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**Abstract**

The elusive character of student agency makes it a relevant construct to be investigated and measured. An initial effort in this direction was represented by the Agentic Engagement Scale, a 5-item instrument designed to assess the degree to which students constructively contribute to the flow of the instructions they receive from the teacher. Despite its merits, in its current form this scale takes into account only a part of the wide range of student agentic expressions. In the present work, we propose an extension of the Agentic Engagement Scale from five to ten items. Compared to the original scale, the new version covers a larger variety of proactive student contributions, such as those concerning peer interactions and those communications in which learners question or challenge the teacher's instructions. The study was conducted on 1,064 Italian high school students equally distributed between males and females. Confirmative factor analysis endorsed the adequacy of a one-factor structure of the enlarged Agentic Engagement Scale, which showed good psychometric properties as well as positive associations with student motivation to learn and the other three aspects of engagement (i.e. affective, behavioural and cognitive). The theoretical and practical implications of a more comprehensive scale of student agentic engagement are discussed.

Keywords: student engagement; agentic engagement; agency; validation; confirmatory analysis

## Development and Validation of an Enlarged Version of the Student Agentic Engagement Scale

In the scientific as well as the political debate, the concept of student agency has progressively attracted a good deal of attention. In the research area, Educational Psychology has broadly emphasized that students' active and agentic participation in classroom activities is at the heart of successful learning processes (e.g. Mäkitalo, 2016; Rajala, Kumpulainen, Rainio, Hilppö, & Lipponen, 2016). At the same time, the political reforms that have occurred in most European countries since the drafting of the Lisbon Strategy<sup>1</sup> in 2000 have spawned documents and norms based on instruction models focused on competences rather than contents and oriented to providing more room to students' agency, responsibility and autonomy (Gordon et al., 2009; Sternberg, 2002).

Given the importance of student agency, a questionnaire suitable for measuring this dimension is definitely required. An initial effort in this direction was represented by the Agentic Engagement Scale (Reeve & Tseng, 2011; Reeve, 2013), a short self-report tool designed to assess the degree to which students constructively contribute to the flow of the instructions they receive from the teacher. Despite its merits, this scale takes into account only a part of the wide range of student agentic expressions. For this reason, in the present work we propose an extension of this scale in order to cover a larger variety of proactive student contributions, such as those concerning peer interactions and those communications in which learners query the teacher's instructions.

### **The Many Aspects of Student Agency**

The definitions of agency are numerous and various, especially in the educational field, to the extent that this dimension has been described as a "tricky concept" (Matusov, von Duyke, & Kayumova, 2016, p. 420) owing to the difficulty encountered in defining, operationalizing and

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<sup>1</sup> The Lisbon Strategy is a program of economic reforms approved by the European Council in an extraordinary meeting held in March 2000 in Lisbon. In the Conclusions of the Lisbon summit, the European Council recognised the fundamental role of instruction and education for the economic growth and development, and set the target - for all the member states of the European Union - of increasing the quality and effectiveness of education systems.

measuring it. Without claiming to be exhaustive, it might be helpful to quote some of the definitions that can be found in the literature. Scott (2008) described agency as “an actor’s ability to have some effect on the social world – altering the rules, relational ties, or distribution of resources” (p. 77). Lipponen and Kumpulainen (2011) argued that “the basic concept of agency is that people do not merely react to and repeat given practices [...] instead, people should have the capacity for autonomous social action during which they intentionally transform and refine their social and material worlds” (p. 812). Mäkitalo (2016) claimed that agency corresponds to “the capacity of humans to distance themselves from their immediate surroundings and it implies recognition of the possibility to intervene in, and transform the meaning of, situated activities” (p. 64). Finally, Clarke and colleagues (Clarke, Howley, Resnick, & Rosé, 2016) proposed a “hybrid model of agency as both the intention [...] and capability [...] to take action in the world to change the course of events” (p. 29).

The aforementioned citations are sufficient to understand that these definitions generally share a focus on the individual’s ability to transform the social practices in which s/he participates. By translating this principle into everyday classroom life, it could be stated that student agency is closely related to the power to influence and transform interactive learning practices. However, which kinds of transformations raised by students are actually allowed in classroom contexts?

As shown by various studies conducted in different schools and grades (e.g. Aguiar, Mortimer, & Scott, 2010; Molinari, Mameli, & Gnisci, 2013; Howe & Abedin, 2013), in daily classroom activities interactions are actually highly controlled by the teacher. It is indeed the teacher who usually decides who can intervene, on what topic and for how long. In such an organised context, students do not always have the opportunity to think actively, publicly argue and express their reasons or motives, listen and possibly criticize the points of views and opinions of others.

Reflecting on the difficult balance between students’ free and authentic participation and teachers’ control of classroom activities, Matusov and colleagues (Matusov, 2011; Matusov et al.,

2016) suggested distinguishing between two main aspects of student agency. The first and most accepted – i.e. *responsive* or *domesticated* agency – refers to moments when students intervene by affirming or justifying their opinions in response to a teacher’s solicitation, thus adhering to an interactive path fundamentally controlled by the adult. The second and seldom considered – i.e. *self-generated* or *free-range* agency – regards moments in which students spontaneously take up a stance and express their own ideas. Actually, these moments are not so infrequent, as documented by studies based on the descriptive and qualitative analysis of classroom interactions (e.g. Candela, 1998; Mameli & Molinari, 2013; Rajala, Martin, & Kumpulainen, 2016). Acting outside the teacher’s predetermined plans, students may, for example, affirm ideas that are not necessarily in line with those of the teacher or classmates, propose new and unexpected topics, or criticize the existing social practices. The arguments discussed by Matusov have recently been gathered from other scholars (e.g. Rajala et al., 2016) who shed light on the importance of investigating and encouraging both forms of agency, paying particular attention to those agentic patterns that take the form of students’ resistant behaviours to the teacher’s requests and oppositional initiatives.

### **Measuring Student Agency**

The elusive character of agency – often mentioned in educational psychology research but hitherto seldom systematically investigated (Clarke et al., 2016) – makes even more relevant the issue of how to inspect and measure this construct. To date, the ways agency takes shape in classroom contexts has been mainly described by qualitative studies conducted from a socio-cultural perspective (e.g. Clarke et al., 2016; Martin, 2016), while quantitative research using self-report tools is scarce and essentially confined to the large field of student engagement research.

By and large, this research field deals with measuring the degree to which students are actively involved within learning activities in terms of commitment and effort (Jang, Kim, & Reeve, 2012; Pianta, Hamre & Allen, 2012) and scholars generally concur in describing student engagement as a meta-construct made up of three components (e.g., Fredricks, Blumenfeld, & Paris, 2004), i.e. affective, behavioural and cognitive. This commonly accepted tripartite

conceptualization, however, has recently been challenged: whilst recognising the presence and relevance of these three dimensions, Reeve (2012) argued that they have the drawback of depicting only the way learners react to the flow of instructional activities from the teacher to the students, while they overlook students' active and transformative contributions. To grasp this aspect, Reeve suggested adding a fourth dimension to the student engagement construct, i.e. the agentic one, which he 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).

In order to measure this aspect, Reeve elaborated a five-item instrument – the Agentic Engagement Scale (AES; Reeve & Tseng, 2011) – designed to grasp students' unilateral contributions to the unfolding of learning activities. A few years afterwards, Reeve (2013) proposed an adapted version of his tool, again made up of five items, that in its new formulation was also able to assess students' transactional and dialectical contribution to the learning environment. This adaptation was needed considering that "agentic engagement can be viewed not just as a student's contributions into the flow of instruction but also as an ongoing series of dialectical transactions between student and teacher" (Reeve, 2013, p. 580).

Although the Reeve scale has been used in a limited number of studies because of its recent formulation, it has shown good psychometric properties in both Asian (Reeve & Tseng, 2011; Reeve, 2013) and Western European (Mameli & Passini, 2017) populations. Overall, the results of the few studies using the Agentic Engagement Scale have been promising. First, Reeve has shown that agentic engagement, as the other three engagement dimensions (Klem & Connell, 2004; Stroet, Opendakker, & Minnaert, 2013), is positively affected by an educational context capable of motivating students through the fulfilment of their basic psychological needs (Jang et al., 2012; Reeve, 2012). From the perspective of Self Determination Theory (Ryan & Deci, 2000), these needs correspond to autonomy (i.e. students are encouraged to act freely), relatedness (i.e. students feel connected in warm and supportive relationships with teachers and classmates) and competence (i.e. students feel skilled and able to face challenging learning tasks). Second, Reeve's studies have

shown that student agentic engagement has a relevant and unique role in predicting important educational outcomes, such as academic achievement. In particular, “even after accounting for the contribution of the other three aspects of engagement [...] there remained unexplained variance in students’ achievement that agentic engagement was able to explain (Reeve & Tseng, 2011, p. 263).

Notwithstanding the merits of the Reeve scale, as the author himself pointed out, “future research will be better positioned to improve the assessment of the construct” (Reeve, 2012, p. 169). In line with the author’s invitation, in our opinion the AES might be improved by considering, among others, two main points that are not discussed in the original instrument but which have been widely emphasised in the socio-cultural literature on classroom interactions (e.g. Mercer & Howe, 2012). First, as some authors have pointed out (Matusov, 2011; Matusov et al., 2016; Rajala et al., 2016), it is time for educational research to consider those transactional moments in which students assume an agentic position by questioning or criticising the instructions and requests they had received from the adult. In fact, although students’ dissent has been typically conceived negatively, “it is important to frame student opposition as an educational challenge and in terms of its transformative potential to develop student agency and more meaningful educational practices” (Rajala et al., 2016, p. 18). For example, as shown by the literature on school justice (e.g. Peter & Dalbert, 2010), the extent to which students perceive that the treatment they receive from their teachers is (un)fair represents an important motivational factor which can affect students’ attempts to change the learning environment towards a greater equity (Dalbert & Stoeber, 2006; Molinari, Speltini, & Passini, 2013).

A second aspect that we think warrants consideration refers to the fact that the instructional flow in classroom activities comprises interactions among multiple participants. Following a conceptualization of engagement as a transactional process that is influenced by forces acting bidirectionally between the learning environment and the student, Reeve (2012, 2013) only took into account the student (individually) and the teacher. However, within a lesson, multiple voices are connected in the co-construction of the activities (Mameli & Molinari, 2014; Mercer, 2008) and

it frequently happens that students actively participate in the discourse by publicly communicating their opinions and taking up stances not only in respect to the teacher, but also to each other (Mameli, Mazzoni, & Molinari, 2015).

### **The Present Study**

The present study aims to provide a development and an enlarged version of the Agentic Engagement Scale proposed by Reeve (2013) to include those facets of agency omitted in the original version. Specifically, we added five new candidate items to the original 5-item scale reflecting: (a) students' unilateral and original contributions (one item); (b) students' transactional contributions in relation to the classmates (one item); (c) students' transactional and questioning contributions involving the teacher (three items). The source of the material to create these new items came from previous works focusing on the observation of interactive patterns in classroom lessons (Author, 2014; Author, 2015; Molinari, Speltini, & Passini, 2013). In the Measures section, the procedure adopted for the creation of the new items is explained in greater detail.

There were two objectives that we pursued in this study. The first consisted in verifying the one-dimensional factor solution of the enlarged agentic engagement scale. The second was to test the validity of the enlarged instrument by exploring its association with other relevant dimensions. In line with the procedure followed by Reeve and Tseng (2011) for the validation of the original scale, and consistently with the main results of the studies using the previously described original scale, we selected five dimensions that were expected to show a positive association with agentic engagement. The first three dimensions are represented by the other three traditional aspects of engagement, i.e. affective, behavioural and cognitive ones. We hypothesize that agentic engagement will correlate positively and significantly with each of these three constructs, with associations not so high as to suppose an overlap of the components. The fourth aspect which is expected to show a positive correlation with agentic engagement regards students' motivation to learn. In this study – as well as Reeve's works – motivation to learn is conceptualised as students' perception of basic psychological needs fulfilment (Reeve & Tseng, 2011; Ryan & Deci, 2000). Finally, in line with



Reeve (2012), we expect to find a positive association between agentic engagement and academic achievement.

## **Method**

### **Participants**

The study was conducted on a convenience sample of 1,064 high school students (53.9% boys, 46.1% girls) coming from four city-based middle class schools located in Northern Italy. Participants, aged 13 to 19 ( $M = 15.86$ ,  $SD = 1.22$ ), were enrolled in 8<sup>th</sup> (17.7%), 9<sup>th</sup> (31.6%), 10<sup>th</sup> (24.3%) and 11<sup>th</sup> (26.4%) grades. The 6.95% of them ( $N = 74$ ) were of foreign origin but spoke fluent Italian.

### **Measures**

*Agentic engagement* was assessed with the Agentic Engagement Scale (Reeve, 2013) in its Italian validated form (Mameli & Passini, 2017). This scale comprises 5 items (e.g. “I let my teacher know what I need and want”) measuring students’ contributions to the activities but also more transactional and dialectical inputs. Students specified their grade of agreement on a 7-point Likert scale (from 1=completely disagree to 7=completely agree). Following Reeve’s invitation (2012) to improve the assessment of this dimension, we also added five new candidate items. By adopting a procedure akin to the one followed by Reeve (2013; Reeve & Tseng, 2011), we came to the formulation of these items by examining the results of two observational studies (Authors, 2011, 2014). In these studies, a vast corpus of video-recorded classroom lessons was analysed with the aim of describing the unfolding of microtransitions (Mameli & Molinari, 2014). Microtransitions, defined as discursive shifts capable of triggering a transformation of the meaning-in-interaction which re-directs interactive exchanges, are particularly useful to detect how students proactively contribute to transforming the discursive flow of a teacher-led lesson. In more detail, from the corpus of data, the Authors (2011, 2014) selected those discursive episodes (Scott, Mortimer, & Aguiar, 2006) in which a student contribution managed to modify the lesson’s unfolding by intervening on: (a) the discursive content or topics, (b) the instructional procedures, or (c) the

interactive form (dyadic, triadic or polyphonic, depending on the actors simultaneously involved in an interaction). For a detailed description of the coding system used, please refer to Authors (2011, 2014). For the purposes of the current study, in this material we searched for the most recurrent practices students use to intervene on, and re-direct, the ongoing lesson, thus proactively trying to produce a transformation of the learning environment. Then, two non-independent judges proceeded to qualitatively group these discursive episodes into broad categories until an agreement was reached. The final five categories were eventually operationalized into five items. One item concerns the student's unilateral and original contribution ("During classes, it can happen that I introduce new issues or discussion topics"). One item covers transactional processes in relation to the peers ("I defend my opinions even if they are not in line with those of my classmates"). Finally, three items concern transactional and questioning aspects in relation to the teacher ("I make sure that my teacher understands if there is something I don't like;" "If I don't agree with a teacher's statement, I tell him/her"; "If I think that a teacher's behaviour is unfair, I tell him/her").

*Affective, behavioural and cognitive engagement* were measured using the questionnaire proposed by Lam and collaborators (2014) in its Italian validated version (Mameli & Passini, 2017). As in the original study, three subscales were computed: affective engagement (9 items,  $\alpha = .86$ , e.g. "I think what we are learning in school is interesting") evaluates students' liking for learning and school; behavioural engagement (12 items,  $\alpha = .85$ , e.g. "If I have trouble understanding a problem, I go over it again until I understand it") measures students' effort in learning and participation in school and extra-scholastic activities; cognitive engagement (12 items,  $\alpha = .89$ , e.g. "When studying, I try to combine different pieces of information from course material in new ways") assesses students' use of relevant information processing approaches in learning. For the first two subscales, students were asked to indicate their degree of agreement on a 7-point Likert

scale (1=strongly disagree; 7=strongly agree)<sup>2</sup>. For the cognitive engagement subscale, a 7-point Likert scale of frequency (1=never; 7=always) was employed. The mean of the items on each subscale was used as an overall score on the corresponding dimension.

**Basic psychological needs** were investigated through the *Activity Feeling State* (AFS, Reeve & Sickenius, 1994; Reeve & Tseng 2011) in its translated Italian version (Molinari & Mameli, 2017), a 10-item self-report instrument of perceived psychological needs satisfaction. The questionnaire, which opens with the sentence “During class I feel...”, evaluates the degree of psychological needs fulfilment in regard to autonomy (e.g. “Free to decide for myself what to do”), competence (e.g. “My skills are improving”), and relatedness (e.g. “Involved with close friends”). Participants were asked to indicate their grade of agreement on a 7-point Likert scale (from 1 = *Strongly disagree* to 7 = *Strongly agree*). In accordance with Reeve (2013), we relied on a one-dimension solution. Overall, the scale displayed a good reliability (Cronbach  $\alpha = .79$ ).

**Academic achievement** was measured with a single item (Molinari, Speltini, & Passini, 2013). Students were asked to indicate the final average mark they received in all subjects on their last report card (on a 10-point-scale, ranging from 1 to 10, with 10 being the highest and 6 the minimum pass level). The choice to rely on a self-report index is determined by administrative rules and school privacy constraints which make it difficult to gain access to students’ official records. Although we are aware that self-report grades should be carefully treated, we considered this score as sufficiently reliable for the purposes of this work. In fact, previous studies (Cassady, 2001; Kuncel, Credé, & Thomas, 2005) revealed that students’ self-report grades reflect in a rather accurate way their actual grades and are able to predict educational outcomes (e.g. school success) akin to official grades.

## Procedures

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<sup>2</sup> For all the scales used in the questionnaire, we chose to standardize the type of measurement using 7-point Likert scales.

We proceeded by sending an e-mail to the principals of the sixteen main high schools located in two cities in Northern Italy, illustrating the research and its main goals. We then selected the four schools whose principals replied to us and voluntarily decided to join the study. For each school, we asked for the availability of at least eight classrooms (two for each school grade considered) to distribute the questionnaire. The classrooms were selected by the school boards on the grounds of teachers' availability to give some of their time for the questionnaire administration.

Before the data collection, the minors' parents were asked to fill in an informed-consent form with no family declining. The students were also invited to express their own agreement in voluntarily participating in the study and they were given assurances concerning the confidentiality and anonymity of data treatment. The questionnaire was distributed to the students in their classrooms during school hours after a brief explanation of the research and its principal goals. The study was conducted in compliance with the ethical norms set by the Italian National Psychological Association.

### **Data Analysis**

First, in order to verify the adequacy of the enlarged measurement of agentic engagement and that the five new items may be added to the same dimension, we performed both an exploratory (EFA) and confirmatory factor analysis (CFA) splitting the data in half using an odd-even split. Individuals with some missing data (ranged from 0.1% to 0.8%, see Table 1) were deleted from these analyses. Model fit of CFA was assessed using the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Squared Residual (SRMR). For the CFI and the TLI, values between .90 and .95 indicate acceptable fit, and values above .95 indicate good fit. For the RMSEA values of  $<.05$  are taken as good fit, and values between .05 and .08 as acceptable fit. For the SRMR, a value of zero indicates perfect fit, and values less than .08 indicate acceptable fit (Hu & Bentler, 1999). Second, the normality, the internal reliability (both with alpha and omega coefficients), and the item analysis of the enlarged scale of agentic engagement 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 and kurtosis are between  $\pm 2$  (Gravetter & Wallnau, 2014). As concerns the other psychometric properties, internal reliability  $> .70$  (Cronbach & Meehl, 1955) and item-total correlations  $> .30$  (Green & Lewis, 1986) are considered acceptable. Finally, in order to examine the validity of the enlarged scale exploring its association with other relevant dimensions (second goal of the study), correlations of the agentic engagement with the other variables investigated were computed. Partial correlations were also used in order to evaluate the marginal utility of the agentic engagement scale with basic psychological needs and academic achievement after controlling for the other three dimensions of engagement.

### Results

As concerns the enlargement of the agentic engagement scale (objective 1), an EFA (maximum likelihood with oblimin rotation criteria) was conducted on half of the sample. The scree test revealed a clear break between the first and second eigenvalue: 4.39, 1.11, 0.96, 0.77, 0.63, etc. Moreover, Horn's parallel analysis (Horn, 1965) was conducted. One thousand random datasets that parallel aspects of the empirical data (i.e., sample size and number of items) were simulated. The number of factors extracted was indicated by whether eigenvalues from the actual dataset exceed the 95<sup>th</sup> percentile of simulated eigenvalues. Results showed that just the first factor in the real data set (4.39, 1.11, ...) had an eigenvalue larger than the one from the simulated data sets (1.28, 1.20, ...). Hence, only one component was extracted. Loadings were all greater than .40 (see Table 1).

CFA with maximum likelihood estimation was then used to verify the fit of the one-factor solution on the other half of the sample not used for EFA. Modification indexes suggested correlating four error terms. As some scholars (see Beckstead, 2002; Gerbing & Anderson, 1984) have pointed out, the inclusion of correlated error terms in the CFA models does not undermine the factorial validity, whereas they are theoretically plausible and do not mask a second-order model. Rather, they provide a factorial representation of the observed data structure that is more appropriate and realistic in terms of real data. In the current model, these correlations were all

theoretically plausible given the very similar meaning and formulation of the associated items. Indeed, the first three correlations were all between error terms of items referred to students expressing their opinions to the teacher: “I let my teacher know what I am interested in” with “I let my teacher know what I need and want” and with “If I think that a teacher’s behaviour is unfair, I tell him/her” and this last item with “If I don’t agree with a teacher’s statement, I tell him/her.” The fourth correlations was between the error term of the item “During classes, I ask questions to help me learn” correlated with the error term of the item “During classes, it can happen that I introduce new issues or discussion topics,” with both items referring to an active participation of the student as regards the arguments covered in the lessons.

The final uni-dimensional model fit the data in an acceptable way:  $\chi^2(31) = 125.03, p < .001, CFI = 0.94, TLI = 0.91, RMSEA = .08, SRMR = .05$ . Factor loadings are showed in Table 1. A two-dimensional model (with the original 5-items on a dimension and the new 5-items on the other and with these two dimensions as not correlated) was tested. The same four correlations between errors terms of the uni-dimensional model were computed. The model fit was not acceptable:  $\chi^2(31) = 408.71, p < .001, CFI = 0.74, TLI = 0.62, RMSEA = .15, SRMR = .19$ . The same two-dimensional model, but with the correlation between the two dimensions, fit instead the data in an acceptable way:  $\chi^2(30) = 122.12, p < .001, CFI = 0.94, TLI = 0.90, RMSEA = .08, SRMR = .05$ . Standardized correlation between the old and new agentic dimensions was very high ( $r = .94, p < .001$ ), supporting the proposition of uni-dimensionality. Moreover, chi-square difference test indicated a non-significantly better fit over the one-factor model:  $\Delta\chi^2(1) = 2.91, p = ns$ .

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As concerns psychometric properties, the enlarged agentic engagement scale had statistically acceptable values on normality (skewness and kurtosis  $< \pm 2$ ) and inter-item correlations  $> .35$  (see Table 1). After having split the data in half (using an odd-even split), internal reliabilities showed that the  $\alpha$  of the 10-item scale ( $\alpha = .85$ , first half-data set) was reasonably greater than the one of the original five items ( $\alpha = .75$ , second half-data set). Similarly, McDonald’s (1999) omega total

coefficient was greater on the 10-item scale (.86, first half-data set) compared to the 5-item version (.76, second half-data set).

Bivariate correlations (objective 2) showed that both the new (first half-data set, see Table 2 above the diagonal) and the original (second half-data set, see Table 2 below the diagonal) agentic engagement scales were positively correlated with the three subscales of affective, behavioural, and cognitive engagement, as well as with basic psychological needs. As concerns academic achievement, the new enlarged agentic scale was not correlated, while the original version was slightly positively correlated. Finally, partial correlations showed that the enlarged agentic engagement was still positively correlated with basic psychological needs ( $r = .19, p < .001$ ), controlling for the effects of the other three engagement dimensions.

### **Discussion**

The present study presented a first contribution to the construction and validation of an enlarged version of the Agentic Engagement Scale (AES), which added five new items to the original AES (Reeve, 2013). This extended scale could be considered as a useful alternative to the original scale for statistical, theoretical and practical reasons.

As far as statistical properties are concerned, our results confirm the adequacy of this measure on a Western European student population from Italy. As concerns the extension to ten items, both exploratory and confirmatory factor analyses support the aggregation of the new items to the existing pool of items mapping onto the agentic dimension. As the parallel analysis pointed out as well, these items do not identify a new latent dimension but contribute to explaining that agentic dimension previously measured by Reeve. Moreover, the psychometric properties show an improvement in this scale. The extended 10-item agentic scale has a better Cronbach's alpha of the 5-items original version as well as a higher McDonald's omega coefficient. Our research thus seems to provide a relevant tool for the challenge launched by Reeve (2012) of improving the assessment of this construct.

From a theoretical point of view, we think that the enlarged scale ameliorates the original one in three ways. First, by expanding the items proposed by Reeve about students' unilateral and transactional contributions, this scale examines the opportunity for students to introduce new discussion themes *ex novo*. In other words, what is considered is the students' agentic role in allowing the teacher to grasp their generative and active contribution in the process of co-construction of the lesson (Mercer, 2008). Second, the new instrument version introduces, in addition to transactional teacher-student exchanges, the theme of interactions and stance-taking among peers, indicated in the literature as one of the various interactive patterns present in everyday classroom life (Alexander, 2008). As illustrated by Mameli and collaborators, "the distribution of voices enriches the classroom possibilities to be engaged in triadic or multiple interactions, which several scholars consider as significant opportunities for discussions and learning" (Mameli et al., 2015, p.561). Third, and probably most important, the new scale considers those agentic exchanges in which learners question and challenge the teacher's instructions (Matusov et al., 2016). There are a number of studies showing the importance for students to take responsibility for their educational processes even through oppositional initiatives aimed at changing the educational environment to make it more suited to their learning needs (Pretsch et al., 2016; Rajala et al., 2016; Virkkunen, 2006). In our view, these aspects certainly deserve to be considered within an agentic engagement scale: if students take part in their educational paths in an agentic way by changing the conditions in which they learn, challenges to the *status quo* should fully be considered one of these conditions.

In addition to statistical and theoretical issues, the use of an enlarged Agentic Engagement scale has significant implications for scientific purposes and school practices as well. In the first place, instruments able to develop awareness about students' perceptions of the wide range of their agentic expressions could inform researchers, policymakers and teachers about the actual opportunities for learners to assume the role of actors and authors in their educational pathways (Lipponen & Kumpulainen, 2011). This is an important issue, considering that scholars concur in indicating student agency – in its responsive and self-generated forms (Matusov et al., 2016) – as



one of the main goals for schools in the 21<sup>st</sup> century (Mäkitalo, 2016; Rajala et al., 2016). In addition, a measure able to capture the many different forms of students' agency is crucial to monitor and eventually evaluate programs and interventions aimed at soliciting an active and proactive, but also critical and transformative, role of students in their instructional pathways.

Finally, we tested whether the enlarged version of the AES covaried with the other engagement dimensions, students' motivation and academic achievement. As expected, both the original and the enlarged versions of the scale show significant and positive associations with affective, behavioural and cognitive engagement dimensions. This result is consistent with previous studies (Reeve, 2013; Reeve & Tseng, 2011; Tas, 2016) and confirms that the four components of student engagement are closely entwined, albeit with correlations not so high as to suppose an overlapping between concepts. In addition, as hypothesised, both the original and the enlarged AES positively correlate with basic psychological needs fulfilment, supporting the idea that an educational context able to sustain learners' inner motivation is also able to host proactive and transformative contributions from the students (Reeve, 2013; Reeve & Tseng, 2011). However, in contrast with our expectations and the literature (Reeve, 2012, 2013; Tas, 2016), we did not find a significant association between the enlarged AES and academic achievement, while a positive albeit moderate correlation was identified between this latter and the original 5-item agentic engagement scale from Reeve. This result represents a novelty element of this enlarged scale that distinguishes it from the studies carried out with the original scale. Nevertheless, this finding should be interpreted with due caution, since the magnitude of the correlation between the original five-item agentic engagement scale and academic achievement is almost negligible. We can tentatively hypothesize that student agency is positively, albeit moderately, considered in evaluating students only if it assumes conformist or teacher-controlled forms (Matusov et al., 2016), whereas considering a more comprehensive concept of agency may undermine the agency-achievement association.

### **Limits and Conclusions**

This study has some limitations that need to be taken into account. First of all, our results are based on a single Italian and convenience sample and are limited with respect to the socio-cultural characteristics related to the school settings where the research was conducted. Second, our work is based on students' self-report data. This raises concerns especially in relation to the measure of academic achievement. Indeed, although previous studies found an acceptable association between actual and self-reported grades, such an association is nonetheless imperfect (Kuncel et al., 2005). For this reason, the results regarding this variable should be interpreted with caution and certainly need to be tested in future studies basing on official grades. Third, future studies should also consider issues related to the convergent and divergent validity of the scale. Last but not least, the new proposed items came from two previous observational studies that are inevitably limited in terms of the sample considered and the analyses realised. Further studies are needed to test the quality of these new items and eventually further contribute to improving the definition of the construct.

Notwithstanding these limitations, the results presented in this article are promising. Indeed, our work extends current research by offering a more comprehensive scale of student agentic engagement which enhances the definition and measurement of this construct by covering, as compared with the original version of the scale, also the transformative potential related to student opposition and transactional processes in relation to their peers. The final scale displays good psychometric properties and can thus be considered as a useful choice to assess the agentic aspects of student engagement. Furthermore, this enlarged scale could be useful to inform scholars and school professionals about the degree to which students perceive themselves as active and transformative authors of their own educational pathways. Such information may be precious in setting out educational programs aimed to enhance the various facets of student agency.

Finally, our study contributes to problematizing the concept of agentic engagement raising questions vis-à-vis the school evaluation system, at least as far as the Italian context is concerned. In fact, the low correlation scores found for both the original and the enlarged version of the

instrument with academic achievement are rather puzzling, as they might signal that student agency, particularly in the form of students' challenges to adult guidance and control, is not particularly relevant when assigning grades. In this regard, further studies – possibly using actual student grades – will be needed to clarify the links between student agency and academic success.

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Table 1.

*Psychometric Properties, Exploratory and Confirmatory Factor Analysis on the Agentic Engagement Scale.*

	Psychometric Properties					Factor Loadings	
	<i>M(SD)</i>	% MV	Skewness	Kurtosis	IIR	EFA	CFA
During classes, I express my preferences and opinions	3.83(1.70)	0.8	.01	-.92	.69	.78	.75
If I don't agree with a teacher's statement, I tell him/her <sup>a</sup>	3.93(1.86)	0.8	-.04	-1.08	.62	.73	.60
I let my teacher know what I need and want	3.48(1.56)	0.5	.00	-.82	.66	.70	.73
I let my teacher know what I am interested in	3.96(1.59)	0.4	-.13	-.67	.55	.65	.53
If I think that a teacher's behaviour is unfair, I tell him/her <sup>a</sup>	3.45(1.95)	0.6	.32	-1.05	.53	.63	.54
I make sure that my teacher understands if there is something I don't like <sup>a</sup>	3.67(1.82)	0.5	.15	-.96	.50	.58	.56
During classes, it can happen that I introduce new issues or discussion topics <sup>a</sup>	3.69(1.75)	0.3	.03	-.99	.51	.57	.53
When I need something in classes, I'll ask the teacher for it	4.57(1.66)	0.2	-.44	-.67	.43	.53	.41
During classes, I ask questions to help me learn	4.55(1.65)	0.6	-.38	-.64	.46	.50	.42
I defend my opinions even if they are not in line with those of my classmates <sup>a</sup>	5.53(1.35)	0.1	-.97	.79	.35	.41	.33

*Note.* <sup>a</sup> = New candidate items. MV = Missing values. IIR = Inter-item r. EFA = Exploratory Factor Analysis. CFA = Confirmatory Factor Analysis.

Table 2.

*Pearson Correlation Coefficients Among all the Variables.*

Measures	1	2	3	4	5	6	7
1. Agentic eng.	—	.24***	.23***	.33*	.31***	.02	.06
2. Affective eng.	.29***	—	.55***	.41***	.53***	.28***	-.21***
3. Behavioral eng.	.36***	.51***	—	.44***	.38***	.37***	-.03
4. Cognitive eng.	.35***	.34***	.40***	—	.25***	.20***	-.02
5. BPN	.34***	.60***	.40***	.31***	—	.24***	-.14***
6. Academic Ach.	.14**	.21***	.37***	.21***	.23***	—	-.06
7. Age	-.06	-.26***	-.04	-.02	-.16***	.04	—

*Note.* eng. = Engagement. BPN = Basic psychological needs. Ach. = Achievement. Values below the diagonal are for the original agentic engagement scale (5-item scale). Values above the diagonal are for the enlarged agentic engagement scale (10-item scale).

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