

MEASURING FOUR-DIMENSIONAL ENGAGEMENT IN SCHOOL: A VALIDATION OF THE STUDENT ENGAGEMENT SCALE AND OF THE AGENTIC ENGAGEMENT SCALE

CONSUELO MAMELI
STEFANO PASSINI
UNIVERSITY OF BOLOGNA

Student engagement has traditionally been defined as a metaconstruct made up of three aspects: emotional, behavioral, and cognitive. Recently, however, a fourth component has been proposed, namely the agentic one. Notwithstanding the widely recognized importance of investigating student engagement, in Italy a validated scale suitable for this purpose does not exist. The present work represents a first contribution to the validation in Italy of a questionnaire designed to measure student engagement in high school. By combining two separate questionnaires (i.e., the Student Engagement Scale and the Agentic Engagement Scale) within a single instrument, this study focuses on the psychometric properties of a four-dimensional student engagement scale on 1,210 Italian secondary school students. Results confirm the robustness of the four-dimensional structure of the student engagement scale.

Key words: Student engagement; Agentic engagement; Validation; Measurement; Assessment instruments

Correspondence concerning this article should be addressed to Consuelo Mameli, Department of Education Studies, University of Bologna, Via Filippo Re 6, 40126 Bologna (BO), Italy. Email: consuelo.mameli@unibo.it

Over the past twenty years the concept of student engagement, recently defined as energy in action (Ainley, 2012; Skinner & Pitzer, 2012), has received increasing interest worldwide (Appleton, Christenson, & Furlong, 2008; Lawson & Lawson, 2013; Shernoff & Schmidt, 2008). A number of studies converge in identifying engagement as a crucial factor in predicting learning and academic success (e.g., National Research Council & Institute of Medicine, 2004), and some researchers indicate that it functions as a full mediator between intrinsic motivation and school achievement (Reeve, 2013). There is also evidence that adolescents showing low engagement levels tend to exhibit risky behaviors (e.g., a more frequent use of psychoactive substances), and they are more likely to dropout of school (Li & Lerner, 2011; Wang & Fredricks, 2014).

Besides a large amount of empirical evidence, there are other reasons — theoretical, practical, and historical — that have contributed to directing scholars' attention toward this issue (Fredricks, Blumenfeld, & Paris, 2004). From a theoretical point of view, student engagement is fascinating because, while still involving the individual, it has the nature of a dynamic, social, and synergistic process (Lawson & Lawson, 2013). In its most recent conceptualizations, engagement corresponds to a metaconstruct defined and incessantly redefined within social contexts and interpersonal relationships (Peck, Roeser, Zarrett, & Eccles, 2008; Wang & Eccles, 2013) which influence the degree to which a student is able to take action in terms of school commitment and effort (Pianta, Hamre, & Allen, 2012).

This characterization has important implications for professional practice because it qualifies engagement as a malleable and evolving dimension (Crick, 2012; Fredricks et al., 2004), liable to change by intervening in the learning environment and the relationships involved in it (Borman, Hewes, Overmann, & Brown, 2003). Furthermore, this ductility makes student engagement a relevant variable upon which to intervene especially in this historical moment, characterized by a general disaffection of young people vis-à-vis school (Crosnoe, 2002; Modell & Elder, 2002).

All these reasons signal the importance of thoroughly understanding and investigating student engagement. To do this, standardized instruments are fundamental to identify and possibly intervene in critical situations and contexts. Although in the literature there are several of these instruments, as far as we know in Italy a validated scale suitable for this purpose does not exist. This lack is worrisome considering the critical situation of this country from an educational point of view. The report by the Ministry of Education, University, and Research (2013) states that school dropout rate in this country corresponds to 19.2% (mostly males), and this datum places Italy in a significantly retarded position, specifically fourth from last with respect to the other European countries. In addition, the results of the international tests OECD-PISA (2012) on reading, writing, and mathematical skills showed that Italian students are in the lower positions of the ranking, although there have been some improvements with respect to the same survey conducted in 2009.

In light of these considerations, the present work represents, to our knowledge, a first contribution to the validation in Italy of a questionnaire appropriate for measuring student engagement in high school. In this study, we consider an engagement theoretical model comprising four dimensions: affective, behavioral, cognitive, and agentic.

ENGAGEMENT AS A THREE-DIMENSIONAL CONSTRUCT

Scholars' interest in student engagement has been proportional to the effort to clarify its definition and to design tools with which to evaluate it. The concentration of studies, however, has led to a variety of solutions, resulting in some confusion. Two areas result to be particularly critical (Fredricks & McColskey, 2012; Glanville & Wildhagen, 2007; Lam et al., 2014; Lawson & Lawson, 2013): the first concerns the number of dimensions which fall within the concept of engagement and their definition, while the second relates to the measurement of each one.

As for the number of dimensions, the most recent lines of research converge in defining student engagement as a metaconstruct made up of three main aspects (Fredricks et al., 2004; Jimerson, Campos, & Grief, 2003; Wang & Fredricks, 2014): emotional or affective, behavioral, and cognitive. Emotional engagement corresponds to student identification and the sense of belonging to school (Finn, 1989; Voelkl, 2012), and to the affective feelings about learning and educational activities (Finn & Zimmer, 2012). Other scholars (Fredricks & McColskey, 2012), however, also include in this dimension the set of positive or negative emotions that students experience with respect to their teachers and classmates. Behavioral engagement is defined as student participation and involvement in curricular (Fredricks et al., 2004) and extra-curricular (Finn, Pannozzo, & Voelkl, 1995) activities. Some researchers (e.g., Finn & Rock, 1997) also include student discipline in this component, meaning their ability to keep to school rules. Never-

theless, the latter aspect is controversial because it is unclear whether student conduct should be considered as an engagement indicator or an outcome (Lam et al., 2014). Finally, cognitive engagement — which represents the weakest and most elusive construct component (Wang & Fredricks, 2014) — is conceptualized as the students' degree of investment in learning processes and strategies. Although some scholars link this element to the ability to self-regulate learning processes (Cleary & Zimmerman, 2012; Walker, Greene, & Mansell, 2006), others argue that self-regulation strategies have a behavioral nature and should not therefore be included in this dimension (Lam et al., 2014).

As regard the student engagement measurement, self-report instruments are those most commonly used due to ease and speed of administration. As pointed out in some literature reviews (Fredricks et al., 2004; Reeve, 2012), however, most of the available tools present some drawbacks. Some instruments, for instance, assessed engagement by means of a unique and general scale, thus failing to distinguish between behavioral and psychological aspects (Marks, 2000). Other questionnaires were instead focused on a single component of engagement, such as the cognitive (Pintrich, Smith, Garcia, & McKeachie, 1993) or the emotional (Voelkl, 2012) one. Other instruments have attempted to measure all three construct components (e.g., Fredricks et al., 2004), although differences have been observed in the way similar items were adopted as indicators of different engagement elements. Finally, some scales confused engagement indicators with other variables that could rather be considered as antecedents, such as the quality of students' social relations (Appleton, Christenson, Kim, & Reschly, 2006), or outcomes, such as conduct problems (Wang, Willet, & Eccles, 2011), of engagement.

Seeking to overcome these limits, Lam and colleagues (2014) conducted an international study in twelve countries (Austria, Canada, China, Cyprus, Estonia, Greece, Malta, Portugal, Romania, South Korea, the United Kingdom, and the United States of America) on nearly 3,500 students from 7th to 9th grade in order to clarify the concept of student engagement and to build up a questionnaire appropriate for measuring its three components in different student populations. The developed 33-item scale presents several strengths. First of all, it includes items specifically selected by an international research team and based on an extensive review of relevant past studies. Second, the items were singled out according to a clear definition of the three engagement components: the affective engagement subscale assesses student liking for learning and school; the behavioral engagement subscale measures student effort in learning and participation in school and extrascholastic activities; the cognitive engagement subscale evaluates student use of meaningful information-processing strategies in learning. Third, the items were chosen with the specific aim of avoiding confusion between the actual engagement indicators and their antecedents or outcomes. Fourth, the scale showed good psychometric properties for the international samples where it was tested, and this makes the questionnaire potentially suitable for its use in different contexts, including the Italian one.

AGENCY AS THE FOURTH COMPONENT OF STUDENT ENGAGEMENT

As previously stated, the three-component nature of student engagement is largely shared in the literature. Recently, however, Reeve (2012, 2013; Reeve & Tseng, 2011) suggested adding

a fourth component to these three dimensions, namely agentic engagement, which has given rise to a certain amount of attention in the academic debate (Lawson & Lawson, 2013).

Within the theoretical framework of Self-Determination Theory (Ryan & Deci, 2000, 2002; Vansteenkiste, Niemiec, & Soenens, 2010), and in particular of the student-teacher dialectic framework, Reeve (2012) stressed the importance of considering engagement as a social process built into the interpersonal contexts in which the individual (i.e., the student) actively participates. Briefly, this theoretical framework emphasizes the circular and bidirectional nature of the factors related to the engagement construction. On the one hand, the learning environment may be more or less supportive and can contribute in different ways to shaping intrinsic student motivation, the result of which is reflected in the engagement dimension. For instance, an interpersonal context characterized by teachers who encourage student autonomy, competence, and positive relationships will facilitate high intrinsic motivation and may thus encourage a good level of engagement. On the other hand, Reeve and other authors (Ainley, 2012; Brooks, Brooks, & Goldstein, 2012; Crick, 2012; Mameli & Molinari, 2014) argue that a student does not simply *receive* these influences, but actively intervenes in the learning environment, thereby modifying it. For instance, students may ask questions if they did not understand a topic, they may express their own opinions or may ask to deepen an issue of particular interest to them. The agentic engagement is placed by Reeve in this action space, and is defined as “the process in which students proactively try to create, enhance, and personalize the conditions and circumstances under which they learn” (Reeve, 2012, p. 161).

According to this scholar, the behavioral, emotional, and cognitive engagement components so far conceptualized and measured in the literature are appropriate to assess the way in which students react to the activities and tasks proposed during the lessons, but fail to capture their active and transformative contribution. To understand and evaluate this aspect, Reeve and Tseng (2011) developed a 5-item scale (the Agentic Engagement Scale, AES), later modified and improved (Reeve, 2013). The scale used an agentic engagement definition based on five key points (Reeve & Tseng, 2011): it is proactive, intentional (deliberate and purposive), enriches and personalises the learning activity, contributes to the flow of the teacher’s instructions, and does not indicate the teacher’s ineffectiveness or incompetence. Despite its innovative and original potential, to date Reeve’s scale has only been used in his works, based on moderate size samples of students from Taiwan and South Korea. To our knowledge, no studies have tested the validity of this scale on Western student populations.

THE PRESENT STUDY

The present study focuses on the psychometric properties of a four-dimensional student engagement scale, composed by combining two separate questionnaires into a single instrument. As for the first three dimensions — emotional, behavioral, and cognitive — we relied on the Student Engagement Scale as proposed by Lam and collaborators (2014), which showed good psychometric properties in a number of countries. As for the fourth dimension, that is agentic engagement, we used the Agentic Engagement Scale originally proposed by Reeve (Reeve, 2013; Reeve & Tseng, 2011).

Two specific objectives were pursued in this study. The first aim is to confirm the four-dimensional factor solution of the questionnaire. We therefore expect to find good reliabilities for

all the four dimensions as well as a confirmation of the enlarged structure of the concept of student engagement. The second goal is to analyze the concurrent validity of the questionnaire. Based on the vast existing literature, we chose three dimensions which were expected to show a high association with the four engagement aspects assessed. In particular, we expect student engagement to correlate positively with a good relationship with peers (Polychroni, Hatzichristou, & Sideridis, 2012; Ream & Rumberger, 2008) and academic achievement (Skinner & Pitzer, 2012; Wang & Holcombe, 2010), while we predict a negative association between engagement and psychological distress (Antaramian, Huebner, Hills, & Valois, 2010; Steele & Fullagar, 2009).

METHOD

Participants

Participants were 1,210 Italian secondary-school students (664 males, 543 females, and three persons who did not indicate their gender), coming mostly from middle-class families. They were enrolled in five academic and technical secondary schools located in Northern Italy. The average age of the participants was 16.08 ($SD = 1.36$, range 14-19) years. They were almost equally divided into students attending the first two years of compulsory schooling (aged 14-16, $n = 540$, 44.63%) and the last three years of high school (aged 17-19, $n = 670$, 55.37%). Almost all the participants were of Italian origin ($n = 1,126$, 93.1%), while the remaining students nonetheless spoke fluent Italian.

Procedure

For underage students, participation in the study was preceded by an informed-consent procedure that required active consent from both of the students' parents. Only the parents of two students denied their consent and were therefore excluded.

The questionnaires were distributed in an online version in the classrooms during school lab hours. In cases where this was not possible ($n = 210$), we proceeded with the administration of paper questionnaires that were then manually entered into the database. The research was introduced to the students as a survey on school experience and they were asked to verbally express their consent to take part in the study. The scholar explained the procedure and guaranteed confidentiality and anonymity. It took approximately 20 to 25 minutes to complete the questionnaire. This survey was approved by the Ethics Commission of the institution where the authors work and was conducted in agreement with the ethical norms laid down by the Italian National Psychological Association.

Measures

Affective, behavioral, and cognitive engagement. The questionnaire used is the one proposed by Lam and collaborators (2014). The 33 items making up the questionnaire were selected

by the authors from preexisting instruments widely used in the literature (e.g., Finn et al., 1995; Miller, Greene, Montalvo, Ravindran, & Nichols, 1996; Rao & Sachs, 1999; Skinner & Belmont, 1993).¹

For the Italian version, the instrument was subjected to a back-translation (Brislin, 1970) by a native English speaker. The back-translated items were then reviewed by the authors and, where necessary, unclear statements were reformulated. In particular, the items that had ambivalent or confusing meanings in the Italian structure were reformulated paying attention to maintaining a conceptual equivalence (Herdman, Fox-Rushby, & Badia, 1997) with the original English item. For example, the original item "When I'm in class, my mind wanders" should be literally translated into Italian as "Quando sono in classe, la mia mente vaga." Since this formulation is somewhat confusing, this item was reformulated as "Quando sono in classe mi distraggo," which in English corresponds to "When I'm in class, I get distracted."

The questionnaire investigates student engagement by means of three scales: affective, behavioral, and cognitive. Affective engagement scale (nine items, one of which is reverse scored) measures students' liking for learning and school. Sample items are: "I am very interested in learning" and "I think learning is boring" (reverse). Behavioral engagement scale (12 items, three of which are reverse scored) assesses students' effort in learning and involvement in school and extrascholastic activities. Sample items are: "In class, I work as hard as I can" and "When I'm in class, I just act like I'm working" (reverse). The cognitive engagement scale (12 items) estimates students' use of significant information-processing strategies in learning. Sample items are: "When I study, I figure out how the information might come in useful in the real world" and "I make up my own examples to help me understand the important concepts I learn from school." For the first two subscales, students were asked to indicate their level of agreement on a 7-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*). For the cognitive engagement scale, a 7-point Likert scale of frequency was used (from 1 = *never* to 7 = *always*). The mean of the items on each subscale was used as an overall score on the corresponding dimension. Copies of the Italian questionnaire are available from the authors on request.

Agentic engagement. This dimension was measured with the Agentic Engagement Scale (AES; Reeve & Tseng, 2011) in its revised form (Reeve, 2013). As this instrument had never been used before in Italy, a back-translation procedure was adopted. The scale is made up of five items assessing students' contributions to education but also more transactional and dialectical inputs. Students were asked to indicate their grade of agreement on a 7-point Likert scale (range from 1 = *completely disagree* to 7 = *completely agree*). A sample item is "I let my teacher know what I need and want." Copies of the Italian version of this scale are available from the authors on request.

Connectedness among students. The students' perception of the connectedness among classmates was measured using the Connected Classroom Climate Inventory (CCCI; Dwyer et al., 2004). The students were asked to indicate to what extent they agreed with 18 statements (e.g., "The students in my class respect one another," "The students in my class are concerned about one another") on a 7-point Likert scale, from 1 = *strongly disagree* to 7 = *strongly agree*. The mean of the scores was used to indicate the students' perception of a classroom environment in which students feel socially connected through commonalities, a sense of community, and a mutual concern for each other. Cronbach's alpha for this scale was .93.

Psychological distress. The General Population Clinical Outcomes in Routine Evaluation measure (GP-CORE; Evans, Connell, Audin, Sinclair, & Barkham, 2005) was used to investigate nonclinical levels of distress. The GP-CORE is a 14-item instrument derived from the larger Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM; Evans et al., 2002). Items include statements such as “I have felt tense, anxious, or nervous” and “I have felt warmth or affection for someone” (reversed), with higher scores signifying higher levels of concern and distress. For this study, responses are evaluated on a 7-point Likert scale from 1 = *not at all* to 7 = *most or all of the time*. In the present work, Cronbach’s alpha was .78.

School achievement. All students were asked to indicate their average school grade at the end of the first semester.

Analytical Procedures

First, the normality, the internal reliability, and the item analysis of each dimension of the student engagement scale were examined. In particular, as concerns normality of the scale, values of skewness and kurtosis were considered. Normality of the data is considered acceptable when skewness $< |3.0|$ and kurtosis $< |8.0|$ (Kline, 2011). Concerning the other psychometric properties, internal reliability $> .70$ (Cronbach & Meehl, 1955) and item-total correlations $> .30$ (Green & Lewis, 1986) are considered acceptable. Second, confirmatory factor analysis (CFA) was performed to confirm the structure of the scale. As suggested by Hu and Bentler (1999), model fit of CFA was assessed using the comparative fit index (CFI, cutoff value close to .90), the Tucker-Lewis index (TLI, cutoff value close to .90), and root mean square error of approximation (RMSEA, cutoff value close to .06). In particular, we examined two different multidimensional structures: the three-dimensional (affective, behavioral, and cognitive) and the four-dimensional (affective, behavioral, cognitive, and agentic) solutions. These structures were each time compared with the corresponding one-dimensional structure. To test significant improvement in model fit, the chi-square difference test was used to compare nested models. Finally, correlations of the dimensions of the student engagement scale were computed with the other variables in order to examine the concurrent validity.

RESULTS

As can be seen in Table 1, the three original dimensions of the student engagement scale identified by Lam and colleagues (2014) showed good psychometric properties. Internal reliabilities of these three dimensions did not increase with the elimination of any item. Considering the agentic dimension, the analysis showed an acceptable internal reliability, although this dimension is composed by fewer items. Moreover, in both cases, the normality of the scale and interitem correlations were statistically acceptable.

The means of the dimensions showed that participants gave high scores to the affective and cognitive dimensions and medium scores to the behavioral and agentic ones. As concerns gender differences (see Table 1), in line with the literature (e.g., Skinner, Kindermann, & Furrer, 2009; Wang & Eccles, 2013), *t*-test analysis showed that girls had higher scores on the behavioral dimension.

TABLE 1

Means, standard deviations, psychometric properties, and gender differences on each dimension of the Student Engagement Scale

| | n item | <i>M</i> | <i>SD</i> | Psychometric properties | | | <i>t</i> -test for gender | | | |
|------------|--------|----------|-----------|-------------------------|----------|----------|--------------------------------|----------------|---------------|----------|
| | | | | Skewness | Kurtosis | α | Inter-item <i>r</i> (range) | <i>M</i> girls | <i>M</i> boys | <i>t</i> |
| Affective | 9 | 4.71 | 1.07 | -.66 | .26 | .87 | .32-.70 | 4.77 | 4.66 | 1.82 |
| Behavioral | 12 | 4.39 | 1.01 | -.37 | -.01 | .87 | .37-.68 | 4.59 | 4.22 | 6.47*** |
| Cognitive | 12 | 5.10 | 0.99 | -.71 | .64 | .90 | .44-.79 | 5.03 | 5.13 | -1.82 |
| Agentic | 5 | 4.06 | 1.20 | -.26 | -.38 | .78 | .47-.65 | 3.93 | 4.17 | -3.54*** |

*** $p \leq .001$.

Differently from other studies reporting no discrepancy between males and females in respect to the agentic engagement (Reeve, 2013; Reeve & Tseng, 2011), a difference in favor of males was found on this dimension. No differences were found on the affective and cognitive dimensions.

Then, in order to assess the structure of the entire scale, two distinct confirmatory factor analyses (three- and four-dimensional structures) were performed on the scale items. As can be seen in Table 2, these analyses confirmed the robustness of all the multidimensional structures. All the factor loadings were significant at $p < .001$ (see Table 3). In all the models, the same correlations between error terms were included.² These correlations were all between error terms of items loading on the same dimension and were all theoretically plausible given the very similar meaning and formulation of the associated items. For instance, the error term of the item co9³ correlated with the error term of the item co10, with both items referring to the cognitive process of connecting new school information with past subjective experiences. Or else, the error term of the item ag3 correlated with the error term of the item ag1, with both items referring to a request for clarification to the teacher. In specific, four correlations were allowed on the affective dimension: af4-af6; af2-af6; af4-af7; af6-af7. Nine correlations were allowed on the behavioral dimension: be1-be5; be3-be6; be3-be12; be6-be12; be2-be7; be2-be4; be9-be11; be10-be11; be7-be11. Eight correlations were allowed on the cognitive dimension: co1-co2; co9-co10; co3-co11; co5-co11; co6-co11; co8-co12; co8-co9; co5-co6. Two correlations were allowed on the agentic dimension: ag1-ag3; ag4-ag5. Moreover, one correlation between error terms was estimated between two items of distinct dimensions, that is, be8 (behavioral) with ag1 (agentic). Also in this case, the theoretical closeness is plausible given that both the items refer to the active participation of the student in the classroom.

In general, the three-dimensional structure was the analysis with a modestly better fit. However, considering that the four-dimensional structure also had acceptable fit, and considering the opportunity of having a fourth dimension which also considers the aspects related to unilateral and original student contributions, the four-dimensional one was considered the best solution. In both cases, chi-square difference tests indicated a significantly better fit over the one-factor model: $\Delta\chi^2(3) = 2568.03, p < .001$ for the three-dimensional structure; $\Delta\chi^2(6) = 3009.02, p < .001$ for the four-dimensional structure.

In order to test how much each dimension is related to engagement in school, a second-order model was computed, with the four dimensions as first-order factors, and a student engagement latent variable as the higher-order factor. The contribution of each dimension on the student engagement factor was significant, $\chi^2(634) = 2315.32$; CFI = .90; TLI = .90; RMSEA = .047; affective = .85, $p < .001$; behavioral = .81, $p < .001$; cognitive = .60, $p < .001$; and agentic = .50, $p < .001$.

TABLE 2
 Confirmatory factor analyses on one-, three-, and four-dimensional structures

| Measures | χ^2 | df | CFI | TLI | RMSEA |
|-----------------------------|----------|-----|-----|-----|-------|
| One dimension (33 items) | 4180.39 | 474 | .81 | .79 | .080 |
| Three dimensions (33 items) | 1612.36 | 471 | .94 | .93 | .045 |
| One dimension (38 items) | 5354.73 | 641 | .79 | .77 | .078 |
| Four dimensions (38 items) | 2345.71 | 635 | .92 | .91 | .047 |

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation.

TABLE 3
 Standardized correlations between factors and factor loadings
 for the four-dimensional structure of the Student Engagement Scale

| | Affective | Behavioral | Cognitive | Agentic |
|--------------|-----------|------------|------------|-----------|
| Correlations | | | | |
| Affective | — | | | |
| Behavioral | .71 | — | | |
| Cognitive | .50 | .47 | — | |
| Agentic | .40 | .35 | .43 | — |
| | af1 = .73 | be1 = .60 | co1 = .68 | ag1 = .42 |
| | af2 = .68 | be2 = .62 | co2 = .77 | ag2 = .69 |
| | af3 = .75 | be3 = .66 | co3 = .58 | ag3 = .51 |
| | af4 = .55 | be4 = .28 | co4 = .57 | ag4 = .68 |
| | af5 = .54 | be5 = .62 | co5 = .42 | ag5 = .75 |
| | af6 = .55 | be6 = .28 | co6 = .51 | |
| | af7 = .52 | be7 = .70 | co7 = .75 | |
| | af8 = .74 | be8 = .62 | co8 = .72 | |
| | af9 = .43 | be9 = .54 | co9 = .83 | |
| | | be10 = .76 | co10 = .81 | |
| | | be11 = .73 | co11 = .47 | |
| | | be12 = .29 | co12 = .65 | |

Note. af = affective; be = behavioral; co = cognitive; ag = agentic. All the correlations and loadings have $p < .001$.

Finally, concurrent validity of the student engagement scale was analyzed by inspecting the correlations with the CCCI, the GP-CORE, and school achievement. In line with the hypotheses (see Table 4), affective engagement showed moderate positive correlations with CCCI and academic achievement, and a high negative correlation with psychological distress index (GP-CORE). Behavioral engagement showed a high positive association with academic achievement, a moderate positive correlation with the CCCI, and a moderate negative association with GP-CORE. Cognitive engagement was confirmed as the weakest component of the construct, showing on the whole, the lowest correlations with the dimensions of school achievement, connectedness among students, and psychological distress (the latter in a negative direction). Finally, the agentic engagement, to date the most unexplored component of the construct, showed the same directions of association as the other three dimensions. In particular, this aspect exhibited a moderate positive correlation with CCCI and a low positive association with school achievement. Furthermore, it presented a moderate negative correlation with the GP-CORE.

DISCUSSION

With this study, we presented a first contribution to investigate the psychometric properties of a four-dimensional student engagement scale. As shown by results, our attempt to refer to a four-dimensional student engagement scale combining the Student Engagement Scale and the Agentic Engagement Scale within a single instrument produced good results. Indeed, the findings

TABLE 4
 Pearson correlation coefficients among all the variables

| Measures | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------------|---------|---------|---------|---------|---------|--------|-----|
| 1. Affective | — | | | | | | |
| 2. Behavioral | .57*** | — | | | | | |
| 3. Cognitive | .39*** | .45*** | — | | | | |
| 4. Agentic | .33*** | .38*** | .37*** | — | | | |
| 5. GP-CORE | -.33*** | -.16*** | -.15*** | -.22*** | — | | |
| 6. CCCI | .27*** | .14*** | .12*** | .27*** | -.34*** | — | |
| 7. School achievement | .28*** | .39*** | .21*** | .14*** | -.16*** | .01 | — |
| 8. Age | -.22*** | -.04 | -.01 | .00 | .06* | -.08** | .02 |

Note. GP-CORE = general population clinical outcomes in routine evaluation; CCCI = connected classroom climate inventory.

* $p < .05$. ** $p < .01$. *** $p < .001$.

from the confirmatory factor analyses show that both the three- and the four-dimensional structures have good fits. We think that this is promising for considering all the aspects connected to students' engagement, including the agentic one. In fact, as Reeve and Tseng (2011) pointed out, "recognizing that students constructively contribute into the instruction they receive clarifies the picture of how students learn and profit from potential learning opportunities" (p. 263).

Second, the correlations between the four engagement subscales and CCCI, GP-CORE, and school achievement are in the hypothesized directions as a support to the concurrent validity of the scale. All four engagement dimensions are positively correlated with school grades, confirming the fact that commitment and involvement play a critical role in achievement and learning (Kahu, 2013). Even student engagement and classmates' relationships are positively associated. Peers are an important part of school, and it is reasonable to assume that when students are socially connected and reciprocally supporting, they feel positively motivated toward academic work and school activities (Juvonen, Espinoza, & Knifsend, 2012). Finally, the degree of engagement is negatively associated with psychological distress, and this is consistent with other research suggesting that, besides multiple factors including family and peer relationships, personal school commitment affects, and is affected by, student's psychological distress (DeSanctis-King, Huebner, Suldo, & Valois, 2006; Ma & Huebner, 2008). In addition, the negative association between agentic engagement and GP-CORE is particularly significant because it highlights the importance for students to be recognized as legitimated and competent actors within the school context for their personal well-being (Marginson, 2014; Ryan, Deci, & Vansteenkiste, 2016).

LIMITS AND CONCLUSIONS

This study has some limitations that need to be taken into account and that leave some questions unanswered. First, the results are based on a single sample. Moreover, CFAs fit the data well only after allowing correlations between many error terms. Future studies should

replicate these results in other schools and in other contexts to enhance the validity of the findings of the present study. Second, concurrent validity should be investigated using other variables. For instance, it could be interesting to see the relationships between the four dimensions of school engagement and family or teacher-student relationships. Third, and related to the last point, future studies should also consider variables that differentiate the four dimensions, in order to confirm their distinctiveness.

However, despite these limitations, the results presented in this article are promising. Indeed, our work extends current research by offering a comprehensive engagement scale which includes affective, behavioral, cognitive, and agentic components. Moreover, our study has tested the agentic dimension in a Western student population for the first time. The final scale displays good psychometric properties and can therefore be considered as a valid choice among the many tools existing on this subject. Moreover, the Italian validation of this instrument, to our knowledge, provides for the first time in this country the chance to use a questionnaire directly linked to the most recent international literature. Information about student engagement may be useful to define and evaluate prevention and intervention programs aimed at having an impact on students' liking for school and improving their school pathways.

NOTES

1. For a full discussion, please refer to the original article (Lam et al., 2014).
2. The model without the inclusion of correlated error terms did not fit the data well, $\chi^2(659) = 5597.83$; CFI = .78; TLI = .76; RMSEA = .079. However, as some scholars (see, Beckstead, 2002) have pointed out, the inclusion of correlated error terms in the CFA models does not undermine the factorial validity, whereas they are theoretically plausible. Rather, it provides a factorial representation of the observed data structure more appropriate and realistic in terms of real data.
3. The precise formulation of the Italian items composing the questionnaire is available from the authors upon request.

REFERENCES

- Ainley, M. (2012). Students' interest and engagement in classroom activities. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 283-302). New York, NY: Springer.
- Antaramian, S. P., Huebner, E. S., Hills, K. J., & Valois, R. F. (2010). A dual-factor model of mental health: Toward a more comprehensive understanding of youth functioning. *American Journal of Orthopsychiatry*, 80, 462-472. doi:10.1111/j.1939-0025.2010.01049.x
- Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools*, 45, 369-386. doi:10.1002/pits.20303
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the student engagement instrument. *Journal of School Psychology*, 44, 427-445. doi:10.1016/j.jsp.2006.04.002
- Beckstead, J. W. (2002). Confirmatory factor analysis of the Maslach Burnout Inventory among Florida nurses. *International Journal of Nursing Studies*, 39(8), 785-792.
- Borman, G. D., Hewes, G. M., Overmann, L. T., & Brown, S. (2003). Comprehensive school reform and achievement: A meta-analysis. *Review of Educational Research*, 73, 125-230. doi:10.3102/00346543073002125
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Dissertation Abstracts International*, 3, 185-216. doi:10.1177/135910457000100301

- Brooks, R., Brooks, S., & Goldstein, S. (2012). The power of mindsets: Nurturing engagement, motivation, and resilience in students. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 541-562). New York, NY: Springer.
- Cleary, T. J., & Zimmerman, B. J. (2012). A cyclical self-regulatory account of student engagement: Theoretical foundations and applications. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 237-257). New York, NY: Springer.
- Crick, R. D. (2012). Deep engagement as a complex system: Identity, learning power and authentic enquiry. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 675-694). New York, NY: Springer.
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281-302. doi:10.1037/h0040957
- Crosnoe, R. (2002). High school curriculum track and adolescent association with delinquent friends. *Journal of Adolescent Research*, 17, 144-168. doi:10.1177/0743558402172003
- DeSantis-King, A. L. D., Huebner, S., Suldo, S. M., & Valois, R. F. (2006). An ecological view of school satisfaction in adolescence: Linkages between social support and behavior problems. *Applied Research in Quality of Life*, 1, 279-295. doi:10.1007/s11482-007-9021-7
- Dwyer, K. K., Bingham, S. G., Carlson, R. E., Prisbell, M., Cruz, A. M., & Fus, D. A. (2004). Communication and connectedness in the classroom: Development of the connected classroom climate inventory. *Communication Research Reports*, 21, 264-272. doi:10.1080/08824090409359988
- Evans, C., Connell, J., Audin, K., Sinclair, A., & Barkham, M. (2005). Rationale and development of a general population well-being measure: Psychometric status of the GP-CORE in a student sample. *British Journal of Guidance & Counselling*, 33, 153-173. doi:10.1080/03069880500132581
- Evans, C., Connell, J., Barkham, M., Margison, F., McGrath, G., Mellor-Clark, J., & Audin, K. (2002). Towards a standardised brief outcome measure: Psychometric properties and utility of the CORE-OM. *The British Journal of Psychiatry*, 180, 51-60. doi:10.1192/bj.p.180.1.51
- Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research*, 59, 117-142. doi:10.3102/00346543059002117
- Finn, J. D., Pannozzo, G. M., & Voelkl, K. E. (1995). Disruptive and inattentive-withdrawn behavior and achievement among fourth graders. *The Elementary School Journal*, 95, 421-434. doi:10.1086/461853
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology*, 82, 221-234. doi:10.1037/0021-9010.82.2.221
- Finn, J. D., & Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 97-131). New York, NY: Springer.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74, 59-109. doi:10.3102/00346543074001059
- Fredricks, J. A., & McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 763-782). New York, NY: Springer.
- Glanville, J. L., & Wildhagen, T. (2007). The measurement of school engagement: Assessing dimensionality and measurement invariance across race and ethnicity. *Educational and Psychological Measurement*, 67, 1019-1041. doi:10.1177/0013164406299126
- Green, L. W., & Lewis, F. M. (1986). *Measurement and evaluation in health education and health promotion*. Palo Alto, CA: Mayfield Publishing Company.
- Herdman, M., Fox-Rushby, J., & Badia, X. (1997). "Equivalence" and the translation and adaptation of health-related quality of life questionnaires. *Quality of Life Research*, 6. doi:10.1023/A:1026410721664
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, 1-55. doi:10.1080/10705519909540118
- Jimerson, S. R., Campos, E., & Grief, J. L. (2003). Toward an understanding of definitions and measures of school engagement and related terms. *California School Psychologist*, 8, 7-27. doi:10.1007/bf03340893
- Juvonen, J., Espinoza, G., & Knifsend, C. (2012). The role of peer relationships in student academic and extracurricular engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 387-401). New York, NY: Springer.
- Kahu, E. R. (2013). Framing student engagement in higher education. *Studies in Higher Education*, 38, 758-773. doi:10.1080/03075079.2011.598505

- Kline, R. B. (2011). *Principles and practice of structural equation modelling* (3rd ed.). New York, NY: Guilford Press.
- Lam, S., Jimerson, S., Wong, B. P. H., Kikas, E., Shin, H., Veiga, F. H., . . . Zollneritsch, J. (2014). Understanding and measuring student engagement in school: The results of an international study from 12 countries. *School Psychology Quarterly: The Official Journal of the Division of School Psychology, American Psychological Association*, 29, 213-232. doi:10.1037/spq0000057
- Lawson, M. A., & Lawson, H. A. (2013). New conceptual frameworks for student engagement research, policy, and practice. *Review of Educational Research*, 83, 432-479. doi:10.3102/0034654313480891
- Li, Y., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *Developmental Psychology*, 47, 233-247. doi:10.1037/a0021307
- Ma, C. Q., & Huebner, E. S. (2008). Attachment relationships and adolescents' life satisfaction: Some relationships matter more to girls than boys. *Psychology in the Schools*, 45, 177-190. doi:10.1002/pits.20288
- Mameli, C., & Molinari, L. (2014). Seeking educational quality in the unfolding of classroom discourse: A focus on microtransitions. *Language and Education*, 28, 103-119. doi:10.1080/09500782.2013.771654
- Marginson, S. (2014). Student self-formation in international education. *Journal of Studies in International Education*, 18, 6-22. doi:10.1177/1028315313513036
- Marks, H. M. (2000). Student engagement in instructional activity: Patterns in elementary, middle and high school years. *American Educational Research Journal*, 37, 153-184. doi:10.3102/00028312037001153
- Miller, R. B., Greene, B. A., Montalvo, G. P., Ravindran, B., & Nichols, J. D. (1996). Engagement in academic work: The role of learning goals, future consequences, pleasing others, and perceived ability. *Contemporary Educational Psychology*, 21, 388-422. doi:10.1006/ceps.1996.0028
- Ministry of Education, University, and Research (2013). Dati sul Sistema Istruzione nel Mezzogiorno [Data on the Education System in the South]. Retrieved from http://archivio.pubblica.istruzione.it/fondistrutturali/valutazione/bussola_riferimento/dsi2.htm
- Modell, J., & Elder, G. H. (2002). Children develop in history: So what's new? In W. Hartup & R. Weinberg (Eds.), *Child psychology in retrospect and prospect: In celebration of the 75th anniversary of the Institute of Child Development. The Minnesota Symposia on Child Psychology* (Vol. 32, pp. 173-205). Mahwah, NJ: Lawrence Erlbaum.
- National Research Council & Institute of Medicine. (2004). *Engaging schools: Fostering high school students' motivation to learn*. Washington, DC: National Academy Press.
- OECD-PISA. (2012). What students know and can do: Student performance in mathematics, reading and science. Retrieved from <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf>
- Peck, S. C., Roeser, R. W., Zarrett, N., & Eccles, J. S. (2008). Exploring the roles of extracurricular activity quantity and quality in the educational resilience of vulnerable adolescents: Variable- and pattern-centered approaches. *Journal of Social Issues*, 42, 135-156. doi:10.1111/j.1540-4560.2008.00552.x
- Pianta, R. C., Hamre, B. K., & Allen, J. P. (2012). Teacher-student relationships and engagement: Conceptualizing, measuring, and improving the capacity of classroom interactions. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 365-386). New York, NY: Springer.
- Pintrich, P. R., Smith, D., Garcia, T., & McKeachie, W. (1993). Predictive validity and reliability of the motivated strategies for learning questionnaire. *Educational and Psychological Measurement*, 53, 801-813. doi:10.1177/0013164493053003024
- Polychroni, F., Hatzichristou, C., & Sideridis, G. (2012). The role of goal orientations and goal structures in explaining classroom social and affective characteristics. *Learning and Individual Differences*, 22, 207-217. doi:10.1016/j.lindif.2011.10.005
- Rao, N., & Sachs, J. (1999). Confirmatory factor analysis of the Chinese version of the motivated strategies for learning questionnaire. *Educational and Psychological Measurement*, 59, 1016-1029. doi:10.1177/00131649921970206
- Ream, R. K., & Rumberger, R. W. (2008). Student engagement, peer social capital, and school dropout among Mexican American and non-Latino white students. *Sociology of Education*, 81, 109-139. doi:10.1177/003804070808100201
- Reeve, J. (2012). A self-determination theory perspective on student engagement. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 149-172). New York, NY: Springer.

- Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational Psychology, 105*, 579-595. doi:10.1037/a0032690
- Reeve, J., & Tseng, C. M. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology, 36*, 257-267. doi:10.1016/j.cedpsych.2011.05.002
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78. doi:10.1037/0003-066x.55.1.68
- Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory: An organismic-dialectical perspective. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: University of Rochester Press.
- Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. *Developmental Psychopathology, One:9*, 1-54. doi:10.1002/9781119125556.devpsy109
- Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*, 507-514. doi:10.1007/bf02296192
- Shernoff, D. J., & Schmidt, J. A. (2008). Further evidence of an engagement-achievement paradox among US high school students. *Journal of Youth and Adolescence, 37*, 564-580. doi:10.1007/s10964-007-9241-z
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology, 85*, 571-581. doi:10.1037/0022-0663.85.4.571
- Skinner, E. A., Kindermann, T. A., & Furrer, C. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement, 69*, 493-525. doi:10.1177/0013164408323233
- Skinner, E. A., & Pitzer, J. R. (2012). Developmental dynamics of student engagement, coping, and everyday resilience. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 283-302). New York, NY: Springer.
- Steele, J. P., & Fullagar, C. J. (2009). Facilitators and outcomes of student engagement in a college setting. *The Journal of Psychology, 143*, 5-27. doi:10.3200/jrlp.143.1.5-27
- Vansteenkiste, M., Niemiec, C. P., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. *Advances in Motivation and Achievement, 16*, 105-165. doi:10.1108/s0749-7423(2010)000016a007
- Voelkl, K. E. (2012). School identification. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 193-218). New York, NY: Springer.
- Walker, C. O., Greene, B. A., & Mansell, R. A. (2006). Identification with academics, intrinsic/extrinsic motivation, and self-efficacy as predictors of cognitive engagement. *Learning and Individual Differences, 16*, 1-12. doi:10.1016/j.lindif.2005.06.004
- Wang, M. T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction, 28*, 12-23. doi:10.1016/j.learninstruc.2013.04.002
- Wang, M. T., & Fredricks, J. A. (2014). The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence. *Child Development, 85*, 722-737. doi:10.1111/cdev.12138
- Wang, M. T., & Holcombe, R. (2010). Adolescents' perceptions of school environment, engagement, and academic achievement in middle school. *American Educational Research Journal, 47*, 633-662. doi:10.3102/0002831209361209
- Wang, M. T., Willet, J. B., & Eccles, J. S. (2011). The assessment of school engagement: Examining dimensionality and measurement invariance by gender and race/ethnicity. *Journal of School Psychology, 49*, 465-480. doi:10.1016/j.jsp.2011.04.001