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# The Relationship Between Bullying and Socioeconomic Status: Analysis Using PISA Data

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## 1 Introduction

Bullying in schools is a serious social problem. Particularly in recent years, the development of social networking services (SNS) such as LINE and Twitter has led to a higher incidence of cyberbullying than existed before.<sup>1</sup> As bullying on SNS is more difficult to visualize than that in the real world, the extent of bullying is becoming increasingly unclear.<sup>2</sup>

In the first place, in the era of austerity and poverty immediately after the Second World War, bullying of the survival of the fittest type occurred.<sup>3</sup> However, at that time, school violence had become a social problem, and bullying was hiding in its shadow and only began to emerge in the 1980s when school violence subsided. When it was reported at that time in the media that a student had committed suicide because of bullying, it immediately became a recognized social problem.<sup>4</sup>

Bullying, which has become an educational issue in schools, remains popular around forty years later. In 2007, Ōtsu City's bullying suicide case became national news and revealed the terrible consequences of school bullying. Recently, a junior high school girl in Hachioji, Tokyo, was accused by senior high school students of taking a break for a family trip and, after quitting

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1 Shimoda Yoshiyuki 下田芳幸, "Nihon no Shō-chūgakusei o Taishō toshita Ijime ni kansuru Shinrigakuteki Kenkyū no Dōkō" 日本の小中学生を対象としたいじめに関する心理学的研究の動向, *Toyama Daigaku Ningen Hattatsu Kagaku Kenkyū Jissen Sōgō Center Kiyō Kyōiku Jissen Kenkyū* 富山大学人間発達科学研究実践総合センター紀要教育実践研究, vol. 8, 2014, pp. 23–37.

2 Terai Haruki and Ishimura Ikuo, 寺井治樹・石村郁夫, "Kako no Ijime ni yoru Shinri-teki Gaishō Taiken to Hitei-teki Ninchi no Hen'yō ni kansuru Chōsa" 過去のいじめによる心的外傷体験と否定的認知の変容に関する調査, *Tōkyō Seitoku Daigaku Rinshō Shinrigaku Kenkyū* 東京成徳大学臨床心理学研究, vol. 16, 2016, pp. 181–192.

3 Sugimori Shinkichi 杉森伸吉, "Nihongata' Ijime no Kōzō o Kangaeru" 「日本型」いじめの構造を考える, *nippon.com*, 3 December 2012, <https://www.nippon.com/ja/currents/d00054/> (accessed 9 December 2018).

4 Morita Yohji 森田洋司, *Ijime to wa Nani ka: Kyōshitsu no Mondai, Shakai no Mondai* いじめとは何か—教室の問題, 社会の問題, *Chūō Kōron Shinsha* 中央公論新社, 2010, and Takekawa Ikuo 竹川郁雄, *Ijime to Futōkō no Shakaigaku: Shūdan Jōkyō to Dōistuka Ishiki* いじめと不登校の社会学—集団状況と同一化意識, *Hōritsu Bunkasha* 法律文化社, 1993.

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school in the second semester, committed suicide; her suicide was blamed on the Hachiōji City Board of Education who responded too slowly to the bullying.<sup>5</sup> Recently, at an elementary school in Kōbe City, there were reports of incidents of bullying among teachers, and accusations and protests were sent to the Kōbe City Board of Education.

So far, the background of how bullying has become a social problem has been outlined, but what is the current status? According to the survey about student behavior such as behavioral problems and truancy that was conducted by MEXT (the Ministry of Education, Culture, Sports, Science and Technology) in 2017, the number of cases of bullying has recently been on the increase. Also, 78.4% of elementary schools, 80.6% of junior high schools, and 56.6% of high schools acknowledged bullying in schools in 2017. The total number of bullying cases recognized in the same survey was 414,378, an increase of 91,235 compared to the previous year, representing an unprecedented number of cases. The number of incidences of perceived bullying jumped in the following year's survey due to extensive media coverage.<sup>6</sup> The increase in the number of recognized cases from 2011 to 2012 is a remarkable example of the same phenomenon. However, various measures have been taken against bullying since the 1980s.<sup>7</sup> Why is bullying continuing even though MEXT has distributed leaflets and other materials on bullying, and many books have been published to prevent it?<sup>8</sup>

The reason why bullying cannot be stopped is that the understanding of the concept of bullying and the understanding of what kind of child is being bullied are insufficient. Many studies on the personal attributes of what kinds of children are bullied have been conducted abroad. For example, race, ethnicity, and gender are known to be factors affecting bullying in school.<sup>9</sup> However, few

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5 “Chūni Jisatsu ‘Ijime Atta’ Gakkō ga Shikyōi ni Hōkoku: Hachiōji” 中2自殺「いじめあった」学校が市教委に報告 八王子, *Asahi Shimbun* (Tokyo Morning Edition) 朝日新聞(東京朝刊), 6 November 2018.

6 Zenmei Nobuo 善明宣夫, “Ijime no Shinri to Hattasu” いじめの心理と発達, *Kyōshoku Kyōiku Kenkyū: Kyōshoku Kyōiku Kenkyū Sentā Kiyō* 教職教育研究：教職教育研究センター紀要, vol. 20, 2015, pp. 21–28.

7 Yohji Morita, “Bullying as a Contemporary Behaviour Problem in the Context of Increasing ‘Societal Privatization’ in Japan,” *Prospects*, vol. 26: 311–329, 1996. Yohji Morita, Haruo Soeda, Kumiko Soeda, and Mitsuru Taki, “Japan,” in Peter K. Smith, Yohji Morita, Josine Junger-Tas, Dan Olweus, Richard Catalano, and Phillip Slee eds., *The Nature of School Bullying: A Cross-national Perspective*, Routledge, 1999, pp. 309–323.

8 See, for example, Yohji Morita, *ibid.*

9 Lars Dietrich and Ronald F. Ferguson., “Why Stigmatized Adolescents Bully More: The Role of Self-Esteem and Academic- Status Insecurity,” *International Journal of Adolescence and Youth*, vol. 25, no. 1, 2020. Sycarah Fisher, Kyndra Middleton, Elizabeth Ricks, Celeste Malone, Candyce Briggs, and Jessica Barnes, “Not Just Black and White: Peer Victimization and the Intersectionality of School Diversity and Race,” *Journal of Youth Adolescence*, vol. 44, no. 6, 2015, pp. 1241–1250. Sandra Graham and Jaana Juvonen, “Ethnicity, Peer Harassment, and Adjustment in Middle School: An Exploratory Study,” *Journal of Early*

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studies in Japan have focused on personal attributes. For example, bullying in Japan differs from that in Europe and the United States in that it is common among classmates in the same grade and occurs inside the classroom.<sup>10</sup> In view of these characteristics, it should be considered meaningful to find out what kinds of children are being bullied in Japan.

This paper focuses on the factors that determine bullying. Of particular interest is socioeconomic status. Many studies on the determinants of bullying in Japan have focused on the personalities of individuals. However, seeking the cause of bullying in the victim's personality means that the assaulter is not forced to take responsibility for bullying. As this could be seen to mitigate the absolute evil of bullying, many studies in Japan focused on classroom groups rather than on individual backgrounds.<sup>11</sup> However, given that bullying often arises from jealousy or other similar feelings,<sup>12</sup> it is natural to hypothesize that individual socioeconomic status might affect bullying. Overseas, a meta-analysis examined the relationship between socioeconomic status and bullying and showed that children with lower socioeconomic status are more likely to be bullied.<sup>13</sup> However, there are only a few studies of this type in Japan.<sup>14</sup> One of them points out the relationship between bullying and socioeconomic status from the viewpoint of social stratification and negative experiences in schools using ESSM (Survey of Education, Social Stratification, and Social Mobility in Japan),<sup>15</sup> but although socioeconomic status is used in the model, the relationship may not be linear. For example, if the distribution of children's socioeconomic status

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*Adolescence*, vol. 22, no. 2, 2002, pp. 173–199.

10 Kanetsuna Tomoyuki 金網知征, “Nichi-ei Hikaku Kenkyū kara Mita Nihon no Ijime no Sho-tokuchō: Higaisha e no Hitei-teki Kanjō to Yūjin no Kōzō ni Chūmoku shite” 日英比較研究からみた日本のいじめの諸特徴—被害者への否定的感情と友人集団の構造に注目して, *Emōshon Sutadizu* エモーション・スタディーズ, vol. 1, no. 1, 2015, pp. 17–22.

11 Yohji Morita, op. cit., and Onishi Ayako, Kurokawa Masayuki, and Yoshida Toshikazu 大西彩子・黒川雅幸・吉田俊和, “Jidō Seitō no Kyōshi Ninshiki ga Ijime no Kagai Keikō ni oyobosu Eikyō: Gakkyū no Shūdan Kihan oyobi Ijime ni taisuru Zaiaku-kan ni Chakumoku shite” 児童・生徒の教師認知がいじめの加害傾向に及ぼす影響—学級の集団規範およびいじめに対する罪悪感に着目して, *Kyōiku Shinrigaku Kenkyū* 教育心理学研究, vol. 57, 2009, pp. 324–335.

12 Doi Takeo and Watanabe Shōichi 土居建郎・渡部昇一, *Ijime to Netami: Sengo Minshu Shugi no Otoshigo* いじめと妬み—戦後民主主義の落とし子, PHP Kenkyūjo PHP 研究所, 1995.

13 Neil Tippett and Dieter Wolke, “Socioeconomic Status and Bullying: A Meta-analysis,” *American Journal of Public Health*, vol. 104, no. 6, 2014, pp. 48–59.

14 Nakamura Takayasu 中村高康, “Gakkō ni okeru ‘Ijime’ Taiken to Shakai Kaisō” 学校における「いじめ」体験と社会階層, in Nakamura Takayasu, Hirasawa Kazashi, Aramaki Sōhē, and Nakazawa Akira eds. 中村高康・平沢和司・荒牧章平・中澤渉編, *Kyōiku to Shakai Kaisō: ESSM Chōsa kara Mita Gakureki, Gakkō, Kakusa* 教育と社会階層—ESSM 調査からみた学歴・学校・格差, Tōkyō Daigaku Shuppankai 東京大学出版会, 2018.

15 Ibid.

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depends on the school or region, it is important to determine what kind of school they attend and the socioeconomic status of the school. In other words, the relative position of one's socioeconomic status within a school is considered to be more important than socioeconomic status in comparison to society as a whole, so in this paper, I use data from the Programme for International Student Assessment (PISA) based on these points to examine the relationship between bullying and socioeconomic status. In particular, by considering the difference between the average socioeconomic status in schools and the socioeconomic status of individuals, the relationship between this and bullying can be understood in more detail.

### 2 Data

The data used are the PISA 2015 survey data (sixth cycle) conducted by the Organization for Economic Co-operation and Development (OECD) every three years mainly in OECD member countries. The PISA Survey is a learning achievement survey for fifteen-year-olds that has been jointly and internationally developed and conducted by participating countries since 2000 and consists of three areas: scientific literacy, reading comprehension, and mathematical literacy. Surveys are conducted every three years. In the 2015 survey, the survey was conducted on approximately 540,000 students in 72 countries and regions (35 OECD members and 37 non-members).<sup>16</sup> In Japan, approximately 6,600 students from 198 schools nationwide participated in the survey. The section of the questionnaire on bullying was introduced in the student questionnaire for the first time in the 2015 survey.

Although there are many surveys on bullying both inside and outside Japan, there is no other survey data questioning both students and teachers. Who is asked is an important factor because not only individual characteristics, but also group characteristics influence bullying. So it can be said that PISA, which includes a large amount of information on schools, is suitable for analyzing bullying. Furthermore, scholastic ability is included in the data by the actual score, and scholastic ability can be input into the model as a variable (as an objective, not subjective, index). For these reasons, this paper uses PISA data from 2015.

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<sup>16</sup> Kokuritsu Kyōiku Seisaku Kenkyūjo 国立教育政策研究所, “OECD Seito no Gakushū Tōtatsu-do Chōsa (PISA 2015) no Pointo” OECD 生徒の学習到達度調査(PISA 2015)のポイント, 2016, [https://www.nier.go.jp/kokusai/pisa/pdf/2015/01\\_point.pdf](https://www.nier.go.jp/kokusai/pisa/pdf/2015/01_point.pdf) (accessed 2 February 2020).

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### 3 Results

#### 3.1 Distribution and Correlation of Bullying Experiences

First, I confirmed the distribution of bullying experiences. Participants responded to the following statements: “*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 belonged to me,*” “*I got hit or pushed around by other students,*” and “*Other students spread nasty rumors about me.*” They responded on a 4-point Likert scale ranging from 1 = *Less than a few times a year*; to 4 = *Once a week or more*.

	Less than a few times a year	A few times a year	A few times a month	Once a week or more	Total
Left Out	5419 85.14%	651 10.23%	166 2.61%	129 2.03%	6365 100.00%
Teased	4278 67.21%	1015 15.95%	538 8.45%	534 8.39%	6365 100.00%
Threatened	5962 93.67%	252 3.96%	75 1.18%	76 1.19%	6365 100.00%
Theft or Broken	5494 86.32%	700 11.00%	110 1.73%	61 0.96%	6365 100.00%
Mild Violence	5195 81.62%	611 9.60%	306 4.81%	253 3.97%	6365 100.00%
Nasty Rumors	5036 79.12%	950 14.93%	243 3.82%	136 2.14%	6365 100.00%

**Table 1: Frequency of Bullying at School**

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Table 1 shows that while relatively few students have been threatened, many have been teased. In terms of absolute numbers, there are many types of psychological damage that can be caused by categories such as “Teased” and “Nasty Rumors,” which are consistent with the results.<sup>17</sup> Regarding “Teased,” whether you feel bullied or not depends on your own perception of the interaction. Even if the perpetrator who sends a message thinks it is “only a joke,” the message may not be received in the same spirit in which it has been transmitted.<sup>18</sup> Therefore, the number of incidents may be higher due to subjective opinions. Conversely, “Threatened” is highly criminal, and if threatening occurs, it is more likely that a parent, teacher, police, or other authority figure will be consulted immediately rather than allowing the event to be handled as mere bullying, so the frequency of such incidents may be lower.

Next, Table 2 shows the correlation between bullying damages. In calculating the correlation coefficient, the variables used for bullying were regarded as categorical variables with an order, and Spearman’s correlation coefficient was used. A closer look at the associations of each element shows that each correlation coefficient is in the range of 0.318 to 0.522, and each has a positive value. The correlation shows that those who are susceptible to one type of bullying are also susceptible to other types. Among them, the coefficient with the largest value is the correlation between “Teased” and “Mild Violence,” and the coefficient is 0.522. In other words, “Teased” and “Mild Violence” are likely to occur at the same time. In addition, the coefficients of “Left out” and “Nasty Rumors” and “Teased” and “Nasty Rumors” are relatively high. This result is consistent with a previous study that employed TIMSS (Trends in International Mathematics and Science Study) data.<sup>19</sup>

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17 Ishikawa Yoshiyuki 石川義之, “Ijime Higai no Jittai: Ōsaka-fu Chūgakkō Seito o Taishō ni shita Ishiki Jittai Chōsa kara” いじめ被害の実態—大阪府立中学校 生徒を対象にした意識・実態調査から, *Ōsaka Shōin Joshi Daigaku Ningen Kagaku Kenkyū Kiyō* 大阪樟蔭女子大学人間科学研究紀要, vol. 9, 2010, pp. 155–184.

18 Yumi Endo, “Divisions in Subjective Construction of Teasing Incidents: Role and Social Skill Level in the Teasing Function,” *Japanese Psychological Research*, vol. 49, 2007, pp. 111–120.

19 Sudō Kōsuke 須藤康介, “Ijime to Gakuryoku: TIMSS2011 Chūgakusei Dēta no Keiryō Chōsa kara” いじめと学力—TIMSS2011 中学生データの計量分析から, *Edogawa Gakuen Daigaku Kiyō* 江戸川学園大学紀要, vol. 24, 2014, pp. 121–129.

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	Left out	Teased	Threatened	Theft or Broken	Mild Violence	Nasty Rumors
Left out						
Teased	0.400					
Threatened	0.373	0.342				
Theft or Broken	0.318	0.360	0.383			
Mild Violence	0.329	0.522	0.405	0.490		
Nasty Rumors	0.450	0.412	0.339	0.353	0.375	

**Table 2: Correlation Between the Types of Bullying (n=6365)**

### 3.2 Factors Related to Bullying

So far, the actual situation of bullying incidents can be seen from the data of PISA 2015. From this start, a multivariate analysis on bullying susceptibility based on the structure hidden behind the bullying was performed.

First, factor analysis was performed using the six bullying items asked about in the PISA 2015 survey. Although these six items can be simply added together, there are many types of bullying, and it is known that each type has a different nature.<sup>20</sup> For this reason, it is difficult to simply summarize bullying as a single item. For example, regression analysis was performed for each type of bullying in order to determine the defining factors.<sup>21</sup> Although bullying items are treated differently depending on the research, in this paper, bullying was divided into subgroups by categorical factor analysis, as in a previous study that analyzed the risk factors for bullying in schools.<sup>22</sup> Table 3 shows the hidden structure, the results of factor analysis. For each factor, the first factor was composed of three items, and the items “Left out” and “Nasty Rumors” showed a

<sup>20</sup> Sumida Masaki 住田正樹, “Ijime no Taipu to sono Taiō” いじめのタイプとその対応, *Hōsō Daigaku Kenkyū Nenpō* 放送大学研究年報, vol. 25, 2007, pp. 7–21.

<sup>21</sup> Sudō, op. cit.

<sup>22</sup> Silja Saarento, Aantti Kärnä, Earnest V.E. Hodges, and Christina Salmivalli, “Student-, Classroom-, and School Level Risk Factors for Victimization,” *Journal of School Psychology*, vol. 51, 2013, pp. 421–434.



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particularly high load. Therefore, I called this factor “Mental Bullying.” The second factor consisted of two items, with the item “Mild Violence” indicating a high factor load. Therefore, this factor was named “Physical Bullying.” Since the third factor consisted of only one item, “Theft or Broken,” this factor was named “Stolen or Broken Property.” When used in the multiple regression analysis in the next section, the positive and negative directions were reversed by multiplying the first and third factor scores by  $-1$ . By following this procedure, for all factors, the higher the factor score, the more easily it can be interpreted as “bullying.”

	Mental Bullying	Physical Bullying	Stolen or Broken Property	Commonality
Left out	-0.869	-0.008	-0.016	0.764
Teased	-0.329	0.659	0.107	0.706
Threatened	-0.403	0.274	-0.280	0.734
Theft or Broken	-0.051	0.032	-0.871	0.865
Mild Violence	0.073	0.903	-0.112	0.886
Nasty Rumors	-0.708	0.042	-0.132	0.693

**Table 3: Factor Analysis Regarding Bullying at School (n=6365)**

Next, I examined the relationship between the extracted factors and socioeconomic status. PISA asks parents about the respondents’ parents’ educational background, parents’ occupation, family property, amount of household goods, and the number of books owned by the family. Parents’ education was categorized as “1. Graduate school,” “2. University,” “3. Junior college or College,” “4. General high school,” “5. High school (occupational training course),” or “6. Junior high school.” For occupations, the participant answered the name of occupation. After that, the data from the parent with a higher educational background was adopted as the parents’ education. The property owned by the household asks whether the property in question is possessed by the family by offering one of the two options, “Yes” or “No.” Regarding the number of household

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goods,<sup>23</sup> the question “How many in your home?” was asked for each type: “1. None,” “2. One,” “3. Two,” “4. Three or more.” As for the number of books in the home, “How many books are there in your home? Please select one that applies. Suppose you have about 40 books per meter of a bookshelf. Please do not include magazines, newspapers, textbooks in the total.” the answers were “1. 0–10 books,” “2. 11–25 books,” “3. 26–100 books,” “4. 101–200 books,” “5. 201–500 books,” “6. More than 501 books.” PISA creates a variable called household property by taking into account the answers to these questions.<sup>24</sup> In this paper, I decided to consider socioeconomic status by using the socioeconomic status index prepared by the OECD from these three variables.

Table 4 shows the correlation between socioeconomic status and the extracted factors. As can be seen from Table 4, the correlation between socioeconomic status and all factors is significant, but the individual coefficients are relatively small, and the correlation is fairly weak.

	Mental Bullying	Physical Bullying	Stolen or Broken Property
SES	0.07***	0.08***	0.07***

**Table 4: Correlation Between SES and Factors (n=6365,  $p<0.001$ )**

Finally, multiple regression analysis confirms whether or not bullying is related to socioeconomic status. When performing multiple regression analysis, as a school-level variable, in addition to the socioeconomic status of the individual created earlier, “school average of individual socioeconomic status” and “the absolute value of SES (Individual – School)” were used. The former was created because socioeconomic status may differ from school to school. Regarding the latter, if the average socioeconomic status does indeed differ from school to school, I thought that it would be necessary to consider whether the socioeconomic status of the individual is far from the school’s average, rather than the overall societal average. In the multiple regression analysis, the variables gender, grade, class by skill level, number of students in a Japanese language class, class dummy by proficiency level, parental interest in education, public high school dummy, and

<sup>23</sup> Televisions, cars, rooms with a bath or shower, cell phones with Internet access (e.g. smartphones), computers (desktop computer, portable laptop, or notebook), tablet computers (e.g. iPad, BlackBerry PlayBook), e-book readers (e.g. Kindle, Kobo, Bookeen), musical instruments (e.g. guitar, piano), etc.

<sup>24</sup> Organisation for Economic Co-operation and Development, “Scaling Procedures and Construct Validation of Context Questionnaire Data,” PISA 2015 Technical Report, 2017, pp. 289–344, [https://www.oecd.org/pisa/data/2015-technical-report/PISA2015\\_TechRep\\_Final.pdf](https://www.oecd.org/pisa/data/2015-technical-report/PISA2015_TechRep_Final.pdf) (accessed 2 February 2020).

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city dummy were input to the model as control variables.

Gender is a dummy variable with 1 for males and 0 for females. Regarding “Grades,” PISA measures “scientific literacy,” “reading comprehension,” and “mathematical literacy” as described earlier. In this study, these three scores were summed and used as an index of individual academic achievement. Regarding the school environment, the item from the teacher’s questionnaire was used. Regarding the “Advanced Placement Class,” a dummy variable was created, which was 1 if the class by skill level was implemented, and 0 if the class was not. As for “Class Size,” class values for each category of options were assigned; “1. 15 students or fewer,” “2. 16–20 students,” “3. 21–25 students,” “4. 26–30 students,” “5. 31–35 students,” “6. 36–40 students,” “7. 41–45 students,” “8. 46–50 students,” “9. More than 50 students.”

A parent’s educational involvement is an indicator of how much they are interested in a child’s school life. If parents care about their children, it is possible that they will detect discrepancies in their human relationships at an early stage. In PISA, the questions, “*My parents are interested in my school activities,*” “*My parents support my educational efforts and achievements,*” “*My parents support me when I am facing difficulties at school,*” and “*My parents encourage me to be confident*” were asked using a scale from “1. *Strongly disagree*” to “4. *Strongly agree*.” In this study, these four items were simply added to create a variable called “Parental involvement.” For “Public high school dummy,” 1 was substituted for a public high school and 0 was substituted for a private high school. In addition, “City dummy” was asked about school location.

Table 5 shows the results of the multiple regression analysis. Table 5 shows that the socioeconomic status of individuals had a significant positive effect at the 1% level in all models. This suggests that children of parents with high socioeconomic status are susceptible to both mental and physical bullying. The socioeconomic status average at school also had a significant positive effect. In other words, students are more likely to be bullied in schools where children with high socioeconomic status gather. On the other hand, the difference between an individual’s socioeconomic status and the average socioeconomic status of a school did not produce significant results with regard to levels of bullying. In other words, rather than the position of the socioeconomic status in the school, it can be said that overall socioeconomic status in the society as a whole leads to bullying.

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	Mental Bullying		Physical Bullying		Stolen or Broken Property	
	B	S.E.	B	S.E.	B	S.E.
Intercept	0.92 ***	0.11	0.84 ***	0.12	0.81 ***	0.11
Male (ref. Female)	0.04 *	0.02	0.18 ***	0.02	0.15 ***	0.02
Individual SES	0.06 ***	0.01	0.06 ***	0.01	0.05 ***	0.01
Average SES of School	0.13	0.05	0.15	0.05	0.15	0.05
The Absolute Value of SES (Individual – School)	0.00	0.02	0.01	0.02	0.00	0.02
Grades	0.05 †	0.02	0.07	0.02	0.04	0.02
Parental Involvement	-0.05 ***	0.01	-0.05 ***	0.01	-0.05 ***	0.01
Advanced Placement Class	0.01	0.02	0.00	0.02	0.01	0.02
Class Size	0.00	0.00	0.00	0.00	0.00	0.00
Public school (ref. Private)	-0.06 ***	0.03	-0.06 ***	0.03	-0.06 ***	0.03
City (ref. Town, Village)	0.03	0.03	0.03	0.03	0.03	0.03
<i>Adj. R<sup>2</sup></i>	0.03		0.04		0.03	

\*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ , † $p < 0.1$

**Table 5: Multiple Regression Analysis with Regard to Bullying (n=6365)**

Looking at the other control variables, the male dummy had a significant positive effect in each model. In other words, boys are more likely to be bullied than girls. Parental interest in education also had a significant positive effect on all models. I found that children of parents who are interested in their children's school life and who support them are less likely to be bullied. This suggests that parents may be able to resolve the anxieties and worries of their children if they

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experience any problems with school life. In addition, the public schools variable had a significant negative effect. This shows that children in public schools are less likely to be bullied than those in private schools.

### 4 Conclusion

This paper examined the relationship between bullying and socioeconomic status using PISA data. The analysis reveals that socioeconomic status can be a factor in bullying and that wealthy children with high socioeconomic status are most likely to be bullied. Previous studies have shown that poor children can be bullied for their appearance.<sup>25</sup> However, the results of this paper conclude that children who have high socioeconomic status are being bullied rather than poor children, and that this does not depend on what kind of school they attend. In schools where many children come from disadvantaged socioeconomic backgrounds, such children are certainly more likely to be jealous or envious and bully others. So why are children who have high socioeconomic status likely to be bullied? One hypothesis presents itself in this regard. Even in schools where there are many children with a high socioeconomic status, there are, of course, some children with low socioeconomic status. Such children would feel jealous of all the children around them, but would they be most jealous or dissatisfied with the richest child among the children with high socioeconomic status? Unfortunately, PISA data does not include information on whether the respondents themselves have ever engaged in bullying. For this reason, there is room for further analysis after more data is collected.

In this paper, unlike previous studies, I showed that children with a high socioeconomic status could be bullied, but other issues were also highlighted. The analysis found that the average socioeconomic status differs between schools and, in such cases, it may be appropriate to perform multilevel analysis assuming nested data. In this paper, I calculated the ICC as an index of whether to perform multilevel analysis. However, depending upon how much you value the assumption of nesting, a multilevel analysis may need to be considered in the future. In addition, as shown in the results in this paper, the incidence of bullying differs between young men and young women. Since boys are more susceptible to physical bullying while girls are susceptible to mental bullying, it may be necessary to reflect these points in the model and analyze them separately for boys and girls.

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<sup>25</sup> Tippett and Wolke, *op. cit.*, and Nakamura, *op. cit.*