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Bullying effect on students' performance[☆]

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Abstract

This article seeks to measure the effect of bullying in math scores of students in the 6th grade of public elementary school in the city of Recife, Pernambuco, Brazil from a survey by Joaquim Nabuco Foundation in 2013. The methodology applied is Propensity Score Matching (PSM) in order to compare students who report having suffered bullying with a control group, consisting of students who did not suffer bullying. Specifically, we aim to understand the role of social emotional skills and their potential influence on bullying. The results suggest that bullying has a negative impact on performance in mathematics and that social emotional skills can help students deal with bullying. Several econometric techniques were used to circumvent endogeneity problems. To identify personality traits, we use a factor model that also serves to correct for prediction error bias. The sensitivity analysis indicated potential problems of omitted variables. The results indicate that anti-bullying programs should take into account social emotional skills.

JEL classification: I21; I28; J24

Keywords: Bullying; Propensity Score Matching; Impact evaluation; Personality traits; Mathematics

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1. Introduction

Bullying is a behavioral phenomenon that has attracted the attention of educators and policy makers in many parts of the world in recent years. For Fante (2005), bullying is a situation which is characterized by intentional verbal or physical abuse, made repetitively, by one or more students against one or more peers. The author states that this phenomenon is a form of violence quickly growing in the world. In Brazil, during November 2015 the Federal government established the nationwide initiative called the Systematic Program¹ to Combat Bullying.² This federal law aims to combat bullying throughout society, especially in schools.

Levitt and Dubner (2014) state that trillions of dollars were spent on educational reform projects around the world, usually focusing on some sort of overhaul of the system: better curriculum, smaller classes, more testing and so on. For the authors, the main raw material of the educational system – the students themselves – is often overlooked. For Kibriya et al. (2015) bullying is an important issue that could affect performance in school, which is often overlooked.

There is a consensus among economists that higher levels of education increase economic growth, the income of individuals and the quality of life (Barro, 1991; Hanushek and Kimko 2000; Doppelhofer and Miller, 2004). For Glewwe et al. (2016) a greater number of school enrollment may have little influence on economic growth and personal income if children do not learn effectively while they are in school. Bullying can affect the child's learning and trigger effects on further income throughout life, since the child's school life is compromised.

According to the data resulting from research conducted by Joaquim Nabuco Foundation in 2013 with 4191 students in 6th grade (grade 5) of the public schools of Recife it was shown that 36.41% of students said they fully agree with the fact that they suffered bullying and 40.71% when the question was stated with an “maybe”. A study by Nansel et al. (2001) with a sample of 15,686 American students of the 6th year (the 1st year of high school) showed that about 30% of students reported moderate or frequent involvement in bullying.

Mullis et al. (2012) suggest in a survey from 2011 with more than 300,000 students from 48 developed and developing countries, that more than 50% of the students reported that they experienced bullying in school and 33% of the sample reported having bullied weekly. Note that bullying is a problem present in several countries, be they rich or poor countries (Brown and Taylor, 2008; Ammermueller, 2012; Eriksen et al., 2012; Dunne et al., 2013; Ponzo, 2013).

In this context, the objective of the current study is to investigate whether bullying has an effect on the grades of students in mathematics. Specifically, we seek to understand potential factors that may influence the effect of bullying among students as well as we seek to investigate the effect of social emotional skills and their ability to reduce the negative effect of bullying in school.

For this, data from a survey of 2013 conducted by the Joaquim Nabuco Foundation was used with students of the 6th year of primary education in public schools in Recife. We used a quasi-experimental setting consisting of both OLS estimation and Propensity Score Matching (PSM). This approach reduces the selection bias to find a more similar control group to the treatment group, based on observable characteristics and then compares the effect of bullying on the mathematics performance of students who have experienced bullying (treated) with students who have not experienced bullying (control). Several robustness analyses were performed to ensure the validity of the results.

Beyond this introduction, the publications proceed as follows. The next section presents a brief review of the literature. Section 3 presents the description of the database and some descriptive statistics. Section 4 presents the empirical strategy used in the estimation models. Section 5 presents the results and interpretations. The robustness and sensitivity analyses are presented and discussed in Section 6. Finally, the last section presents the final considerations.

2. Literature review

The literature is quite rich when investigations involve the effects of school, families, teacher characteristics, parental schooling, student gender, cognitive ability in various social dimensions such as Hanushek (1986), Farkas et al. (1990), Card and Krueger (1992), Farkas et al. (1997), Murnane et al. (2000), Kerckhoff et al. (2001), Riani and Rios-Neto

¹ Anti-bullying laws and campaigns have also been implemented in the US, Canada, UK, Germany, Scandinavian countries, Colombia and South Korea.

² For details, see Law No. 13,185, of November 6, 2015.

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