are more intelligent than are others are all parallel confounds inherent within the concepts of behavioral engagement, emotional engagement, and cognitive engagement as well. Overall, however, it seems that educators' understanding of how students learn and profit from potential learning experiences can only be enhanced by adding agency as a fourth aspect of students' engagement during learning activities.

8. Conclusion

Students vary in how they react to the learning activities their teachers provide, as some students work harder, with greater joy, and more strategically. These behavioral, emotional, and cognitive differences are important in predicting students' learning and achievement. But students further vary in how much or how little they purposively work to have a say in their learning opportunities, as by offering suggestions as to how they might be enriched, personalized, or generally improved upon. The findings in the present study showed that such agentic engagement was conceptually distinct from the three other three aspects of engagement, that it correlated significantly with a constructive aspect of students' motivation, and that it predicted independent variance in students' achievement. Such a pattern of results opens the door to future work that seeks to more fully understand how students learn and also how educational psychologists can better appreciate students' constructive contributions into their own learning.

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