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Bullies, victims and bully-victims in South African schools: Examining the risk factors

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School bullying is a complex social phenomenon that negatively impacts the psychosocial well-being of students, as well as the overall culture and climate of schools. Designing appropriate interventions to combat bullying in South African schools requires nuanced information about this phenomenon. This paper examines the extent and nature of bullying in schools located in different and unequal socio-economic contexts. It then examines the risk factors associated with being a victim of bullying. Self-reported data from a nationally representative sample of 12,514 Grade Nine South African students, who participated in the 2015 Trends in International Mathematics and Science Study, was used. Data were subjected to analysis using independent samples *t*-tests and hierarchical generalised linear modelling. The results revealed different patterns of bullying victimisation and perpetration by the socio-economic status (SES) of the school, with students attending schools with a low SES reporting higher levels of bullying. Factors resulting in higher odds of being a victim were students' gender and psychosocial characteristics. Perpetration as a risk factor for victimisation (bully-victims) was found across bullying types. The results suggest that students play different participant roles as bully and victim, and that the two behaviours reinforce one another.

Keywords: bullying; bullying risk factors; bully-victim; school safety; South Africa; TIMSS

Introduction
Bullying is an international phenomenon (United Nations Educational, Scientific and Cultural Organization, 2017), the occurrence of which has become increasingly evident in South African schools (Isdale, Reddy, Juan & Arends, 2017; Zuze, Reddy, Visser, Winnaar & Govender, 2018). This phenomenon has become visible through mainstream media reports and viral social media video clips (Ncontsa & Shumba, 2013), resulting in public concern about the lack of safety in South African schools. Existing safety fears include physical violence, homophobic bullying, sexual harassment and more recently, cyber bullying. These fears are growing, as children may be exposed to unsafe conditions at school from a very young age (Zuze, Reddy, Juan, Hannan, Visser & Winnaar, 2016), which has implications for their immediate and long-term well-being.

The 2015 Trends in International Mathematics and Science Study (TIMSS) found that an alarming 17% of Grade Nine students in South Africa reported being exposed to some form of bullying on an almost weekly basis (Mullis, Martin, Foy & Hooper, 2016). Internationally, the presence of bullying is strongly related to the culture and climate present within a school, with the two factors reinforcing each other (Evans & Smokowski, 2016). Studies have found that a positive culture and climate are associated with less bullying behaviour in schools (Guerra, Williams & Sadek, 2011; Låftman, Östberg & Modin, 2017).

In an endeavour to ensure that students learn in a safe environment, the Department of Basic Education ([DBE], Republic of South Africa, 2015) published the National Safe Schools Framework to assist schools to understand, identify and respond to security threats, and to help schools to monitor progress in combatting bullying.

In order to achieve policy goals, policy makers and implementers need to understand the extent and nature of bullying in South African schools to be able to appropriately direct resources and formulate interventions to reduce incidences of bullying. Due to the varying socio-economic contexts in which schools operate in the country, there is a need to understand the extent and nature of bullying in different school types. It is also important that the risk factors associated with bullying are identified. In addition, specific patterns of bullying that occur between perpetrators and victims ought to be examined. As will be evident from the literature review, there is limited South African research focusing on these areas.

The 2015 TIMSS data provides an opportunity to investigate the phenomenon of bullying amongst Grade Nine students. In order to investigate school bullying in South Africa, this paper will address three key research questions:
1. What is the extent and nature of bullying in South African schools of differing socio-economic status (SES)?
2. What are the risk factors associated with being bullied?
3. What is the relationship between victims and perpetrators of bullying?

Various theoretical frameworks have been used to understand bullying, including differential association theory and general strain theory (Moon, Hwang & McCluskey, 2011), an ecological systems framework (Lee, 2011), social cognitive theory (Swearer, Wang, Berry & Myers, 2014), dominance theory (Evans & Smokowski, 2016)

and a sociocultural perspective (Maunder & Crafter, 2018), among others. While the theories mentioned provide insight at the individual level, organisational culture theory provides a picture of the school system as a whole and how this relates to the phenomenon of bullying. Evans and Smokowski (2016:371) define culture as "shared values, beliefs, rituals, and customs," and highlight that organisations have their own unique cultures that influence how they function and solve problems, ultimately impacting their success. Within a school, the organisational culture is referred to as the school culture or climate (Evans & Smokowski, 2016). This theory provides a useful frame for this paper, as bullying can be a result of, and a determinant of, a school's culture or climate. In order to ensure positive school climates, exploring the phenomenon of bullying is therefore critical.

Literature Review

Bullying refers to negative and intentional actions, which are aimed at causing physical and psychological harm to one or more individuals who have difficulty defending themselves (Gladden, Vivolo-Kantor, Hamburger & Lumpkin, 2014; Olweus, 1993). It is a specific form of aggression, which is repeated, and involves an imbalance of power between the victim and the perpetrator (Menesini & Salmivalli, 2017; Wang, Iannotti & Nansel, 2009). Bullying encompasses a broad range of behaviours, from verbal insults to more aggressive behaviours and hate crimes. These behaviours can be categorised into direct and indirect forms. Physical bullying (causing bodily harm through pushing, hitting and kicking) and verbal bullying (such as name-calling, hurtful teasing and intimidation) are considered to be direct forms of bullying. Relational bullying refers to indirect forms of bullying, such as social exclusion and spreading rumours about others (Menesini & Salmivalli, 2017; Wang et al., 2009).

Cyber bulling has emerged as a new form of relational bullying that occurs through electronic technology such as computers and cell phones, as well as communication tools such as text messages, social media, chat groups, and websites (Wang et al., 2009; Wang, Nansel & Iannotti, 2011). This form of bullying is different in nature, as all other forms of bullying occur in groups where victims are aware of who the perpetrators are, whereas cyber bullying can be anonymous. The prevalence of cyber bullying has increased in recent years with the availability of new technologies (Tustin, Zulu & Basson, 2014).

Participants in bullying commonly take on the role of bystander, victim, bully or bully-victim (Obermann, 2011; Solberg, Olweus & Endresen, 2007). Bullies and victims can easily be grouped into discrete categories identified by whether ac-

tions are committed by an individual (perpetrator) or an individual is the recipient of those actions (victim). The identification of bully-victims rests on the degree of overlap between these two roles. These students occupy a 'dual position,' as they are victims of bullying in some environments and perpetrators of bullying in others (Lereya, Copeland, Zammit & Wolke, 2015; Obermann, 2011; Solberg et al., 2007). This perpetuates a cycle of bullying in the school environment.

There is a small, but growing body of research on adolescent bullying in the South African context. A number of studies on secondary school students (Grades 8 to 12) have been conducted on a local scale. In metropolitan areas, the prevalence of secondary school student bullying has been reported to be as high as 61% in Tshwane (Neser, Ovens, Van der Merwe, Morodi & Ladikos, 2003), 52% in Cape Town (Townsend, Flisher, Chikobvu, Lombard & King, 2008) and 36% in Durban (Liang, Flisher & Lombard, 2007). In rural secondary schools, the prevalence has been reported at 16% in the Eastern Cape (Mlisa, Ward, Flisher & Lombard, 2008) and 12% in Mpumalanga (Taiwo & Goldstein, 2006). In addition to the TIMSS findings, at the national level, the 2012 National School Violence Study in South Africa, found that approximately 13% of students reported bullying and one in five students had experienced cyber bullying in the previous year (Burton & Leoschut, 2013).

Risk factors

Demographic risk factors, such as age, grade and gender, have been shown to be clearly associated with bullying in a number of studies (Atik & Güneri, 2013; Pečjak & Pirc, 2017). Low socio-economic status (SES) is a further risk factor that has been found to be associated with bullying (Tippett & Wolke, 2014; Zuze et al., 2016); however, due to its complexity and the variations in its definition and measurement, findings have been mixed. Other risk factors relate to student perceptions (a sense of belonging and feelings of fair treatment at school) (Meyer-Adams & Conner, 2008).

Studies have found that the prevalence of bullying tends to decrease in higher grades, with fewer students in higher grades reporting bullying (Pečjak & Pirc, 2017). Solberg et al. (2007) found that the prevalence of both victims and bully-victims declined as grades increased. Olweus (1994) and Olweus and Limber (2010) also found that there was a clear trend towards less use of physical bullying in the higher grades. Researchers attribute the decrease in bullying over time to the increased social maturity of adolescents and their improved ability to resolve problems with their peers. However, Borg (1998) posited that bullying only appears to decrease over time, and that it

instead simply shifts to more passive, verbal forms of bullying. Studies focusing on the prevalence of bullying in terms of age have found that increased age increases the likelihood of being a bully (Atik & Güneri, 2013; Solberg et al., 2007), with younger students at greater risk of being victims of bullying (Liang et al., 2007; Olweus, 1994; Pečjak & Pirc, 2017).

Studies have also found a consistent gender gap associated with differences in the prevalence and types of bullying either perpetrated or experienced. Bullying has been found to be more prevalent among boys, as both perpetrators and victims (Pečjak & Pirc, 2017; Silva, Pereira, Mendonça, Nunes & De Oliveira, 2013; Veland, Midthassel & Idsoe, 2009). Olweus (1994) and Silva et al. (2013) have shown that while the majority of boys reported being bullied by boys, a large percentage of girls were also bullied by boys. In terms of cyber bullying, Erdur-Baker (2010) and Wang et al. (2009) found that boys were more likely to be bullies, while girls were more likely to be victims. This gender gap was found for bully-victims as well (Silva et al., 2013; Solberg et al., 2007). A South African study by Liang et al. (2007) reported the same findings, with boys being at greater risk of both perpetration and victim-isation. The results of the 2011 TIMSS showed that there is a higher frequency of bullying among Grade Nine boys than girls who attend schools with similar characteristics (Zuze et al., 2016).

Studies investigating direct and indirect forms of bullying have consistently found that girls are more involved in indirect bullying, while boys are more involved in direct bullying (Boyes, Bowes, Cluver, Ward & Badcock, 2014; Wang et al., 2009). Craig, Harel-Fisch, Fogel-Grindvald, Dos-taler, Hetland, Simons-Morton, Molcho, De Mato, Overpeck, Due, Pickett, The HBSC Violence and Injuries Prevention Focus Group and The HBSC Bullying Writing Group (2009) and Olweus (1994) noted that boys were more likely to be subjected to direct physical aggression and bullying, while girls were more exposed to other more subtle forms of bullying.

In explaining the higher frequency of bullying among boys, a common explanation relates to different patterns of socialisation experienced by each gender. Pečjak and Pirc (2017) have suggested that parents in the home environment, and the broader social environment, provide differing guidance to boys and girls in terms of social behaviour and expressing distress. Boys are en-couraged to express "independent and active ways of making themselves recognized [*sic*]" (Pečjak & Pirc, 2017:29), and they are more often encouraged to express power and hide their distress. On the other hand, girls are often encouraged to show dependence and passivity, and express their emo-tions of distress.

The literature suggests that there is a link between SES and bullying; however, due to the complex nature of the concept, findings have been inconsistent (Tippett & Wolke, 2014). In a longitudinal study, Sourander, Helstelä, Helenius and Piha (2000) found that there was no association between SES and bullying or victimisation from childhood through to adolescence. However, in other international studies, the risk of being a bully, victim or bully-victim was found to be higher among adolescents whose parents were from lower SES positions, as measured by parental educational achievement or economic affluence (Nordhagen, Nielsen, Stigum & Köhler, 2005; Tippett & Wolke, 2014). Although victims of physical and relational bullying often tend to come from low SES families, high SES was found to be associated with both cyber bullying and victimisation (Wang et al., 2009). Even though students reported less bullying as they got older, the bullying experienced by students from disadvantaged homes remained relatively consistent across age levels (Veland et al., 2009).

Research findings point to the increased prevalence of bullying in schools at which student SES differences are larger (Due, Merlo, Harel-Fisch, Damsgaard, Holstein, Hetland, Currie, Gabhainn, Gaspar de Matos & Lynch, 2009). Due et al. (2009) found that there was no association between the prevalence of bullying and the economic level of the school attended; however, adolescents attending schools where there was greater economic inequality among students were at greater risk of being victims of bullying (Due et al., 2009). Zuze et al. (2016) found that, in South Africa, SES had an impact on bullying, as the chances of being bullied on a regular basis were higher for students from poor families. Students from a lower SES were more likely to be bullied than students from a higher SES, irrespective of the SES of the school. Therefore, it appears that students who are most vulnerable are those who have less private resources in relation to their peers.

Student perceptions (or psychosocial factors) of the schooling environment have also been linked to the prevalence of bullying (Meyer-Adams & Conner, 2008). These factors include the aspiration to do well at school, being happy at school and feeling as though you belong at school. Natvig, Albrektsen and Qvarnstrøm (2001) found that students involved in school bullying were significantly more likely to reflect negative per-ceptions of the school. This relationship was strongest for bully-victims, followed by bullies, then by victims. The inverse of school belonging - alienation - was associated with perpetrators; but school distress (anxiety in the school environment) was not related. Bullies were twice as likely to feel alienated from school as students not involved in bullying (Natvig et al., 2001). Konishi, Miyazaki,

Hymel and Waterhouse (2017) found that a greater sense of school belonging among secondary school students was associated with lower rates of reported involvement in bullying, as either a perpetrator or a victim.

The current body of research focuses on a variety of risk factors that are associated with bullying. There is, however, limited extant research on victimisation as a risk factor for becoming a bully, which relates to the phenomenon of bully-victims. Through the methodology employed, this study attempts to address this gap.

Findings drawn from studies on bullying must be interpreted with caution, as the research designs employed (including cross-sectional surveys, retrospective and longitudinal surveys, as well as case studies) have limitations with regard to the reliance on self-reported data and the correlational nature of these designs (Protogerou & Flisher, 2012). Bias involved in self-reporting, such as providing socially acceptable responses or being unable to accurately recall events, may result in over-reporting or under-reporting of bullying.

Methodology

The data for this paper were taken from the 2015 TIMSS study conducted by the International Association for the Evaluation of Educational Achievement (IEA) in South Africa. From the population of schools that offered Grade Nine, a stratified random sample of 292 schools participated in the study. The sample was stratified by province and school type (independent or public), as well as the language of instruction. Subsequently, for each sampled school, a random selection process of intact classes was applied. A total of 12,514 South African Grade Nine students participated in the 2015 TIMSS study (Zuze et al., 2018). This sampling strategy ensures that the findings are generalisable to the population of Grade Nine students in the country, providing a unique dataset.

Students were required to complete a background questionnaire after the administration of a mathematics and science achievement test. The student questionnaire included a set of nine items that elicited the frequency of being a victim or a perpetrator of bullying. The items referred to: being made fun of, exclusion (being left out of games), spreading lies, theft, physical injury, coercion, sharing embarrassing information, posting information online and threatening behaviour. While these items could have been collapsed into an index of bullying, they were analysed individually, in order to understand the differences between the various dimensions of bullying. Psychosocial factors were examined by asking students to rate their feelings of safety and fair treatment from teachers when at school on a Likert scale. The TIMSS 2015 dataset is the only generalisable South African dataset that includes items on being a perpetrator and victim of bullying in secondary schools.

The TIMSS data were analysed using STATA version 13 for Windows. Descriptive statistics of student characteristics in each school type, and levels of victimisation and perpetration were derived. The DBE's classification of schools as fee-paying and no-fee-paying was adopted. The classification is based on the SES of the community in which a school is located (Department of Education, 1998). For this paper, schools were classified as either no-fee schools (Quintile 1 to 3 schools) or fee-paying schools (Quintile 4 and 5 public schools and independent schools). Fee-paying schools are typically better resourced than no-fee schools, which rely exclusively on state funding. These categories provide an indication of school SES. We have therefore categorised fee-paying schools as "High SES" and no-fee schools as "Low SES." Independent samples t-tests were conducted to determine whether differences in bullying between High and Low SES schools were statistically significant.

A summary scale of household SES was also created and included in the analysis. This variable was derived based on the presence of 16 assets in students' homes. The students were asked to indicate whether their household had the following: a fridge, a television, their own room, their own computer, a shared computer, a Digital Versatile Disk (DVD) player, an internet connection, a landline telephone, a motor car, water flush toilets, running tap water, electricity, a dictionary, a gaming system, their own cell phone and a study desk. This variable was continuous and was standardised to a mean of 0 and a standard deviation of 1.

Hierarchical generalised linear models (HGLMS) or generalised linear mixed models, were then used to analyse the data for this study. This approach is suitable for multilevel data with binary outcomes (Raudenbush & Bryk, 2002). The dependent variables were whether or not students were bullied on a monthly basis. We developed a two-level model. At the student level (level-1), we hypothesised that lower levels of being a victim of bullying would be associated with being older, being female, feeling safe and fairly treated at school, being from a higher SES household, and not being a perpetrator of bullying. At Level-2, we predicted that attending a no-fee school would increase the chances of being a victim of bullying and widen the gender gap in bullying. The results shown below are presented as odds ratios. Odds ratios indicate the change in odds that result from a unit change in the explanatory variable. Odds ratios greater than one imply that as the predictor increases that the odds of being bullied also increase. Odds ratios less than one suggest that as

the predictor increases, the odds of being bullied decline.

Findings
Table 1 shows that, without exception, students in no-fee schools were bullied more frequently, on average, than students in fee-paying schools. The two most common types of bullying behaviour, that students reported, in both school types, were theft and being made fun of - both of which are direct forms of bullying (Table 1). The least common form of victimisation reported by students was having information about themselves posted online (cyber bullying). Students in no-fee schools were more likely to be victims of bullying than students attending fee-paying schools across all types of bullying. The link between school SES and being a victim of bullying is evident as all the differences between no-fee and fee-paying schools were statistically significant at the 99% level.

Table 1 Summary of victimisation on at least a monthly basis

Type of bullying	No-Fee N = 7,944		Fee-paying N = 4,570		
	N*	Ave	N*	Ave	t-value
Made fun of	3,622	47%	1,762	38%	7.02**
Left out of games	2,507	34%	919	21%	10.02**
Spread lies about me	2,492	33%	1,257	27%	7.41**
Stole something from me	4,092	53%	2,025	42%	8.21**
Hurt by others	1,711	22%	687	14%	8.72**
Forced to do something	1,585	21%	494	11%	10.80**
Shared embarrassing information	1,991	27%	756	17%	8.32**
Posted information about me online	1,103	15%	296	6%	12.16**
Threatened me	1,819	25%	533	11%	11.85**

Note. *Unweighted sample size. **$p < 0.01$. Missing data excluded. Authors' own calculations from the TIMSS 2015 Student background and Achievement datasets.

In Table 2, a comparison of perpetration of bullying is shown across schooling environments. The two most common types of perpetration in both school types were: making fun of others - a direct form of bullying; and social exclusion (leaving others out of games) - a relational or indirect form of bullying. Across both school types, the least frequent type of perpetration was posting information about others online. A similar link between school SES and being a perpetrator was also observed for the perpetrator indicators. Across the various bullying items, a higher percentage of students in no-fee schools reported being perpetrators of bullying than students in fee-paying schools. Again, all the differences between no-fee and fee-paying schools were statistically significant at the 99% level.

Table 2 Summary of perpetration of bullying on at least a monthly basis

Type of bullying	No-Fee N = 7,944		Fee-paying N = 4,570		
	N*	Ave	N*	Ave	t-value
Made fun of others	2,937	40%	1,443	32%	6.79**
Left others out of games	1,938	27%	660	15%	10.36**
Spread lies about others	1,262	17%	390	8%	10.12**
Stole something from others	1,560	21%	591	13%	8.19**
Hurt others	1,259	17%	537	11%	8.01**
Forced others to do something	1,207	17%	294	7%	10.80**
Shared embarrassing information	1,275	18%	349	8%	11.22**
Posted information about others online	944	14%	178	3%	15.66**
Threatened others	1,269	18%	397	9%	10.24**

Note. *Unweighted sample size. **$p < 0.01$. Missing data excluded. Authors' own calculations from the TIMSS 2015 Student background and Achievement datasets.

The greatest difference by school type was found for leaving others out of games, where 12% more students admitted to this type of bullying in no-fee schools than in fee-paying schools. The second biggest difference was observed for "posted information about others online," with 11% more students in no-fee schools reporting this behaviour than those in fee-paying schools. The next biggest differences were in the items "forced others to do something" and "shared embarrassing informa-tion," which were reported by 10% more students in no-fee schools than were reported by students in fee-paying schools. The smallest difference observed between no-fee and fee-paying schools was in terms of students reporting hurting others. As in the victimisation items, the largest differences by school type were for relational and verbal forms of bullying.

Table 3 presents the results of an analysis of student characteristics related to victimisation in

terms of specific forms of bullying. For all forms of bullying, being a perpetrator significantly increased the odds of being a victim of bullying. The odds were equally high for being made fun of (verbal bullying), being hurt (physical bullying), and being left out of games (relational bullying). The highest odds were found for having information posted online (cyber bullying), students being forced to do things that they did not want to do, and students being threatened. With all of the other variables in the model accounted for, the odds of students having information about themselves posted online increased by a factor of 13 if those students also posted information online about others. Similarly, the odds of being forced to do things were nearly eight times higher if students were also involved in forcing others to do things. The odds of being threatened at least once a month were seven times higher if students threatened others with a similar frequency. Interestingly, older students in the same grade (generally those who have repeated grades) were more likely to be victims of bullying than students who were of the appropriate grade age. The exception was theft, where increased age lowered the odds of being a victim of theft.

Girls were consistently less likely to be victims of all forms of bullying. The gender gap favouring girls was particularly wide when it came to being made fun of. No significant gender gap was found for the indirect forms of bullying such as spreading lies, sharing embarrassing information or cyber bullying.

Students' perceptions (psychosocial factors) of the school environment were found to be associated with the frequency with which they experienced bullying. Students who reported feeling secure at school had lower odds of being bullied, while students who felt exposed to unfair treatment by their teachers were significantly more likely to be bullied. Again, the trends were very similar across the range of definitions of bullying.

Students of higher SES exhibited lower odds of some, but not all, forms of bullying. Specifically, it significantly lowered the odds of students being made fun of, being left out of games, being a victim of theft and having embarrassing information shared about them. There was no significant relationship between SES and students being the victim of lies being spread about them, being hurt, having information about them posted online, being forced into activities or being threatened. It was surprising that the relationship between student SES and bullying was not stronger and more consistent, given what is known about bullying in high-poverty schools. To test this relationship in a different way, the school level (Level 2 of the multilevel model) considered the odds of being bullied based on the type of school attended (fee or no-fee). Due to established gender differences in bullying behaviour (from Model 1), we also examined whether the type of school widened or narrowed gender differences in bullying.

Table 4 presents the results of the school–level model. Attending a no-fee school significantly increased the odds of being bullied, even with all the student characteristics being taken into account. The odds of being forced into activities, being threatened and having information posted online were particularly high. In terms of the gender gap, attending a no-fee school narrowed the gender gap associated with several types of bullying. These were: being made fun of; being a victim of theft; being hit or hurt; or being threatened. Put differently, the difference in the frequency with which boys and girls experienced these forms of bullying were smaller in no-fee schools. The exception was the widening of the gender gap associated with the use of force in no-fee school environments. Thus, the difference in frequency with which boys and girls became victims of coercion was wider in no-fee schools.

Discussion and Conclusion
In this paper, we set out to determine the extent and nature of bullying amongst Grade Nine South African students and to identify risks factors for bullying, which will enable the strengthening of anti-bullying programmes and interventions. We acknowledge the limitations to this study in using cross-sectional, self-reported survey data, which limited our ability to make causal conclusions. The data used in the study were collected in 2015, and thus the findings reflect the state of bullying at that time. Taking these limitations into account, this paper extends the previous literature in at least four important ways.

First, we used a large-scale nationally representative sample of Grade Nine students in South Africa. Our findings therefore extend the findings from other, smaller South African studies such as Boyes et al. (2014), Liang et al. (2007) and Townsend et al. (2008). The nature of the data allowed for generalisable findings across the country, on the relationship between bullying and gender, student SES, and psychosocial factors.

This study found that girls were less likely than boys to be victims of bullying. This was found across the various forms of bullying assessed, including relational bullying. This differs from international literature, given that where bullying is prevalent among girls, it has been reported to take the form of relational or verbal bullying (Olweus, 1994; Wang et al., 2009). Due to the higher prevalence of bullying among boys, interventions must be sensitive to the unique needs of adolescent boys as a specific group within schools.

Table 3 Odds of being bullied: Results from students and supporting inputs

Student inputs	Made fun of	Left out	Spread lies	Stole	Hit or hurt	Embarrassing information	Posted online	Forced	Threatened
Bullying characteristic									
Intercept	0.43***	0.20***	0.31***	0.54***	0.14***	0.16***	0.04***	0.11***	0.11***
Perpetrator	5.53***	5.68***	4.62***	3.46***	5.61***	6.88***	13.57***	7.86***	7.12***
Age	1.01	1.15***	1.02	0.91***	1.05**	1.08***	1.25***	1.12***	1.08***
Gender (female)	0.61***	0.84*	1.08	1.14	0.72**	0.98	1.21	0.80**	0.77**
Sense of safety	0.94	1.02	0.79***	0.86***	0.83***	0.85***	0.89*	0.87**	0.82***
Unfair treatment	1.03	1.03	1.22***	1.02	1.27***	1.26***	1.30***	1.20**	1.31***
Socioeconomic status	0.94**	0.94**	0.96	0.93***	0.96	0.95**	1.02	0.99	0.96

Note. $*p < 0.1, **p < 0.05, ***p < 0.01$. Authors' own calculations from the TIMSS 2015 Student background and Achievement datasets. Missing data excluded.

Table 4 Odds of being bullied: Results from students and supporting inputs

School inputs	Made fun of	Left out	Spread lies	Stole	Hit or hurt	Embarrassing information	Forced	Posted online	Threatened
Bullying characteristic									
Intercept									
No-fee	1.10	1.46***	1.20**	1.41**	1.34**	1.42***	1.65***	2.15***	1.85***
Gender bullying gap									
No-fee	1.38**	1.05	0.92	1.25*	1.52***	1.01	0.99	0.63**	1.41***

Note. $*p < 0.1, **p < 0.05, ***p < 0.01$. Authors' own calculations from the TIMSS 2015 Student background and Achievement datasets. Missing data excluded.

The relationship between student SES and bullying, while evident, is not as robust as we anticipated. This seems to suggest how pervasive bullying is in the South African education system. Further research that uses additional wealth indicators, aside from the asset variables reported in TIMSS, would help in clarifying the relationship between this construct and bullying. These indicators may include: receipt of state grants, levels of parental education and household income.

An important finding in this paper is that the school environment, or at least the student perceptions of the school environment, was associated with bullying behaviour. This is consistent with the findings of Natvig et al. (2001). As stated earlier, in view of the cross-sectional design of our study, it is difficult to draw conclusions regarding causal relationships; however, the strength of the relationship suggests that these non-cognitive factors must be considered either in the identification of students at risk of becoming perpetrators or as a component of anti-bullying strategies that rehabilitate perpetrators.

The second way in which this article adds to the international body of knowledge related to bullying, is by comparing the extent of various forms of bullying in differently resourced environments. The inclusion of no-fee/fee-paying schools as a variable is particularly important in a developing country context such as South Africa, where resource inequity in society and the education system persists. The findings pointed to a clear distinction between the average levels of victimisation and perpetration between the schooling types. Students in no-fee schools were more likely to report experiencing bullying as victims - across the types of bullying - than were students of higher SES status. This is in line with the findings of Nordhagen et al. (2005) and Tippett and Wolke (2014). Such findings suggest that differentiated strategies and interventions may be required to combat bullying in these contexts. The differences in bullying perpetration and victimisation between the school types provide an indication of the school culture or climate present in these schools, which relates to the organisational culture theory. In order to address bullying, particularly in no-fee schools, it may be necessary to implement strategies that focus on promoting a positive school experience for students.

Third, we examined the prevalence rates and risk factors for three different forms of bullying: physical, verbal and relational (including cyber bullying). Our results suggest the distinct nature of the three forms within different school types.

Fourth, we examined the co-occurrence of perpetration and victimisation in this population. Whereas other studies (Solberg et al., 2007) have determined the prevalence of bully-victims by the degree of overlap of bullying and victimisation, to our knowledge, this is the first study that uses the role of perpetrator as a risk factor in being a victim, using a nationally representative sample from South Africa. The findings indicate that it is important to identify bully-victims as a distinct group, in order to design appropriate interventions.

Interventions to reduce bullying need to consider the culture and climate that exist within a school (organisational culture theory). Their success will depend on the extent to which all stakeholders, including students, teachers and other school staff, as well as parents, and the wider community are committed to reducing bullying (Evans & Smokowski, 2016).

The results of this study provide evidence that bullying and victimisation should not be considered strictly as opposing behaviours. This methodology may be useful for international scholars examining this phenomenon.

In an endeavour to promote safe learning environments in South African schools, the issues raised in the paper should be taken into account by policymakers, as well as teachers and principals. Failure to do so may result in a perpetuation of cycles of bullying in the education system.

Note

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