



Correlates of students' internalization and defiance of classroom rules: A self-determination theory perspective

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Background. It is generally accepted that well-established classroom rules prevent problem behaviour, while also supporting students' achievement gains. Yet, there might be considerable variability in students' underlying motives to comply or refrain from complying with classroom rules, with some students adhering to them because they fully accept them as their own, and others feeling compelled by external or internal demands to do so or even defying the rules altogether.

Aims. Grounded in self-determination theory, this study aimed to examine whether students' reasons for following (i.e., internalization) and for refraining from following (i.e., defiance) classroom rules differentially and uniquely predict student outcomes, including feelings of resentment, acting out, cheating, and truancy.

Sample. A total of 1006 students (46.7% boys; $M = 14.18$ years ± 1.73) out of 56 different secondary school classes participated in the study.

Methods. Students were invited to fill out an online survey about experiences with their head teacher.

Results. For three out of four outcomes, identified regulation and external regulation to follow classroom rules were found to be, respectively, negatively and positively related, whereas a null relationship with introjected rule following was found. Controlled non-rule following was most strongly predictive of maladaptive functioning, as indexed by more feelings of resentment, acting out, cheating, and truancy.

Conclusions. Whereas students' ownership of rules is critical to prevent classroom misbehaviour, their pressured non-adherence is a risk factor.

For many teachers, the adequate handling of students' misbehaviours such as disruptive talking, harassing classmates, skipping classes, and cheating is one of the most pressing concerns they are facing daily in the classroom (Browsers & Tomic, 2000). Large-scale surveys with nationally representative samples have shown that the prevalence of student misbehaviour is fairly high. With 54% of 8–12 grade students in the United States exhibiting at least one out of a list of seven specific misbehaviours (e.g., skipping classes, disruptive behaviour, fighting; Finn, Fish, & Scott, 2008), over 90% of American 9–12 grade students reporting having cheated at least once during their high school career

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(Galloway, 2012), and a truancy percentage of around 30% among Malaysian (12–17 years; Yoep *et al.*, 2016) and Belgian (14–21 years; Keppens & Spruyt, 2016) secondary school students, student misbehaviour clearly is a challenge for teachers that traverses national boundaries. Moreover, researchers have reported that specific disruptive classroom behaviours are directly connected to poorer academic achievement and dropout (Finn *et al.*, 2008).

Within the literature, it is generally accepted that well-established classroom rules prevent problem behaviour (Grossman, 2004; Kerr & Nelson, 2006), while also supporting students' achievement (Brophy, 1999; Korpershoek, Harms, de Boer, van Kuijk, & Doolaard, 2016; Schwab & Elias, 2015). Classroom rules are defined as explicit expectations regarding cooperative and desirable (e.g., raising hands to answer a question) and disruptive and undesirable (e.g., disturbing others while they are working, cheating when taking a test) classroom behaviours (Evertson & Emmer, 1982; Evertson & Weinstein, 2006). Although clear classroom rules intend to encourage students to take responsibility for their behaviour (Gable, Hester, Rock, & Hughes, 2009), there is considerable variability in students' motives to comply with these rules (Way, 2011), with some students adhering to them because they fully endorse or internalize the rules as their own and other students feeling compelled by external or internal demands to do so. Furthermore, at least some students defy instead of internalize classroom rules as when they oppose pressuring expectations or feel pressured to stick to internally held standards for non-compliance (Aelterman, Vansteenkiste, Soenens, & Haerens, 2016). Insights into *why* students both obey and disregard classroom rules may help us understand why students misbehave in school. Grounded in self-determination theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017), the aim of this study was to examine whether students' underlying reasons for following (i.e., internalization) and refraining from following (i.e., defiance) classroom rules differentially and uniquely predict indicators of misbehaviour in the classroom.

Towards ownership of rules: The process of internalization

According to SDT, students' adherence to established classroom rules depends on the extent to which they fully accept, internalize, and personally endorse these rules (Deci & Ryan, 2000; Grusec & Goodnow, 1994). When the reason for complying with a rule has not been internalized at all, the behavioural regulation is said to be external, as students comply with classroom rules out of fear for punishment, to avoid the removal of privileges, or to gain rewards and appreciation (i.e., external regulation). When pressures from within are at play, such as when students comply with the rules to feel worthy and be seen as a loyal and conscientious model student or to avoid feelings of guilt, shame, and self-criticism (Assor, Vansteenkiste, & Kaplan, 2009), the regulation is labelled introjection. Introjected regulation constitutes partial internalization, as the reason for adhering to rules is no longer outside the student; yet, the student has not fully accepted the value of the rule as his own.

A fuller form of internalized regulation occurs when students understand and accept the value of a rule or standard. In the case of identified regulation, classroom rules are perceived to be endowed with personal significance and purpose as they help attaining personally valued immediate or long-term outcomes (Vansteenkiste *et al.*, 2018). Because students have internalized the reason for complying with classroom rules, they more volitionally stick to these rules and thus take more personal responsibility for their functioning. Finally, to the extent that students' reasons for complying with a rule are

brought in harmony with their more deeply anchored values, commitments, and interests, students are said to function in an integrated manner, which represents the fullest, most complete form of internalization. Such integrated regulation may, however, not be easily achieved on a day-to-day basis (Sheldon & Kasser, 2001) and may require considerable introspection, self-awareness, and maturity (Brickell & Chatzisarantis, 2007).¹

Up until today, SDT-based educational research has primarily focused on these motivational regulations in relation to studying (Ryan & Connell, 1989). Dozens of studies have shown that greater internalization of studying is predictive of a myriad of positive outcomes, including more persistence, more behavioural engagement, greater use of adaptive learning strategies, more deep-level learning, less test anxiety and emotional disaffection, less procrastination, and better grades (see Guay, Ratelle, & Chanal, 2008; Ryan & Deci, 2017; Skinner, 2016; Vansteenkiste *et al.*, 2018 for an overview). In addition, research indicates that students who have a deep interest in the material and who seek personal development (i.e., internalization) report less cheating (Murdoch & Anderman, 2006; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009) and are less likely to drop out (Vallerand, Fortier, & Guay, 1997) than those who view the work as a means to an end or seek to outperform their classmates.

Although student compliance with classroom rules relates negatively to disruptive behaviour (Ducharme & Shectter, 2011), few, if any, SDT-based studies have examined the role of students' internalization of classroom rules in the prediction of student misbehaviour. In one study addressing this issue, Wentzel, Filisetti, and Looney (2007) examined junior high school students' reasons for behaving in a prosocial manner, as indexed by reasons for cooperating with a classmate, helping and following classroom rules, and their links with peer- and teacher-rated prosocial behaviour. Results revealed that identified and introjected regulation for acting prosocially correlated positively, whereas external regulation was unrelated to prosocial behaviour. In a similar vein, Roth, Kanat-Maymon, and Bibi (2011) showed that identified regulation for acting prosocially correlated negatively, whereas externally regulated prosociality correlated positively with self-reported bullying in school. These studies mainly focused on correlates of students' internalization of commandments that apply in the classroom (e.g., 'help a classmate in distress'). However, classroom rules often also take the form of prohibitions, which are intended to prevent the occurrence of undesirable behaviours and disciplinary problems (e.g., 'do not cheat when taking a test'). A few studies, especially in the parenting domain (Soenens, Vansteenkiste, & Niemiec, 2009; Vansteenkiste, Soenens, Van Petegem, & Duriez, 2014), have already looked into youngsters' internalization of prohibitions. For example, Soenens *et al.* (2009) found that a lack of internalization of parental rules for friendships among adolescents related positively to deviant peer affiliation, which in turn related positively to involvement in problem behaviours.

Defiance of classroom rules

For a class to function harmoniously and to enhance opportunities for learning, students ideally internalize the established classroom rules (Schwab & Elias, 2015). Yet, some

¹Intrinsic motivation represents the prototype of autonomously regulated behaviour. When intrinsically motivated, students perform an activity out of a sense of enjoyment and interest in the activity itself. In the case of rule following, intrinsic motivation (e.g., 'following rules is really fun') might apply only to a minority of individuals, so that, identified (and integrated) regulation, which are considered the end points of the internalisation process, are more relevant regulatory subtypes in this context (Ryan & Deci, 2017; Vansteenkiste, Niemiec, & Soenens, 2010).

students may be unwilling to follow rules and instead may be defiant against these rules (Vansteenkiste *et al.*, 2014; Way, 2011). The concept of defiance has, however, received little explicit attention within SDT (but see Aelterman *et al.*, 2016). Indeed, a lacuna in the extant literature is that SDT, much like other contemporary motivational theories, focuses mainly on the 'why' of human behaviour, at the expense of the 'why not' of behaviour (Vansteenkiste & Mouratidis, 2016; but see Legault, Green-Demers, & Pelletier, 2006; Vansteenkiste, Lens, Dewitte, De Witte, & Deci, 2004).

Within SDT, underlying reasons for not performing a target activity have almost been exclusively studied through the notion of amotivation, which exists when people lack intentionality or energy to act and are discouraged to engage in the activity (Ryan, Lynch, Vansteenkiste, & Deci, 2011). Yet, a lack of motivation may also take the form of oppositional defiance, as when students feel either externally or internally pressured to refrain from rule compliance (Aelterman *et al.*, 2016). Indeed, when students are exposed to pressuring circumstances, they may also react with more active forms of non-compliance (Van Petegem, Soenens, Vansteenkiste, Beyers, & Aelterman, 2015). Specifically, the presence of an overly demanding teacher or the pressure to save face in front of peers constitute examples of external pressure that may put students at risk for a power game with their teacher to maintain or establish their independence. To oppose these external forces, students may engage in disruptive behaviour that is against odds with following the established rules. But students can also feel internally pressured to defy the teacher's requests and expectations such as when they hold particular internal standards or stereotypes, they have to stick to as to protect their ego. For instance, when they consider following rules to be 'for teachers' pets', they feel pressured by an inner voice to not comply with these rules as to prove to themselves they do not belong to such a category of students. Regardless of whether students' defiance of rules is grounded in more external or internal demands, it reflects the tendency to seek distance from the teacher (Van Petegem *et al.*, 2015). Because defiance is not based upon self-endorsed values and choices but instead is determined by external or internal pressures they oppose, it can be conceived as a form of anti-internalization. This type of defiance has been labelled as controlled motivated non-participation (Aelterman *et al.*, 2016). In their study, Aelterman *et al.* (2016) provided confirmatory factorial evidence that controlled reasons for not putting effort into the lesson can be clearly distinguished from students' motives for participation. In addition, controlled motivated non-participation was positively associated with controlled motivation to participate, indicating that it constitutes pressured functioning. Further, controlled motivated non-participation yielded unique positive associations with feelings of resentment towards both the learning material and the teacher, which emerged above and beyond the other motivational dimensions (i.e., autonomous participation, controlled participation, amotivation). Yet, controlled motivated non-participation failed to uniquely predict self-reported learning and teacher-rated performance (Aelterman *et al.*, 2016).

The present study

The overall goal of this study was to examine the unique predictive validity of students' reasons for following (i.e., identified, introjected, and external rule following) and refraining from following (i.e., controlled non-rule following) classroom rules in relation to feelings of resentment, acting out, cheating, and truancy. In line with previous studies, we expected identified rule following to yield the strongest negative associations (Roth *et al.*, 2011; Soenens *et al.*, 2009; Wentzel *et al.*, 2007), and controlled non-rule following

the strongest positive associations (see Aelterman *et al.*, 2016) with the outcomes, while external and introjected rule following were expected to fall in-between both extremes. These associations were expected to emerge above and beyond students' background variables and reasons for (not) studying.

Method

Participants and procedure

This study involved a convenience sample of students from one large public urban secondary school in Flanders (Belgium) that voluntarily participated in the data collection as part of a reform trajectory on fostering the motivational climate in the school. All students within the school were invited to fill out an online survey about experiences with their head teacher. In a class with alternating teachers for different subjects – as is the case in secondary schools in Belgium – the head teacher is the primary contact point and confidential person for students (and their parents) of a specific class. The head teacher has the task of monitoring the academic progress and well-being of the students, and fostering the social relationships and team spirit within the class throughout the school year. At the moment of data collection, students were approximately 2 months into the school year.

The sample consisted of 1,006 students (46.7% boys) out of 56 different secondary school classes taught by a different teacher. The mean age of the students was 14.18 years ($SD = 1.73$; range 11–19 years). Of the sample, 85% had a Belgian nationality, whereas 15% of the students reported to have another, non-specified nationality. Information about the socioeconomic status of the students was not available. In terms of education type, 941 students were enrolled in an academic track (93.5%), whereas 65 students (6.5%) followed a technical track. On average, students were taught 4.14 hr per week (range 1–15 hr) by their head teacher. Participation in the study was voluntary and confidential, and students could drop out at any time for any reason. A passive parental consent method was used by distributing a letter to students' parents explaining the purposes of the study and providing a method to retract permission. None of the parents objected to their child participating in the study. In total, 94 students (response rate: $1006/1100 = 91\%$) did not participate in the survey due to illness or absence for non-specified reasons. The study protocol was approved by the Ethical Committee of Ghent University.

Measures

Unless mentioned otherwise, students responded to the items on a 5-point Likert scale ranging from 1 (not at all true for me) to 5 (very true for me). Total scores for each scale were calculated by averaging across the items.

Internalization of classroom rules

Students' reasons for following classroom rules were assessed with the Self-Regulation Questionnaire-Parental Rules (Soenens *et al.*, 2009), which was adapted to the context of classroom rules. Students were presented with the stem 'I follow my head teacher's classroom rules because...' followed by 18 items reflecting three types of regulation: external regulation (6 items; e.g., 'otherwise I will be punished'), introjected regulation (6 items; e.g., 'it makes me feel proud about myself'), and identified regulation (6 items; e.g.,

'I find these rules personally meaningful'). Internal consistencies were good with Cronbach's alphas of .77, .85, and .87 for external regulation, introjected regulation, and identified regulation, respectively.

Defiance of classroom rules

Students' defiance of classroom rules was assessed relying on an 8-item scale that was recently developed to measure secondary school students' controlled reasons for non-participation in the context of physical education (Aelterman *et al.*, 2016). For the purposes of this study, the original scale was adapted as to refer to the context of classroom rules. Students were presented with the stem 'I sometimes don't follow my head teacher's classroom rules because...' followed by items representing externally pressuring (four items; e.g., 'because then my classmates look up to me', 'because the teacher should not interfere with what I do') and internally pressuring (4 items; e.g., 'because in my opinion only the teacher's pets always comply with the rules', 'because I have had enough of continuously being a model student') reasons to not comply with the head teacher's rules. The scale had good reliability ($\alpha = .91$).

Feelings of resentment

To measure feelings of resentment (six items; e.g., 'In class I sometimes resent the learning material', 'In class I sometimes get angry at my head teacher'; $\alpha = .86$), we relied on items developed by Assor, Roth, and Deci (2004) to assess feelings of resentment towards parents. These items have been used in previous work in the physical education context (Aelterman *et al.*, 2016) and were adapted to the present context by changing the referenced teacher in the item (i.e., from PE to head teacher).

Acting out

The Teacher-Child Rating Scale (T-CRS; Hightower *et al.*, 1987) is a widely used, well-validated and multidimensional teacher-reported rating scale. In this study, we only assessed the dimension tapping into students' acting out (four items; 'In class I disturb others while they are working'), thereby adapting the items from a teacher report to a student self-report format ($\alpha = .77$).

Cheating

Students' cheating behaviour was operationalized by means of a scale adopted from Anderman, Griesinger, and Westerfield (1998). This 6-item scale ($\alpha = .88$) assesses two aspects of cheating, that is, students' degree of cheating (e.g., 'I sometimes cheat when taking a test or an exam') and students' attitudes towards cheating (e.g., 'It is okay to cheat').

Truancy

Similar to previous work (Vansteenkiste *et al.*, 2012), truancy was assessed by asking students to indicate to what extent they had skipped a class (i.e., one hour) and to what extent they had skipped a whole school day since the beginning of the school year (Baerveldt, 1992). Students responded to a 4-point Likert scale from 0 (never), over 1

(once) and 2 (two or three times) to 3 (four or more times). Both items were moderately positively correlated, $r = .52$, $p < .001$, and thus taken together into a single truancy score.

Study motivation

To examine whether students' internalization and defiance of classroom rules accounted for unique variance in the outcomes beyond students' study motivation, students' reasons for studying were measured to include as covariates in the study. To this, we employed the 20-item Academic Self-Regulation Scale (SRQ-A; Ryan & Connell, 1989), which has previously been used with primary (e.g., Vandeveld, Van Keer, & Rosseel, 2013) and secondary school (Vansteenkiste *et al.*, 2009) students. The stem 'I study for the subject of my head teacher because. . .' was followed by 16 items reflecting four types of regulation: external regulation (four items; $\alpha = .75$; e.g., 'I'm supposed to do so'), introjected regulation (4 items; $\alpha = .77$; e.g., 'I want others to think I'm smart'), identified regulation (four items; $\alpha = .82$; e.g., 'I want to learn new things'), and intrinsic motivation (four items; $\alpha = .91$; e.g., 'I'm highly interested in this subject'). In addition, four items tapped into students' amotivation ($\alpha = .88$; e.g., 'I used to have good reasons to do so, but now I wonder why I actually study for this subject.').

Plan of analysis

Preliminary to the main analysis, a confirmatory factor analysis (CFA) based on maximum-likelihood estimation in *Mplus* was conducted to examine the factorial validity of the full set of scales included in the present study. In addition, we examined whether the study variables were associated with student age, and whether there were significant differences according to student sex and educational track.

Because 1006 students were nested within 56 classes (i.e., teachers), multilevel regression analyses in MLwiN 2.27 (Rasbash, Steele, Browne, & Goldstein, 2014) were employed to examine the relation of students' reasons for (not) following classroom rules with student outcomes. First, a baseline variance components model or intercept-only model (i.e., null model) was estimated to calculate the intraclass correlation coefficients for each outcome. Next, in separate models for each of the outcomes, students' background variables (i.e., sex, age, and educational track) and reasons for studying were included simultaneously as control variables in a first step (i.e., Test model – Step 1). In a second step, students' reasons for following and for refraining from following rules were entered as predictors into the regression model (i.e., Test model – Step 2). Herein, both random intercept and random slope models were tested.

Results

Preliminary analyses

Results of the CFA revealed that the expected factor model yielded an acceptable fit, $\chi^2(1867) = 5569.71$, $p < .001$; RMSEA = .05; CFI = .90; TLI = .89; SRMR = .06 (Hu & Bentler, 1999), with all items loading exclusively on their corresponding factor and indicator loadings ranging between .48 and .90, except for one external studying item ('because I'm supposed to do so') having a lower factor loading (.25), all $p < .001$.

Means and standard deviations for the full sample and separated by sex and educational track are presented in Table 1. As can be noticed, mean scores for each of the dependent variables are fairly low, which indicates that students within the participating school rarely engage in these behaviours. Further, only 10% and 5% of the students reported having skipped a class or a whole school day at least once since the beginning of the school year, respectively. The majority of the students (52%) indicated to not cheat at all when taking a test or an examination, and over 46% believe it is inappropriate to cheat.

Examining whether the study variables differed according to student sex and educational track, we found that the multivariate effect for sex was statistically significant, Wilk's lambda = .89, $F(13,974) = 9.01$, $p < .001$, $\eta_p^2 = .11$. As displayed in Table 1, univariate tests were significant for amotivation to study, controlled non-rule following, feelings of resentment, acting out, and cheating, with boys scoring higher than girls on each of these variables. As for educational track, the multivariate effect was not significant, Wilk's lambda = .98, $F(13,974) = 1.61$, $p = .08$, $\eta_p^2 = .02$. Yet, significant univariate tests were found for cheating and truancy, with students following a technical track reporting to cheat and to skip classes significantly more often compared to students following an academic track. Latent correlations between student age and the study variables (see Table 2) were significantly negative for external studying and introjected rule following, and significantly positive for feelings of resentment, cheating, and truancy. Based on these

Table 1. Means and standard deviations for the full sample and separated by sex and educational track

Variable	Full sample M (SD)	Boys M (SD)	Girls M (SD)	F (1, 986)	Academic M (SD)	Technical M (SD)	F (1, 986)
Intrinsic study motivation	2.87 (1.06)	2.89 (1.07)	2.86 (1.05)	0.21	2.88 (1.06)	2.66 (1.08)	2.60
Identified study motivation	3.12 (0.93)	3.12 (0.93)	3.12 (0.93)	0.00	3.14 (0.93)	2.92 (0.93)	3.04
Introjected study motivation	2.67 (0.94)	2.68 (0.93)	2.66 (0.96)	0.16	2.68 (0.95)	2.53 (0.90)	1.44
External study motivation	2.64 (0.87)	2.69 (0.92)	2.59 (0.83)	3.57	2.63 (0.87)	2.71 (0.89)	0.44
Amotivation to study	2.00 (0.93)	2.21 (1.01)	1.81 (0.82)	46.14***	2.00 (0.94)	2.00 (0.89)	0.00
Identified rule following	3.18 (0.82)	3.15 (0.82)	3.21 (0.81)	1.29	3.19 (0.81)	3.04 (0.92)	2.12
Introjected rule following	20.78 (0.89)	2.76 (0.89)	2.80 (0.88)	0.540	2.79 (0.88)	2.68 (0.92)	0.84
External rule following	2.60 (0.82)	2.63 (0.82)	2.57 (0.81)	1.26	2.59 (0.82)	2.70 (0.77)	1.00
Controlled non-rule following	1.84 (0.83)	2.06 (0.90)	1.64 (0.70)	67.11***	1.84 (0.83)	1.80 (0.85)	0.13
Feelings of resentment	1.92 (0.71)	1.97 (0.74)	1.87 (0.68)	5.11*	1.91 (0.70)	2.04 (0.85)	2.07
Acting out	1.79 (0.70)	1.94 (0.72)	1.67 (0.65)	39.26***	1.78 (0.69)	1.94 (0.83)	3.00
Cheating	2.03 (0.84)	2.08 (0.87)	1.98 (0.81)	3.95*	2.01 (0.83)	2.34 (0.92)	9.29**
Truancy	1.12 (0.40)	1.13 (0.37)	1.11 (0.37)	1.15	1.11 (0.39)	1.21 (0.54)	3.79*

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

Table 2. Latent correlations among the study variables as computed via CFA

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Covariates															
1. Sex	—														
2. Age	.05	—													
3. Educational track	-.01	.27***	—												
4. Intrinsic study motivation	-.01	.06	-.06	—											
5. Identified study motivation	-.00	-.02	-.06	.83***	—										
6. Introjected study motivation	-.01	-.07	-.04	.21***	.43***	—									
7. External study motivation	-.12***	-.09**	.03	-.11**	.03	.46***	—								
8. Amotivation to study	-.23***	-.02	.01	-.38***	-.36***	.09*	.42***	—							
Predictors															
9. Identified rule following	.04	-.02	-.05	.44***	.58***	.45***	.17***	-.20***	—						
10. Introjected rule following	.03	-.11**	-.03	.25***	.43***	.76***	.35***	.04	.76***	—					
11. External rule following	-.06	-.07	.03	-.04	.08*	.57***	.61***	.38***	.22***	.60***	—				
12. Controlled non-rule following	-.25***	-.01	-.01	-.15***	-.09*	.11***	.32***	.56***	-.22***	.02	.38***	—			
Outcomes															
13. Feelings of resentment	-.06	.14***	.05	-.32***	-.29***	-.05	.18***	.41***	-.37***	-.16***	.24***	.50***	—		
14. Acting out	-.23***	.05	.08*	-.15***	-.15***	.01	.22***	.34***	-.26***	-.06	.25***	.51***	.74***	—	
15. Cheating	-.09*	.25***	.10**	-.10**	-.15***	-.07	.11	.23***	-.20***	-.10**	.16***	.39***	.40***	.49***	—
16. Truancy	-.04	.18***	.08*	-.06	-.06	-.05	.03	.15***	-.17***	-.11**	.06	.26***	.38***	.38***	.30***

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

results, student sex, age, and educational track were also controlled for in the primary analyses in addition to students' study motivation variables.

Table 2 presents the latent correlations among the study variables as computed via CFA. As expected based on previous research (Ryan & Connell, 1989; Soenens *et al.*, 2009; Vansteenkiste *et al.*, 2014), the three subscales tapping into students' types of regulation to follow classroom rules formed a quasi-simplex model. Specifically, external rule following related positively to introjected rule following, and less positively to identified rule following. Introjected rule and identified rule following were highly positively correlated. In addition, consistent with our theorizing that controlled non-rule-following reflects a pressured form of functioning (also see Aelterman *et al.*, 2016), it was found to be negatively related to identified rule following, while being positively related to external rule following. Yet, it was unrelated to introjected rule following. Further, identified and introjected rule following yielded a negative association with all student outcomes, whereas an opposite pattern of correlations was found for external rule following and controlled non-rule following.

Primary analyses

For all outcome variables, a two-level model with students at Level 1 and teachers at Level 2 yielded a better model than a single-level model, $\Delta\chi^2(1)$ ranging between 5.31 for truancy, $p < .05$, and 104.63 for cheating, $p < .001$. In addition, estimation of a fully unconditional two-level null model (Hox, 2010) and intraclass correlation coefficients (ICCs) indicated that there was a significant difference from zero in variance at the class level (see Table 3, null model) for feelings of resentment, ICC = 9%, $\chi^2(1) = 19.99$, $p < .001$, and cheating, ICC = 18%, $\chi^2(1) = 16.66$, $p < .001$, but not for acting out ICC = 3%, $\chi^2(1) = 3.47$, $p = .06$, and truancy, ICC = 3%, $\chi^2(1) = 3.38$, $p = .07$. Although there was no significant between-class variance for two of four dependent variables, for the purpose of consistency across models, multilevel modelling was employed in subsequent analyses for all outcomes as to take into account the hierarchical structure of the data.

Next, in separate models for each of the outcomes, students' background variables (i.e., sex, age, and educational track) and grand mean centred reasons for studying were included simultaneously as control variables in a first step (see Table 3, Step 1). As intrinsic motivation and identified regulation are often highly correlated (Calvo, Cervelló, Jiménez, Iglesias, & Murcia, 2010), and this also was the case in this study ($r = .83$, $p < .001$; see Table 2), we created a composite score for autonomous study motivation ($\alpha = .91$) by averaging both subscales.

Then, students' grand mean centred reasons for following and for refraining from following classroom rules were included as Level 1 predictors in a second step (see Table 3, Step 2). As the focus of the study was on interindividual differences among students, and not on the estimation of between-classroom differences, we did not include any Level 2 predictors in our model. Table 3 shows that the inclusion of students' identified, introjected, external rule following, and controlled non-rule following (Step 1) significantly ameliorated the model for each outcome compared to the model only including covariates (Step 1), as the iterated generalized least squares estimation (IGLS deviance) was significant for each of these test models, ranging between $\Delta\chi^2(4) = 39.34$ (in the case of truancy) and $\Delta\chi^2(4) = 135.87$ (in the case of resentment), all $ps < .001$. For all outcomes, except cheating, identified regulation to follow classroom rules was negatively related, whereas no relationships with introjected rule following were found.

Table 3. Summary of the model estimates for the two-level analyses of student outcomes

Parameter	Feelings of resentment				Acting out			
	Test model				Test model			
	Null model	Step 1	Step 2	Null model	Step 1	Step 2	Step 1	Step 2
Fixed Part								
Intercept	B (SE) 1.92 (.04)	B (SE) 1.93 (.04)	B (SE) 1.90 (.04)	B (SE) 1.80 (.03)	B (SE) 1.91 (.04)	B (SE) 1.87 (.03)	B (SE) 1.87 (.03)	B (SE) 1.87 (.03)
Covariates								
Student sex ^a		-.03	0.04 (.0204)		-.03	0.04 (.0204)	-.31	0.04 (.0204)
Student age		.17	0.07 (.02)***		.17	0.03 (.02)*	.07	0.04 (.01)**
Technical track ^b		-.06	-.06 (.10)		-.08	0.08 (.10)	.11	0.06 (.09)
Autonomous study motivation		-.19	-.11 (.03)***		-.14	-.05 (.03)	-.07	-.03 (.03)
Introjected study motivation		-.03	-.02 (.03)		-.03	-.01 (.03)	-.01	-.03 (.03)
External study motivation		.06	0.02 (.03)		.04	0.04 (.03)	.05	0.01 (.03)
Amotivation		.26	0.08 (.03)***		.10	0.15 (.03)***	.20	0.02 (.03)
Predictors								
Identified rule following			-.16					-.17
Introjected rule following			-.06					0.02 (.04)
External rule following			.14					0.06 (.03)
Controlled non-rule following			.27					0.28 (.03)***
Random Part								
Class-level variance	σ^2 (SE) .05 (.01)	σ^2 (SE) .03 (.01)	σ^2 (SE) .02 (.01)	σ^2 (SE) .02 (.01)	σ^2 (SE) .01 (.01)	σ^2 (SE) .01 (.01)	σ^2 (SE) .01 (.01)	σ^2 (SE) .01 (.01)
Student-level variance	.46 (.02)	.38 (.02)	.33 (.02)	.47 (.02)	.42 (.02)	.37 (.02)	.37 (.02)	.37 (.02)
Test of significance								
IGLS Deviance reference model	2082.90	2082.90	1892.13	2083.81	2083.81	1973.55	1973.55	1973.55
IGLS Deviance test model								
χ^2 (df)		1892.13	1756.26		1973.55	1844.13		1844.13
		190.77 (7)***	135.87 (4)***		110.26 (7)***	129.42 (4)***		129.42 (4)***

(Continued)

Table 3. (Continued)

Parameter	Cheating				Truancy			
	Test model				Test model			
	Null model	Step 1	Step 2		Null model	Step 1	Step 2	
Fixed Part	B (SE)	B (SE)	B (SE)	β	B (SE)	B (SE)	B (SE)	β
Intercept	2.03 (.05)	2.04 (.05)	2.00 (.05)		1.12 (.02)	1.12 (.02)	1.11 (.02)	
Covariates								
Student sex ^a		-.05 (.05)	0.02 (.05)	.02		-.01 (.03)	0.01 (.03)	.03
Student age		0.11 (.02)***	0.12 (.02)***	.25		0.03 (.01)***	0.03 (.01)***	.13
Technical track ^b		0.12 (.15)	0.09 (.13)	.11		0.04 (.06)	0.04 (.05)	.10
Autonomous study motivation		-.05 (.03)	-.04 (.03)	-.04		0.00 (.02)	0.01 (.02)	.02
Introjected study motivation		-.03 (.03)	-.06 (.03)*	-.07		-.01 (.02)	-.01 (.02)	-.02
External study motivation		0.03 (.03)	-.02 (.03)	-.02		0.01 (.02)	0.00 (.02)	.00
Amotivation		0.19 (.03)***	0.03 (.03)	.03		0.05 (.02)***	0.01 (.02)	.02
Predictors								
Identified rule following			-.08 (.04)	-.08			-.05 (.02)*	-.10
Introjected rule following			-.03 (.04)	-.03			-.01 (.02)	-.02
External rule following			0.13 (.04)**	.13			0.00 (.02)	.00
Controlled non-rule following			0.33 (.03)***	.33			0.09 (.02)***	.19
Random part	σ^2 (SE)	σ^2 (SE)	σ^2 (SE)		σ^2 (SE)	σ^2 (SE)	σ^2 (SE)	
Class-level variance	.12 (.03)	.07 (.02)	.05 (.02)		.01 (.00)	.00 (.00)	.00 (.00)	
Student-level variance	.59 (.03)	.55 (.03)	.48 (.02)		.15 (.01)	.15 (.01)	.15 (.01)	
Test of significance								
IGLS Deviance reference model	2359.20	2359.20	2270.32	978.23	978.23	978.23	947.29	
IGLS Deviance test model	2270.32	88.87 (7)***	2140.88	947.29	947.29	907.95	907.95	
χ^2 (df)			129.45 (4)***	30.94 (7)***	30.94 (7)***	39.34 (4)***	39.34 (4)***	

Notes. Values in parentheses are standard errors.

^a0 = male, 1 = female; reference category = male; ^b0 = academic track, 1 = technical track; reference category = academic track.* $p < .05$; ** $p < .01$; *** $p < .001$.

External rule following was positively related to feelings of resentment and cheating, but unrelated to acting out and truancy. As for controlled non-rule following, a unique positive association with feelings of resentment, acting out, cheating, and truancy, above and beyond reasons for following classroom rules was found. The random part of the test models (Step 2) indicated that the between-student variance explained by students' reasons for (not) following rules was 11.9%, 12.3%, 11.4%, and 3.3% for feelings of resentment, acting out, cheating, and truancy, respectively, when compared to a reference model only including the covariates (Step 1).

Finally, random slope models were estimated for each of the outcomes to examine whether associations between the predictors ($n = 4$) and student outcomes ($n = 4$) significantly varied as a function of class. Results revealed that associations were largely similar across classes, with only four of sixteen relationships showing significant class-level variances in the slopes. Specifically, the random slope variance was statistically significant from zero for external rule following in the prediction of resentment, $\chi^2(2) = 4.73$, $p = .03$, introjected rule following in the prediction of acting out, $\chi^2(2) = 4.57$, $p = .03$, and identified rule following, $\chi^2(2) = 4.06$, $p = .04$, and controlled non-rule following in the prediction of truancy, $\chi^2(2) = 7.68$, $p = .006$, indicating that for these associations, strength of the relationships varied across classes. In each of these four cases, the covariance (i.e., relationship between intercepts and slopes) was insignificant.

Discussion

Grounded in SDT, this study examined students' underlying reasons for (not) following established classroom rules in relation to important student outcomes. Several interesting findings emerged. First, in line with SDT (Ryan & Connell, 1989) and previous studies (e.g., Soenens *et al.*, 2009), we found evidence for a distinction between three motives for following classroom rules that can be ordered along a continuum of increasing internalization (i.e., external, introjected, and identified regulation). In addition, building on prior work (Aelterman *et al.*, 2016), we demonstrated that controlled non-rule following represents a motivational category that can clearly be discerned from students' reasons for following the rules. Correlational analyses showed that subtypes formed a simplex pattern, with subtypes closer to each other (e.g., identified and introjected rule following) correlating more strongly than subtypes further apart (e.g., identified rule following and controlled non-rule following). In addition, congruent with previous work (Aelterman *et al.*, 2016), controlled non-rule following was positively correlated with external reasons for following rules, suggesting that students on average feel simultaneously pressured to adhere and to not adhere to rules. Indeed, it makes sense that the students who at times follow rules for external reasons are the same students who at other times refrain from following the rules, as both reasons constitute pressured functioning, yet the pressure manifests differently at the behavioural level. In the case of external rule following, students give in to the encountered external demands, for example to please their teacher, while in the case of controlled non-rule following, the pressure is grounded in opposition against an imposed or internally held demand, with students taking distance from the teacher (Aelterman *et al.*, 2016). Notably, controlled non-rule following was unrelated to introjected rule following.

Second, inspecting whether students' internalization and defiance of classroom rules accounted for unique variance in outcomes revealed that identified regulation yielded the most adaptive pattern of functioning. In line with SDT and past research (Roth *et al.*,

2011; Soenens *et al.*, 2009; Wentzel *et al.*, 2007), these findings indicate that if students follow the classroom rules because they value and fully accept the rules as their own, they are less likely to feel resentful or to display classroom misbehaviour (e.g., acting out and truancy). Further, consistent with our predictions and past work (Aelterman *et al.*, 2016), controlled non-rule following yielded the most maladaptive pattern of outcomes, as indexed by more resentment, acting out, cheating, and truancy. So, even though controlled non-rule following is less frequently reported by students, when present, it relates more strongly to students' misbehaviour.

As for external regulation, results revealed that students who indicated to follow the established rules in the classroom to obtain external approval or to avoid punishment, reported more feelings of resentment and cheating, but not acting out and truancy, presumably the more problematic outcomes. They may experience more anger and resentment towards their teacher and engage in subtler and unnoticed problem behaviour (i.e., cheating), yet, unlike their classmates high on controlled non-rule following, they do not engage in the more externally visible problem behaviours, like acting out and truancy. Indeed, as long as the external pressures are operative, students may stick to the prescribed rules, as also predicted by behaviouristic accounts (e.g., punishment, reinforcement and extinction; Landrum & Kauffman, 2006). Yet, as can be predicted on the basis of SDT (Ryan & Deci, 2017) and more preventive approaches towards classroom management (Korpershoek *et al.*, 2016; Oliver, Wehby, & Reschly, 2011), such external pressures may come with an affect-related cost, as manifested through elevated resentment (Shook, 2012).

Notably, following established rules to avoid feelings of guilt and shame (i.e., introjected regulation) did not predict any of the outcomes. This null-relation is consistent with previous studies (Soenens *et al.*, 2009; Wentzel *et al.*, 2007) and can be explained by the conflicting nature of introjected regulation. The established rules are perceived to be valuable, yet, in contrast with identified regulation, lack personal meaning such that rule adherence will require considerable self-control and effort (Vansteenkiste *et al.*, 2018). Alternatively, some students may also combine introjected and identified reasons for rule following. It should be noted, however, that although regression analyses pointed to non-significant unique contribution of introjected regulation, the correlations with feelings of resentment, cheating, and truancy were all significant.

Limitations

The present study has a number of limitations, including the cross-sectional design and the inclusion of only one urban secondary school. Future research using experimental or longitudinal designs is needed to examine the causal and long-term effects of students' internalization and defiance of classroom rules in relation to student outcomes. Further, the involvement of more units at the school-level would allow drawing more generalizable conclusions about the associations under study.

Second, all data were self-reported, so that some of the associations obtained may be overestimated due to shared method variance. An important aim for future research is to adopt a multi-informant approach to assess students' misbehaviour by also including teacher reports or peer nominations (e.g., see Wentzel *et al.*, 2007). Furthermore, given the likelihood that self-reported acting out, cheating, and truancy are sensitive to social desirability and underreporting, it seems relevant to control for this bias in future studies. Also, it would be interesting to not only look at students' engagement in disruptive

behaviours, but to include achievement and positive outcomes such as prosociality as well.

Further, no measurement of amotivation to follow rules was included. In the context of rule following, amotivation may manifest as the lack of confidence to meet teachers' expectations or the lack of perceived contingency between the expected behaviour and a desirable outcome (Ryan *et al.*, 2011). Future studies would do well to also include a measure tapping into these aspects of amotivation. Along similar lines, it is possible that apart from controlled reasons for not following the rules, students may also refrain from rule following for more autonomous reasons. In the case of autonomous non-rule following, students may have given more consideration to the established rules and may have volitionally decided to not stick to these rules, because they do not align with their personal preferences, values, and interests (Aelterman *et al.*, 2016; Vansteenkiste & Mouratidis, 2016). This issue certainly deserves further exploration.

Finally, one should be aware that (at least some) younger students might struggle with some concepts, and the measures may require some adjustments for use in younger age groups. For example, 11-year olds may experience more difficulties indicating the extent to which they 'find these rules personally meaningful'.

Directions for future research

Given that the study of students' reasons for (not) following classroom rules, and controlled non-rule following in particular, is still in its infancy, more systematic empirical work is needed. First, the main purpose of the study was to investigate whether individual students' reasons for (not) following rules were related to a variety of student outcomes. Since these motivational predictors were all Level 1 predictors and we did not include any between-class (i.e., Level 2) predictors (e.g., Lüdtke, Robitzsch, Trautwein, & Kunter, 2009), students were considered as the primary unit of analysis. Yet, variance decomposition of the outcomes variables revealed that there was significant between-class variance in feelings of resentment (9%) and cheating (18%), so future research is warranted to explore whether classroom-level factors such as class size or the teacher's style of rule setting can account for these between-class differences.

Second, it would be interesting to gain insight into the dynamic relation between the different reasons for (not) following classroom rules. For example, one avenue for future research is to investigate whether students high on controlled non-rule following initially had controlled reasons for following the established rules, but in response to persistent external pressure gradually shifted into a tendency to resist an overly pressuring teacher. Possibly, the act of sticking to imposed rules is so energy-consuming that their self-control gets depleted (DeBono, Shmueli, & Muraven, 2011; Muraven & Baumeister, 2000) and leads them to oppose the pressuring rules altogether.

Further, it should be noted that students' reasons for (not) following classroom rules were assessed with respect to classroom rules in general without defining the specific content or nature of these rules. However, within the literature a distinction is made between organization rules (e.g., raising hands to ask a question, no cheating when taking a test) and learning rules (e.g., always bringing the handbook to the class, handing in homework on time) (Gable *et al.*, 2009). Future research could differentiate between these two categories of classroom rules and examine whether students' internalization and defiance differ in terms of the category of rules being questioned.

Finally, besides showing that students' underlying reasons for (not) following classroom rules account for unique variance in student outcomes, an interesting avenue

for future research is to study the antecedents contributing to the internalization and defiance of classroom rules. According to SDT, the internalization and defiance of classroom rules likely depends on *how* these rules are established and monitored by the teacher (Ryan & Deci, 2017). Future research may investigate whether the clarity (Vansteenkiste *et al.*, 2012) and the style (Reeve, 2009) of rule setting at the beginning of the school year relate to students' short- and long-term functioning throughout the year (Patrick, Turner, Meyer, & Midgley, 2003).

Conclusion

This study demonstrated that students' reasons for following and refraining from following classroom rules play a unique role in the prediction of classroom misbehaviour. To the extent that classroom rules are perceived as personally meaningful and thus have been fully accepted by students as their own, students will likely display a more adaptive pattern of outcomes. In contrast, students' controlled non-rule following is most strongly predictive of students' feelings of resentment, acting out, cheating, and truancy.

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