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Cyberbullying and self-perceptions of students associated with their academic performance

Maham Muzamil
University of Lahore, Pakistan

Gulzar Shah
Jiann-Ping Hsu College of Public Health, Georgia Southern University, USA

ABSTRACT

The aim of this study is to explore the factors influencing students' academic achievements in secondary school level (grades 09 and 10). Those factors include students' self-reported psychological issues (e.g. perception of being bullied through social media) as well as socioeconomic status. Study participants included 610 students at senior secondary level (237 male and 363 female) randomly selected from ten different government schools. The schools were randomly selected from the lists provided by their respective Education District Officer (EDO). The data were collected by researchers with the help of teachers. Participants' were offered as incentives a drawing for a gift certificate. Bivariate statistics and multinomial logistic regression analyses were used for data analysis. Our study shows that traditional as well as cyberbullying may have a significant negative impact on students' academic performance when socioeconomic status is not considered in the model. The effect of cyber as well as traditional bullying is offset by socioeconomic status. The findings from this research study show that socioeconomic status (i.e. household income, parents' education) and low self-efficacy are the factors responsible for students' low performance. Policies and interventions addressing these issues may be instrumental in improving overall student performance at the secondary school level.

Keywords: *social media; cyberbullying; self-perception; socioeconomic status; secondary education; academic achievement*

INTRODUCTION

Thomas Theorem posits that perception, whether real or unfounded, can have real impacts (Merton 1995, p.379). It is imperative to understand students' perception about themselves and impacts on their academic performance in the current student learning environment marked with social media connectivity and cyber-space socialization. Continuous improvement in student learning outcomes is important because high-quality education beyond the basic level is critical for the development of any nation. Quality education is much more critical for a struggling economy such as Pakistan. In this era of globalization where the "world is flat" when it comes to outsourcing jobs, having an educated workforce can be very critical (Friedman 2006). Securing a white-collar job in an economy with job scarcity and stunted growth, student's academic performance becomes a critical decision driver for employers sifting through a large applicant pool. In a very competitive local and global job market, performing well in school is critical for securing and retaining well-paying jobs. In every field, highly qualified people are in demand. As Battle and Lewis (2002) state, "In this era of globalization and technological revolution, education is considered as the first step for every human activity." Education plays a vital role in the development of human capital and is linked with an individual's well-being and opportunities for better living (Psacharopoulos & Patrinos 2004; Chow 2000)

Existing research literature shows that students' performance can be affected by a host of factors. Some of those factors include cultural barriers, economic challenges, competing family demands for student time (e.g. help with family business), access to and quality of schools, teacher's skills, attitudes, and motivations, or unfairness within the system (Yucel 2007; Vessman & Hanushek 2007; Hunter & Schmidt 1976; Breckler 2011; Ojiambo 2009). Previous research studies have explored several other factors which correlate with students' academic performance, including but not limited to, characteristics of teachers, schools, family environment, etc. Many researchers have focused on the impact of teachers' role in the teaching-learning process (Gilakjani 2012; Martins 2006). Teachers' inefficiency may affect students' potential and academic performance (Rowe 2003).

Influence of family context has also been studied across the globe for its impact on students' academic performance, given its crucial role in resource stewardship and emotional support. Baxter & Hatt (2000) suggested that students' academic performance may also depend on students' program of study. Family demands and high expectations affect both students' academic grades and labor market earnings. Furthermore, Yucel (2007) and other researchers have suggested that socio-economic status (SES) indicated by parents' education and household wealth have a significant but small impact on students' academic achievements (Goyal 2007; Griffith 1996; Ermisch & Francesconi 2001). Some studies suggest that the SES of parents is among the most important variables in determining a child's academic performance (Chow 2003; Azhar 2014; Lorenzo 2013; Shaheen 2014; Eshetu 2015). Parents' financial status and education may have important influences on the personality of their child. Educated parents can better understand the educational needs of the child and the child's aptitude. They can assist the child with his or her homework during his/her early education which affects a child's proficiency in their foundational area of knowledge. Parents that are financially well off can provide the latest technology and facilities to support the educational needs of their children (Agus & Makhbhul 2002; Beblo & Lauer 2004; Chow 2003; Checchi 2000; Azhar 2014; Lorenzo 2013; Shaheen 2014; Akhtar 2012; Eagle 1989; Memon & Joubish 2010; Ali 2009; Eshetu 2015).

Students' own psychological and subjective (perceived) barriers to their academic performance are also considered important in shaping their academic performance. Research suggests that students' own psychological issues such as lack of confidence, low self-esteem, absence from class, test anxiety, challenges of learning a second language and interpersonal stressors are among the central factors directly related to students' academic achievements (Breckler 2011; Collier 1995; Arulampalam 2007; Rana & Mehmood 2010; Ross 1999; Clay-Spotser 2015).

Students' learning environmental and social realities are increasingly shaping cyber interactions. The use of the internet and web 2.0 technologies allow individuals to interact virtually in cyberspace, enabling virtual experiences, and creating realities through social media interactions. Such virtual space interactions can remove some traditional limitations of co-presence in the physical space and parental control over children, which may lead to the creation of a hyper-reality for those interacting in online virtual communities (Baudrillard 2013). Young adults in such situations may be less likely to conform to mainstream societal norms because social media can facilitate a seamless blending of reality and hyper-reality or a mirage of reality (Hine 2015). For instances, while parents may have traditionally controlled children's peer interactions by limiting physical contact with peers, cyber interactions strip parents off of such control to some extent. Virtual relations and identities are increasingly possible due to the use of social media and different networking sites such as Facebook, Twitter, Flicker, MySpace, Instagram, and YouTube.. Studies have documented peer influences, particularly demonstrating the impact on smoking, drug use, and alcohol use, which are otherwise socially undesirable behaviors (Becker & Curry 2013; Huang 2014; Mundt 2012; McCreanor 2013).

Bullying can have significant negative impact on self-esteem, resulting in stress and depression. Bullying embodies recurring abusive behavior that can be emotional, physical or verbal, with an intention to hurt others (APA 2011). Bullying through electronic media is becoming a common place through the increasing virtual interactions among teens. This is known as *cyberbullying*, defined as repetitive aggressive behavior using technology through cell phones and the internet. The use of the internet is more common during adolescence (Smith 2006; Vandebosch 2008; Lenhart 2001). Cyberbullying involves the use of information and communication technologies such as e-mail, cell phone and pager text messages, instant messaging, defamatory personal websites, and defamatory online personal polling websites, to support deliberate, repeated, and hostile behavior by an individual or group that is intended to harm others (Neves & de Oliveira Pinheiro 2010, p.24). Research studies show that both traditional and cyberbullying are becoming major issues facing the youth globally. Social media and the internet have become major reasons behind suicidal behavior. With teen suicide on the rise, an increase in acts of violence, and victims being identified, cyber bullying has affected not only personal lives but also students' academic performance (Schneider & Coulter 2012; Luxton & Fairall 2012; Huang & Chou 2010)

There is dearth of studies on traditional bullying, cyber bullying, and students' self-efficacy and self-perceptions as potential barriers to their academic performance. Our study is designed to fill these important research gaps, by focusing students' own perceptions about the self as they may impact academic performance. Although factors associated with student performance has not received research attention in Pakistan, previous research elsewhere has focused on some of the factors included in our study as potentially associated with students' achievements. For instance, Becker & Luther (2002) and Barry (2005) stressed four critical social-emotional components that influence achievement performance: academic and school attachment, teacher support, peer values, and mental health. In order to explain persistent problems with students' academic performance, most of research studies, primarily focused on teachers' qualifications, teaching methodology, subject matter knowledge, teaching experience, teachers' efforts, and behavior (Hammond 2000; Aslam 2012).

METHODS

Study Design and sample

We used a cross-sectional quantitative study design to pursue the objectives of this study. We used a two-stage sampling simple random sampling design wherein at the stage one, schools served as the sampling unit and at the stage two, students were the sampling units. Study participants comprised 610 students at senior secondary level (237 male and 363 female) whose participation was voluntary and anonymous. The participant's age range was 13 years to 21years. The Schools were randomly selected from the lists provided by the respective Education District Officer (EDO). The probability-based sampling design helped us improve the representativeness of our sample, thus reducing sampling bias,

Survey instrument

In order to explore the factors associated with student's academic achievements, authors designed a questionnaire to collect primary data. The first part of the questionnaire include factors related to demographic variables including gender, monthly household income, parents 'education level, and student's previous exam results. The second part of the questionnaire was composed of issues concerning student's social, cultural, economic, interpersonal, and school environment. The questionnaire structured for this purpose has the scale ranging from 5 to 1, with 5 being strongly agree, 3 as neutral (50/50) response, and 1 as strongly disagree. We pre-tested

our questionnaire with 30 students, which helped us improve our instruments' reliability and validity.

Data collection

The pre-tested questionnaire was administered in January 2016 to students in-class using the drawing for gift certificates to incentivize participation in our survey. The questionnaires filled by senior secondary class (SSC) students were returned to teachers and then collected by researchers. The data of students' academic performance/achievement was collected from the national documents of Pakistan i.e. Punjab examination commission (PEC) result Gazette Grade 8^{th} and Board of Intermediate and Secondary Education (BISE) provided by the respective Education District Officer (EDO). A total of 610 questionnaires were delivered and returned with a response rate of 100%.

Measures

We measured students' academic performance (the ordinal dependent variable) as letter grade: A, B, C or lower. . The primary independent variables were measured through two questions: (1) "During the past 12 months, I have been electronically bullied? (Include being bullied through e-mail, chat rooms, instant messaging, Web sites, or texting)" and "During the past 12 months, I have been bullied", both measured on a 5-point Likert Scale: Strongly disagree, Disagree, About 50/50, Agree, and Strongly Agree. Other variables are shown in the Tables 2 and 3.

Data analysis

The data were analyzed using SPSS statistics version 23 (IBM corporation, Armonk, NY, USA) Descriptive statistics were used to analyze collected data. Various comparisons were made to analyze the significant effect of factors affecting students' academic progress. For multivariate analysis of the association between student performance and bullying, while controlling for other variables, we used multinomial logistic analysis. We also conducted bivariate analysis of the association using Somer's D.

RESULTS AND DISCUSSION

Our **bivariate analyses** showed a significant negative impact of cyber bullying on students' performance. A significantly higher proportion of students who were not bullied secured "A grades" ($p<0.001$); 28 percent of students who strongly disagreed, and 38 percent who disagree that during the past 12 months that they had been electronically bullied also received an "A grade". In comparison, 19 percent who agreed and 25 percent who strongly agreed received "A grades" (Table 1).Traditional bullying was also negatively associated with students' academic performance. However, the pattern of association was non-linear ($p<0.001$).

Socio-economic factors seemed to strongly influence students' academic performance (Table 1). Without adjusting for other potential confounders, a significantly smaller proportion of students (4.2%) with a total monthly household income less than Rs. 15,000 secured an overall 'A grade', compared with students with a household income of Rs. 15,000-19,999 (33.0%) and those with income of Rs. 20,000 or higher (42.5%)received an A grade ($p<0.001$). Mother's education seemed to have a strong positive effect. While none of the students with mother's no formal education received an "A grade," only 6.4 percent whose mother's education of primary or middle school levels received "A grades" In contrast, 40.7 percent and 47.9 percent of students with mother's education of 10^{th} and 11^{th}grade or above secured an overall "A grade" for the academic year. Father's education also showed a strong and significant positive association. Students who

believed that poor grades meant that they have not worked hard enough had significantly better performance compared with those who disagreed/strongly disagreed with this reasoning. Students who did not let fear discourage them from studying performed much better than those who agreed with the statement that "the fear that I might fail does not let me study" Other factors associated with student performance are shown in Table 1.

Table1: *Students' Grades in the Recently Completed School Year by Experiences of Being Bullied and other Perceptions about Self*

	Overall grades			
Student perceptions	**C or lower**	**B**	**A**	***p***
During the past 12 months, I have been bullied on one or more occasions in school.				**0.011**
Strongly disagree	29.6%	59.3%	11.1%	
Disagree	24.3%	45.9%	29.7%	
About 50/50	30.4%	44.3%	25.3%	
Agree	47.4%	33.6%	19.0%	
Strongly Agree	41.8%	43.6%	14.5%	
During the past 12 months, I have been electronically bullied? (Include being bullied through e-mail, chat rooms, instant messaging, Web sites, or texting).				**0.000**
Strongly disagree	20.7%	51.7%	**27.6%**	
Disagree	30.4%	31.2%	**38.4%**	
About 50/50	40.3%	45.6%	14.1%	
Agree	33.6%	47.1%	19.3%	
Strongly Agree	37.5%	37.5%	**25.0%**	
Total monthly household income				**0.000**
Less than Rs. 15,000	26.4%	69.3%	**4.2%**	
Rs. 15,000-19,999	41.4%	25.6%	**33.0%**	
Rs. 20,000 or higher	38.1%	19.4%	**42.5%**	
Mothers education				**0.000**
No formal education	61.4%	38.6%		
Primary or middle	28.5%	65.1%	**6.4%**	
Completed 10th grade	31.2%	28.1%	**40.7%**	
Grade 11 or above	31.0%	21.1%	**47.9%**	
Fathers education				**0.000**
No formal education/Primary	57.9%	40.4%	**1.8%**	
Middle	28.2%	67.2%	**4.6%**	
Completed 10th grade	36.4%	39.9%	**23.6%**	
Grade 11 or above	22.9%	23.9%	**53.2%**	
The fear that I might fail does not let me study.				**0.000**
Strongly disagree	28.1%	36.6%	**35.3%**	

Student perceptions	Overall grades			*p*
	C or lower	B	A	
Disagree	35.7%	53.6%	10.7%	
About 50/50	49.7%	35.4%	14.9%	
Agree	29.7%	50.9%	19.4%	
Strongly Agree	21.5%	50.6%	27.8%	
I do not believe in luck because I believe persistence/ hard work lead to success				**0.016**
Strongly disagree	37.1%	45.7%	17.1%	
Disagree	31.2%	46.8%	22.1%	
About 50/50	30.9%	47.9%	21.3%	
Agree	26.9%	45.7%	27.4%	
Strongly Agree	45.9%	34.8%	19.3%	
Poor grades mean to me that I have not worked hard enough.				**0.001**
Strongly disagree	48.3%	41.4%	10.3%	
Disagree	47.1%	35.3%	17.6%	
About 50/50	31.4%	50.0%	18.6%	
Agree	25.6%	47.3%	27.1%	
Strongly Agree	42.3%	35.0%	22.6%	
I am doing part time job or tutoring other students in order to afford my education.				**0.006**
Strongly disagree	60.0%	30.0%	10.0%	
Disagree	31.3%	36.3%	32.5%	
About 50/50	28.8%	48.5%	22.7%	
Agree	35.7%	40.0%	24.3%	
Strongly Agree	36.3%	43.8%	19.9%	
It seems that success in exams is more influenced by parents' social position than students' own hard work.				**0.000**
Strongly disagree	23.3%	63.3%	13.3%	
Disagree	19.7%	34.2%	46.1%	
About 50/50	33.3%	52.6%	14.1%	
Agree	38.0%	38.3%	23.7%	
Strongly Agree	41.0%	42.6%	16.4%	

Note: The p-values in the bold font indicate significant associations at p<=0.05.
The p-values are based on chi-square tests of subgroup differences.

Results of **multinomial logistic regression** models show the effect of traditional bullying and cyber bullying after controlling for socioeconomic factors. Our results show that after controlling for father's education and household income, the strength of association between traditional bullying declined substantially (Table 2) Higher odds of securing the grade A (vs. grade C) existed for student who disagreed (AOR=3.950; p=0.039) or were on "about 50/50" category about level of agreement to the statement that they had experienced bullying (AOR=4.116; p=0.005). Neither cyber bullying nor traditional bullying had any significant impact on students' ability to get B grade versus C or lower grade (Table 2).

After controlling for the other variables in the model, significantly higher odds of securing "A grade" existed for students with higher household incomes. Compared with students with a household income of RS 25,00 or more, students with household income of Rs, 15,000 or less were only 0.148 times as likely to have secured an A. Female students had much higher odds (AOR=1.69; p=0.001) compared with male students to secure A grade. However, it is noteworthy that students in the lowest income category (less than Rs. 15,000) were more likely to secure a B grade rather than C grade, compared with students in the highest income category (Table 2)

Table2: *Multinomial Logistic Regression Analysis of Student Performance in Recently Completed School Year by Household Income and Bullying Status*

Independent Variables	Overall grade A vs. C or lower				Overall grade B vs. C or lower			
	AOR		95% Confidence Interval for AOR		AOR		95% Confidence Interval for AOR	
		p	Lower Bound	Upper Bound		*p*	Lower Bound	Upper Bound
Total monthly household income								
Less than Rs. 15,000	0.148	**0.000**	0.069	0.320	4.801	**0.000**	2.729	8.445
Rs. 15,000-19,999	0.833	0.496	0.491	1.411	1.151	0.643	0.635	2.087
Rs. 20,000 or higher								
Gender								
Female	1.691	**0.034**	1.042	2.745	1.098	0.654	0.729	1.656
Male								
During the past 12 months, I have been bullied on one or more occasions in school.								
Strongly disagree	1.060	0.944	0.213	5.284	1.443	0.519	0.473	4.402
Disagree	3.950	**0.039**	1.070	14.587	1.565	0.417	0.530	4.620
About 50/50	4.116	**0.005**	1.529	11.080	1.203	0.619	0.580	2.498
Agree	1.940	0.217	0.677	5.556	0.601	0.214	0.269	1.342
Strongly Agree								

Independent Variables	Overall grade A vs. C or lower				Overall grade B vs. C or lower			
	AOR		95% Confidence Interval for AOR		AOR		95% Confidence Interval for AOR	
		p	Lower Bound	Upper Bound		*p*	Lower Bound	Upper Bound
During the past 12 months, I have been electronically bullied? (Include being bullied through e-mail, chat rooms, instant messaging, Web sites, or texting).								
Strongly disagree	1.777	0.417	0.443	7.129	2.026	0.266	0.583	7.039
Disagree	0.994	0.991	0.371	2.665	1.008	0.986	0.402	2.528
About 50/50	0.361	**0.045**	0.133	0.978	1.154	0.747	0.484	2.747
Agree	0.605	0.300	0.234	1.564	1.161	0.732	0.495	2.723
Strongly Agree								

*. Represents the reference category

Abbreviations: AOR, Adjusted odds ratio. Note: The p-values in the bold font indicate AOR being significantly different than 1, at the p<=0.05.

After controlling for father's education, students who agreed that they were cyber bullied had significantly higher odds of receiving A grade rather than a C or a lower (AOR=3.80; p=0.05) compared to students strongly agreeing that they were bullied (Table 3). The impact of cyber bullying on student performance was negligible after controlling for father's education, which strongly highlights the protective role of father's education. Furthermore, a significant association was found between father's education and academic performance of children after controlling for other variables, including bullying status. Significantly lower proportions of children with no formal education of their fathers (vs. 11 grade or above) secured an A grade (AOR=0.012; p<0.001). Students whose father's education of "1 to middle grade" also had significantly lower odds of getting an A compared to students with father's education of grade 11 and above (AOR=0.059; p<0.001) Lower odds of securing an A grade were also observed for students with father's education of over middle grade but less than 11th grade compared with students with father's education of grade 11 and above (AOR=0.228; p<0.001). After controlling for father's education, differences in student performance by student's gender were not significant.

***Table3**: Multinomial Logistic Regression Analysis of Student Performance in Recently Completed School Year by Father's Education and Bullying Status*

	Overall grade A vs. C or lower				Overall grade B vs. C or lower			
	AOR		95% Confidence Interval for AOR		AOR		95% Confidence Interval for AOR	
		p	Lower Bound	Upper Bound		*p*	Lower Bound	Upper Bound
Father's education								
No formal educ/Primary	0.012	**0.000**	0.002	0.093	0.696	0.363	0.319	1.520
Middle	0.059	**0.000**	0.021	0.163	2.421	**0.012**	1.215	4.825
Completed 10th grade	0.228	**0.000**	0.125	0.416	1.108	0.748	0.592	2.076
Grade 11 or above								
Gender								
Female	1.513	0.103	0.920	2.490	1.365	0.121	0.921	2.024
Male								
During the past 12 months, I have been bullied								
Strongly disagree	0.624	0.583	0.115	3.372	1.619	0.384	0.548	4.787
Disagree	3.800	**0.054**	0.977	14.779	1.687	0.329	0.591	4.814
About 50/50	4.893	**0.003**	1.707	14.024	1.398	0.356	0.686	2.846
Agree	2.611	0.096	0.844	8.078	0.624	0.234	0.287	1.357
Strongly Agree								
During the past 12 months, I have been electronically bullied?								
Strongly disagree	2.367	0.244	0.556	10.080	1.938	0.281	0.582	6.457
Disagree	1.324	0.589	0.479	3.662	0.934	0.880	0.383	2.278
About 50/50	0.353	**0.056**	0.122	1.025	1.178	0.703	0.508	2.729
Agree	0.568	0.265	0.210	1.537	1.344	0.483	0.589	3.066
Strongly Agree								

*. Represents the reference category; Abbreviations: AOR, Adjusted odds ratios

Note: The p-values in the bold font indicate AOR being significantly different than 1, at the p<=0.05.

DISCUSSION

This study examined the influence of traditional and cyber bullying on students' academic performance in the recently completed school year. Our study showed that traditional as well as cyber bullying may have a significantly negative impact on students' academic performance, but socioeconomic status of parents is a strong neutralizing impact. These findings have important social and public health implications in that students that are bullied may not only perform poorly in school, being bullied may have a spill-over effects on their social life as well. Cyber bullying is a rapidly emerging form of immoral, antisocial behavior that may present new and grim consequences, resulting in challenges for parents, teachers, and others committed to the education and the well-being of children (Huang & Chou 2010, p.1581).

Our findings also show that students with higher household incomes performed much better in school than those with lower household incomes. Our findings are well aligned with the premise that parental involvement continues to improve student achievement, particularly when parents are well-educated (Henderson & Berla 1994). Previous studies have indicated that parental involvement exerted both direct and indirect effects on high school academic achievement (Fehrmann & Reimers 1987, p.137). Our results further led us to conclude that students, whose parents were well educated, performed better in their academic programs as compared to those students whose parents were less educated or illiterate.

Results of our multivariable analyses suggest that although traditional bullying has a negative impact on student performance even after controlling for students' high levels of socioeconomic status which plays a protective role. When relatively affluent kids are bullied, their family's socioeconomic status helps them absorb the negative impact of bullying. So in a sense, there is a double jeopardy for the students with poor education status of the father and lower household income. On one hand, uneducated parents cannot help their children in their homework, on the other; their poor household income status may encourage the perpetrators (bullies) to perceive that the consequences of bullying will be less severe if the victims tried to retaliate. Surrogate role models and tutors may be helpful to victims of bullying.

Our study showed an interesting trend in the impact of household income on the students' grades. We found that everything else being equal, students in the highest household income category were likely to perform either very well or very poorly. In contrast, students in the lower income category were more likely to be in the middle (i.e., B grades rather than A or C and lower). This may imply that poor students may try hard, in general, but they hit a glass ceiling due to opportunity structure (need to help family in complementing household income, inability to engage a private tutor etc.). Affluent students, on the other hand, may have more resources to get away with deviance from school norms and may be less compliant with teachers' and parents' requests to study harder if performing poorly. In sum, factors such as parents' education, family income and cyberbullying have a significant yet intertwined impact on the academic performance of the students at secondary level.

IMPLICATIONS AND FUTURE RESEARCH RECOMMENDATIONS

Findings of our study ought to be interpreted in view of its limitations. We had a small sample size, relative to the large population of schools and students in the district of Lahore. We also limit our student population to secondary schools, in order to reduce the confounding effect of the level of students' education. Future studies may build on our findings and study larger populations as well as academic achievement in other types of educational settings, such as private and online schools, to determine if students differ based on the educational setting.

In order to improve academic achievements of students at the secondary school level, the government should develop an effective and strict monitoring system of public schools to have a regular check and balance in education and results. Teachers' must be trained to spot bullying within the school premises and schools must develop clear policies to punish perpetrators of bullying, including reports of cyber-bullying. This may help offset the effect of family income and give all students an equitable learning environment. Our findings may also point to a role for civil society, community, NGOs, and the media to raise awareness about negative consequences of bullying and to help disenfranchised students escape the consequences of bullying through evidence-based interventions. The school should implement effective systems of guidance and counseling, especially for those students with lower self-efficacy.

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