It's the Hard-Knock Life for Us: A Multilevel Analysis on the Association between Grade Retention and Being Bullied in 25 countries.

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ABSTRACT

Across the world, numerous students are being bullied at school. Bullying is often caused by a power imbalance between students. Therefore, identifying potential sources of such a power imbalance can prevent school bullying from happening. Based on the labeling theory, we expect that grade retention can lead to such a power imbalance and, therefore, increase the likelihood of being bullied at school. Hence, this study examines the association between grade retention and self-reported victimisation. We also expect that retainees will be less likely to become a victim of school bullying in schools and countries with a high number of other retainees. If true, this would signal a moderating effect of both school- and country retention composition on the association between grade retention and victimisation. The contextualised impact of grade retention upon victimisation is assessed by cross-national multilevel analyses on PISA2018 data (25 countries; 8,039 schools; 159,412 students). Overall, our findings indicate that being retained in primary and/or secondary education is associated with higher levels of victimisation, while retainees suffer from more victimisation in countries with a low number of other retainees. In contrast to our expectations, however, we did not find such a moderation effect of school retention composition.

Keywords: grade retention, victimisation, school bullying, cross-national research, multilevel analysis, educational systems

INTRODUCTION

Worldwide, thousands of students are bullied at school (Lian et al. 2021). Being bullied is a detrimental experience that may lead to depression, feelings of anxiety and eating disorders (Bond et al. 2001; Chaux and Castellanos 2015; Cornell et al. 2013; Farrow and Fox 2011; Gladstone et al. 2006; Hodges and Perry 1999; Lian et al. 2021). Mental health issues that arise from being a victim of bullying persist throughout adulthood (Gladstone et al. 2006). Overall, it is clear that school bullying should be avoided as much as possible due to its harmful consequences (Chaux and Castellanos 2015). Nonetheless, despite intensive efforts by policy makers and school staff to tackle the problem, bullying at school seems to be particularly hard to eradicate (Chaux and Castellanos 2015).

Most predictors of victimisation are distinctive features or characteristics that lead to isolation, stigmatisation and a power imbalance between the victim and the aggressor(s) (Chaux and Castellanos 2015; Demanet 2008; Demanet and Van Houtte 2012; Olweus 1994). Identifying those predictors is the first step in curbing school bullying (Cook et al. 2010). Grade retention could be such a predictor, as the practice has previously been linked to social isolation (Demanet and Van Houtte 2016) and stigmatisation (Penna and Tallerico 2005). Retainees also have fewer same grade friendships (Demanet and Van Houtte 2016), which increases the potential to become victimised as school bullies prefer to pick isolated targets, following the path of the least resistance (Chaux and Castellanos 2015; Demanet 2008; Olweus 1994). On average, retainees have fewer friends who could defend the victim against the aggressor (Demanet 2008), leading to a power imbalance (Chaux and Castellanos 2015; Olweus 1994). Moreover, grade retention has been conceptualised by Nagin and colleagues (2003) as "*a visible demonstration of failure*" (p. 1). As a result, retainees are commonly labeled as "*slow learners*" and "*underperformers*". This can create the perception among other students that retainees are less intelligent (Jimerson 2001; Nagin et al. 2003), leading to a second potential source of power

imbalance. Therefore, based on the labeling theory (Becker 1963; Demanet and Van Houtte 2016), we expect that being retained increases the likelihood of victimisation.

Until recently, victimisation was severely understudied as a potential outcome of grade retention (Crothers et al. 2010), although it has gained some traction within retention research since 2019 (Harris et al. 2019; Lian et al. 2021; Ozada Nazim and Duyan 2020; Zequinão et al. 2020). To the best of our knowledge, five studies were conducted out about this research topic of which Harris and colleagues (2019) were the only ones not to find a significant association between grade retention and victimisation. The relationship between grade retention and victimisation, however, has not been contextualised yet, which has led Harris and colleagues (2019) to state that "*future studies should employ multilevel analyses to compare findings across levels*". Contextualising the subject is of pivotal importance, because the potential explanatory processes for grade retention as a predictor of victimisation, such as social isolation, stigmatisation and the consequential power imbalance between retained and non-retained students, all depend on the social context (see e.g., Coleman 1986).

Recent, contextualised studies on other non-cognitive outcomes of grade retention suggest that being retained is a less meaningful, less isolating and less stigmatising experience in contexts where it is a normalised and prevalent practice (Demanet and Van Houtte 2016; Van Canegem et al. 2021; 2022). Retention rates differ vastly between different schools and countries, because the retention rate is a direct result of policies and views held by decision-makers on the effectiveness of grade retention. The school retention composition, which is the percentage of retainees at a given school, exerts a moderation effect on the relationship between grade retention and same-grade friendships (Demanet and Van Houtte 2016). This means that the differences in same-grade friendships between retainees and non-retainees are smaller in contexts with a high number of retainees (Demanet and Van Houtte 2016). Based on those

findings, we expect that retainees are less likely to become the victim of school bullying in schools and countries with a high retention composition.

In summary, the overarching aim is to assess whether being retained in primary and secondary education is associated with victimisation at school in secondary education. Moreover, it is studied if there is a moderation effect of retention composition at both the school and country level. Based on the labeling theory (Becker 1963), we expect that being retained leads to a higher chance of victimisation in schools and countries with a low retention composition.

THEORETICAL BACKGROUND

School bullying, caused by power imbalance

According to Olweus (1994), a student is being bullied or victimised when he/she is exposed, repeatedly and over time, to negative actions on the part of one or more other students. Negative actions are intentionally perpetuated by the aggressor, with the aim to inflict injury or discomfort upon the victim (Olweus 1994). Bullying is characterised by a clear asymmetric power imbalance between victim and perpetrator, which allows the bully to repeat the aggressive behavioural pattern over time (Chaux and Castellanos 2015; Demanet and Van Houtte 2012; Olweus 1994). The definition of Olweus (1994) has gained wide acceptance within the field of school bullying, although many studies overlook the aspect of power imbalance (Chaux and Castellanos 2015). In a way, power imbalance creates the opportunity to display bullying behaviour, as the bully is confident enough that bullying a certain victim will not bear any consequences. So schools and countries that aim to curb school bullying should identify and level out potential sources of power differences between their students as much as possible.

As a prevalent form of violence at school, bullying is a fundamental human rights issue (Lian et al. 2021). Victimisation compromises a students' right to education and has detrimental mental health outcomes that can last throughout adulthood, such as depressive thoughts, feelings of anxiety, a general lack of self-confidence and eating disorders because of a distorted body image (Bond et al. 2001; Chaux and Castellanos 2015; Cornell et al. 2013; Farrow and Fox 2011; Gladstone et al. 2006; Hodges and Perry 1999). The amount of anti-bullying programs has risen vastly in many countries, as policy makers increasingly acknowledge that schools ought to be safe spaces (Olweus 1994). Nonetheless, school bullying remains a prevalent problem. In a global study on the pooled prevalence of school bullying, Biswas and colleagues (2020) have estimated that at least 30% of all adolescents between the age of 12 and 17 has been a victim of school bullying in the past thirty days. Hence, many schools and countries struggle to decrease bullying behaviour at school.

In order to decrease school bullying, we need to study which factors are able to predict which students are more likely to be selected as victim (Cook et al. 2010). Most identified factors are symptoms of an underlying power differential between the victim and the bully (Agirdag et al. 2011; Bernstein and Watson 1997; Chaux and Castellanos 2015). Hodges and Perry (1999), for instance, have found that lacking physical strength leads to a higher chance of becoming a victim, while Voss and Mulligan (2020) identified short stature as a predictor of victimisation for boys. Victims of bullying are also more likely to come from a disadvantaged socio-economic background (Biswas et al. 2020; Due et al. 2009). Meanwhile, countries with more income inequality tend to have higher levels of school bullying than countries with a more equal income distribution (Due et al. 2009; Elgar et al. 2009). There are reasons to assume that being retained might also be one of those predictors that lead to a power imbalance (Harris et al. 2019; Lian et al. 2021).

Grade retention: state of the art

Grade retention, also known as grade repetition, is defined as the practice of letting underperforming students repeat their grade (Jimerson 2001). Grade retention is often applied involuntarily (Brophy 2006), so, in essence, it can be conceptualised as an involuntary change of social context. Former classmates, with whom connections have previously been established, can proceed to the next grade, while retainees have to create new social bounds with its younger, new classmates if they wish to evade social isolation (Demanet and Van Houtte 2016; O'Keeffe 2013). Hence, because of this contextual shift, being retained could have unforeseen non-cognitive side-effects (Anderson et al. 2005).

Research on grade retention dates back to as early as 1908 (Goos et al. 2021; Jackson 1975), although the increased focus on non-cognitive outcomes is fairly recent. This can be attributed to changed pedagogical views on the nature of schooling (Solhaug 2006). Besides improving the cognitive abilities of students, schools are now increasingly held responsible for the mental wellbeing, civic attitudes and sense of citizenship of their students (Solhaug 2006). Therefore, the effectiveness of grade retention is not only measured in terms of (cognitive) learning outcomes, but also in terms of non-cognitive processes and outcomes (Van Canegem et al. 2021).

Most studies on cognitive outcomes identify a trend that is known as 'the grade-replacement effect', in which cognitive abilities increase in the short term, whereas these positive effects diminish or decrease in the long term (Jimerson and Ferguson 2007). Hence, the initial cognitive upswing can be attributed to a mere repetition effect in which the same curriculum matter is learned twice (Jimerson and Ferguson 2007). This assumption is confirmed by most recent meta-analyses, as they reveal that grade retention has a zero net effectiveness in terms of cognitive learning outcomes (Allen et al. 2009; Goos et al. 2021). Allen and colleagues

(2009) have stated that a zero net effectiveness is no plea in favour of grade retention, as the practice remains very costly and potentially harmful in terms of non-cognitive side-effects.

Grade retention has been linked to significantly higher dropout rates (Jimerson 2001), a lower self-esteem (Martin 2011; Mathys et al. 2019), a lower academic self-concept (Van Canegem et al. 2021), a lower sense of belonging (Van Canegem et al. 2022), lower intrinsic and extrinsic motivation (Martin 2011; Mathys et al. 2019), lower parental support (Mathys et al., 2019), more deviant behaviour (Demanet and Van Houtte 2013), less same-grade friendships (Demanet and Van Houtte 2013) and higher rates of violent crime (Eren et al. 2018). In a ground-breaking longitudinal study, Kretschmann and colleagues (2019) have found that being retained is preceded by a steep decline in students' academic self-concept, interest, and learning motivation in the last months before the retention year. Those negative effects decrease in size over time but, contrary to what some scientists believe (Marsh 2005), grade retention is not followed by an increase in academic self-concept (Kretschmann et al. 2019). After studying a multitude of non-cognitive outcomes, Mathys and colleagues (2019) conclude that grade retention "*appears to be detrimental to early-adolescence psychosocial adjustment*" (p. 1). Hong and Yu (2008), however, did not find any negative effects on social-emotional development in kindergarten. This indicates that the educational level at which a student is retained, determines how stigmatising and impactful the experience is. Overall, current meta-analyses clearly state that retainees are not benefitting from the experience in secondary education (Allen et al. 2009; Jimerson 2001; Goos et al. 2021).

Grade retention as a predictor of being bullied and a source of power imbalance

We argue that being retained could be a predictor of victimisation. While this outcome was severely understudied in the past (Crothers et al. 2010), it has been gaining some traction recently within retention research (Harris et al. 2019; Lian et al. 2021; Ozada Nazim and Duyan 2020; Zequinão et al. 2020). At the moment, existing studies found grade retention to be

significantly associated with victimisation, with the exception of Harris and colleagues (2019). Moreover, Crothers and colleagues (2019) and Ozada Nazim and Duyan (2021) found that being retained was not only associated with victimisation, but also with bullying, which could render retainees to take on the role of so-called "*bully-victims*" (Demanet and Van Houtte 2012; Olweus 1994). Other studies found that, besides bullying behaviour, retainees also show higher levels of disruptive behaviour (Pagani et al. 2001), school misconduct (Demanet and Van Houtte 2013) and youth criminality (Diaz et al. 2016). These findings suggest that grade retention leads to frustration (Jimerson 2001). The frustration-aggression theory (Berkowitz 1989; Dollard et al. 1939) states that aggression or deviant behaviour is a reaction upon frustration that arises because a person is blocked from reaching a certain goal. Aggression is an act that is aimed to bring injury or harm upon others (Dollard et al. 1939). Frustration, in other words, is a potential cause of aggression and aggression can get diverted onto an innocent target when the source of frustration remains unchallenged (Berkowitz 1989; Dollard et al. 1939). Hence, the frustration-aggression theory (Berkowitz 1989; Dollard et al. 1939) might explain why, besides being victimised, retainees also seem to engage in bully behaviour (Crothers et al. 2010; Ozada Nazim and Duyan 2021).

The involuntary change of social context may create a power imbalance between students, as retainees have to reintegrate and form new social connections with younger classmates, while former classmates proceed to the next grade (Demanet and Van Houtte 2016; O'Keeffe 2013). Therefore, retainees have fewer same-grade friendships (Demanet and Van Houtte 2016), which increases their vulnerability of being victimised as other classmates will be less inclined to defend the retained student against aggressive acts (Olweus 1994).

Besides the loss of friendships and increased levels of frustration, being retained is also associated with stigmatisation (Goos et al. 2021; Jimerson 2001; Van Canegem et al. 2021). In line with the labeling theory (Becker 1963), retainees are labeled as '*slow learners*' or

'*underperformers*' by a distinct ritual (the process of being retained), which can lead to the perception that retainees are less intelligent than their regularly promoted agemates. The label remains visible by a high number of people during the retention year, although it fades away in higher grades (Demanet and Van Houtte 2013). Being socially isolated and stigmatised are both accurate predictors of victimisation (Earnshaw et al. 2018). We argue that these two factors add up to a power imbalance between retained and non-retained students, leading to the hypothesis that being retained in primary and/or secondary education is associated with a higher victimisation in secondary education (H1). We expect, however, that the label of being retained gradually fades away over the years and, thus, that the effect of being retained in secondary education will be substantially larger than the effect size of being retained in primary education (H2).

Retention composition as moderating variable

The negative association between grade retention and non-cognitive outcomes such as academic self-concept and sense of belonging is more outspoken in schools and countries with a low number of retainees (Van Canegem et al. 2021; 2022). Hence, the label of being a retainee is less stigmatising when more students have been retained within a given context (Demanet and Van Houtte 2013; 2016). It seems that the burden of this label becomes heavier when it is not shared with others (Becker 1963). This insight has led to studies on the effect of retention composition with regard to cognitive (Hong and Raudenbush 2005; 2006), behavioural (Demanet and Van Houtte 2013; Hong and Yu 2008) and social outcomes (Demanet and Van Houtte 2016; Van Canegem et al. 2022), but remains unexplored in terms of victimisation. Therefore, in their study on the relationship between grade retention and victimisation, Harris and colleagues (2019) have stated that "*future studies should employ multilevel analyses to compare findings across levels*".

If being retained becomes a less stigmatising experience when it is more common, it can be expected that bullies will be less likely to select their victims based on whether or not they have been retained in the past. Moreover, retained students have more same-grade friends in schools with a high retention composition (Demanet and Van Houtte 2016), leading to less social isolation and a higher likelihood that someone will stand up for the potential victim against bullies (Chaux and Castellanos 2015). Therefore, based on these arguments, it is hypothesised that students in schools (H3) and countries (H4) with a high number of retainees are less likely to be bullied.

Different educational views on the role and functions of grade retention have led to major differences in retention rates between schools and countries (Dupriez et al. 2008; Van Canegem et al. 2021). At the school level, gatekeepers such as teachers and school boards often have a large autonomy in the decision-making process of whether or not to retain a student. This autonomy has led to vastly different school retention rates (Tomchin and Impara 1992), as they allow the specific views of those gatekeepers to impact the school retention composition considerably. Therefore, how being retained is experienced and whether or not it leads to victimisation, could differ from school to school.

In countries with high retention rates, grade retention is generally assumed to be an effective educational intervention, whereas it is also deemed as an efficient way to improve the homogeneity (and, thus, the believed teachability) of a class group (Goos et al. 2013; Mons 2007). In such countries, grade retention is often combined with other differentiation methods such as ability grouping and tracking. The exact form in which grade retention occurs, differs widely from country to country (Brophy 2006). Hence, a theoretically substantiated selection of countries is pivotal for a successful cross-national comparison on any potential effect of grade retention.

As far as we know, Lian and colleagues (2021) have conducted the only cross-national study on the association between grade retention and victimisation. Via multivariate logistic regression models, they unveiled that grade retention is significantly associated with different types of victimisation (Lian et al. 2021). However, the study has neglected the advice of Harris and colleagues (2019) to contextualise this association. Lian and colleagues (2021) used a logistic regression without integrating any control variables at the school or country level with the exception of the dichotomy between private and public schooling. Therefore, the increased likelihood in victimisation might not solely be caused by grade retention at the individual level, but also by unaccounted differences between schools and the educational systems of countries (Lian et al. 2021).Moreover, Lian and colleagues (2021) lacked a theoretical substantiation with regard to the selection of countries with regard to their cross-national analyses. As a result, all countries that participated in PISA2018 were selected, except for the few countries that do not apply grade retention at all (Lian et al. 2018). It is doubtful that the outcomes of different forms of grade retention can be compared across national systems if multilevel analysis techniques , control variables at higher levels and the theoretical basis for such a comparison are all absent (Van Canegem et al. 2022).

This is especially the case with non-cognitive outcomes, as the available research on the cross-cultural comparability of non-cognitive outcomes in PISA (He et al. 2019) and grade retention (Brophy 2006; Van Canegem et al. 2022) shows that collectivist (e.g. South Korea) and developing countries (e.g., Argentina, Tunisia) should be excluded from cross-national comparisons. Being retained is a fundamentally different practice in these countries that also seems to be experienced differently by students, which might lead to different non-cognitive processes. As Harris and colleagues (2019) have noted correctly, a contextualised cross-national study with a rigorous selection of countries is necessary to adequately study the potential ways that grade retention might be associated with victimisation.

Heterogeneity management model typology

The different views of school boards, teachers and national policy makers on the effectiveness and desirability of grade retention are a crucial explanation for the variation in the retention rates of schools and countries (Dupriez et al. 2008; Goos et al. 2021). Some teachers, for instance, believe that grade retention is an effective way to separate students based on their academic performance (Dupriez et al. 2008; Mons 2007). Therefore, Mons (2007) has created a typology of four heterogeneity management models that examines the different approaches on student differentiation from an international perspective (see Table 2), enabling theoretically substantiated cross-national comparisons between different national educational systems (Dupriez et al. 2008). This typology builds on a configuration of institutional parameters that countries use to account for pupils' heterogeneity, such as ability grouping, tracking, individualised teaching, and grade retention (Mons 2007). The typology enables to explain national differences in the application of grade retention and the underlying political views. Moreover, it provides us with insights about national differentiation strategies besides grade retention. This way, the typology can be used to compare the non-cognitive outcomes of grade retention cross-nationally (Van Canegem et al. 2022).

In the separation model, students are categorised from early on into separate and rigid educational routes, based on their academic results (Dupriez et al. 2008). This categorisation procedure is known as 'tracking' (Trautwein et al. 2006). If the variance between the achievement of a student and the rest of the class group becomes too widespread, grade retention is used as a measure to create more homogeneity (Dupriez et al. 2008). Therefore, the model combines high retention rates with a high number of students in (pre)vocational tracks. Germany, most of its neighbours (Austria, Belgium, the Czech Republic, Luxembourg, the Netherlands, Switzerland) and some Eastern European countries (Hungary, the Slovak Republic) fit the separation model.

In the uniform integration model, as applied in Southern European countries (France, Greece, Italy, Spain, Portugal), students are taught a common core curriculum until the age of 14/16 (depending on the country). Grade retention is used as main sorting mechanism to create different streams of students within this comprehensive schooling system which results in high retention rates (Dupriez et al. 2008).

Anglo-Saxon countries (Australia, Canada, Ireland, New Zealand, the United Kingdom, the United States) fit the à la carte integration model, in which a common core curriculum is taught until the age of 16. All students follow this curriculum at approximately the same pace, although intraclass ability grouping is used at the primary level to account for mixed abilities. These countries also use 'setting and streaming', which is a flexible grouping policy based on both students' general performance as well as their specific performance within each discipline (Dupriez et al. 2008). Therefore, retention rates are rather low in these countries (Mons 2007).

At last, the individualised integration model can be observed in Northern European countries (Denmark, Finland, Iceland, Sweden) and Poland (Dupriez et al. 2008). These countries do not use tracking, while grade retention and ability grouping are highly exceptional. Heterogeneity among students is dealt with by various forms of differentiation and individualised teaching, such as tutoring within small groups or on a one-to-one basis (Mons 2007).

The current study

The overarching aim of the current study is to assess whether grade retention is associated with victimisation. Furthermore, we want to study the potential role of retention composition with regard to this association. The literature review leads us to propose the following four hypotheses:

Hypothesis 1: there is a significant positive association between grade retention and victimisation.

Hypothesis 2: the effect on victimisation of being retained in secondary education will be substantially larger than the effect of being retained in primary education.

Hypothesis 3: school retention composition will moderate the association between being retained and victimisation, which leads to a higher likelihood of being victimised in schools with a low retention composition.

Hypothesis 4: country retention composition will moderate the association between being retained and victimisation, which leads to a higher likelihood of being victimised in countries with a low retention composition.

METHODS

Sample

Data were obtained from the PISA2018 dataset, which used a two-stage stratified sampling design (OECD, 2018). In the first stage, systematic Probability Proportional to Size (PPS)-sampling was used to select schools with a probability that corresponded to their size. The second-stage sampling units consisted of students within the sampled schools. Each country had a target cluster size (TCS) of 42 students for countries using computer-based surveys, and 35 for countries using paper-based surveys. Respondents came from a variety of grades (especially in countries with a high retention rate), although they were nearly all 15-year-olds (OECD 2018). Hence, the study is based on a same-age comparison in which the likelihood of victimisation for retainees in one grade is compared to the likelihood for their regularly promoted agemates in higher grades (Ehmke et al. 2010). The final dataset consisted of 159,412 students, across 8,039 schools in 25 countries.

In order to provide a theoretical substantiation for the selection of countries into the cross-national analysis, countries were only integrated into the study when they could be

categorised into the heterogeneity management model of Mons (2007). We followed the categorising procedure that Dupriez and colleagues (2008) have previously applied. To maintain congruence between the classification and the time of data sampling, all data in this study originated from 2018. Ultimately, this led to the selection of 25 OECD member countries in Europe, North America and Oceania (Mons 2007). Norway fits the individualised integration model based on all the aforementioned criteria, but had to be excluded from the analyses because it does not use grade retention at all.

Study design

Given that we were dealing with nested data—students are nested in schools, which are nested in countries — multilevel analysis (Raudenbush and Bryk 2002; Snijders and Bosker 1999) was most appropriate. We first estimated unconditional models, which enabled us to determine the amount of variance in victimisation at the school level, as a significant between-school variation warrants multilevel analyses. Data were weighted using the W_FSTUWT variable (OECD 2018). This is the final trimmed nonresponse adjusted student weight, which included student-level trimming (OECD 2018). All metric variables were grand-mean centred to ensure model stability.

The first step of the analysis was to assess the amount of variance situated at each level by an unconditional model (Model 1). Secondly, the individual association between grade retention and victimisation was estimated, accounted for all individual control variables (Model 2). We controlled for gender, immigration background, socio-economic status and sense of belonging, while reading scores, math scores and science scores served as a proxy for school performance. Boys (Bernstein and Watson 1997; Smith et al. 2019) and students with a migration background (Messinger et al. 2012) are more likely to be bully-victims, both engaging in and suffering from bullying behaviour. Students with a lower socio-economic

status (Chaux and Castellanos 2015), a lower sense of belonging (Vitoroulis and Georgiades 2017) and lower school performance (Bernstein and Watson 1997; Strøm et al. 2013) are at risk of being victimised, although it is likely that being victimised also leads to a lower sense of belonging and a lower school performance (Bernstein and Watson 1997). Throughout all analyses, the relative effect of being retained in primary education and secondary education was estimated, as this distinction allowed us to test whether the association between being retained and victimisation was mainly situated in the long- or short-term (see also Demanet and Van Houtte 2012).

Next, school retention composition and country retention composition at the secondary education level were included in the analyses, as well as all control variables at the school and country level (Model 3). This allowed us to contextualise the association between grade retention and victimisation. School and country compositions at the primary education level were omitted from the study, as we have no data on which schools were attended during primary education, whereas retention composition at primary education is considerably less visible in secondary education. Moreover, school decision-makers in secondary schools seldomly have agency in primary school, which means that substantial differences between schools in the percentage of students who were retained in primary education is more likely to be caused by a different socio-economic-, migrant- and/or gender school composition.

We controlled for immigrant composition and socio-economic composition at the school level and for GDP per capita at the national level. Earlier studies have found that integrating immigrant school composition provides a more nuanced understanding of bully dynamics as, for instance, non-native students are bullied less in schools with more other non-native students (Agirdag et al. 2011; Vitoroulis and Georgiades 2017). Moreover, Dietrich and Cohen (2021) have found that schools with high bullying rates also tend to be schools with a high migrant composition and a low socioeconomic composition. Hence, both composition

variables were controlled for in order to reassure that unmeasured compositional differences were not responsible for the findings of this study. GDP per capita was controlled for as well, as rich countries possess more financial resources to set up effective bullying intervention programs (Dietrich and Cohen 2021), while they also have more access to different forms of individualised differentiating mechanisms.

Fourthly, the heterogeneity management model typology was added (Model 4). This allowed us to control for systematic national differences with regard to student differentiation besides crude retention rates. The separation model served as reference group category because it combined a high number of retainees with a high degree of differentiation.

Fifthly, cross-level interaction terms were included (Model 5). The first cross-level interaction term tested if school retention composition moderated the association between grade retention and victimisation, while the second cross-level interaction tested the potential moderation effect of national retention composition. Missing data were handled via listwise deletion. Missing data were quite rare with 8,039 of 8,313 schools (96.70% participation rate) and 159,412 of the 216,095 students (73,77% participation rate) included in the analyses.

In the end, standardised coefficients (γ*) were calculated in order to obtain comparable effect sizes. These coefficients were obtained by multiplying the regression coefficient with the standard deviation of the independent variable and dividing the multiplication by the standard deviation of the dependent variable, namely victimisation.

MEASURES

Dependent variable

Victimisation was measured by an index of six items, that all followed upon the question "*During the past 12 months, how often have you had the following experiences in school?*". The listed experiences were (1) "*Other students left me out of things on purpose*"; (2) "*Other*

students made fun of me"; (3) "*I was threatened by other students*"; (4) "*Other students took away or destroyed things that belong to me*"; (5) "*I got hit or pushed around by other students*"; and (6) "*Other students spread nasty rumours about me*" (Lian et al. 2021; OECD 2019). The response options were "*Never or almost never*" (coded as 0), "*A few times a year*" (1), "*A few times a month*" (2) or "*Once a week or more*" (3). High scores on the index indicated that the respondent was regularly being victimised. A principal component analysis with factor loadings ranging from 0.765 to 0.829 showed that all items measured the same latent variable. The OECD (2018) has created a standardised derived IRT index (Weighted Likelihood Estimates (WLE)), with a mean of zero and a standard deviation of one. The highest means (corresponding to more victimisation) were found in New Zealand ($\bar{x}$=0.40); Australia ($\bar{x}$=0.35) and the United Kingdom ($\bar{x}$=0.23), while the lowest means were found in the Netherlands ($\bar{x}$=-0.29), Portugal ($\bar{x}$=-0.25) and Spain ($\bar{x}$=-0.24).

Independent variable

Grade retention was operationalised as a dichotomous variable (with students who have never been retained coded as "0" and students who were retained at least once as "1"). Students were asked whether they have been retained before in primary education (ISCED1) and/or lower secondary education (ISCED2). Both variables were included in the analysis at the individual level. Overall, 12.4% of all students had been retained at least once in their school career, with 6.4% of retainees in ISCED1 and 6.7% of retainees in ISCED2.

Moderating variables

School retention composition was operationalised by aggregating individual responses on grade retention in lower secondary education (ISCED2) to the school level. This way, we obtained the percentage of retained students at each school. School retention composition varied substantially between schools, from 0.0% to 100.0%, with an average percentage of 6.89% (*SD*=11.96).

Similarly, country retention composition was an aggregation of individual responses at the country level on grade retention in lower secondary education (ISCED2). As expected, large differences occurred between countries with regard to the prevalence of grade retention. The country retention composition varied from 0.9% to 32.0% with an average of 6.87% (*SD*=0.07). Retention rates were highest in Luxembourg (32.02%), Belgium (29.06%) and Spain (25.14%), and lowest in Iceland (0.95%), Poland (2.10%) and Greece (2.68%).

Student-level control variables

Gender was coded as '0' for males and '1' for females. Of all respondents, 49.7% were female (*n*=107,340). *Immigrant status* was coded as "0" for native respondents (at least one parent born in the assessed country) and as "1" for migrants of the first (born in a foreign country) or second generation (both parents born in a foreign country). Of all respondents, 83.5% reported being native (*n*=172,573), while 16.3% were migrants of the first or second generation (*n*=34,149).

Students' socioeconomic status (ESCS) was measured by the *Index of Economic, Social and Cultural Status* (WLE), a composite score obtained through principal component analysis (PCA) and based on the indicators of parental education and home possessions, such as the number of books at home (OECD 2018). For students with missing data on one of the three components, the missing variable was imputed by the OECD (2018). Values ranged from -7.60 to 4.04 with a mean of 0.08 (*SD*=0.96).

Plausible Value-scores were selected for *reading skills, science skills* and *math skills* (Ataş and Karadağ 2017). These scores served as a proxy for cognitive abilities. In plausible values testing, a model is tested 10 times with each set of plausible values. Throughout this process, effect sizes did not vary significantly, which is why the first set of plausible values was

used. Average scores were 492.89 (*SD*=100.61) for reading, 494.35 (*SD*=95.54) for science and 496.59 (*SD*=91.50) for math.

Sense of belonging was measured by a scale of six items that included statements such as "*I feel like an outsider at school*" and "*I make friends easily at school*". Item scores were reversely coded when necessary so that higher values corresponded to higher levels of sense of belonging. The derived IRT scale (Weighted Likelihood Estimates (WLE)) was created by the OECD (2018). Sense of belonging was highest in Spain ($\bar{x}$=0.51), Austria ($\bar{x}$=0.41) and Germany ($\bar{x}$=0.29), while it was lowest in the Czech Republic ($\bar{x}$=-0.28), the Slovak Republic ($\bar{x}$=-0.28) and the United States ($\bar{x}$=-0.24).

School-level control variables

Migrant school composition was operationalised as the percentage of first- and second-generation migrants at each school, which varied from 0.0% to 100.0% with a mean of 16.72% (*SD*=20.34). The mean of the individual *socioeconomic status* was taken to calculate schools' *socioeconomic composition*, with values ranging from -5.84 to 2.83 ($\bar{x}$=0; *SD*=1).

Country-level control variables

Countries were categorised into the *heterogeneity management typology* in order to control for systematic differentiation mechanisms besides grade retention (Mons 2007). Austria, Belgium, the Czech Republic, Germany, Hungary, Luxembourg, the Netherlands, the Slovak Republic and Switzerland were categorised into the separation model, because these countries combine early differentiation into tracks, high retention rates and a high percentage of 15-year-old students in (pre)vocational tracks (Dupriez et al. 2008; Janmaat and Mons 2011). Australia, Canada, Ireland, New Zealand, the United Kingdom and the United States fitted into the à la carte integration model because late differentiation is combined with modest rates of grade retention and a low percentage of students in prevocational tracks. France, Greece, Italy,

Portugal and Spain were clustered into the uniform integration model because of their late differentiation (in comparison to the separation model), their high rates of grade retention and their high percentage of students in (pre)vocational tracks. Denmark, Finland, Iceland, Poland and Sweden were part of the individualised integration model because of low retention rates, a low percentage of 15-year-old students in (pre)vocational tracks, and low rates of differentiation between students.

GDP per capita was used as a proxy for countries' socioeconomic development. Data on these variables were obtained from the International Monetary Fund and the World Bank (2018). Countries varied greatly in GDP, ranging from $15,468 (Poland) to $116,654 (Luxembourg). The average GDP per capita was 44,467 (*SD*=19,625) (see Table 2). All countries scored considerably above the world average of $11.385.

RESULTS

The unconditional null model revealed that victimisation varied significantly at all three levels, warranting the use of a multilevel model (see Table 3). Of the total variance in victimisation, 2.7% occurred between countries (σ^2=0.946; τ_0=0.027; p<.001) and 3.3% between schools (σ^2=0.946; τ_0=0.033; p<.001). Throughout all models, there was a clear positive association between being retained both in primary and secondary education, and victimisation. The standardised regression coefficient of being retained in secondary education increased from 0.021 (γ=0.085; *SE*=0.020; p<0.001; Model 4) to 0.037 (γ=0.150; *SE*=0.021; p<0.001; Model 5), while the effect of being retained in primary education (γ=0.113; p<0.001; γ*=0.028; Model 5) remained fairly robust throughout all models. Hence, when controlling for other variables, being retained in both primary and secondary education is associated with more victimisation. In the final model, however, the standardised regression coefficient of being

retained in secondary education was substantially larger than the one of being retained in primary education.

Initially, we also observed a significant direct negative association between victimisation and the country retention rate (γ=-1.190; p<0.01; γ*=-0.079; Model 3), which meant that all students (both retainees and non-retainees alike) were more likely to be bullied in countries with high retention rates. The significance, however, disappeared when heterogeneity management models were integrated (γ=-0.353; p>0.05; γ*=-0.023; Model 4). Therefore, the initially observed association was due to national differentiation mechanisms besides crude retention rates that were initially not accounted for.

Students who are going to school in countries fitting the à la carte integration model are significantly more likely to be bullied at school (γ=0.210; p<0.001; γ*=0.065; Model 5) than students in the separation model. No significant differences with the separation model were observed, however, for students in the individualised integration model (γ=-0.018; p>0.05; γ*=-0.006; Model 5) and the uniform integration model (γ=-0.053; p>0.05; γ*=-0.016; Model 5).

The cross-level interaction between school retention composition and individual retention in secondary education was not significant (γ=-0.022; p>.05; Model 5); which implied that the association between grade retention and victimisation is not impacted by the number of other retainees within school. At the country level, however, a moderation effect did appear, as the cross-level interaction between country retention composition and individual retention in secondary education was significant (γ=-0.493; p<.05; Model 5). This meant that retainees in countries with a low retention composition have a higher likelihood of being victimised.

DISCUSSION

School bullying remains an obstinate problem that is hard to eradicate (Chaux and Castellanos 2015). In order to prevent bullying, potential predictors and causes of victimisation should be studied (Cook et al. 2010). Based on the labeling theory (Becker 1963), being retained is likely to cause a power imbalance between the retainee and other students (Chaux and Castellanos 2015). This way, grade retention could be a predictor of victimisation. As far as we know, four out of the five current studies on this topic have identified grade retention to be associated with more victimisation (Crothers et al. 2010; Lian et al. 2021; Ozada Nazim and Duyan 2020; Zequinão et al. 2020), while Harris and colleagues (2019) did not find a significant association at all. The latter study argues that the relationship has never been contextualised properly and that multilevel analyses are warranted (Harris et al. 2019). Studying potential moderation effects of school and country retention compositions could unravel how the labeling process of being a retainee leads to stronger outcomes in contexts with few other retainees (Demanet and Van Houtte 2016; Van Canegem et al. 2021). Hence, we studied if being retained in primary and/or secondary education led to more victimisation (H1), if the association was larger for students who were retained in secondary education than those who were retained in primary education (H2), and if retainees had a higher likelihood of being victimisation in schools (H3) and countries (H4) with a low retention composition.

Our findings indicated that students who have been retained at least once are victimised more than non-retained students. This turned out to be the case for both students retained in primary and secondary education, with consistently significant, positive associations throughout all models. Therefore, the findings confirmed the first hypothesis (H1): being retained is associated with more victimisation at school. This is consistent with the findings of four out of the five current studies on the topic (Crothers et al. 2010; Lian et al. 2021; Ozada Nazim and Duyan 2020; Zequinão et al. 2020). Moreover, the findings indicate that the stigma

or label that is attached to being retained in primary education still sticks around at the age of 15, as the association remains significant. In other words, our findings suggest that negative non-cognitive outcomes of grade retention crystallise over time. Nonetheless, the effect size of being retained in primary education was substantially smaller, about a third of the total effect, than the effect size of grade retention in secondary education. This is a confirmation of the second hypothesis (H2), which indicates that it is less visible for a bully in secondary education that a potential victim was retained during primary education than in secondary education.

Contrary to expectations, school retention composition did not moderate the association between grade retention and victimisation, leading us to reject the third hypothesis (H3). This is, however, the case at the national level, where we found a significant cross-level interaction effect of country retention composition. Hence, the fourth hypothesis (H4) can be confirmed. This indicates that the labeling process associated with being retained is mainly affected by policy makers at the national level. Peers seem to weigh up the stigma of being retained with the number of other retainees in their country, leading to more victimisation in countries where being retained is a rare experience. In countries where grade retention is a common practice, the high prevalence of retainees softens the negative association between being retained and school victimisation. This strengthens the notion that bullies select their victims based on their isolated position and the amount of stigmatisation that potential victims have to endure at school (Chaux and Castellanos 2015). The power imbalance between retainees and classmates that have never been retained, increases if being retained is a highly exceptional experience. Therefore, grade retention seems to be the most detrimental for victimisation in countries where it is applied the least.

It remains unclear, however, why the national level plays a more important role than the school level. This is unexpected, as the country level is a more distant context than the proximal school context. When applied on the labeling theory (Becker, 1963), this means that the amount

of stigmatisation that is attached to the label of being a retainee is mainly determined by the national discourse and national beliefs on grade retention. Following this line of thought, being retained is a more stigmatising and isolating experience in countries where it is seldomly applied which, in turn, increases the likelihood of being victimised by bullies. Stigmatisation is a social process and it might be that students have already coupled grade retention to a certain amount of stigmatisation, before they begin to attend secondary education, which would render the moderating effect of school retention composition in secondary education insignificant. Therefore, the national discourse on grade retention plays a role in both how being retained is experienced (Van Canegem et al., 2022) and to which degree being retained is labeled by others. Being retained seems to be a less meaningful experience in countries where it is a common practiced, although, overall, retainees have a higher likelihood of being victimised in all schools and countries, regardless of their respective retention rates.

Initially, we also observed a significant direct negative association between country retention composition and victimisation, which means that countries with a low number of retainees are plagued by more victimisation. However, this association disappeared entirely when the heterogeneity management models were accounted for (Dupriez et al. 2008; Mons 2007). Hence, the initially observed association can be attributed to other systematic differentiation mechanisms besides crude retention rates. Students within countries that fit the individualised integration model face significantly more victimisation than students within countries that fit the separation model. There were no significant differences between the other models. Ultimately, these findings show that the arrangement of national educational structures and their differentiation mechanisms have the ability to impact bullying behaviour at school. Drawing from these findings, for instance, it could be that more rigid student differentiation mechanisms, such as tracking, are associated with less bullying behaviour. Further research, however, is necessary.

As far as we know, this is the first study addressing the need to contextualise the association between grade retention and victimisation (Harris et al. 2019). The findings indicate that the national retention composition is more relevant for understanding the association between grade retention and victimisation than the school retention composition, despite the closer proximity and physical visibility of the school context. These findings align with earlier research on the impact of grade retention upon sense of belonging (Van Canegem et al. 2022), which could mean that this is the case for a wider variety of non-cognitive outcomes.

Some limitations should be noted. Crothers and colleagues (2010) and Ozada Nazim Duyan (2021) have unraveled an interesting dynamic, in which grade retention increases the likelihood of being a bully/victim (Demanet and Van Houtte 2012; Olweus 1994) or an aggressive victim (instead of a passive victim) (Bernstein and Watson 1997). Therefore, it is possible that, besides the higher chance of victimisation, retainees are also more likely to engage in bully behaviour themselves (Olweus 1994). Bullies/victims show the least attachment to peers, the school and their parents (Demanet and Van Houtte 2012), which corresponds to previous findings that retainees have a lower sense of belonging (Van Canegem et al. 2022) and fewer friendships (Demanet and Van Houtte 2016). Sadly, PISA2018 does not contain information on (self-reported) bullying behaviour, which is why this study solely focuses on victimisation. In the future, longitudinal research could unravel if being retained precedes both bullying behaviour and victimisation. If being retained precedes bullying behaviour, this would strengthen earlier research findings that grade retention leads to frustration (Jimerson 2001) and deviant behaviour (Demanet and Van Houtte 2013).

The outcome variable is based on self-reported behaviour, which can lead to a social desirability bias (Chung and Monroe 2003). This would especially be true if we would have integrated bullying behaviour into the study, as bullying others is widely regarded as antisocial and undesirable behaviour. A social desirability bias, however, is less of a concern when

studying victimisation (Demanet and Van Houtte 2012). As is the case with other forms of victimisation (such as, for example, domestic violence), victims are often more aware of their precarious situation than authority figures or relatives, as the acts of aggression are often carried out in absence of such figures (Demanet and Van Houtte 2012). Therefore, self-reported victimisation might be the most accurate way to estimate real victimisation levels.

Another limitation is that this study has a cross-sectional design, which limits the ability to interpret our research findings in terms of causality. Therefore, future longitudinal research is highly recommended. Moreover, all selected countries in this cross-national study are wealthier than the global average and situated in either Europe, North America or Oceania. This limits the generalisability of the results, but increases the internal validity as it is more certain that outcomes are due to grade retention or systematic national differences that were accurately accounted for. Norway was the only country within the heterogeneity management model typology of Mons (2007) that had to be omitted, because its educational system does not use grade retention as an interventional mechanism, precluding the comparison of non-cognitive outcomes between retainees and non-retainees. Countries in other parts of the world have fundamentally different educational systems with other forms of grade retention (Brophy 2006). Therefore, in contrast to Lian et al. (2021), we opted not to include these countries in the cross-national analysis. Further research on non-cognitive outcomes of grade retention in other parts of the world is highly recommended.

Grade retention can be operationalised in different ways. Harris and colleagues (2019), for instance, studied if students who were retained repeatedly were more likely to suffer from victimisation than students who were retained only once. They did not find significant differences, although linking the number of retained years to its non-cognitive outcomes remains an interesting venue for retention research. Nonetheless, the crossnational nature of this article led us to operationalise grade retention as a binary variable. The group of students

that has been retained repeatedly throughout lower secondary education (ISCED2) is very small in most countries, especially in countries with a low retention composition, such as Iceland (0.3%), the Netherlands (0.1%) and Ireland (0.03%). Including the number of repeated years into the study would have weakened the cross-national analyses due to the small sample sizes in these countries.

Notwithstanding these limitations, this study adds to the growing amount of research that questions the desirability and effectiveness of maintaining grade retention as a common educational intervention (e.g., Demanet and Van Houtte 2016; Dupriez et al. 2008; Goos et al. 2013; Lamote et al. 2014; Tingle et al. 2012). When controlled for relevant predictors such as socio-economic background, cognitive abilities and gender, retainees are more at risk of becoming the victim of school bullying. Because of its net zero effectiveness in terms of improving cognitive outcomes (Allen et al. 2009; Goos et al. 2021), its higher drop-out rates (Jimerson 2001) and the potentially harmful non-cognitive outcomes, we expect that the debate about grade retention will shift away in the upcoming years from assessing its overall effectiveness and desirability to the question how the overly optimistic attitudes of teachers, school boards and national policy makers can be changed and how these stakeholders can implement the current scientific findings into daily practice (Goos et al. 2021).

Because of its potential harmfulness, we urge policy makers to be cautious with using grade retention as a standard method to differentiate student populations. Victimisation has a lot of negative effects, such as depression, anxiety, eating disorders and self-confidence issues, that persist long into adulthood (Bond et al. 2001; Chaux and Castellanos 2015; Cornell et al. 2013; Farrow and Fox 2011; Gladstone et al. 2006; Hodges and Perry 1999). Therefore, we plea for the implementation of evidence-based alternatives, as the effectiveness of mere social promotion is also questionable (Jimerson and Renshaw 2012; Goos et al. 2021). Students who are at risk of developing academic difficulties should be identified as soon as possible and

receive individualised help beyond the mere academic setting (Goos et al. 2021). Moreover, at-risk students should be provided with targeted remedial interventions, such as tutoring within small groups, summer schools for specific courses and self-regulation interventions that aim to improve their study methods (Goos et al. 2021).

Statements

Data Availability Statement

Data available on request due to privacy/ethical restrictions: the data that support the findings of this study are publicly available on the website of the OECD. Our modifications to the data are available on request from the corresponding author.

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Ethical Guidelines

This study was carried out with utmost respect for the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was explicitly obtained from all participants involved in the study, while participants could retract from the study at any given moment. The PISA dataset was anonymised by providing each case with an anonymous identification number, in order to assure the privacy of the respondents. Data are stored in a safe way and are only accessible upon request. They are only to be used for the purpose of scientific research. Ethics approval was not required for this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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Table 1: descriptive statistics for independent variables: frequencies (%), means (M), standard deviations (SD), and N

	Frequency (%) or mean (SD)	N	Missings
Student level variables			
Retained in primary education (ISCED1)	13,017 (6.4%)	202,248	13,847
Retained in secondary education (ISCED2)	13,524 (6.7%)	201,411	14,684
Sense of belonging	0.05 (1.03)	194,650	21,445
Gender: female students	107,340 (49.7%)	216,093	2
Students with a migration background (1st and 2nd generation)	34,149 (16.5%)	206,722	9,373
Reading score (PV1)	492.88 (100.61)	216,095	0
Math score (PV1)	496.59 (91.50)	216,095	0
Science score (PV1)	494.35 (95.54)	216,095	0
ESCS index	0.08 (0.96)	208,520	7,575
School level variables			
School retention composition (ISCED2)	0.07 (0.12)	214,304	1,791
Migrant school composition	0.17 (0.20)	215,226	869

SES school composition	0.08 (0.52)	215,217	878
Country level variables			
Country retention composition (ISCED2)	0.07 (0.07)	216,095	0
Uniform integration model	66,371 (30.7%)	216,095	0
Individualised integration model	27,731 (12.8%)	216,095	0
A la carte integration model	67,332 (31.2%)	216,095	0
GDP per capita	44,467.81 (19,625.89)	216,095	0

Table 2: List of countries including the number of retained students and type of heterogeneity management model

Country	Number of cases	Number of retained students ISCED1+2 (%)	Mean (SD) being bullied	GDP per capita in US dollars (World bank, 2018)	Heterogeneity management model
Australia	14,273	804 (6.3%)	0.35 (1.13)	57.355	À la carte integration
Austria	6,802	889	-0.03	51.478	Separation

		(13.3%)	(0.97)		
Belgium	8,475	2,351	-0.11	47.583	Separation
		(29.1%)	(0.88)		
Canada	22,653	1,152	0.17	46.313	À la carte
		(5.6%)	(1.06)		integration
Czech Republic	7,019	242	-0.13	23.415	Separation
		(3.5%)	(1.01)		
Denmark	7,657	281	0.03	61.599	Individualised
		(4.0%)	(0.91)		integration
Finland	5,649	176 (3.2%)	-0.03	50.031	Individualised
			(0.96)		integration
France	6,308	1,108	-0.05	41.631	Uniform
		(17.8%)	(1.00)		integration
Germany	5,451	890	-0.01	47.810	Separation
		(19.0%)	(0.93)		
Greece	6,403	170	0.00	20.324	Uniform
		(2.7%)	(1.00)		integration
Hungary	5,132	329	-0.12	16.410	Separation
		(6.4%)	(0.98)		
Iceland	3,296	30	-0.18	72.968	Individualised
		(0.9%)	(0.93)		integration
Ireland	5,577	345	0.14	78.621	À la carte
		(6.2%)	(1.01)		integration
Italy	11,785	1,542	-0.07	34.615	Uniform
		(13.4%)	(1.02)		integration

Luxembourg	5,230	1,655 (32.0%)	-0.05 (0.97)	116.654	Separation
Netherlands	4,765	690 (18.0%)	-0.29 (0.75)	53.045	Separation
New Zealand	6,173	328 (5.4%)	0.40 (1.12)	42.949	À la carte integration
Poland	5,625	117 (2.1%)	0.07 (1.03)	15.468	Individualised integration
Portugal	5,932	1,362 (24.2%)	-0.25 (0.89)	23.562	Uniform integration
Slovak Republic	5,965	297 (5.2%)	0.07 (1.05)	19.406	Separation
Spain	35,943	8,911 (25.1%)	-0.24 (0.88)	30.389	Uniform integration
Sweden	5,504	185 (3.4%)	-0.12 (0.93)	54.589	Individualised integration
Switzerland	5,822	966 (16.9%)	0.00 (1.00)	82.818	Separation
United Kingdom	13,818	358 (2.7%)	0.23 (1.05)	43.043	À la carte integration
United States	4,838	465 (9.9%)	0.15 (1.05)	62.996	À la carte integration
Total	216,095	25,643 (12.4%)	0.00 (1.00)	11.385	

(*global*

average)

Table 3. Determinants of victimisation: the effect of grade retention and retention-composition at the school- and country-level (multilevel analysis)

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	0.010	0.077	0.056	0.084***	0.084***
	(0.033)	(0.034)*	(0.028)*	(0.024)	(0.024)
Student-level*:*					
Retention (ISCED1)		0.118***	0.116***	0.115***	0.113***
		(0.020)	(0.020)	(0.020)	(0.020)
Retention (ISCED2)		0.085***	0.077***	0.077***	0.150***
		(0.017)	(0.013)	(0.013)	(0.030)
Sense of belonging		-0.306***	-0.306***	-0.306***	-0.305***
		(0.026)	(0.026)	(0.026)	(0.026)

Female	-0.161***	-0.160***	-0.160***	-0.160***
	(0.014)	(0.014)	(0.014)	(0.014)
Immigrant	-0.049*	-0.037*	-0.037*	-0.037*
	(0.021)	(0.018)	(0.018)	(0.018)
Socioeconomic status	0.021***	0.025***	0.025***	0.024***
	(0.003)	(0.004)	(0.004)	(0.003)
Reading score	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Math score	-0.000*	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Science score	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
School-level:				
School retention-composition (ISCED2)		0.097	0.097	0.095
		(0.081)	(0.081)	(0.109)
Migrant composition		-0.078*	-0.078*	-0.078*
		(0.033)	(0.033)	(0.033)
Socioeconomic composition		-0.022	-0.022	-0.022
		(0.014)	(0.014)	(0.014)
Country-level:				
Country retention-composition (ICED2)		-1.190**	-0.353	-0.325
		(0.426)	(0.434)	(0.446)
GDP per capita		0.000*	0.000	0.000
		(0.000)	(0.000)	(0.000)
Uniform integration model			-0.054	-0.053
			(0.049)	(0.049)
Individualised integration model			-0.020	-0.018
			(0.059)	(0.059)
A la carte integration model			0.208***	0.210***
			(0.065)	(0.065)

School retention-composition					-0.022
x grade retention (ISCED 2)					(0.142)
Country retention-composition					-0.493*
x grade retention (ISCED 2)					(0.202)
Country-level variance	0.027***	0.020***	0.017***	0.010***	0.010***
	(0.008)	(0.006)	(0.005)	(0.002)	(0.002)
Between-school variance	0.033***	0.017***	0.017***	0.017***	0.017***
	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
Within-school variance	0.946***	0.834***	0.833***	0.833***	0.833***
	(0.042)	(0.035)	(0.035)	(0.035)	(0.035)

Note: Standard errors are presented between brackets, levels of significance: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

Appendix 1: *victimisation*

During the past 12 months, how often have you had the following experiences in school?

	Never or almost never	**A few times a year**	**A few times a month**	**Once a week or more**
Other students left me out of things on purpose.	□	□	□	□
Other students made fun of me.	□	□	□	□
I was threatened by other students.	□	□	□	□

Other students took away or destroyed things that belong to me.	□	□	□	□
I got hit or pushed around by other students.	□	□	□	□
Other students spread nasty rumors about me.	□	□	□	□