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Relevance of student and contextual school variables in explaining a student's severity of violence experienced

Ton Mooij^{1,2}

Abstract

Teachers conceptualise and interpret violent behaviour of secondary students in different ways. They also differ in their estimates of the relevance of student and contextual school variables when explaining the severity of violence experienced by students. Research can assist here by explicating the role of different types of contextual school variables. The research question is twofold: 1) Do contextual school variables, in addition to a student's personal, family, and educational variables, explain a student's violent behaviour? 2) If so, what is the role of student composition variables compared with variables indicating the social cohesion of the school? A hypothetical model was developed in which personal, family-related, educational, and school variables of different types simultaneously explain the severity of violence experienced by a student. The method used to test the model empirically is secondary analysis of data collected in a Dutch national survey on school safety in secondary education (N students = 78,840; N schools = 219). Severity of violence experienced is assessed by the Mokken Scale on Severity of Violence Experienced (MSSVE). Multiple regression analyses reveal that a student who is older, a young male, born in the country of residence, feels at home in another country, does not have an intact family, is not religious, is enrolled in the highest educational track, and is achieving lower marks in the school subjects of language and mathematics, experiences more severe violence than other students (explained variance 3.4%). Simultaneously, different types of contextual school variables are differently relevant. Mean severity of violence experienced by students at school indicates clearly more variance (2.3%) than the combination of student composition variables (0.4%). The conclusion is that the theoretical model is empirically supported, which also underlines the validity of the MSSVE. The discussion focuses on a comprehensive multilevel approach to stimulate and check improvement of social cohesion at school.

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Introduction

Teachers perceive and interpret misbehaviour and the violent behaviour of students in different ways (cf. Hong, 2012; Salvano-Pardieu, Fontaine, Bouazzaoui, & Florer, 2009).

Characteristics of teachers, the school and the students seem to play a role here. For example, teachers who are younger, female, or working in low-attainment educational settings, use more curricular differentiation and collaborate more with students on disciplinary issues than other teachers (Mooij, 2011a). Furthermore, teachers in low-attainment schools, schools situated in cities, or who are homosexual/lesbian, experience more violent behaviour as a victim or witness than their respective counterparts. At the school level, social discrimination and corresponding behavioural processes between teachers and students indicate the quality of the social cohesion in a school (cf. Beauvais & Jenson, 2002; Carbines, Wyatt, & Robb, 2006; Peschar, 2005). Social cohesion of a school reflects the degree of connectivity between individual teachers or students and between groups of teachers or students. In this respect research in secondary schools revealed the existence of school-based social mirroring processes between teachers and students (Mooij, Sijbers, & Sperber, 2006). Teachers' different perceptions and interpretations of the misbehaviour and violent behaviour of students may thus be correct and indeed correspond with real differences in student characteristics and violence motives and behaviour (cf. Mooij, 2011b).

However, different interpretations of student behaviour between teachers in the same school may hinder the adequate recognition and timely reduction or prevention of student violence, which may increase the problem of violence for both teachers and students. This delay and the lack of precision seem to be one of the reasons why violence in school is a major concern for teachers and other professionals in countries such as the United States of America (American Psychological Association, 1993; Mayer & Furlong, 2010; National Education Association, 1994), New Zealand (Office of the Children's Commissioner, 2010) and the Netherlands (Ministry of Education, Culture and Science, 2011). Schools are complex organisations in which professionals such as teachers and school leaders are expected to collaborate to promote school safety and to assist students in their learning processes. Teachers and school leaders therefore need adequate and timely information about their

students' social behaviour which does not seem to be generally or systematically available or provided.

Another complicating issue is that researchers assess violent behaviour within differing behaviour areas and by means of differing procedures. These instruments and methods include, for example, self-reporting instruments like the Olweus Bully/Victim Questionnaire (Solberg & Olweus, 2003) or variations thereof (Wang, Iannotti, Luk, & Nansel, 2010), multi-dimensional psychometric scales describing various types of peer victimisation (Mynard & Joseph, 2000), clustering procedures to identify students with similar victimisation experiences (Felix, Furlong, & Austin, 2009), and approaches that scale students according to the severity of violence the victims have experienced (Michie & Cooke, 2006; Nylund, Bellmore, Nishina, & Graham, 2007).

One of the approaches to tackle the diversity of assessment procedures can be based on Item Response Theory (IRT). IRT models generally clarify item functions on a latent scale, relative to one another, with each item situated on a continuum of the underlying construct from low to high difficulty or severity (cf. Schafer, 1996). Van Schuur (2003) treats 'Mokken Scale Analysis' as a probabilistic IRT model in which the probability of a positive response to a dichotomous item depends on one or more respondent parameters and one or more item parameters. Both types of parameters can be isolated and estimated separately (Mokken, 1997; Molenaar & Sijtsma, 2000). For example, Regan, Bartholomew, Kwong, Trinke, and Henderson (2006) evaluated the structure of the physical violence scale, part of the Conflict Tactics Scales (CTS). They determined the ordering of items used to assess 14 acts of physical violence within heterosexual relationships in a sample of women and men. Nitschke, Osterheider, and Mokros (2009) developed a Mokken scale based on 11 items to discriminate sexual sadists from sexual non-sadists. Furthermore, Mooij (2012) used data on secondary school students concerning six types of violence to construct a Mokken scale. In the unidimensional results, 25 items reflect an increase in the severity of violence experienced by students: from verbal and mild physical violence, which occurs most frequently, to combinations of social, material and severe physical violence, to very severe and serious sexual violence, which occurs least frequently. The reliability of this 'Mokken Scale on Severity of Violence Experienced' (MSSVE) is relatively high ($\rho=0.94$), which was confirmed in a cross-validation study.

This scale result on the MSSVE can be used to clarify more of the variables that are relevant in the explanation of students' violent behaviour. Valid empirical information could, for example, assist teachers to develop a more unified picture of what is going on in their

school and, therefore, to develop strategies to address the problem. This teacher relevance aligns with the need to know more about the meaning and potentials of Mokken scaling in this field (cf. Siu, 2011; You, Ritchey, Furlong, Shochet, & Boman, 2011). In this respect the score of a student on the MSSVE (Mooij, 2012) can be theoretically related to various types of explanatory variables, followed by empirical assessment in practice, to check the validity of the MSSVE. At an individual level, personal variables, like age and gender, and specific family or educational characteristics, seem relevant (Armstrong, 2011; Kettler, 2011). At the same time, various types of contextual school variables seem to be applicable, for example, means of personal or family variables of the students at school ('student composition variables'), or variables characterising social school policy and school cohesiveness (Cronbach, 1983; Henry, Farrell, Schoeny, Tolan, & Dymnicki, 2011; Hong, 2012; Mooij, Smeets, & De Wit, 2011).

As the research of Beauvais and Jenson (2002) and Carbines et al. (2006) makes clear, a student's integration in a school's social, cultural, and curriculum processes is dependent on many characteristics that operate more or less simultaneously in practice. In addition to the relevance of personal and family variables, one main issue for teachers and researchers is the relevance of these different types of contextual school variables for the students' experience of violence. In particular teachers and school leaders will be supported by adequate and timely information about their students' social behaviour and knowing about the possible influences of other variables on that behaviour. To provide for this information, the question for research is formulated as: 1) Do contextual school variables, in addition to a student's personal, family, and educational variables, explain a student's violent behaviour? 2) If so, what is the role of student composition variables compared with variables indicating the social cohesion of the school?

The present goal is to answer this question by elaborating a theoretical explanatory model and checking the model empirically by relating the MSSVE score to other individual student variables and different types of contextual school variables. The outcome will determine both the validity and usability of the MSSVE and the possibly differentiated relevance of personal, family, educational, and school contextual variables to the students' violent behaviour.

Theoretical model

Research on violence demonstrates some consistent findings about relationships between individual or personal and other variables, and a student's violence score. Figure 1 presents an overview in a theoretical explanatory model that elaborates the hypothesised influences of specific student level and school level variables on the severity of violence experienced by a student.

Figure 1 about here

At the student level, traditionally relevant variables are personal background variables such as age and gender (see Figure 1). Being a young male, and being older, is to experience more severe types of violence than being a young female or being younger (Farrow & Fox, 2011; Loeber, Slot, Van der Laan, & Hoeve, 2008; Marshall, 1992; Regan et al., 2006). In addition, variables such as country of birth, and feeling at home in the country of actual residence, are important for a student's functioning and sense of well-being in school (Beauvais & Jenson, 2002; Carbines et al., 2006; Felix et al., 2009). Being foreign-born, and not feeling at home in the country of residence, appear to be related to less than optimal functioning in education, which may imply that a student has experienced more violence compared with counterparts who were born in, and feel at home in, the country of residence (Mooij, De Wit, & Fettelaar, 2011).

Relevant family-related variables are whether or not the student's family is intact and whether or not he or she is religious (see Figure 1). Having an intact family and being religious are both related to living in a more harmonious or socially cohesive environment, which is assumed to involve less experience of violence (Beauvais & Jenson, 2002; Carbines et al., 2006; Felix et al., 2009). Other types of individual student variables are educational variables such as educational track and school marks. The higher the educational track, and the better a pupil's educational performance as expressed in higher marks, the less violence the pupil is expected to experience at school (Loeber et al., 2008; Marsh & Martin, 2011).

Attending a school means being part of many complex and different social, emotional, and curriculum processes that are simultaneously active in different multilevel ways (Cronbach, 1983; Felix et al., 2009). At the school level, various types of variable, which indicate the school's social composition, may be relevant to the severity of violence experienced by a student (see Figure 1). A first category is based on personal student characteristics. It may be that, at schools that have relatively more older students, or more young males than young females, and so on (see the student level in Figure 1), each student in

the school experiences more violent behaviour than students attending schools with other or opposite characteristics (cf. also Lee, Borden, Serido, & Perkins, 2009; Matjasko, 2011). Students' mean educational track and their school marks may also play a role (American Psychological Association, 1993): achieving higher marks will motivate learning and thus prevent violent behaviour.

A second category of school variables supposed to be relevant concerns the social cohesion or social atmosphere of the school. Such contextual school variables may be more important to each student's social and violent behaviour than, for example, contextual school characteristics based on indicators of the school's student composition (Beauvais & Jenson, 2002; Carbines et al., 2006; Henry et al., 2011). In this respect, mean level of severity of violence experienced by the students at school can function as an indicator of the school's degree of social cohesion.

Method

Secondary analysis

In 2005 an Internet-based survey was developed to assist the Dutch Ministry of Education, Culture and Science record and evaluate trends in school safety among students, school staff, and school leadership. Starting in 2006, every second year both national government and participating schools should be informed about cross-sectional and longitudinal results concerning school safety and the corresponding feelings, experiences, and incidents of violence. Moreover, government and schools were interested in school measures to reduce and prevent violence (see also Mooij, Smeets, & De Wit, 2011). The model in Figure 1 contains part of the variables integrated in the digital national survey. Therefore, the theoretical model can be checked empirically by performing secondary analysis on part of Dutch national data on school safety (cf. Mooij, De Wit, & Polman, 2008).

The secondary analysis uses the national data collected in 2008. In this year, a total of 78,840 students participated in the survey at 219 secondary schools located throughout the Netherlands. The students completed the Internet-based questionnaire in their classrooms, under teacher supervision (see further Mooij, 2011a, 2011b). Univariate and multivariate data analyses were carried out with the Statistical Package for the Social Sciences (SPSS, version 17.0).

Student-level variables

The variables at the student level are operationalised as illustrated in Table 1. The variables are shown in combination with their univariate results. The mean age of the secondary school students is 14; 50% are young males. About 6% of the students were not born in the country of residence, whereas 10% feel at home in a country other than the country of residence. Some 79% have an intact family. About 45% are non-religious; 18% are religious but do not attend church, mosque or temple; and 37% are religious and do attend one of these religious buildings.

Table 1 about here

The information in Table 1 about educational track reflects the differentiation in the Dutch secondary educational system, which varies from special education (category for lowest attainment) to pre-university education (category for highest attainment). The distribution across educational tracks is generally in line with national distributions (Mooij et al., 2008). Mean school marks are satisfactory (school marks usually vary from 1 (lowest) to 10 (highest)).

Violence experienced by a student was assessed by 29 items reflecting antisocial or aggressive activities typical of verbal, material, social, mild physical, severe physical, and sexual types of violence. Each student indicated whether he or she had experienced each antisocial activity since the 2007 summer vacation (August) and the date of data collection in early 2008. Scoring of each item was performed by the student choosing one of seven answer alternatives (from 'never' to 'always'). For technical reasons (see Molenaar & Sijtsma, 2000), the scores obtained for each item were dichotomised (never=0, once or more=1). Mokken scale analysis resulted in a reliable scale (MSSVE: reliability $\rho=0.94$) consisting of 25 items (see Table 2, and Mooij, 2012).

Table 2 about here

The ordered items in Table 2 reflect a unidimensional latent Mokken Scale construct characterised by local independence, or respondent and item measurement invariance. For each item it is true that the more the student can be described in terms of the construct, the greater the chance that the response to the item will be positive (the scale is 'monotone homogeneous') (Molenaar & Sijtsma, 2000; Sijtsma & Molenaar, 2002). Furthermore,

MSSVE is characterised by ‘double monotonicity’ which implies that the ordering of items is uniform across groups of respondents or, in other words, item response functions do not intersect. Mooij (2012) confirmed that the Mokken scale of 25 items is invariant between groups based on gender (young males versus young females), country of birth (country of residence versus another country), and feeling at home in the country (country of residence versus another country). The invariance supports the existence of the Mokken scale both within and across each subcategory, for example for young males, young females, and young males and young females simultaneously. This invariance result does not imply that, for example, young males and young females obtain the same total score. Given these outcomes, the sum score of a student on the MSSVE can be used to indicate each student’s scale score on severity of violence experienced (see Table 2).

School-level variables

In line with the modelling in Figure 1, a first category of contextual school variables consists of student composition variables. These variables are indicated by per school aggregated personal student variables such as mean age, mean percentage of young females, and so on. Table 3 presents descriptive results of these mean or composite variables; the number of schools is either 209 or 210. The second category of school-level variable concerns the indicator of the school’s social cohesion, which is based on the mean score on the MSSVE for all students per school who completed this instrument.

Table 3 about here

Analysis

The scores on the school variables in Table 3 were assigned to each student within each school. In other terms, each student in a school received disaggregated or contextual scores based on the mean characteristic of the school. This procedure facilitates the carrying out of three direct or simultaneous multiple regression analyses at an individual level of analysis. Figure 1 serves to analyse and compare three models. Model 1 combines the student level variables of Figure 1, to check their simultaneous relevance in one step to explain the individual score on the MSSVE. Model 2 adds the student composition variables as contextual school variables to the student level variables of Figure 1, whereas Model 3 combines the disaggregated indicator of the school’s social cohesion with the student level variables. In particular the comparison of the relative variance explained by Model 2 versus

Model 3 informs the relevance of each of these two categories of contextual school variables, taking Model 1 as the same base model.

Results

Table 4 presents the results on Models 1-3 in terms of B coefficients, standard errors (SE), statistical significances, and percentages of variance explained. The analyses are carried out on data of 70.791 students representing 208 secondary schools. Under Model 1, all student variables are entered simultaneously in one step to assess their relevance. The results in Table 4 illustrate that, compared with younger students and young females, older students and young males experience more severe violence. Also, students experience more severe violence when they are born in the country of residence, feel at home in a country other than the country of residence, and do not have an intact family. Compared with being non-religious, which is the category of reference, students who are religious experience less severe violence, regardless of whether or not they attend church, mosque, or temple. The reference category for educational track is the highest track for secondary education, that is, pre-university education. The simultaneous regression results of Model 1 illustrate that, in addition to the other outcomes, attending pre-university education and achieving lower marks in the subjects of Dutch language and mathematics increase a student's score on severity of violence experienced. The total percentage of explained variance is 3.4.

Table 4 about here

The results under Model 2 in Table 4 demonstrate that including the first category of contextual school variables in the multiple regression analysis adds another 0.4% variance to the explained variance of Model 1. Furthermore, 'being religious but not church-going' no longer differs from not being religious, and enrolment in special education no longer differs from pre-university education in terms of explaining severity of violence experienced. Student composition variables that are statistically relevant in increasing the severity of violence experienced by a student are: a higher percentage of younger students at school, a higher percentage of foreign-born students, a higher percentage of students who do not feel at home in the country, a higher percentage of students with an intact family (which differs from the effect at the student level), a higher percentage of students who are not religious, and a higher percentage of students achieving lower school marks in mathematics.

The results under Model 3 in Table 4 demonstrate that including only the mean score on the MSSVE as a contextual school variable clearly raises the percentage of explained variance. This percentage increases from 3.4% (Model 1) to 5.7% (Model 3), which is more than the performance of Model 2 (3.8%).

Discussion

The aim of this study is to elaborate the relevance of different types of variables concerning the explanation of severity of violence experienced by a secondary student, to inform teachers and school leaders about opportunities to promote the degree of social cohesion at school. The research question to be answered is whether contextual school variables, in addition to a student's personal, family, and educational variables, explain a student's violent behaviour and, if so, what the role is of student composition variables compared with variables indicating the social cohesion of school. The hypothetical relevance of different types of variables has been illustrated in the theoretical model in Figure 1. Secondary analysis of data of a national study on school safety has been carried out to present an empirical answer to the research question. In addition to student personal, family, and educational variables, student composition and social cohesive contextual school variables were used in successive multiple regression analyses. Statistical significance of B coefficients and relative percentages of explained variance were used to answer the research question.

The results with respect to a first empirical Model 1 show that a student who is relatively older, a young male, born in the country of residence, who feels at home in a country other than the country of residence, does not have an intact family, is not religious, is enrolled in the highest educational track, and is achieving lower school marks in the subjects of language and mathematics, experiences more severe violence than a student who does not fit this description. Introducing a first category of student composite variables disaggregated from the school level causes only minor changes in the individual student level effects (see Table 4, Model 2). Inclusion of these contextual school variables in the student level variables of Model 1 raises the percentage of explained variance from 3.4% to 3.8%. Including only the students' mean level of severity of violence experienced as a social cohesive contextual variable demonstrates the contributory effect of this mean school variable to be relatively large: the explained variance is increased from 3.4% (Model 1) to 5.7% (Model 3).

The interpretation of these results emphasises the relevance of explanatory variables at both the student level and the school level (see Figure 1). Moreover, the importance of personal, family, and educational variables at the student level is generally in line with the expectations based on the research literature as expressed above in the theoretical design of Figure 1. The role of pre-university education is contrary to expectations, however. This may be because, in the present design and analyses, the outcome is statistically controlled for student age, school marks of school subjects that are important in the school career, and the other variables. This issue deserves more research, in particular regarding the role of the other personal, family, educational, and school mean variables. In this respect the mean MSSVE variable acts as a contextual school variable indicating rather strong aspects of the social and cultural environment of a student. The present outcome therefore seems to confirm the qualitative research of Beauvais and Jenson (2002) and Carbines et al. (2006). Their research suggests that, when students at a school show a low degree of pro-social behaviour, each student has to adjust in order to function relatively adequately. On the other hand, at schools where pro-social behaviour and corresponding social cohesion are relatively high, each student can more easily participate or join in. In other terms: a student in a school characterised by a relatively high degree of severity of violence has to adapt and become rather violent too, or become isolated, in order to survive in this school environment.

In particular the indicator of the social cohesion of the school, that is the students' mean level of severity of violence experienced, then seems the most relevant for teachers and school leaders in evaluating social safety and students' violent behaviour at school. This is also the case because measures to change student characteristics like age, gender, or intactness of family, are hardly or not possible to realise. Therefore, differentiated proposals and procedures to develop, implement, and empirically check pro-social discrimination and social behaviour processes within the whole school are required, to effectively prevent and reduce the incidence of antisocial behaviour of students at the school, class, and individual level. Probably the best way is to combine pedagogical, social, curricular, and disciplinary measures in a comprehensive and explicit school culture that offer teachers specific support in their daily work and effectively integrate students' social responsibilities since their first day in school (Alschuler, 1980; Mooij, 1999a, 1999b; Salmivalli, Kaukiainen, & Voeten, 2005; Stevens, De Bourdeaudhuij, & Van Oost, 2000). At the class level, teachers should refer to the school-wide culture and rules of social cohesion in pro-social and preventative ways. Teachers know students best and can get along with them in differentiated ways, either in line with the normative culture or more individually where needed. At the individual level, all teachers and

students should experience that their own cognitive and other interests, social behaviour, and feelings of safety are promoted best when all persons in school are functioning in a socially responsible way (cf. Chapman & Harris, 2004; Sørli, Hagen, & Ogden, 2008).

To realise a whole-school improvement it is thus necessary to design a comprehensive multilevel approach to promote pro-social behaviour and reduce or prevent violent and other forms of socially problematic behaviour (Chapman, Buckley, Sheehan, Shochet, & Romaniuk, 2011; Henry et al., 2011; Mooij & Smeets, 2009). Longitudinal assessment of curricular, instructional, social, and social policy characteristics is required to estimate causal effects on the development of each student's social and learning behaviour (Astor, Guerra, & Van Acker, 2010; Glover, Gough, Johnson, & Cartwright, 2000; Mooij, 2013; Mooij & Fettelaar, 2013). Digital information collection and feedback procedures such as sketched in the Method section can also produce differentiated benchmarks to reliably and validly evaluate the development of social cohesion from differentiated diagnostic points of view (Mooij, 2013; Mooij & Fettelaar, 2013). In this way schools can get and use their own feedback scores including school trends over time, to formulate and evaluate own school policy goals and own systematic support strategies for both teachers and students.

The overall conclusion of this study is that a combination of specific personal, family, and educational student variables, and in particular the school-based mean variable on severity of violence experienced, plausibly explains the severity of violence experienced by a student. Therefore, a multilevel approach to understand and reduce violent behaviour of students is indicated. Given the verification carried out with respect to theoretically expected relationships, it is also concluded that the results provide evidence of the validity of the MSSVE. These outcomes encourage further exploration of the meaning and relevance of the Mokken scale. As noted above it would, for example, be very instructive to use other categories of explanatory variables, like curricular or social characteristics assessed by school personnel or school leaders at multiple levels (cf. Kuusisaari, 2013; Mitchell, Finkelhor, Wolak, Ybarra, & Turner, 2010; Mooij et al., 2011; Mooij & Fettelaar, 2013).

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Relevance of student and contextual school variables

Table 1. Univariate results of individual student variables

| Variable | N | Min. | Max. | Mean or % | SD |
|--|--------|------|------|-----------|------|
| Age (in years) | 78,297 | 7 | 25 | 14.31 | 1.48 |
| Gender (0=young male; 1=young female) | 78,297 | 0 | 1 | 0.50 | 0.50 |
| Country of birth (0=residence; 1=other) | 78,089 | 0 | 1 | 0.06 | 0.23 |
| Feel at home country (0=resid.; 1=other) | 75,587 | 0 | 1 | 0.10 | 0.29 |
| Have intact family (0=no; 1=yes) | 78,297 | 0 | 1 | 0.79 | 0.41 |
| Religiosity: categories | | | | | |
| | 78,297 | | | | |
| Not religious=1 | 35,187 | 0 | 1 | 44.9% | |
| Religious, do not attend church, etc=2 | 13,902 | 0 | 1 | 17.8% | |
| Attend church, mosque etc=3 | 29,208 | 0 | 1 | 37.3% | |
| Educational track: categories | | | | | |
| | 78,297 | | | | |
| Special education=1 | 2576 | 0 | 1 | 3.3% | |
| Practical education=2 | 2645 | 0 | 1 | 3.4% | |
| Preparatory secondary vocation. educ.=3 | 43,576 | 0 | 1 | 55.7% | |
| Senior gen. sec. educ./pre-univ. educ.=4 | 14,286 | 0 | 1 | 18.2% | |
| Pre-university education=5 | 12,832 | 0 | 1 | 16.4% | |
| Other=6 | 2382 | 0 | 1 | 3.0% | |
| Mean school marks in | | | | | |
| | | | | | |
| Dutch language | 77,682 | 2 | 9 | 6.82 | 0.97 |
| English language | 76,970 | 2 | 9 | 6.86 | 1.26 |
| mathematics | 75,360 | 2 | 9 | 6.73 | 1.26 |

Relevance of student and contextual school variables

Table 2. Mokken Scale score assessing severity of violence experienced by secondary students

| Severity | Order and items in Mokken scale | Violence type | N* | % | Cum. % | |
|--|---|-------------------------------------|----------|------|--------|------|
| Most | 25 rape | Sexual | 1068 | 1.4 | 100.0 | |
| | 24 using a weapon | Severe physical | 360 | 0.5 | 98.6 | |
| | 23 sexually molesting someone | Sexual | 489 | 0.6 | 98.1 | |
| | 22 threatening someone with a weapon | Severe physical | 648 | 0.8 | 97.5 | |
| | 21 feeling someone up | Sexual | 894 | 1.1 | 96.7 | |
| | 20 spray-painting or dirtying something | Material | 1318 | 1.7 | 95.5 | |
| | 19 stealing | Material | 1359 | 1.7 | 93.8 | |
| | 18 beating or roughing someone up | Severe physical | 1503 | 1.9 | 92.0 | |
| | 17 threatening | Social | 1802 | 2.3 | 90.1 | |
| | 16 intimidating | Social | 2071 | 2.6 | 87.7 | |
| | 15 destroying things | Material | 2339 | 3.0 | 85.1 | |
| | 14 blackmailing | Social | 2488 | 3.2 | 82.0 | |
| | Middle | 13 scratching or damaging something | Material | 2908 | 3.7 | 78.8 |
| | | 12 sexual gestures | Sexual | 3241 | 4.1 | 75.0 |
| 11 hiding or mislaying something | | Material | 3668 | 4.7 | 70.8 | |
| 10 making sexual comments | | Sexual | 3842 | 4.9 | 66.0 | |
| 9 spreading false rumours | | Social | 4057 | 5.2 | 61.0 | |
| 8 hitting | | Mild physical | 4400 | 5.6 | 55.8 | |
| 7 tripping someone on purpose | | Mild physical | 4464 | 5.7 | 50.1 | |
| 6 pushing or kicking someone on purpose | | Mild physical | 4534 | 5.8 | 44.3 | |
| 5 striking or hurting someone on purpose | | Mild physical | 4644 | 5.9 | 38.4 | |
| 4 making a lot of noise on purpose | | Verbal | 5454 | 7.0 | 32.3 | |
| 3 bothering someone on purpose | | Verbal | 4017 | 5.1 | 25.3 | |
| Least | 2 talking in an extra loud voice | Verbal | 3948 | 5.0 | 20.0 | |
| | 1 calling someone names | Verbal | 4556 | 5.8 | 14.9 | |
| Least | 0 | | 6933** | 8.9 | 9.0 | |

* Number of students included = 77,005; number missing = 1292.

** Number of students with zero sumscore.

Relevance of student and contextual school variables

Table 3. Univariate results of two types of contextual school variables

| Variable | N | Min. | Max. | Mean | SD |
|---|-----|------|-------|-------|------|
| <i>Student composition variables</i> | | | | | |
| Mean age of students | 210 | 11 | 16.33 | 14.28 | 0.63 |
| Mean % of young females | 210 | 0 | 1 | 47 | 0.14 |
| Mean % students born in country other than residence | 209 | 0 | 1 | 7 | 0.09 |
| Mean % students feeling at home in other country | 209 | 0 | 1 | 12 | 0.12 |
| Mean % students with intact family | 210 | 0 | 1 | 74 | 0.14 |
| Mean religious (not=1, not church=2, attend church=3) | 210 | 1 | 3 | 1.87 | 0.42 |
| Mean educational track | 210 | 1 | 5.02 | 3.30 | 0.64 |
| Mean school marks in Dutch language | 209 | 6.00 | 7.83 | 6.89 | 0.31 |
| Mean school marks in English language | 209 | 5.98 | 7.80 | 6.91 | 0.30 |
| Mean school marks in mathematics | 209 | 5.50 | 7.79 | 6.78 | 0.32 |
| <i>Indicator of social cohesion</i> | | | | | |
| Mean level of severity of violence experienced | 209 | 3.41 | 25 | 8.48 | 2.24 |

Relevance of student and contextual school variables

Table 4. Multiple Regression results of severity of violence experienced predicted by individual variables (model 1) and individual and contextual school variables (models 2 and 3)

| | Model 1 | | Model 2 | | Model 3 | |
|---|---------|-----------------|---------|--------|---------|-----------------|
| | B | SE ¹ | B | B | B | SE ¹ |
| Constant | 6.84 | 0.35** | 6.60 | 1.70** | -1.51 | 0.40** |
| <i>Explanatory student variables</i> | | | | | | |
| Age | .38 | 0.02** | 0.40 | 0.02** | 0.36 | 0.02** |
| Gender (0=young male; 1=young female) | -1.30 | 0.05** | -1.30 | 0.05** | -1.27 | 0.05** |
| Country of birth (0=residence; 1=other) | -0.41 | 0.11** | -0.37 | 0.11** | -0.41 | 0.11** |
| Feel at home in country (0=resid.; 1=other) | 0.57 | 0.08** | 0.75 | 0.09** | 0.69 | 0.08** |
| Have intact family (0=no; 1=yes) | -0.69 | 0.06** | -0.78 | 0.06** | -0.74 | 0.06** |
| <i>Religiosity: Not religious (ref. category)</i> | | | | | | |
| Religious, do not attend church, mosque | -0.21 | 0.06** | -0.09 | 0.07 | 0.10 | 0.06 |
| Religious, attend church, mosque, temple | -0.59 | 0.05** | -0.35 | 0.06** | -0.32 | 0.05** |
| <i>Student's educational track</i> | | | | | | |
| Special education | -0.33 | 0.14* | -0.26 | 0.14 | -0.04 | 0.14 |
| Practical education | -1.71 | 0.15** | -1.24 | 0.17** | -0.34 | 0.15* |
| Preparatory secondary vocational educ. | -1.27 | 0.06** | -1.01 | 0.09** | -0.62 | 0.07** |
| Senior general sec. educ. / pre-un. educ. | -0.65 | 0.08** | -0.60 | 0.08** | -0.44 | 0.08** |
| Pre-university education (refer. categ.) | ref | ref | ref | ref | ref | ref |
| Other | -0.29 | 0.15* | -0.17 | 0.15 | -0.06 | 0.14 |
| Mean school marks in Dutch | -0.09 | 0.03** | -0.09 | 0.03** | -0.08 | 0.03** |
| Mean school marks in English | -0.02 | 0.02 | -0.01 | 0.02 | -0.01 | 0.02 |
| Mean school marks in mathematics | -0.12 | 0.02** | -0.10 | 0.02** | -0.11 | 0.02** |
| <i>Explanatory contextual school variables</i> | | | | | | |
| Mean age of students at school | -- | -- | -0.14 | 0.06* | -- | -- |
| Mean % of young females at school | -- | -- | -0.42 | 0.30 | -- | -- |
| Mean % born in country other than residence | -- | -- | 3.65 | 1.09** | -- | -- |
| Mean % who feel at home in other country | -- | -- | -3.77 | 0.64** | -- | -- |
| Mean % who have intact family | -- | -- | 3.20 | 0.60** | -- | -- |
| Mean % students not religious | -- | -- | 1.62 | 0.16** | -- | -- |
| Mean % students attending pre-univ. educ. | -- | -- | -0.09 | 0.17 | -- | -- |
| Mean marks in Dutch language at school | -- | -- | -0.04 | 0.13 | -- | -- |
| Mean marks in English language at school | -- | -- | 0.12 | 0.12 | -- | -- |
| Mean marks in mathematics at school | -- | -- | -0.30 | 0.11** | -- | -- |
| Mean level of severity violence experienced | -- | -- | -- | -- | 0.91 | .02** |
| <i>Percentage of variance explained</i> | 3.4 | | 3.8 | | 5.7 | |

¹ *: .01 ≤ p ≤ .05; **: p < .01.

Relevance of student and contextual school variables

Figure 1

Theoretical model of individual and contextual school variables relevant to severity of violence experienced by a secondary student

Relevance of student and contextual school variables

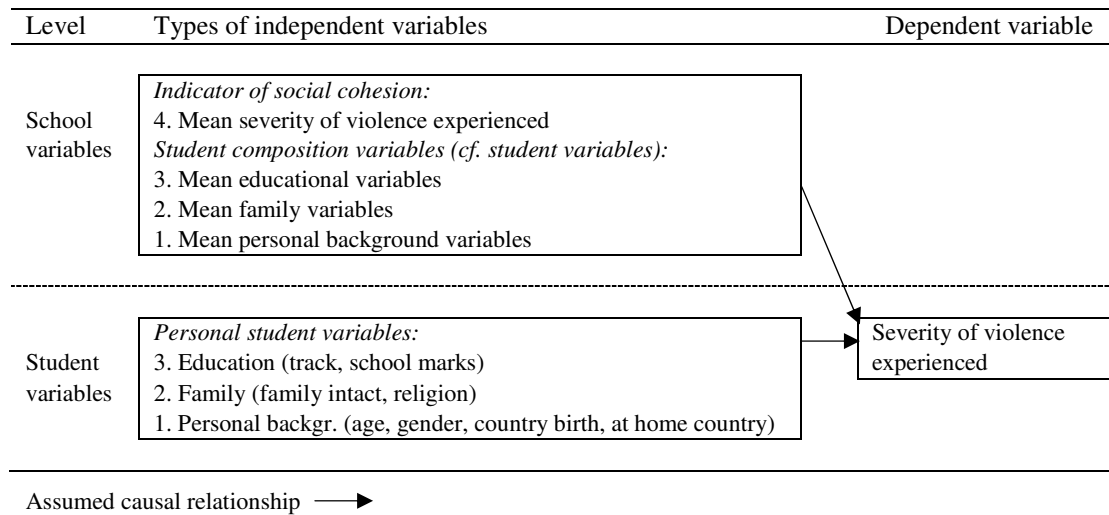


Figure 1