International Journal of Educational Research 77 (2016) 37–49

Contents lists available at ScienceDirect

International Journal of Educational Research

journal homepage: www.elsevier.com/locate/ijedures

Multidimensionality of behavioural engagement: Empirical support and implications

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ARTICLE INFO

Article history:
Received 20 October 2015
Received in revised form 6 February 2016
Accepted 11 February 2016
Available online xxx

Keywords:
Behavioural engagement
Multidimensionality
Measurement
Motivation
Achievement

ABSTRACT

Behavioural engagement refers to a large range of student behaviours, differing from one study to another. What are the advantages and disadvantages of using a global measure or specific behaviours? The aim of the present study was to test the multidimensionality of the construct of behavioural engagement (presence of distinct dimensions and relevance of grouping them). Five dimensions were distinguished: participation, following instructions, withdrawal, disruptive behaviour and absenteeism (explanatory factorial analyses, Sample 1). Confirmatory factorial analyses supported the grouping of these dimensions in a common construct (Sample 2). The links between correlates and a global measure of behavioural engagement or specific dimensions were generally consistent. The global measure hid differences in relations between dimensions and some correlates. Taking the multidimensionality of behavioural engagement into account appears crucial.

1. Introduction

Behavioural engagement is crucial for students' schooling. Behaviourally engaged students reach higher achievement than disengaged students. The latter are also more at risk for school drop-out (Archambault, Janosz, Fallu & Pagani, 2009; Fredricks, Blumenfeld & Paris, 2004; Rumberger & Rotermund, 2012).

However, as stressed by Lawson and Lawson (2013), research on this concept is very extensive as it reflects various interests and theoretical approaches of engagement researchers. The meaning of « behaviourally (dis) engaged students » may differ largely from one study to another. According to some authors, behaviourally engaged students in the classroom context are those who take part in lessons, notably by asking questions to the teachers, by spending time on task, etc. (Hirschfield & Gasper, 2011; Ladd, Birch, & Buhs, 1999). In other studies, it consists in following teachers' instructions (Fall & Roberts, 2012). Behaviourally disengaged students are considered by some authors as those who annoy others during lessons, who do not follow the classroom rules, who act defiant, etc. (Ladd & Dinella, 2009; Ponitz, Rimm-Kaufman, Grimm & Curby, 2009). For others, these students do not participate in activities, think about other things during the lessons, avoid help-seeking, or are absent (Roeser, Strobel, Quihuis, 2002; Shih, 2008).

All these behaviours differ from each other to some degree. For instance, acting defiant, displaying disruptive behaviours, annoying others, etc. refer to « active behaviours » which would have a potential effect on the classroom climate and other students. To the opposite, withdrawal, avoiding help-seeking, thinking about other things, etc. consist in more passive

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http://dx.doi.org/10.1016/j.ijer.2016.02.007
0883-0355/

behaviours. Moreover, they were found to be associated with different outcomes. For instance, displaying disruptive behaviours was more related to anger while withdrawal was more related to sadness (Roeser et al., 2002). These behaviours seem therefore to refer to different student experiences in school. The concept of behavioural engagement assumes that, theoretically, all these kinds of behaviours have something in common and could be considered as indicators of a same construct (Appleton, Christenson, & Furlong, 2008; Fredricks et al., 2004). However, the relevance of grouping them still need to be empirically tested. Do the indicators used reflect different sides of behavioural engagement, supporting the multidimensional nature of this concept?

The answer to those questions has crucial implications for researchers as the findings of the studies may vary according to the behaviours investigated. Moreover, one could ask what are the advantages and the disadvantages of using a global measure of behavioural engagement compared with specific behaviours. The current study addresses these issues as the answer to those questions is critical to increase our understanding of the development of student engagement (Fredricks et al., 2004).

1.1. Engagement as multi-components

Engagement refers to "the quality of a student's connection or involvement with the endeavour of schooling and hence with the people, activities, goals, values, and place that compose it" (Skinner, Kindermann, & Furrer, 2009, p. 494). It is a multi-components concept generally assumed to include behavioural, emotional and cognitive engagement (Fredricks & McColskey, 2012; Wang, Willett, & Eccles, 2011). Behavioural engagement refers to the students' participation and involvement in school activities, academic, social or extracurricular (Fredricks et al., 2004). Emotional engagement consists in students' affective reactions to the school, teachers, academics and classmates (Fredricks et al., 2004; Skinner, Furrer, Marchand & Kindermann, 2008). It refers notably to discrete emotions (such as boredom, anxiety, sadness, happiness, etc.; Fredricks et al., 2004; Skinner & Belmont, 1993) Cognitive engagement refers to the psychological commitment in learning (e.g., use of learning – such as surface and deep processing – strategies and self-regulation strategies; Greene, Miller, Crowson, Duke, & Akey, 2004; Patrick, Ryan, & Kaplan, 2007; Wang et al., 2011).

Above those distinctions, authors stressed the need to distinguish engagement from motivation (Hospel & Galand, 2011; Skinner et al., 2008). Engagement refers to the way students feel, think and behave in classroom or at school, to the level of energy or effort they put in school. Motivation, antecedent of engagement, consists in the perceptions, beliefs, and motives that fuel those reactions.

1.2. Behavioural engagement, a key construct

Common in almost all definitions and measurement of engagement (Fredricks et al., 2011), behavioural engagement is a key construct. Only this component significantly predicts drop-out when all components of engagement are considered simultaneously (Archambault et al., 2009). It is a stronger predictor of long-term achievement than emotional engagement (Ladd & Dinella, 2009) and mediates the link between academic competence and emotional engagement (Li, Lerner, & Lerner, 2010).

But what is meant by "behavioural engagement"? Authors define this concept as "the behaviours students engage in that involve them in the activities of the classroom and school. (. . .) (It) included the social tasks of school, for example, attending classes and school, following classroom rules, interacting positively and appropriate with teachers (. . .)" (Finn & Zimmer, 2012; p.100). In the literature, this concept has been used to refer to a large range of behaviours and has been measured through very different ways (Fredricks et al., 2011). Some authors focused on specific students' behaviours and, investigated separately: for instance, effort (Hughes, Luo, Kwok & Loyd, 2008), acting-out/disruptive behaviours (Finn, Pannozzo and Voelkl, 1995; Hughes et al., 2008; Roeser et al., 2002), inattentive behaviours (Finn et al., 1995), withdrawal (Roeser et al., 2002); participation (Buhs, Ladd & Herald, 2006; Gregory, Allen, Mikami, Hafen, & Pianta, 2014; Ladd et al., 1999), time on task (Gregory et al., 2014; Hirschfield & Gasper, 2011; Lan et al., 2009), compliance to classroom norms (Fall and Roberts, 2012), school avoidance (Buhs et al., 2006). Other authors mixed several types of behaviour and merged them in a global measure: participation, effort, concentration, and persistence (Hughes, Wu & West, 2011; Hoglund, 2007; Smalls, 2010); attention and compliance (Wang et al., 2011); school attendance and discipline/following the rules (Archambault et al., 2009; Li & Lerner, 2011); class attendance, engagement in other activities than class work (e.g., chatting, texting; Elffers, 2013); participation and disruptive behaviours (Ladd & Dinella, 2009); involvement, persistence, avoidance, withdrawal and participation (Shih, 2008); etc. (see also e.a. Conner & Pope, 2013; Darensbourg & Blake, 2013; Li & Lerner, 2013; Virtanen, Lerkkanen, Poikkeus & Kuorelatti, 2014). As stressed by Lawson and Lawson (2013), this diversity expressed the different interests and theoretical approaches that guide research on behavioural engagement. For instance, research on self-efficacy theory or on perceived control distinguish behaviours such as active attempts, effort, persistence from passivity, giving up, etc. (see Skinner et al., 2009).

Yet, most of the time, this diversity of behaviour has not been taken into account in past research, either in measuring of behavioural engagement (as no authors included all kind of behaviours) or in discussing the results. Beyond the differences in behaviours measured, almost all authors have operationalized this construct as a single underlying continuum, from engagement to disengagement (Archambault et al., 2009; Hughes et al., 2008; Ladd et al., 1999; Lanza & Taylor, 2010; Li et al., 2010). Behaviours cited above are quite different and authors have sometimes studied only some specific dimensions, but it

seems to us that they may be organized along this continuum. Behaviours such as participation, effort, time on task may indicate the strongest engagement as students really take part in schooling by displaying such active behaviours. Compliance/following the rules is less active and may indicate a weaker engagement. Disruptive/acting-out behaviours, annoying others, etc. are indicators of disengagement. They are active and inappropriate behaviours. Withdrawal doing other activities than class work, avoiding to participate in activities, giving up, etc. are also indicators of disengagement but are more passive. Through both kinds of behaviours, students are still connected in some ways with their classroom environment. Yet, it is difficult to order these behaviours as they could indicate the same level of engagement but could refer to different ways for students to disengage from classroom activities. Finally, school avoidance, absenteeism, etc. may be the strongest indicator of disengagement as it consists in physical withdrawal from school activities. The relevance of considering all these behaviours as a same global construct is a central question. Including or merging different indicators of behavioural engagement from one study to another is not very problematic if they simply reflect variation in the intensity of engagement. However, if some relations are specific between some kinds of behaviour and some correlates, differences in indicators of behavioural engagement between studies could change the pattern of results. In the next section, we checked if consistent results were found in previous studies using different indicators of behavioural engagement.

1.3. Correlates of behavioural engagement

Various aspects of student experience in classrooms and schools have been documented as correlates of behavioural engagement (e.g., achievement, motivation, etc.). The aim of this section is to compare the results of previous studies in order to see whether they are consistent or different according to the indicators of behavioural engagement used. The second case would suggest the presence of specific dimensions. To do this, we focused on some well-known correlates of behavioural engagement. The results of previous studies focusing on the links between behavioural engagement and these correlates have produced inconsistent findings. For instance, some authors found significant associations between behavioural engagement and achievement (Buhs et al., 2006; Gottfried, 2010; Ladd & Dinella, 2009; Petrides, Chamorro-Premuzic, Frederickson, & Furnham, 2005). Yet, other authors found no links between behavioural engagement and achievement (Finn & Zimmer, 2012; Hughes et al., 2008). These inconsistencies may be due to the behaviours used as indicators of engagement. Buhs et al. (2006) measured students' participation, Gottfried (2010) measured attendance, Ladd and Dinella (2009) measured compliance with rules and directives, and Petrides et al. (2005) focused on truancy. On the other hand, Finn and Zimmer (2012) and Hughes et al. (2008) focused on disruptive behaviours. Moreover, among the behaviours significantly related to achievement cited above, it appears that the strength of the associations vary according to the specific behaviours investigated within the same study. For instance, classroom participation is more strongly related to achievement than school avoidance (Buhs et al., 2006). Unexcused absences were more strongly associated with low achievement than excused absences (Gottfried, 2009). Therefore, it may be that some aspects of behavioural engagement such as participation and withdrawal are more crucial for achievement than others (i.e. attendance and disruptive behaviours).

Regarding motivation, self-efficacy was negatively related to withdrawal and giving-up (Pintrich, 1999; Roeser et al., 2002; Wang, 2005), while perceived task value was negatively related with disruptive behaviours (Borders, Earleywine, & Huey, 2004; Roeser et al., 2002). Effort, persistence and active participation were positively linked with both motivational variables (Cox & Whaley, 2004; Linnenbrink & Pintrich, 2003; Patrick et al., 2007).

Regarding the relations between dimensions of behavioural engagement and others components of engagement (emotional and cognitive engagement), studies also showed some differences. As stressed in "Engagement as multi-components" section, emotional engagement refers to discrete emotions (Fredricks et al., 2004). Previous research showed negative relations between effort and negative emotions (Dettmers et al., 2011), between participation and boredom (2005Ainley, Corrigan, & Richardson, 2005; Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010). Persistence was mainly associated with interest (Ainley et al., 2005). Acting-out behaviours were more linked to anger, while withdrawal was more related to sadness (Roeser et al., 2002) or anxiety (Wang, 2005). Skipping classes was documented to be positively linked with anger and a combined measure of sadness and hopelessness (Roeser & Eccles, 1998). As described previously, cognitive engagement refers to the use of learning and self-regulation strategies (Greene et al., 2004). Students who used better self-regulated strategies spent less time on the task (van Den Hurk, 2006). Students' attention and problem behaviours were negatively linked (Taylor & Lopez, 2005).

These results show that students' behaviours may reflect specific students' experiences at school as they are linked with specific outcomes (for instance, some students who display acting-out behaviours may be more angry while others who display more withdrawal behaviours may feel more sadness). It raises some key questions. Are all these behaviours the reflection of a same underlying construct? What are the consequences of using different ways to measure behavioural engagement (e.g., different kinds of behaviours vs. a global scale)? If the behaviours measured vary from one study to another, inconsistent findings may emerge.

2. Research questions and hypotheses

The variations in the content of the measures used to assess behavioural engagement question the construct validity of this concept. The goal of this paper was not to propose a new measure of behavioural engagement, but to address the concerns raised above and to contribute to the improvement of the measurement of this construct. The first aim of the

present paper is to investigate the multidimensional nature of behavioural engagement by testing if specific dimensions of behavioural engagement emerged when taking the various indicators used in previous studies into account and if these specific dimensions can be considered as indicators of a same construct. Given the specific relations found between some correlates and some kinds of behaviours, we expected that specific dimensions would emerge from the analyses. In accordance with most authors, we expected that these dimensions would be related to a common construct of behavioural engagement. As explained above, a continuum of behavioural engagement may exist.

Second, we wanted to explore the implications of using different ways to measure this concept by investigating the relations between the behavioural dimensions, a global measure of behavioural engagement, and some correlates (i.e. emotional and cognitive engagement, task-value, self-efficacy, achievement). Would specific relations emerge between dimensions and correlates? Would dimensions and the global scale be related in the same way with these correlates? This is a critical issue, as a change of indicator could produce inconsistent findings across studies. From the results retrieved above, we expected that specific relations would emerge according to the dimension considered.

Yet, behavioural engagement can be investigated at different levels (e.g. classroom, school), each level being related to different outcomes and predictors (Janosz, 2012). In the current study, we considered the classroom level to focus on the issues related to the multidimensionality of behavioural engagement, because of its direct connection with learning and achievement (Buhs et al., 2006; Gottfried, 2010; Ladd & Dinella, 2009).

2.1. Overview and analytic strategy

To answer the first research question related to the construct validity of behavioural engagement, we performed an explanatory factorial analysis (EFA) on a first sample (Study 1) to test the presence of distinct behavioural dimensions. More precisely, we included the various indicators of engagement used in previous studies in the EFA to check if some dimensions of behaviours emerged. Then, a confirmatory factorial analysis was performed on a second and distinct sample (Study 2) to test the relevance of grouping the dimensions identified as a same construct of behavioural engagement. To test the second research question, correlations were performed between behavioural engagement (specific dimensions vs. global measure) and some correlates (Study 2).

3. Study 1

Study 1 aimed at testing the multidimensional nature of behavioural engagement, as a step towards testing its construct validity. We tested if, among the large variety of indicators used in previous research, some dimensions of behaviour emerged.

Table 1
Distribution of behavioural engagement items for each dimension and internal consistency coefficients (Study 1).

	α	Factor loadings	Items
Behavioural dimensions			
			During Mathematics lessons, . . .
Participation	.78	.86	1. Asking questions to know more
		.76	2. Asking for explanations when the student doesn't understand
		.74	3. Making suggestions or giving new ideas
		.65	4. Trying to answer when the teacher asks the class a question
Following teacher's instructions	.74	.80	5. Handing in homework on time
		.74	6. Keeping class notes in order
		.70	7. Following the instructions
		.58	8. Doing what the teacher asks
Withdrawal	.81	.87	9. Dreaming and thinking of other things.
		.63	10. Stop working and waiting for the end of the lesson
		.55	11. Pretending to work
		.55	12. Slumping, lying over the chair or the desk
Disruptive behaviours	.75	.84	13. Throwing things in the air
		.72	14. Annoying other pupils
		.66	15. Chatting in a loud voice
		.64	16. Making the others laugh
Absenteeism	.60	.85	17. Playing truant, skipping class
		.76	18. Finding excuses not to come to class

Notes: $N = 1197$. These items have been freely translated from the French version of the items.

3.1. Method

3.1.1. Sample and procedure

Participants were 1197 French-speaking eighth graders, 51.5% were girls. They were 13.6 years old on average (SD = .8). They came from 11 schools located in three cities in Belgium, came from urban environments and had diversified socio-cultural backgrounds.

Students completed a self-reported questionnaire assessing behavioural engagement regarding mathematics lessons, administered by a researcher during regular class time. The students were informed that they were free to participate and that the information would be kept confidential.

3.1.2. Measure

Behavioural engagement was measured by 23 items which reflected the variety of behaviours used in previous research. As stated in the Introduction section, a large range of behaviours were used in previous studies to measure this construct: skipping classes, handing homework completed on time, annoying others, withdrawal, etc. We therefore included a large variety of items to cover this range of behaviours. As we did not find a scale which included all the indicators, items came from several existing scales (Finn et al., 1995; Galand, 2004; Ladd et al., 1999; Li et al., 2011; Li & Lerner, 2011; Marks, 2000; Skinner et al., 2008; Van Ryzin et al., 2009). The items (see Table 1) were translated into French and some formulations were slightly changed to fit with the age of the participants and the context (e.g, course subject). Participants answered on a 5-point Likert scale ranging from 0 = *never* to 4 = *very often*.

3.2. Results and discussion

An explanatory factorial analysis was performed on the behavioural engagement items, with Oblimin rotation. The results supported the presence of four factors. The four-factor model had eigenvalues greater than 1. The first one was named "participation" (four items). It included expression of ideas, initiative taking, answering teachers' questions, and effort. The second one, named "following teacher's instructions" (five items), referred to handing homework completed on time, compliance with the rules, following the teacher's instruction. Third, "absenteeism" (three items) included skipping classes and classroom avoidance. These dimensions seem relevant as they refer to aspects of behavioural engagement studied separately in previous research (Skinner et al., 2009). A fourth factor (ten items) referred to annoying other students, disturbing the lesson but also pretending to work, stopping work, waiting for the end of the lesson, etc. We made the hypothesis that it may include two dimensions that we named: "disruptive behaviours" (i.e. annoying others, disturbing the lesson, etc.) and "withdrawal" (i.e. pretending to work, stopping work, etc.). Indeed, as discussed in the Introduction section, these two dimensions have been studied separately in previous research. Moreover, specific relations have been documented between each of these dimensions and the correlates (e.g., achievement, motivation, emotional engagement). When forcing the extraction of five factors, the items divided up according to these two dimensions. These five dimensions seem relevant as they refer to aspects that are studied separately in previous studies, in different fields of research (see for instance Skinner et al., 2009). The items loadings were quite high (for the four- as well as the five-factor models: >.53, except for two items: .42 and .48). No items loadings were lower than .40.

However, one item reduced the internal consistency of the absenteeism scale and tapped late arrival (deliberate or not) rather than deliberately not attending the lessons. Another item reduced the internal consistency of the participation scale. Its meaning was hazy for many students who asked questions about it when filling in the questionnaire. These two items were dropped from the analyses. To balance the number of items on each dimension, one item (with the lowest factor loading) was extracted from other dimensions. The remaining items, the corresponding factor loadings and internal consistency coefficients are presented in Table 1. Factor loadings were from .55 to .87 for each scale. There were minor cross-loadings between scales but no cross-loading exceeded .30. The internal consistency of the subscales was satisfactory (Nunnally & Bernstein, 2010).

The correlations between dimensions of behavioural engagement (see Table 2) ranged from small (e.g. .01 between disruptive behaviours and participation) to high (e.g. −.58 between following instructions and withdrawal) (Cohen, 1988). Moderate and high positive correlations were found between disruptive behaviours, withdrawal and absenteeism. A moderate positive correlation was found between participation and following instructions. Following instructions had high

Table 2
Summary of zero-order correlations for the different kinds of behaviours, Study 1.

Behaviours	Participation	Following instructions	Absenteeism	Withdrawal	Disruptive behaviours
Participation	1	–	–	–	–
Following instructions	.33**	1	–	–	–
Absenteeism	−.12**	−.38**	1	–	–
Withdrawal	−.33**	−.58**	.44**	1	–
Disruptive behaviours	.01	−.46**	.37**	.57**	1

Notes: $N = 1197$; * $p < .05$; ** $p < .01$.

and moderate negative correlations with disruptive behaviours, withdrawal and absenteeism. Participation had no significant correlation with disruptive behaviours but low to moderate negative correlations with absenteeism and withdrawal.

As a conclusion, the five-factor model (participation, following teacher's instructions, withdrawal, absenteeism and disruptive behaviours) seem meaningful as regards to previous research. These five dimensions seem to correspond with qualitative – and not only quantitative – differences in behavioural engagement. Participation conveys the idea that students take a full and active part in classroom activities and learning. Following teachers' instructions reflect more conformity. Disruptive behaviours, more externalized and active, have direct and potentially disturbing impacts on peers, teacher and the proceedings of the lessons. Withdrawal depicts the students' physical presence but passivity during classroom activities. Finally, absenteeism represents a physical withdrawal from the activities. However, EFA suggest that the four factor model, with one factor including withdrawal and disruptive behaviours, is also plausible. Further investigation as regards to the distinction between withdrawal and disruptive behaviours are needed. This issue was investigated in the Study 2, by means of confirmatory factorial analyses (CFA). Moreover, the promise of the "engagement" construct is to integrate those different dimensions into a unified framework. The different dimensions may reflect a gradation in behavioural engagement, from the most engaged (participation) to the most disengaged (absenteeism) behaviours, as suggested in the Introduction section. Given the correlations found between dimensions, the relevance of grouping them under the same underlying construct needed to be tested.

4. Study 2

First, Study 2 aimed at testing the construct validity of the measure of behavioural engagement by examining if the presence of specific behaviours highlighted in Study 1 could be replicated and related to a higher-order construct, behavioural engagement. Second, it aimed at investigating how each of these dimensions, as well as a global measure of behavioural engagement, were related to expected correlates: emotional and cognitive engagement, task-value, self-efficacy, achievement and gender. Based on research retrieved above, we expected differences in relation according to the kind of behaviour investigated (e.g., participation and withdrawal more linked with achievement than absenteeism and disruptive behaviours). Finally, we expected that girls would report higher behavioural engagement than boys whatever the kind of behaviour considered (Finn et al., 1995; Galand, 2004; Li et al., 2011; Wang et al., 2011).

4.1. Method

4.1.1. Sample and procedure

Participants were 801 French-speaking ninth graders and were 15, 5 years old on average (SD = .9). Forty-five per cent were girls. They came from 10 schools located in several cities in Belgium and had diversified socio-cultural backgrounds. The procedure was similar to Study 1, except that the questionnaire focused on French rather than Mathematics lessons.

4.1.2. Measures

4.1.2.1. Behavioural engagement. It was measured with the items selected in Study 1 (see Table 1).

4.1.2.2. Emotional engagement. This concept was measured by means of discrete emotions (Fredricks et al., 2004). Nineteen items assessed the frequency of three positive (enjoyment: $\alpha = .82$, hope: $\alpha = .76$, interest: $\alpha = .70$) and five negative emotions (anger: $\alpha = .80$, anxiety: $\alpha = .80$, sadness: $\alpha = .63$, shame: $\alpha = .73$; boredom) experienced during French lessons. Each was measured by two items (except for boredom—one item), adapted from a French version (Galand & Philippot, 2005) of the Differential Emotion Scale (Izard, Dougherty, Bloxom, & Kotsh, 1974). Students answered on a 5-point Likert scale ranging from 0 = *never* to 4 = *very often*.

4.1.2.3. Cognitive engagement. Fourteen items tapped student use of self-regulation strategies (e.g., "In French class, I make sure I don't get distracted"; $\alpha = .78$) and learning strategies: surface processing strategies (e.g., "When I am studying French, I underscore in my notes"; $\alpha = .66$) and deep processing strategies (e.g., "When we come across something new in French, I try to make links with what I already know"; $\alpha = .73$) (Galand, Raucent, & Frenay, 2010). Students answered on a 5-point Likert scale ranging from 0 = *never* to 4 = *very often*.

4.1.2.4. Task value. Twenty-one items ($\alpha = .93$) assessed the perceived value of the French lessons, including interest (e.g., "I am very interested by what we learn in French class"), importance (e.g., "It is very important for me to succeed in French") and utility (e.g., "French is no use to me" (reverse)). These items come from a French version (Neuville, Frenay, & Bourgeois, 2007; Ntamakiliro, Monnard, & Gurtner, 2000) of the scale developed by Eccles and Wigfield (1995). Answers could range from 0 = *totally false* to 4 = *totally true*. The items were slightly adapted to fit with the French lesson and the age of participants.

4.1.2.5. Self-efficacy. Eight items (α =.77) assessed student beliefs in his/her ability to deal with French lessons (e.g., "I am certain that I can understand what we learn in French"; Galand and Philippot, 2002). Answers could range from 0 = *totally false* to 4 = *totally true*.

4.1.2.6. Achievement. This measure consisted in self-reported grades for the French lessons (Kuncel, Credé, & Thomas, 2005).

4.2. Results

4.2.1. First-order factorial structure of behavioural engagement

To extend the results of Study 1, confirmatory factorial analyses were performed on behavioural engagement items with Lisrel 8.72, using maximum likelihood estimation. Several parameters were compared to test the model fit (Blunch, 2008; Kline, 2011; MacCallum, Browne, & Sugawara, 1996): the Root Mean Square Error of Approximation (RMSEA), the Standardized Root Square Mean Residual (SRMR); the Comparative Fit index (CFI) and the Parcimony Goodness of fit index (PGFI). A value of χ^2 non-significant, a value of RMSEA around .06 (or less), a value of SRMR of .06 (or less), a value of CFI larger than .95; a value of PGFI larger than .60 indicated an adequate fit of the model (Blunch, 2008; Kline, 2011; MacCallum et al., 1996). However, as χ^2 has been reported to be very sensitive to sample size (Kline, 2011), the ratio of χ^2 on degree of freedom (df) could then be more instructive. The lowest ratio indicates the best fit.

Three measurement models were tested: a one-factor model, a five-factor model and a four-factor model. First, the one-factor model and the five-factor model were compared. In the one-factor model, all the items were directly related to one underlying single factor reflecting behavioural engagement. The five-factor model was based on dimensions identified in Study 1 ("participation", "following teacher's instructions", "withdrawal", "disruptive behaviours", "absenteeism"). The one-factor model fitted the data poorly: χ^2 (135) = 1699.95; RMSEA = .14 (CI [.13–.14], $p < .001$); SRMR = .095; CFI = .89; PGFI = .60. The five-factor model displayed satisfactory fit indices (χ^2 (125) = 485.86; RMSEA = .061 (CI [.056–.067], $p < .001$); SRMR = .043; CFI = .97; PGFI = .68). The factor loadings were significant ($p < .001$) and in the expected direction on the latent factors for the two models. They were higher in the five-factor model for all the items. This model also explained a larger proportion of variance for the items (R^2 from .31 to .67) than the one-factor model, which explained very low proportion of variance for some items (e.g., .03 and .04). We selected the five-factor model as the best fitted to the data.

Modification indices for this model indicated that errors correlated among Items 5 and 6 ("following instructions"), and Items 13 and 14 ("disruptive behaviours"). They appeared close in meaning: both Items 5 and 6 expressed the students' organization; both Items 13 and 14 referred to annoyance of other students. The fit of the revised model was satisfactory (χ^2 (123) = 364.31; RMSEA = .049 (CI [.043–.055], *p*-close = .58); SRMR = .042; CFI = .98; PGFI = .68) and provided a significant improvement ($\Delta\ \chi^2$ (2) = 121.55; $p < .001$).

The correlation matrix of independent variables indicated that the correlations between the five dimensions of this model (see Table 3) were from small (participation and disruptive: $r = -.07$) to high, especially for withdraw and disruptive behaviours ($r = .66$). This last result questioned the discriminate validity of the two dimensions and suggested that they could be included in the same factor, as discussed in Study 1. A four-factor model, including withdrawal and disruptive behaviours in the same dimension, was tested. Indices of fit for this model were less satisfactory (χ^2 (127) = 605.41; RMSEA = .075 (CI [.070–.081], *p*-close < .001); SRMR = .055; CFI = .97; PGFI = .68) than the five-factor model ($\Delta\ \chi^2$ (4) = 241.1; $p < .001$ in favour of the five-factor model). The five-factor model was selected as the best first-order model.

The internal consistency for the five dimensions was satisfactory: participation, α = .74; following instructions, α = .80; withdrawal, α = .82; disruptive behaviours, α = .84; absenteeism, α = .59.

4.2.2. Second-order factorial structure of behavioural engagement

We tested if the five first-order factors were related to a common second-order factor, behavioural engagement. The fit of this model (see Fig. 1) (χ^2 (128) = 450.10; RMSEA = .056 (CI [.050–.061], *p*-close =.052); SRMR = .054; CFI = .98; PGFI = .71) and the internal consistency coefficient (α =.89) were satisfactory.

Table 3
Correlation matrix for the five dimensions of behavioural engagement (Study 2).

	Participation	Following instructions	Disruptive behaviours	Absenteeism	Withdrawal
Participation	1	–	–	–	–
Following instructions	.37**	1	–	–	–
Disruptive behaviours	.07*	−.58**	1	–	–
Absenteeism	−.13**	−.43**	.40**	1	–
Withdrawal	−.28**	−.62**	.66**	.43**	1

Notes. $N = 801$. * $p < .05$; ** $p < .01$.

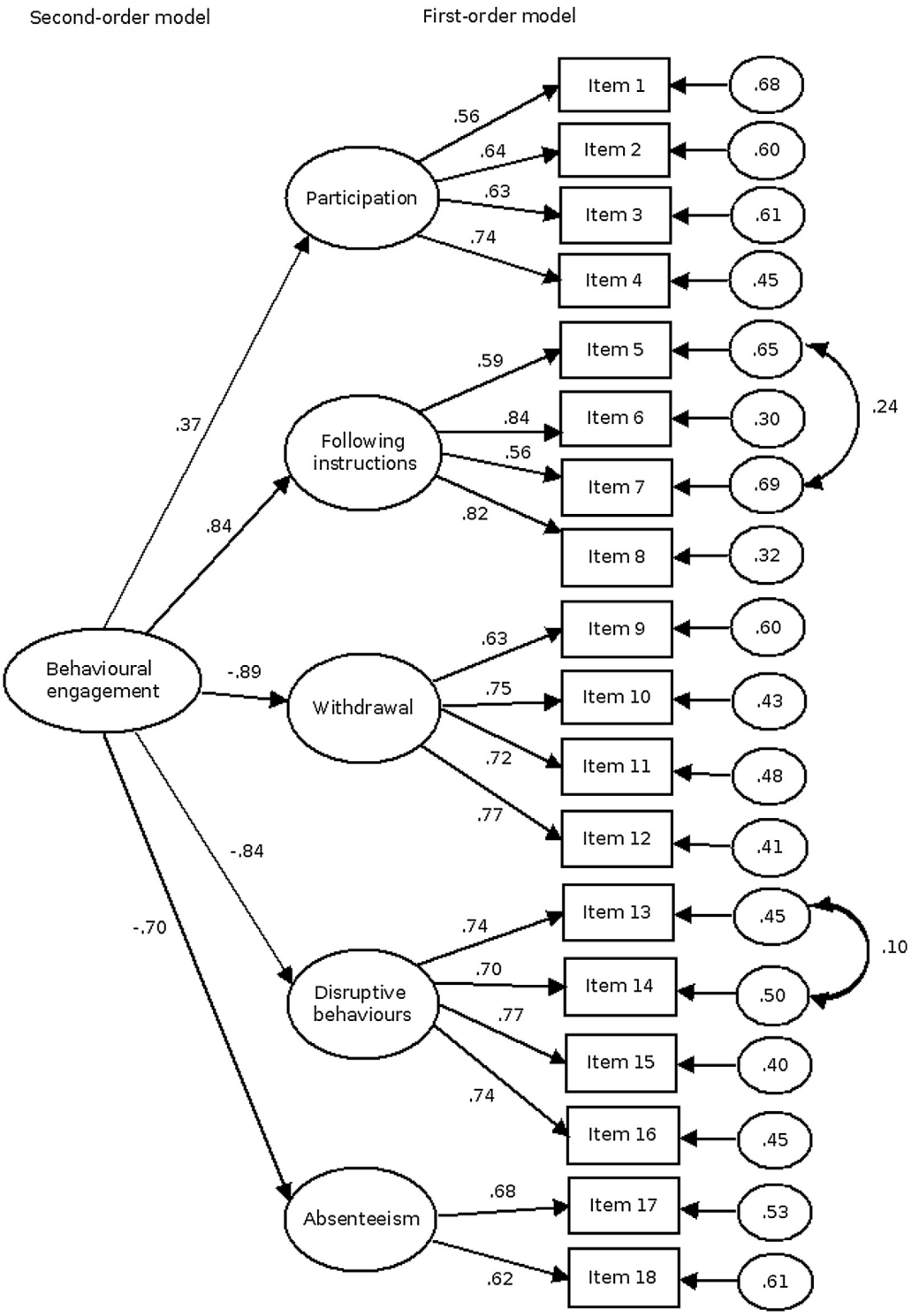

Fig. 1. Final behavioural engagement model (Study 2). Standardized values are reported. All paths are significant at $p < .01$. $N = 801$. χ^2 (128) = 450.10; RMSEA = .056 (CI [.050–.061], p-close = .052); SRMR = .054; PGFI = .71; AGFI = .92.

Table 4
Summary of zero-order correlations for the (dimensions of) behavioural engagement and correlates (Study 2).

Correlates	Participation	Following instructions	Absenteeism	Withdrawal	Disruptive behaviours	Behavioural engagement[a]
Cognitive engagement						
Self-regulation	.477**	.662**	−.312**	−.622**	−.500**	.741**
Surface processing	.353**	.433**	−.194**	−.369**	−.260**	.459**
Deep processing	.525**	.338**	−.164**	−.347**	−.232**	.465**
Emotional engagement						
Enjoyment	.433**	.324**	−.124**	−.358**	−.109**	.390**
Interest	.411**	.520**	−.246**	−.480**	−.325**	.566**
Hope	.338**	.198**	−.046	−.112**	.014	.195**
Anxiety	−.127**	.056	−.015	.033	−.050	−.016
Boredom	−.281**	−.310**	.130**	.417**	.196**	−.390**
Shame	−.100**	.031	.053	.061	−.024	−.040
Anger	−.201**	−.347**	.252**	.367**	.342**	−.424**
Sadness	−.170**	−.075*	.115**	.183**	.040	−.161**
Motivation						
Self-efficacy	.337**	.232**	−.091*	−.151**	−.068	.251**
Task value	.450**	.495**	−.223**	−.517**	−.331**	.582**
Achievement	.224**	.218**	−.160**	−.173**	−.083*	.232**

Notes: $N = 801$; * $p < .05$; ** $p < .01$.
[a] Behavioural engagement consists in the mean of all engagement items (withdrawal, disruptive and absenteeism ones were reversed).

4.2.3. Correlates of behavioural engagement

Based on previous studies, a global measure of behavioural engagement was calculated using the mean of all engagement items (after reversing withdrawal, disruptive and absenteeism items).[1] The zero order correlations between the five dimensions of behavioural engagement, the global measure of engagement and the correlates are presented in Table 4.

The strength of the relations largely differed from one behavioural dimension to another. Regarding emotional engagement, the relation between enjoyment and absenteeism raised for instance −.12 while the relation between enjoyment and participation raised .43. The same results were found regarding boredom ($r_{(\text{boredom, withdrawal})} = .42$; $r_{(\text{boredom, absenteeism})} = .13$). Regarding cognitive engagement, the relation between self-regulation and following instructions raised .66 while it raised only −.31 with absenteeism. In some cases, the relations between a correlate and some dimensions were no significant (e.g., hope and disruptive behaviours or absenteeism) while significant with other dimensions (e.g., hope and participation, following instructions or withdrawal). The relation between self-efficacy and participation raised .34 while the relation between self-efficacy and absenteeism raised −.09. Achievement was related with participation and withdrawal twice as high as with disruptive behaviours. Globally, absenteeism had among the lowest relations with the correlates.

The global behavioural engagement measure was positively linked with cognitive engagement, emotional engagement, task value, self-efficacy and achievement. The relations varied from non-significant (e.g., anxiety, shame) to high (e.g., self-regulation). Compared to the relations observed for the global measure, the strength of the relations between specific dimensions and correlates varied a lot. For instance, the global measure showed a significant low relation (.20) with hope. This emotion was moderately (.34) related to participation while not significantly to absenteeism and disruptive behaviours. In other cases, a significant relation with a specific dimension (e.g., anxiety and shame with participation) could be omitted by using the global measure, unrelated to the correlate. Finally, some relations were higher with the global scale than with the dimensions (e.g., use of surface strategies, anger).

To investigate the effects of gender, one-way multivariate analysis of variance (MANOVA) were performed. A significant multivariate main effect for gender was found (Phillai's Trace = .12, $F(1, 83) = 19.86$, $p < .001$, $\eta^2 = .12$). Regarding univariate main effects, girls appeared significantly more engaged on each dimension than boys. Girls reported higher participation ($F(1,770) = 8.92$, $p < .01$, $\eta^2 = .01$; M girls = 2.20, SD = .85; M boys = 2.01, SD = .90) and following instructions ($F(1,770) = 67.94$, $p < .001$, $\eta^2 = .08$; M girls = 3.23, SD = .63; M boys = 2.77, SD = .88) than boys. Girls reported lower levels of withdrawal ($F(1,770) = 17.90$, $p < .001$, $\eta^2 = .02$; M girls = 1.38, SD = .88; M boys = 1.68, SD = 1.05), disruptive behaviours ($F(1,770) = 67.24$, $p < .001$, $\eta^2 = .08$; M girls = .73, SD = .75; M boys = 1.29, SD = 1.07) and absenteeism ($F(1,770) = 20.32$, $p < .001$, $\eta^2 = .03$; M girls = .38, SD = .57; M boys = .62, SD = .85) than boys.

Girls also reported more engagement on the global scale of behavioural engagement than boys ($F(1,770) = 62.86$, $p < .001$; M girls = 2.92, SD = .53; M boys = 2.56, SD = .70).

[1] We also investigated this question using weighted mean to calculate the global score of behavioral engagement. The results found were similar.

4.3. Discussion

First, consistent with Study 1, the five-factor model is the best model. Distinctions were made between "participation", "following teacher's instructions", "withdrawal", "disruptive behaviours" and "absenteeism". The satisfactory internal consistency of these dimensions replicates findings found in Study 1. Second, the analyses show that these dimensions can be grouped as a same construct, "behavioural engagement".

As hypothesized, the strength of the relations found between the dimensions and the correlates of behavioural engagement vary a lot for some correlates. For instance, regarding cognitive engagement, surface processing strategies is more strongly linked with following instructions than participation. To the contrary, participation is more related to the use of deep processing strategies (suggesting that students who participate may be more strongly involved in classroom activities than students who only comply with teacher instructions). In some cases, only one behavioural dimension is significantly linked with the correlates. Therefore, depending on the dimensions included or omitted in the measure of behavioural engagement, associations found with some correlates could differ. These results stress the interest to take the multidimensionality of behavioural engagement into account. We hypothesized that the behavioural dimensions may be organized along a continuum, from the dimensions showing the higher engagement (i.e. participation) to the dimensions showing the lowest engagement (i.e. absenteeism). The results do not support this hypothesis. According to the continuum hypothesis, participation should for instance have been more related to cognitive engagement or motivation than following instruction. Yet, the results showed that following instruction was more strongly related to self-regulation (i.e. cognitive engagement) than participation. Yet, participation was more strongly related to deep processing strategies than following instruction. The relations found between task value, participation and following instructions were similar. In other cases, the strength of the relations found were very similar for several dimensions. For instance, the strength of the relations between sadness and participation, withdrawal and absenteeism were quite similar.

The global measure of engagement is related to correlates as expected: positively with emotional and cognitive engagement, self-efficacy, task value and achievement. In some cases, the results found with a global measure reflect the results found with the behavioural dimensions. Regarding gender, similar results (in favour of girls) were found with the specific behavioural dimensions and a global scale. Yet, effects sizes varied from one dimension to another: gender explained more variance in following instruction and disruptive behaviours that in participation, withdrawal and absenteeism. Behind the relation observed for the global measure, the strength of the relations between specific dimensions and some correlates could also vary a lot. A non-significant relation between the global measure of behavioural engagement and a correlate can sometimes hide a significant relation with a specific dimension (e.g., anxiety and participation). These results suggest that different student behaviours may indicate different experiences in school. The implications of these results for behavioural engagement measurement are discussed in the General discussion section.

5. General discussion

The variety of behaviours used in previous studies under the label "behavioural engagement" challenged the relevance of considering all these behaviours as indicators of a same underlying construct, namely behavioural engagement (Aim 1). It also raised questions related to the implications of using different measures of this concept (specific behaviours vs. a global measure; Aim 2).

Our results extend prior research on behavioural engagement by bringing empirical support for its multidimensional nature (Aim 1). In both studies, several dimensions reflecting different kinds of behaviours emerge. Five dimensions are found that we labelled "participation", "following teachers' instructions", "withdrawal", "disruptive behaviours" and "absenteeism". These findings do not imply that behavioural engagement is limited to those five dimensions, but they show that student engagement could be reflected in different aspects of student behaviour. The results also show that these dimensions are facets of a common factor, behavioural engagement. Investigations of the relations between a global measure of behavioural engagement, behavioural dimensions and correlates show that the global measure reflects generally the results found with the behavioural dimensions (Aim 2). However, it can hide some big differences in the strength of the relations between specific behavioural dimensions and some correlates. A non-significant relation between a correlate and the global measure can also hide a significant relation between this correlate and a specific behavioural dimension. Therefore, depending on the kind(s) of behaviour included in a measure of behavioural engagement, the relations found with some variables of interest could largely differ. The nature of those differences (e.g., the association between an emotion and a specific dimension) suggests that the dimensions of behavioural engagement not only reflect various positions on a continuum (quantitative variations) but could reflect qualitative variations.

These results have some major implications regarding conceptualization and measurement of behavioural engagement. A global measure seems useful to gain an insight into students' behavioural engagement and to investigate the relation of this concept with some correlates. However, the multidimensionality of behavioural engagement should be taken into account in measurement by including indicators that reflect the variety of behaviours. In some cases, specific behavioural dimensions appear particularly relevant to understand some variables of interest. When researchers focus on specific dimensions, it could be more relevant to refer to the specific behaviours measured. It could be problematic to name "behavioural engagement" a measure that includes only one or two dimensions as it could cause inconsistent findings across studies and

make them difficult to compare. These indications make it important for researchers to choose the appropriate measure depending on the aim of their studies and consider more clearly the limitations of their choices.

Regarding practical implications, the results also support the importance of paying attention to a wide range of behaviours, notably more discreet behaviours such as withdrawal (Finn et al., 1995). Some students' behaviours appear particularly relevant when investigating the question of students' adjustment, such as disruptive behaviours or withdrawal during the lessons. Absenteeism appears to be less strongly related to emotional, cognitive engagement, motivation and achievement than the other dimensions at the classroom level (at least as it is operationalized in this paper).

5.1. Limitations and perspectives

These results need to be replicated and extended. Additional studies are needed to replicate our findings, notably regarding the number of behavioural dimensions. It should be noted that students' sample in Study 1 and Study 2 came from different school grades. Moreover, Study 1 focused on mathematics lessons while Study 2 focused on French lessons. It may therefore be interesting to take these variables into account in subsequent studies to check if results are consistent among school grades and lessons. By the way, the fact that our results are replicated regardless the samples and the school subject strengthens our conclusions about the multidimensionality of behavioural engagement.

Other kinds of measures (teachers' ratings, observations, etc.) could be used. The predictive value of the different dimensions of behavioural engagement could be investigated through a longitudinal design. As we focused on the classroom level, the school level could also be investigated. Among other things, indicators used at the school level can differ (e.g., disruptive behaviours measured through being suspended or expelled; Rumberger & Rotermund, 2012). Some dimensions (e.g., absenteeism) could be more related to correlates at the school level. Other correlates could also be investigated (e.g., peer acceptance, personality, social behaviours, and achievement goals). Finally, the question of multidimensionality should also be taken into account regarding emotional and cognitive engagement, as both of them have been measured through various indicators (Fredricks et al., 2004).

Identification of several dimensions opens the way for further investigations of the patterns of behavioural engagement among students. Different profiles, more or less adaptive, may exist among students. They may reflect the variety of experience lived by students in the classroom context. For instance, the results of the current studies show high correlations between withdrawal and disruptive behaviours. Different students profiles combining these dimensions may exist: some students may report only high levels of withdrawal while other students may report high levels of both. Consequently, students may have different academic and motivational outcomes according to their profile. Person-centred approaches have been scarce in the literature on engagement (Fredricks et al., 2004; Janosz, 2012). Taking the variety of dimensions into account could enrich the study of students' profiles by providing a more accurate picture of the diversity of students' experiences in school. Then, possible differences in the motivational and academic processes at work could be investigated and more appropriate support could be given to students.

5.2. Conclusions

Behavioural engagement refers to a large variety of behaviours used in previous studies. It has implications regarding the comparison of results across studies and challenges the relevance of considering them as indicators of the same construct. It also raises questions related to the implications of using different ways to measure behavioural engagement (i.e. specific behaviours vs. global measure). The current study brings empirical support for the multidimensional nature of behavioural engagement. Five dimensions emerge: participation, following teachers' instructions, withdrawal, disruptive behaviours and absenteeism. The findings also show that these dimensions are facets of a common factor, behavioural engagement. The links found between the correlates of behavioural engagement and the global measure of engagement or specific dimensions are generally consistent. However, using a global measure can hide differences in the strength of the relations between some correlates and some specific dimensions. This stresses the importance to take the multidimensionality of behavioural engagement into account in measurement. In some cases, it seems crucial to focus on specific dimensions to understand some variables of interest.

Acknowledgements

This research was supported by a grant from the National Fund for Scientific Research (F.R.S.-FNRS) of the Fédération Wallonie-Bruxelles awarded to the first author.

The authors want to thank Mostafa Azahaf, Noémie Baudoin, Julie De Meyer, Céline Georges, Anne Gilet, Arnaud Maréchal, Abdel Oulad Ben Taïb, and Sandra Robinet for their help in data collection. They also thank Noémie Baudoin for her helpful comments on a previous version of this article.

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