The impact of bullying on students' learning in Latin America: A matching approach for 15 countries

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ABSTRACT

We examine the impact of bullying on learning and non-cognitive outcomes for sixth grade students in 15 Latin America countries using data from the Third Regional Comparative and Explanatory Study (TERCE) learning survey. We apply OLS and propensity score matching to attenuate the impact of confounding factors. Matching results show that students being bullied achieve between 9.6 and 18.4 points less in math than their non-bullied peers whilst in reading between 5.8 and 19.4 lower scores, a 0.07-0.22 reduction in the standard deviation of test scores. Thus, substantial learning gains could be accomplished by anti-bullying policies in the region.

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1. Introduction

During recent years, bullying at school has become widely recognized as a worldwide problem. Sadly it occurs in places where children should be the most protected, that is, in their homes, foster institutions and schools (UN, 2006). Bullying is a unique form of aggressive behaviour, based on power imbalance (Due et al., 2005; Peets and Kikas, 2006). Bullying is generally defined as negative intentional actions including physical violence, verbal abuse or intent to cause psychological harm through humiliation or exclusion (Olweus, 1993; Rigby, 1996). Global prevalence of school bullying is large. Elgar et al. (2015) using two major international surveys measuring violence in adolescents, the Health Behaviour in School-aged Children (HBSC) and Global School-based Health Survey (GSHS), estimate that 30% of adolescents report being the target of bullying across five regions covering 72 countries. The phenomenon of school violence in Latin America is more severe (Fleming and Jacobsen, 2010). For instance, Román and Murillo (2011) based on the 2006 SERCE learning survey, find an average prevalence rate of bullying incidents 51% in Latin America, though with substantial differential rates across countries. Worryingly, school violence in the region is becoming more systematic and accepted as the norm (Plan International and UNICEF, 2015).

The negative effects of bullying on student's learning is well established in the literature (e.g., Nakamoto and Schwartz, 2009; Lacey and Cornell, 2013). Being bullied is known to significantly lower achievement and tends to increase with the severity of the bullying, but importantly has other long-term consequences (see Eriksen et al., 2014). Yet there has been little specific research in less developed countries (Dunne et al., 2013) and, as far as we are aware, there is also a lack of comparable and robust evidence from Latin America. A notable exception is the multilevel study of Román and Murillo (2011), though their study does not account for selection bias generated by confounding factors (e.g., weak family support, and unfavourable neighbourhood and school characteristics which could lead to both lowering students' achievement as well as larger bullying prevalence). Given the importance of improving the quality of learning in schools as an important part of the post-2015 development agenda, this is now a more pressing issue for less developed regions. Thus, new evidence of one of its barriers is vital to guide school violence policies in Latin America, which in turn could counterbalance the persistent and large socio-economic gradients of learning in that region (Delprato et al., 2015; Duarte et al., 2010).

Hence, in this paper, we provide robust new evidence for the associations of bullying with math and reading scores for sixth grade students in 15 Latin American countries using the Third Regional Comparative and Explanatory Study (TERCE) learning survey of 2013. We present estimates for total bullying as well as by

bullying types –i.e., physical and psychological. Because non-cognitive skills are increasingly considered to be as central as cognitive skills in explaining academic and employment outcomes (Krishnan and Krutikova, 2013), we also extend the literature by estimating the effect of bullying on non-cognitive outcomes (i.e., sense of belonging at school, home study and socialising). To obtain robust estimates we rely on both parametric (OLS) and non-parametric techniques (matching approaches) which minimise the bias due to the correlation of the treatment (being bullied) and observed covariates. We employ propensity score matching to estimate the association that being bullied has on students' outcomes –the average effect of treatment on the treated (ATT). Through matching we are able to find groups of non-treated (non-bullied) students who are similar to treated (bullied) students, so any difference in outcomes can be attributed to the treatment (being bullied).

Furthermore, to investigate the problem of reverse causality (that is, a student can be a poor achiever due to bullying, or by the event of being a low performer he/she is more likely to be bullied) and to inspect if the effect of bullying varies across the learning distribution, we estimate quantile treatment effects for cognitive outcomes. This allows us to assess in which countries focalised programs for different groups of students according to their performance are needed to lessen the bullying-learning relationship. Also, with a policy perspective in mind, mostly missing for the region, we carry out a matched subsample analysis to shed light on policies and their related targeting to cancel out or to minimise the bullying effects on learning among students with the same background. That is, once we have identified a group of non-bullied (non-treated) students who are similar to the bullied (treated) students in all relevant characteristics through matching, we proceed to explain the 'bullying-gap' in outcomes for these matched subsamples using policy variables that may play a role in narrowing the learning gap among bullied and non-bullied students. As a robustness analysis, we also examine whether our main findings are robust to the presence of unobservables.

The paper is organised as follows. Section 1.1 provides a brief review of the literature. Section 2 describes the data and Section 3 outlines the empirical methodology. Section 4 contains the results. We present the main findings and policy implications in Section 5.

1.1. Literature review

Bullying at school is not an isolated social behaviour and, because it occurs in relatively stable groups and involves the participation of others in regular capacities or a 'continuum of behaviours' (Askew, 1999), it is an important determinant in the process of educational production, affecting the motivation, concentration and self-confidence of bullied students (Cassidy, 2009). Bullying also has harmful effects in the health and emotional wellbeing of students (Craig, 1998; Juvonen et al., 2003; Kowalski and Limber, 2013), as well as detrimental effects in adolescents attainment of cognitive (Ammermueller, 2012; Perše et al., 2011; Ponzo, 2013) and non-cognitive skills (Kosciw et al., 2013; Hazel, 2010). For instance, Nakamoto and Schwartz (2009), in a *meta*-analysis of 33 studies, find a significant negative association between peer victimization and grade attainment and student achievement scores. Likewise, Ammermueller (2012) in a study for 11 European countries, finds that being bullied has a significant negative impact on contemporary and later student performance. In an analysis of 2011 TIMSS data from 48 developed countries of grade 4 students, Mullis et al. (2012) find that those who reported being bullied at school on a weekly basis scored 32 points less in mathematics. Brown and Taylor (2008) find that school bullying in the UK has similar adverse effects on educational attainment at age 16 than class size effects.

Findings from these studies (and also the current paper) somewhat present limitations from an econometric perspective since subjective questions used to measure bullying is likely to suffer from measurement error. Our main concern is social desirability (Bertrand and Mullainathan, 2001), where respondents do not want to appear victimized (i.e., bullied) or to acknowledge to interviewers that they are being subjected to stigmatizing peer behaviour.

Bullying has also a direct relationship with non-cognitive outcomes or skills – i.e., those which are less related to raw cognitive processing (Heckman and Kautz, 2014; Kautz et al., 2014). Non-cognitive skills comprise personal traits, attitudes and motivations. Three important non-cognitive skills are: perseverance (to accomplish long-term goals in the face of setbacks), self-control (self-regulation, self-discipline and willpower) and social skills (establish compatible and effective relations with others) (Gutman and Schoon, 2013).[1] Because non-cognitive skills are socially determined, students' bullying –a type of social school behaviour– is likely to affect these skills and by doing so students' academic achievement as well. For instance, students who are victims of bullying were reported to have more difficulty making or keeping friends and to be less likely to have social support (Wolke and Lereya, 2015), and these social skills have a great impact on individual's academic success (Borghans et al., 2008). Some studies argues that perseverance, too, can predict test scores and high school graduation better than measures of intelligence (Duckworth and Seligman, 2005; Duckworth et al., 2007). Non-cognitive skills, very much malleable by school bullying through diminishing a student's degree of socialisation or motivation, are as important as cognitive outcomes in determining educational attainment (Heckman and Rubinstein, 2001; Gutman and Schoon, 2013).

Crucially, the adverse effects of bullying on educational attainment extends beyond the school years and into adulthood (Brown and Taylor, 2008), making this a particularly important social and economic issue. On the educational level, the effect of bullying has consequences on whether students are willing to make the needed effort to improve their learning at the classroom level. This means, educational policy on bullying, and whether or not it has effect on reducing the incidence of bullying matters for the post-2015 education agenda on improving education quality for all by 2030.

Evidence from Latin America is limited (see, Román and Murillo, 2011; and references therein) and particularly research is scarce on the evaluation of anti-bullying policies (Plan International and UNICEF, 2015). Because the region is characterised by diverse social and cultural settings, the type of bullying and school violence and how to address this are mixed as well. This means successful policies need to permeate broad expressions of school violence which are culturally-driven and differ across Latin American sub-regions. In the case of Central America and Mexico, for example, there are high rates of social exclusion and armed violence which had led to an implicit acceptance of violence and repressive methods. In South America there is more heterogeneity in school violence forms but a lack of national legislation on bullying at lower levels of administration, although there has been some recent progress in some countries (Bolivia, Brazil, Chile, Peru and Paraguay).

The implementation of policies in the region, however, tends to be constrained with much focus on school security (Plan International and UNICEF, 2015), surpassing the bullying and school coexistence dimensions, though there have been recent policy advancements in these areas as well. Examples of successful

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[1] In fact, Gutman and Schoon (2013) describe eight non-cognitive skills: self-perception of ability, motivation, perseverance, self-control, metacognitive strategies, social competencies, resilience and coping, as well as creativity.