



# A Scale Assessing Social Academic Participation in Class for University Students

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## Abstract

*An instrumental study was carried out, with the purpose of developing a scale for assessing academic social participation (ASP) in class in university students, and testing its psychometric properties. Students from two national universities answered the ASP scale's items online, along with a scale assessing academic social self-efficacy. Exploratory factorial analysis was applied, obtaining a three dimensional scale (including academic help seeking -AHS-, work with peers -WP-, and autonomous contribution -AC-). All three dimensions were different but significantly correlated ( $p < .01$ ;  $r$  ranging from .14 to .41), which allows to admit academic social participation as a unified construct. Internal consistency values for all three scales (AHS  $\alpha = .83$ ; WP  $\alpha = .81$ ; AC  $\alpha = .91$ ) and the complete scale (ASP  $\alpha = .88$ ) indicate a good reliability. Correlations between sub scales and academic social self-efficacy partially support construct validity. Further studies are recommended to provide additional support on this psychometric property. Also, more specific analyses are suggested to elucidate the studied behaviors' natures.*

**Keywords:** academic social participation, academic social self-efficacy, assessment.

## Introduction

### *Engagement in Education*

For a long time, engagement has been an appealing concept for educational practitioners and researchers. Engagement is a relatively malleable variable, which predicts and prevents school dropout; and fosters positive outcomes for all students (Appleton, Christenson, & Furlong, 2008; Fredricks, Blumenfeld, & Paris, 2004). Moreover, engagement is especially useful as it can be modified by educational intervention.

Through different academic levels, engagement has been linked to academic performance and long term academic achievement (Appleton et al., 2008; Finn & Zimmer, 2012; Reschly & Christenson, 2012). Engagement contributes to those outcomes transcending the effect of strong influences such as family, cognitive, and socio demographic characteristics (Archambault, Pagani, & Fitzpatrick, 2012; Klem & Connell, 2004; Ladd & Dinella, 2009; Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008). Engaged students tend to obtain better grades, perform better on tests, and persist in school (Skinner & Pitzer, 2012). Not only they feel satisfied with their achievement, but they also improve their skills (Skinner & Belmont, 1993).

Engagement can be defined as intensity and quality of students' involvement in initiating and carrying out learning activities. As it has been studied by different lines of research and under several theoretical viewpoints, not all researchers share the same conceptualization, but they all agree that engagement is a multidimensional construct (Appleton et al., 2008; Fredricks, Filsecker, & Lawson, 2016). Engagement can be seen as a compound of three major dimensions, including behavioral, cognitive and affective engagement (Fredricks et al., 2016; Jimerson, Campos, & Greif, 2003). More recently, Reeve and Tseng (Reeve, 2013; Reeve & Tseng, 2011) have proposed agentic engagement as a new dimension, comprising student behaviors oriented to express their educational needs and preferences, and promote improvements in their own learning environment and conditions.

## *Behavioral Engagement*

Behavioral engagement is defined as participation, effort, attention, persistence, positive conduct, and the absence of disruptive behavior (Fredricks et al., 2016) and implies behaviors such as paying attention in class, coming prepared, asking and answering questions, and participating in class discussions (Finn, 1989; Fredricks, Blumenfeld, Friedel, & Paris, 2003; Fredricks et al., 2004). It is a broad dimension that has been consistently linked to academic motivation (Jang, Kim, & Reeve, 2012; Reeve & Lee, 2014), academic performance, behavior at school (Klem & Connell, 2004), improvements in child academic adjustment (Archambault et al., 2012), positive attitudes towards school (Ladd & Dinella, 2009), and skills development (Skinner & Belmont, 1993).

## *Engagement Measures*

As engagement studies arise from several distinct theoretical traditions (Appleton et al., 2008), the works on measuring it are, indeed, diverse. It often happens that the same item is used by different researchers to assess different dimensions, and the same dimension is measured with items that differ considerably among studies (Fredricks et al., 2016; Jimerson et al., 2003). It also occurs that dimensions are defined in different ways according to the research line.

As it goes, it turns out pretty difficult to certainly determine which variables influence, and which are influenced by engagement dimensions, unless those dimensions have a clear definition in each study, specifying the behaviors or psychological events implied. Due to the aforementioned difficulties, Betts (2012) states that, as it is important to develop instruments to assess each engagement dimension, it is also recommendable to develop instruments to identify specific aspects of each general type, which could constitute components or sub dimensions of the general type.

## *Academic Social Participation*

In line with this need for specific assessment instruments, the purpose of this study is to develop and validate an instrument to address academic social participation as one particular behavioral repertoire pertaining to behavioral engagement. Academic social participation has been defined as student behaviors involving social interaction with peers and teachers in class, with academic purposes (Sánchez-Rosas, Takaya, & Molinari, 2016). That is, social behavior meant to regulate their learning processes.

Those kinds of behaviors have been previously studied (Cater & Jones, 2014; Karabenick, 2003; Kember & Leung, 2009; Reeve, 2012; Yazzie-Mintz & McCormick, 2012), but at present there is a dearth of research dealing with them as a unified behavioral repertoire, allowing to understand their causes and implications. Such a lack of studies on this topic can be directly related to the absence of instruments assessing the construct.

## *Dimensions of Academic Social Participation*

A literature revision on behavioral engagement allowed us to identify four possible constructs comprised in academic social participation: academic help seeking, work with peers, autonomous contribution, and critical thinking. As a result, an instrument was developed to assess these four proposed constructs.

*Academic help seeking:* “When students have trouble understanding text material, solving problems or completing assignments, they rely on several strategies to solve those

situations on their own. If these efforts are ineffective, they may also turn to teachers, classmates, friends, or parents for assistance (Cater & Jones, 2014; Karabenick, 2003; Kember & Leung, 2009; Reeve, 2013, Yazzie-Mintz & McCormick, 2012). Academic help seeking is an important strategy for self-regulated learning. It involves, for instance, asking questions in class (Handelsman, Briggs, Sullivan, & Towler, 2005; Kong, Wong, & Lam, 2003; Krause & Coates, 2008), asking for examples (Reeve & Tseng, 2011), or asking a friend for help about a material that the student doesn't understand (Sánchez-Rosas & Pérez, 2015). Karabenick (2003) states that the relative unavailability of teachers in large classes makes it less likely they will be the targets of help-seeking requests, especially when compared to the ease with which students can approach each other for assistance. On the other hand, he acknowledges that student' perceptions of the relative anonymity of large classes as less threatening could also increase the likelihood they would seek help (Karabenick & Knapp, 1988; Shapiro, 1983), which also results when instructors explicitly notify students that they are available (Perrine, Lisle, & Tucker, 1995).

*Work with peers:* A substantial body of literature in engagement addresses peer relationships. Among that research, some major topics are peer group influence on student engagement (Cappella, Kim, Neal, & Jackson, 2013; Juvonen, Espinoza, & Knifsend, 2012; Kindermann, McCollam, & Gibson, 1996), consequences of peer rejection (Buhs & Ladd, 2001; Wentzel & Asher, 1995), and efficacy of work in pairs and in small groups to foster learning (Cater & Jones, 2014; Scoboria, Sirois, & Pascual-Leone, 2009). For this study, teacher assigned groups as well as spontaneous work with peers was considered. For example, discussing with a peer about an assigned task (Shapiro, 2004), seeking to learn with a partner rather than alone (Reeve, 2012), or helping other students to understand learning contents (Handelsman et al., 2005).

*Autonomous contribution:* This dimension comprises several behaviors of voluntary participation, such as making contributions in class (Reeve, 2012), raising a hand to answer a teacher's question (Shapiro, 2004), or participating in class when discussing a new topic (Kember & Leung, 2009). Autonomous contribution is about behaviors involving exchange with the class as a whole, which require the students' own initiative. Among engagement literature there is an important amount of research on this kind of behaviors, as they are an essential part of behavioral engagement. However, there is a lack of research specifically studying it as a form of class social interaction.

*Critical thinking:* This group of behaviors includes those involving expression of critical thinking about learning materials or contents during class. As autonomous contribution, they imply an exchange with the class as a whole. This kind of behaviors hasn't been so deeply addressed by previous research. Nevertheless, recent advances in engagement research are increasingly outlining their importance as a behavioral repertoire that allows students an active role in their learning. These behaviors include, for example, discussing different interpretations of things, expressing ideas that are not in accordance with those of other people, (Hipkins, 2012), or discussing questions that do not have one right answer (Yazzie-Mintz & McCormick, 2012).

### *Academic Social Self-Efficacy as an antecedent of Academic Social Participation.*

Self-efficacy is a key element in research about human motivation. As a general construct, it is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Bandura, 1997, p. 3). Self-efficacy has an effect on people's actions, as they rather avoid those tasks and situations that seem to exceed their capabilities, while choosing and carrying out those in which they

feel capable and confident (Bandura, 1986). Self-efficacy beliefs have an important role in the execution of competent social tasks (Medrano, 2008). Particularly, social self-efficacy is considered an important predictor of real social performance (Moe & Zeiss, 1982), which helps to identify individuals with low and high social skills (Caballo, 2000). At university, academic self-efficacy (confidence to do well in subjects) (Pintrich, Smith, Garcia, & McKeachie, 1993) predicts several academic behaviors that in turn foster students' performance.

Academic social self-efficacy has been stated as a specific dimension of academic self-efficacy (Solberg, O'Brien, Villareal, Kennel, & Davis, 1993). This dimension refers to students' confidence about using interpersonal skills to perform adequately in academics, such as asking questions and speaking out in public (Medrano, 2011; Medrano, Sánchez-Rosas, & Olaz, 2007; Moe & Zeiss, 1982; Sánchez-Rosas, 2013). A previous study (Takaya, 2014), proved academic social self-efficacy to have an indirect, positive and significant predictive capacity ( $p < .01$ ,  $r = .18$ ) on academic social participation.

For this reason, self-efficacy for academic social abilities has been considered an adequate indicator in view of assessing construct validity for the academic social participation scale in this study. According to the previously reviewed theoretical guides, we expected to find positive correlations between academic social participation and academic social self-efficacy.

## Methods

### *Design*

An instrumental study with quantitative methodology was carried out (Montero & León, 2002). A literature review and a focus group served as a foundation to develop the categories to be used in the instrument development, which was afterwards assessed through quantitative methodologies.

### *Participants*

This study was carried out with a self-selected sample, as participants decided by themselves to participate (Sterba & Foster, 2008). The sample comprised a group of university students ( $N = 503$ , 85% female) from 19 academic units in two national universities, most of them majoring in psychology (36%), with an average of 23 years old ( $SD = 5.92$ ). They were invited to participate via social networks, and consented to it after being informed about the research objectives and the anonymity of their answers.

### *Instruments*

Academic Social Participation. A new scale was applied, comprising six items for each measured construct, including academic help seeking (AHS; e.g. "I ask questions when there is a topic I don't understand"), work with peers (WP; e.g. "I work on class activities with other classmates"), autonomous contribution (AC; e.g. "I participate in class discussions"), and critical thinking (CT; e.g. "When my viewpoint differs from that of a mate, I express my opinion"). The 24 mixed items were presented in four sections of six items each. The participants answered to the instrument through a Likert scale with the following values: 1 = *Very Rarely*, 2 = *Rarely*, 3 = *Occasionally*, 4 = *Frequently*, 5 = *Very Frequently*. Psychometric properties of this scale will be presented with detail in the results section.

Academic Social Self-Efficacy. (Olaz, 2006). This instrument assesses student's confidence about carrying out social behaviors at university, and comprises seven items, from which six items have been selected for use in this study. The items are answered through a Likert scale, expressing the respondent's degree of confidence to carry out each behavior. The Likert scale ranges from 1 (*I can't do it*) to 10 (*I'm totally sure I can do it*). The original instrument has shown appropriate internal consistency ( $\alpha = .84$ ), and its application for this study obtained optimal internal consistency ( $\alpha = .91$ ).

### *Procedure*

*Literature review:* A search was conducted through several databases (such as JSTOR, SAGE, ScienceDirect, Springer, and Wiley), looking for papers on engagement, behavioral engagement, and social behavior in academic environment. Seventy peer reviewed studies were included, considering theoretical, instrumental and empirical work since 1985 to 2016. Conceptual and operational definitions for engagement and behavioural engagement were considered. A preliminary list of behaviours was established, including those with the following characteristics:

- a) Verbal interaction is involved.
- b) Teachers and/or classmates are involved.
- c) They occur during class.

The selected behaviors were organized to delimit dimensions following several criteria:

- a) People involved in each behavior.
- b) Class situation in which it occurs.
- c) The purpose of that behavior.
- d) Skills required to complete that behavior.
- e) Existence of previous theoretical or instrumental studies about these groups of behaviors.

Four dimensions were proposed for academic social participation, as they were mentioned previously: academic help seeking, work with peers, autonomous contribution, and critical thinking.

*Focal group:* Nine university students participated in a focal group, answering questions about their own behaviors in class. The purpose for this group was to examine which behaviors relative to the proposed dimensions were habitual in the viewpoint of students themselves. They were explained the objectives of this study (*"we want to know your opinion about behaviors you or your mates do in class, in which you interact with classmates and teachers, and that help in your learning"*), were asked to answer in turns, and informed about the confidentiality of their answers. A brief description of academic social participation and each of the four dimensions was given to the group. The students were asked questions individually (e. g.: *"Can you tell me what behaviours do you or your classmates have when orally participating in class?"*). At the end of the interview, each member was given opportunity to add any opinions, comments or additional information.

*Scale administration:* A protocol was elaborated, containing 24 items, six items in each proposed dimension. A pilot test was carried out with 19 students. According to the pilot test results, the 24 items were kept, and they were mixed and divided into four sections for the principal study. The final protocol was administered to students through an online survey

system, in which they were asked general information (age, gender, major, academic year) before answering the four separate sections of the scale.

### *Data Analysis*

Data was managed through statistical software SPSS (IBM, 2013) and Factor (Lorenzo-Seva & Ferrando, 2013). Preliminary tests were carried out to identify data about age, gender, average scores, and standard deviation for the items in the general participation scale, its four sub scales, and the self-efficacy scale. Asymmetry and kurtosis were examined, and Kolmogorov-Smirnov test was run to know the distribution for the items. Asymmetry values between +1.5 and -1.5 were considered acceptable (Forero, Maydeu-Olivares, & Gallardo-Pujol, 2009). Multicollinearity between items was examined by bivariate Pearson correlations, setting  $r < .90$  values as adequate.

Exploratory factorial analysis was carried out to assess the scale's internal structure. As the participation items had shown a non-normal distribution, the non-weighted least squares method was used (Lloret-Segura, Ferreres-Traver, Hernández-Baeza, & Tomás-Marco, 2014). Oblique rotation (promax) was chosen, as the underlying factors were expected to be interrelated. Several criteria were taken into consideration when deciding the number of factors to keep: (a) Kaiser's rule of eigenvalues-greater-than-one (Kaiser, 1960), (b) the screen test (Cattell, 1966), (c) parallel analysis (Horn, 1965), (d) factorial structure should explain at least 50% of variance (accumulated variance for factors extracted altogether) (Merenda, 1997), and (e) interpretation of the rotated factors.

After running factorial analysis, the following criteria were considered for eliminating items: (a) items loading in two or more factors, (b) factorial loads lesser than .40, (c) high factorial loads in factors other than the one relative to the item's sub scale (d) eliminating the item increases or does not decrease internal consistency (Cronbach's alpha) for its sub scale. Additionally, the data were examined and interpreted according both to theory, and nature of the behaviors involved. A new factorial analysis was run on the resultant group of items, so as to verify its internal structure.

Internal consistency for the participation scale, its sub scales, and the self-efficacy scale, was assessed by calculating Cronbach's alphas, considering these values: .70 acceptable, .80 good, and .90 excellent (George & Mallery, 2007). Bivariate correlations (Pearson's  $r$ ) between the whole participation scale, sub scales, and the self-efficacy scale were calculated in order to evaluate construct validity. The correlations were expected to have, at least, moderate, positive and significant values.

### **Results**

There was no multicollinearity between the items. Kurtosis and asymmetry analysis yielded satisfactory results, but Kolmogorov-Smirnov test showed data didn't fit a normal distribution. A first exploratory factorial analysis suggested a structure of three related factors. This structure merged in a first factor those items proposed for autonomous contribution and critical thinking. A second factor reunited the items proposed for work with peers, and a third factor comprised those proposed for academic help seeking.

Nevertheless, five items were eliminated following the previous mentioned criteria for item retention. Two of these were items proposed as indicators of academic help seeking ("*I ask questions when I don't understand a topic*" and "*I ask questions when I don't understand what is being explained*") and had high factor loads in the first factor ( $> .60$ ), so they were

associated with behaviors of autonomous contribution and critical thinking. One item proposed as indicator of critical thinking was eliminated (“*I give my personal opinion on a topic*”), as it had factorial loads in the first and second factor.

After this, the first factor was a compound of eleven elements, while second and third factors had six and four elements respectively. With the purpose of obtaining three sub scales with a more similar quantity of elements, two items in the first factor were eliminated (“*I give my opinion when it differs from that of the teacher*” and “*I give my opinion when we discuss different solutions for a problem*”). These items were selected as they had relatively lower factorial loads and their elimination didn’t decrease internal consistency of their sub scale and the whole scale.

Thus, in the resultant scale, the autonomous contribution sub scale comprises nine elements, including items firstly proposed as indicators for autonomous contribution and critical thinking. It seemed right to keep this arrangement, as all of these items involve contributions in class. The academic help seeking sub scale comprised the four items retained in the third factor, and the work with peers sub scale comprised the six items included in the second factor. A new exploratory factorial analysis for this scale, verified a stable three factor structure, explaining 52% of variance, with good factor loads and no items loading in more than one factor. Table 1 presents the obtained sub scales and factorial loads for this final version.

	Factor		
	1	2	3
AHS3			
AHS4			.856
AHS5			.686
AHS6			.491
WP1			.829
WP2		.723	
WP3		.529	
WP4		.630	
WP5		.601	
WP6		.779	
AC1	.823		
AC2	.767		
AC3	.787		
AC4	.696		
AC5	.724		
AC6	.835		
CT1	.606		
CT2	.717		
CT4	.617		

Note: The items names correspond to their previous position in the proposed four dimension scale (AHS, academic help seeking; WP, work with peers; AC, autonomous contribution; CT, critical thinking).

Cronbach’s alphas were calculated to assess the scale’s internal consistency, obtaining good to excellent results. Table 2 shows these results.

Table 2. *Internal consistency for the Academic Social Participation Scale and its sub scales.*



	AHS	AC	WP	ASP
Cronbach's $\alpha$	.83	.91	.81	.88

Note: AHS, academic help seeking; WP, work with peers; AC, autonomous contribution; ASP, academic social participation.

The academic help seeking sub scale showed significant and moderate correlations with both the autonomous contribution and the work with peers sub scales. Meanwhile, autonomous contribution had a significant but weak correlation with the work with peers sub scale. Correlations between the sub scales and social academic self-efficacy were not uniform. Academic help seeking and autonomous contribution had significant positive correlations with social academic self-efficacy, while the latter had no significant correlation with the work with peers sub scale. All three sub scales had strong positive correlations with total scores in academic social participation. In turn, the whole scale scores in academic social participation presented a moderate to high significant correlation with academic social self-efficacy. Table 3 presents these results.

Table 3. *Correlations between the Academic Social Participation Scale, its sub scales, and academic social self-efficacy.*

Group	AC	WP	ASP	ASSE
AHS	.41***	.41***	.73***	.35***
AC		.14**	.83***	.65***
WP			.62***	.05
ASP				.55***

Note: p value; \*\*\*  $p < .001$ , \*\*  $p < .01$ . AHS, academic help seeking; WP, work with peers; AC, autonomous contribution; ASP, academic social participation, ASSE, academic social self-efficacy.

## Discussion

Research on engagement has made great advances documenting engagement's importance in learning processes (Green et al., 2012; Johnson & Sinatra, 2013; Skinner & Belmont, 1993). Engagement relationships with other major variables have been examined, such as teacher-student interaction (Archambault et al., 2012; Federici & Skaalvick, 2014; Gasiewski, Eagan, Garcia, Hurtado, & Chang, 2012), teacher's goals (Huges, Wu, & West, 2011), class size (Dominino, Castellaro & Roselli, 2011), motivation (Jang et al., 2012), performance, social adjustment, school persistence and long term academic development (Archambault et al., 2012; Klem & Connell, 2004; Ladd & Dinella, 2009; Valiente et al., 2008). This research opened a field of possibilities for intervention to attain better educational outcomes by enhancing engagement. However, the engagement concept, and particularly its multiple dimensions still lack clearer definitions, which becomes apparent when looking through assessment instruments.

This study's purpose was to contribute to clearly defined engagement measurement by developing an instrument assessing a specific behavioral repertoire within behavioral engagement.

A literature review and a focal group helped to delineate a set of indicators for four behavioral domains (i. e. autonomous contribution, critical thinking, work with peers, and academic help seeking) for which 24 items were drafted. After administering this scale to a group of 503 university students, preliminary tests showed that the items distribution had a non-normal pattern. This is in itself an interesting finding and asks for further analysis about the meaning students assign to these behaviors.

An exploratory factorial analysis suggested a discrimination of items in three separate factors. Broadly speaking, one factor comprises behaviors related to working with peers, another factor relates to academic help seeking, and a third one includes both behaviors proposed as autonomous contribution and critical thinking indicators. An interpretation of this result could be that both dimensions proposed as autonomous contribution and critical thinking involve behaviors of “raising hands” and “speaking in front of the whole class”, while those behaviors proposed as work with peers and academic help seeking do not respond to that description. As a result, the first two were included in the same sub scale, called autonomous contribution, as what held similarity between them was openly contribution in front of the class.

In fact, while selecting which items were to be retained, two items proposed by the research team as indicators for academic help seeking were eliminated, as they had high factorial loads in the same factor as autonomous contribution. These items were, within those proposed for academic help seeking, the closer ones to the description of speaking to the whole class.

The items proposed for work with peers included both spontaneous behavior of looking for a partner to work or discuss themes with, and behaviors subsequent to teacher assigned group work. All of them had consistent factorial loads in the same factor and showed similar distributions.

After selecting the final set of items, the resultant academic social participation scale comprised a total of 19 items, including six items in the work with peers sub scale, four items in the academic help seeking sub scale, and nine items for the autonomous contribution sub scale. Consistency analysis on this scale showed good to optimal results, and all the sub scales had significant positive correlations among them, which supports the idea that the whole participation scale was measuring the same construct. Nevertheless, work with peers sub scale's correlation with autonomous contribution, if significant, was lower than the other two correlations.

Additionally, criterion validity was tested by correlating the participation whole scale and its sub scales to a measure of academic social self-efficacy. As this variable is supposed to foster the students' use of social skills to perform adequately at academics (Medrano, 2011; Medrano et al., 2007; Moe & Zeiss, 1982; Sánchez-Rosas, 2016; Sánchez-Rosas & Pérez, 2015), it was expected to have a positive correlation with academic social participation. Results partially support this hypothesis, as autonomous contribution and academic help seeking showed significant positive correlations with academic social self-efficacy, while work with peers had no significant correlation.

A review on the academic social self-efficacy items shows they are primarily related to social skills linked to openly speaking in public, expressing opinions and asking questions, which are mainly related to autonomous contribution and help seeking, but have weaker connection with working with peers. To overcome this difficulty, further studies are recommended, including criterion variables more closely related with the whole content of indicators comprised in the academic social participation scale.

### *Limitations and Further Research*

A scale measuring academic social participation has been obtained, showing a consistent factorial structure. Partial validity support has been found for this scale and its sub scales.

Correlations between factors support the idea that academic social participation may be considered as one complete construct including the dimensions of autonomous contributions, work with peers, and academic help seeking.

Some limitations to this study are the preponderance of women among the participants, and the fact that criterion validity was tested with only one variable obtaining partial results. For these reasons, further studies are required with a more gender balanced sample, and also with tests oriented to support criterion validity. Also, it is important to find out the relations between this construct and other forms of engagement. After amplifying our knowledge in this area, it should be possible to find out links between academic social participation and other antecedent and consequent variables.

The development and measurement of this construct contributes to more detailed studies on behavioral engagement, increasing possibilities for comprehension and intervention in the educational field.

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