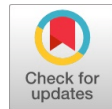


Examining Factorial Validity on Bullying in Malaysian Secondary School Context

Nurulwahida Azid, Busthami Nur, Siti Jaizah Nakman



Abstract: *Bullying is a negative behavior toward an individual or a group of individuals that is considered weak. The Ministry of Education Malaysia says that the types of bullying that is common in Malaysian schools are physical, verbal, anti-social and cyber bullying. Accordingly, this study aims to examine factorial validity on bullying in Malaysian secondary school context. This quantitative approach with cross sectional survey method study was conducted in 3 secondary schools with 140 students randomly selected. 12 sets of questionnaires from previous researchers were transformed into a set of questionnaire to measure the domain of bullying by category. The data analysis of this study involves descriptive statistics analysis and Principal Component Analysis (PCA). The result showed that 4 factors of bullying which explained 68% of variance. The four types of bullying are (i) physical bullying explained by 4 items, (ii) verbal bullying reflected by 4 items, (iii) anti-social explained by 4 items and (iv) cyber bullying explained by 3 items. The results also revealed that there was a difference between physical and verbal bullying and cyber bullying based on gender ($p < 0.05$), there was no difference between anti-social bullying by gender ($p > 0.05$), there was no difference between anti-social bullying and no differences between physical ($p < 0.05$), verbal and cyber bullying by age ($p > 0.05$).*

Keywords: *bully, physical bullying, verbal bullying, anti-social bullying, cyber bullying, Principal Component Analysis (PCA)*

the bus, behind the school building or in a remote area away from teacher's sight. Bullying is defined as one of violence in the school [United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2017)]. Bullying is a negative behavior toward an individual or group of individuals that is considered weak. According to Olweus (2013), bullying is a repeated aggressive behavior toward a person or group that is unable to defend themselves. Bullying is an act of beating and teasing, and the most passive form is an exclusion from social activities. WHO (2009) found that teenagers in the world bully at least once a week. While [United Nations Children's Fund (UNICEF, 2014)] report found that bullying among teenagers is a worldwide problem. Bullying among students can have adverse effects such as physical injury, permanent injury and even death (Anderson, Kaufman, Simon, Barriouthe Paulozzi & Ryan, 2001), segregation from socialization (Sharp, 1995 & Woods & Wolke, 2002), affect academic quality (Glew, Fan, Katon, Rivara & Kernis, 2005), and having trouble building socializing relationships with the school community (Yoneyama & Rigby, 2006), as well as causing mental health problems (Kumpulainen & Rasanen, 2000).

I. INTRODUCTION

Bullying has existed in all communities since long ago. Bullying problems exist in the society of a developed or developing country commonly happen in schools. Studies show that bullying in schools has made schools no longer a safe place for students (Jan & Husain, 2015). In fact, according to Gomez-Ortiz, Romera and Ortega-Ruiz (2016), bullying is considered a serious problem in the school system worldwide. They found that bullying had a negative impact on academic performance. Even female students are more affected by bullying than male students (Sekol & Farrington, 2016). Sekol & Farrington (2016) stated that bullying in schools is considered a global problem affecting the emotional, social and physical well-being of school children worldwide. Jan and Husain (2015) opined that bullying can occur inside and outside the school such as in the classroom, in the school toilet, while waiting for the school bus, while on

II. BACKGROUND OF STUDY

UNESCO (2017) stated that bullying cases is one of the most reported violence in several countries such as Europe, North America, Australia and Asia. This is because data shows 80% of primary school children in the world are involved in bullying cases that often occur in the classroom (UNESCO, 2017). The UNICEF report (2014) based on data collected from various surveys of 106 countries, the number of teenagers involved in bullying cases is 7% in Tajikistan and 74% in Samoa. Another survey found that half of adolescents in 14 of 67 low- and middle-income countries were involved in bullying cases. The Ministry of Education Malaysia (MOE) issued a statement indicating that there were 3011 bullying cases reported in 2015 and the number of cases increased to 3488 cases in 2016 (Yaacob, 2018). Gender differences, age, type of bullying, and country are variables of the research related to bullying. Guerra, Williams and Sadek (2010) conducted a meta-analysis of 153 studies and reported the correlation of gender with bully, victim and bully / victim. While the study of Cook, Williams, Guerra, Kim and Sadek (2010) found that the correlation between male and bullying was $r = 0.18$. Whereas gender differences data on bullying seem less consistent and is usually small. Cook et al. (2010) found that the correlation between female to victim ratio was $r = 0.06$.

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According to them, gender differences in rates of bullying and victimization were less reported. Cook et al. (2010) found that the correlation of male to victim ratio was $r = 0.10$. While the study conducted by Currie et al. (2008), showed that cases of bullying in boys (14%) were greater than in girls (11%). Further, literature review of 109 articles by Barlett and Coyne (2014) found that overall cyber bullying among male was greater than that of female. A study of age-based bullying behavior was conducted by Guo (2016) and found that age was not a moderator for cyber bullying and cyber bullying victims. However, previous studies (Smith, Madsen, & Moody, 1999; Scheitauer, Hayer, Petermann, & Jugert, 2006; Barlett & Coyne, 2014; Guo, 2016) have shown that age and gender differences regarding bullying are inconsistent. Additionally, according to Awaluddin, Yusoff and Aris (2017) a study by the National Health and Morbidity Survey (NHMS) by the Institute of Public Health (Ministry of Health) found that the percentage of bullying among the 13-year-olds was highest (22.8% of cases), followed by the 14-year-olds (19.0%), 15-year-old students (15.0% cases), 16-year-olds (13.4% cases) and 17-year-olds (10.2% cases). Statistics based on Table 1 show that junior students have a greater chance of being involved in bullying cases than older students.

Table 1: Percentage of bullying by age

Age	Percentage of bullying cases in Malaysia 2017
13 years	22.8%
14 years	19.0%
15 years	15.0%
16 years	13.4%
17 years	10.2%

On the whole, bullying has a huge impact on students' emotions and safety in schools as students today are at risk of dealing with some form of bullying such as physical, verbal, anti-social and cyber bullying (Olweus, 1993; Rigby & Slee, 1991; Wolfer, 2013). Therefore, this study was conducted to identify valid factors for measuring physical, verbal, anti-social and cyber bullying in the context of Malaysian secondary school students.

III. RESEARCH QUESTIONS

1. What is the construct validity of bullying types namely physical, verbal, anti-social and cyber using exploratory factor analysis (EFA) with sample of Malaysian Secondary School?
2. What are the differences of Malaysian secondary students towards bullying (physical, verbal, anti-social and cyber) based on gender and age?

IV. METHOD

A. Research Design

This study applied a quantitative approach to the design of a cross sectional survey study (Creswell, 2014). A set of questionnaires was used to collect data to identify the direction and influence of the study constructs (Creswell, 2014; Bakker, 2018). The constructs in this study were physical bullying, verbal bullying, anti-social bullying and cyberbullying.

B. Sampling Design

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The study sample consisted of 140 secondary school students in the Northern states of peninsular Malaysia. The sample size of this study satisfies the sample size for stratified random sampling techniques which is between 10% and 35% of the total population (Bryman & Cramer, 2009). Stratified random sampling was used in this study. This method is selected because it allows certain small groups to have the opportunity to be selected as sample at the same rate as in the population (Fraenkel & Wallén, 2006). According to (McMillan & Schumacher, 2001; Fraenkel & Wallen, 2006), stratified random sampling can represent a population, if the sample is not large. Table 2 shows sample stratified selection based on respondents' criteria.

Table 2: Sample stratified selection based on respondents' criteria.

No.	School	Number of students in Forms 1,2 and 4	Percentage	Number of sample
1.	A	188	188 X 25%	47
2.	B	180	180 X 25%	45
3.	C	192	192 X 25%	48
TOTAL		560	560 X 25%	140

C. Instrument

The instrument of this study involved two sections Part A (demographic of respondent), Part B measuring bullying by category. Instruments for measuring bullies by category such as physical, verbal, anti-social and cyber bullying are instruments that have been modified and translated by researchers who had combined the items from several previous researchers namely Orpinas and Frankowski (name of instrument: Aggression scale, $\alpha = 0.88-0.90$, year: 2001), Parada (name of instrument: Adolescent Peer Relations Instrument, $\alpha = 0.83 - 0.95$, year: 2000), Bosworth Espelage & Simon, (name of instrument: Modified Aggression Scale, $\alpha = 0.70 - 0.83$, year: 1999), Warden, Cheyne, Christie, Fitzpatrick, and Reid (name of instrument: Child Social Behavior Questionnaire, $\alpha = 0.63 - 0.68$, year: 2003), Austin and Joseph (name of instrument: Bullying-Behavior Scale, $\alpha = 0.82$, year: 1996), Crick and Grotpeter, (name of instrument: Children's Social Behavior Scale – Self Report, $\alpha = 0.83-0.94$, year: 1995), Chan, Myron, and Crawshaw (name of instrument: School Life Survey, $\alpha = 0.83-0.94$, year: 2005), Tarshis and Huffman (name of instrument: Children's Social Behavior Scale – Self Report, $\alpha = 0.90$, year: 2007), Poteat and Espelage, (name of instrument: Homophobic Content Agent Target Scale, $\alpha = 0.77-0.85$, year: 2005), Williams and Guerra (name of instrument: Student School Survey, $\alpha = 0.73-0.93$, year: 2007), Hinduja and Patchin, (name of instrument: Bully Survey, $\alpha = 0.74-0.76$, year: 2009).

D. Face and Content Validity

Face validity and content validity involved 3 experts; experts in assessment and measurement, experts in item and instrument development and experts in educational psychology. The results of the three experts are presented in Table 3.



Table 3: Items in the instrument

Item	Question	Domain
PF1	I fought back when someone hit me first. <i>Saya melawan balik apabila saya dipukul</i>	Physical bullying
PF2	I pushed other students. <i>Saya tolak pelajar lain</i>	Physical bullying
PF3	I got into a physical fight because I was angry. <i>Saya bergaduh secara fizikal apabila saya marah.</i>	Physical bullying
PF4	I slapped other students. <i>Saya tampar pelajar lain.</i>	Physical bullying
PF5	I kicked other students. <i>Saya tendang pelajar lain.</i>	Physical bullying
PF6	I hit other students. <i>Saya pukul pelajar lain.</i>	Physical bullying
PF7	I crashed into a student on purpose as they walked by <i>Saya langgar pelajar lain dengan sengaja</i>	Physical bullying
PF8	I got into a physical fight with a student because I didn't like them. <i>Saya bergaduh secara fizikal dengan pelajar lain</i>	Physical bullying
PF9	I punched other students. <i>Saya tumbuk pelajar lain.</i>	Physical bullying
PF10	I threw something at a student to hit them. <i>Saya baling benda kepada pelajar lain supaya mengenai mereka</i>	Physical bullying
PF11	I threatened to physically hurt or harm a student. <i>Saya mengancam untuk mencederakan pelajar lain secara fizikal</i>	Physical bullying
PF12	I joined in with a group of children to hurt another children <i>Saya berpakat dengan sekumpulan pelajar untuk sakiti pelajar lain</i>	Physical bullying
PF13	I broke another child's things because I want to upset them <i>Saya rosakkan barangan pelajar lain supaya mereka sedih</i>	Physical bullying
PF14	I took things from other students and did not give them back <i>Saya tidak pulangkan barang yang saya ambil daripada pelajar lain</i>	Physical bullying
PF15	I have badly beaten somebody up <i>Saya pukul pelajar lain dengan teruk</i>	Physical bullying
PF16	I carried a knife or sharp weapon or other blade <i>Saya bawa pisau atau benda tajam untuk menakutkan pelajar lain</i>	Physical bullying
PF17	I have threatened someone with a knife or sharp weapon.	Physical bullying

	<i>Saya mengancam pelajar lain dengan senjata tajam</i>	
PF18	I have attacked someone with a knife or sharp weapon <i>Saya menyerang pelajar lain dengan senjata tajam</i>	Physical bullying
PF19	I have sexually harassed someone <i>Saya mengganggu pelajar lain secara seksual</i>	Physical bullying
PF20	I have sexually assaulted someone <i>Saya menyerang pelajar lain secara seksual</i>	Physical bullying
PF21	I have robbed someone <i>Saya mengambil duit pelajar lain</i>	Physical bullying
PF22	I have gotten into a fight after drinking or getting high <i>Saya bergaduh semasa mabuk/khayal</i>	Physical bullying
PF23	I destroyed other people's belongings and vehicles <i>Saya merosakkan harta benda dan kenderaan pelajar lain</i>	Physical bullying
PF24	I cuddled students of my opposite gender <i>Saya memeluk pelajar lain jantina</i>	Physical bullying
PV1	I teased students to make them angry. <i>Saya pernah mengusik pelajar lain secara lisan sehingga dia marah</i>	Verbal bullying
PV2	I got angry very easily with someone. <i>Saya sangat mudah marah dengan pelajar lain</i>	Verbal bullying
PV3	I called other students bad names. <i>Saya pernah panggil pelajar lain dengan nama yang mereka tidak suka</i>	Verbal bullying
PV4	I threatened to hurt someone. <i>Saya pernah mengancam untuk sakiti pelajar lain</i>	Verbal bullying
PV5	I threatened to hit someone. <i>Saya pernah mengancam untuk memukul pelajar lain</i>	Verbal bullying
PV6	I teased them by saying things to them. <i>Saya pernah mengusik pelajar lain dengan kata-kata yang menyakitkan hati mereka</i>	Verbal bullying
PV7	I yelled at others and called them mean names. <i>Saya pernah mengherdik pelajar dengan memanggil mereka dengan nama yang buruk</i>	Verbal bullying
PV8	I make jokes about them. <i>Saya pernah mempersendakan pelajar lain.</i>	Verbal bullying

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PV9	I picked on a student by swearing at them. <i>Saya pernah memaki pelajar lain</i>	Verbal bullying
PV10	I said things about their looks that they didn't like. <i>Saya pernah mengutuk penampilan pelajar lain.</i>	Verbal bullying
PV11	I told my friends things about a student to get them into trouble. <i>Saya pernah fitnah pelajar lain supaya dia berasa susah</i>	Verbal bullying
PV12	I fought students I could easily beat. <i>Saya pernah bergaduh dengan pelajar yang lemah</i>	Verbal bullying
PV13	I started (instigated) arguments or conflicts among students. <i>Saya pernah mencetuskan pertengkaran dalam kalangan pelajar.</i>	Verbal bullying
PA1	I told lies about a classmate so that the other kids won't like him/her anymore. <i>Saya pernah berkata bohong tentang seseorang pelajar supaya dia tidak disukai</i>	Anti-social bullying
PA2	I told my friends that I will stop liking them unless my friends do what I say. <i>Saya pernah mengugut untuk tidak berkawan dengan rakan saya jika tidak mengikut apa yang saya suruh</i>	Anti-social bullying
PA3	I asked my friends to turn against another student. <i>Saya pernah menghasut rakan saya untuk menentang pelajar lain.</i>	Anti-social bullying
PA4	I asked other student to start a rumor about another student. <i>Saya pernah berpakat dengan rakan untuk menyebarkan khabar angin tentang pelajar lain.</i>	Anti-social bullying
PA5	I asked other students to ignore a student. <i>Saya pernah berpakat dengan rakan untuk memulaukan pelajar lain.</i>	Anti-social bullying
PA6	I purposely left them out of activities or games. <i>Saya pernah dengan sengaja tidak melibatkan pelajar lain dalam aktiviti dan permainan .</i>	Anti-social bullying
PA7	I kept a student away from me by giving them mean looks. <i>Saya pernah membuat mimik muka yang menakutkan supaya pelajar lain menjauhi saya</i>	Anti-social bullying
PA8	I excluded other students from my clique of friends. <i>Saya pernah menyingkirkan pelajar lain daripada menjadi</i>	Anti-social bullying

	<i>ahli kumpulan saya</i>	
PA9	I gave other students mean or "dirty" looks <i>Saya pernah memerhatikan pelajar lain dengan pandangan yang menakutkan atau seperti berniat jahat</i>	Anti-social bullying
PA10	I kept other students from being friends with people I didn't like. <i>Saya pernah menghalang pelajar lain daripada berkawan dengan pelajar yang saya tidak suka</i>	Anti-social bullying
PA11	I kept those I didn't like from joining in play time or group activities. <i>Saya pernah menghalang pelajar lain untuk menyertai aktiviti atau permainan berkumpulan</i>	Anti-social bullying
PA12	I cheered when someone was beating up another student. <i>Saya pernah bersorak apabila rakan saya memukul pelajar lain</i>	Anti-social bullying
PA13	I joined in when students told lies about other students. <i>Saya pernah menyertai kumpulan pelajar yang sedang menfitnah tentang pelajar lain</i>	Anti-social bullying
PS1	I lied about my age while online using social media <i>Saya pernah menipu tentang umur saya ketika menggunakan media sosial</i>	Cyber bullying
PS2	I posted something online using social media about someone else to make others laugh <i>Saya pernah mempamerkan/mengemos tentang seseorang rakan di media sosial untuk membuatkan orang lain tertawa</i>	Cyber bullying
PS3	I sent someone a private message to make him/her angry or to make fun of him/her <i>Saya pernah menghantar mesej terus kepada seseorang untuk mempersendakannya atau membuat dia marah</i>	Cyber bullying
PS4	I commented something about the picture that someone shared online to make fun or make him/her angry <i>Saya pernah komen sesuatu tentang gambar yang dikongsi seseorang di media sosial untuk mempersendanya atau membuatnya marah.</i>	Cyber bullying
PS5	I posted something about someone else online to make others laugh at him/her. <i>Saya pernah mempamerkan gambar pelajar lain di media sosial tanpa kebenarannya.</i>	Cyber bullying

PS6	I told lies or make fun of some students using the Internet (email, instant messaging, cell phone text messaging, or websites). <i>Saya pernah mempersendakan pelajar lain dengan menggunakan media sosial.</i>	Cyber bullying
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Note: PF = physical bullying, PV = verbal bullying, PA = anti-social bullying, PS = cyber bullying.

E. Data Collection

The process of data collection involved several steps, namely (i) obtaining approval from the Ministry of Education through the Education Policy Planning and Research Division (EPRD), (ii) obtaining consent from the school to conduct the study by submitting a letter of approval from the EPRD. During data collection, the self administrated method was applied. The self administrated rationale was used to enable the researcher to be directly involved in the data collection process of this study. The purpose of the survey and the method of selection of respondents were explained to the school administrators for mutual consent. A school counselor was appointed to assist the researcher in managing the meeting between the researchers and the students during the data acquisition process. The date and time for further data collection was agreed upon by both parties for the three schools involved in this study.

F. Test Analysis

The data analysis of this study used Statistical Package for the Social Sciences (SPSS) software version 25. The analysis of this study involved descriptive statistics analysis and Exploratory Factor Analysis (EFA). It is used to determine construct validity of different type of bullying (Hair, Hult, Ringle & Sarstedt, 2016). PCA is the common statistical tool used to determine the validity of construct (Tabachnick & Fidell, 2007). It helps to reduce set of items into factors without certification. In this study the data was analysed using PCA and rotated by varimax rotation with at least 0.50 of factor loading. Through this analysis, items with a factor loading value of 0.50 and above were retained (Hair, Black, Babin & Anderson, 2010). To retain number of factors, the study used the criteria set by Kaiser (1970), where factors with eigen values greater than 1.0 will be retained (Hair, Hult, Ringle & Sarstedt 2016). Table 4 shows a summary of EFA requirements in the data set.

Table 4: Summary of EFA requirements in the data set

Analysis	Requirement	Reference
Eigen value	Eigen value greater than 1.0	Hair, Hult, Ringle & Sarstedt (2016)
Bartlett's Test of Sphericity	Significant if (p < 0.05)	Tabachnick & Fidell (2007)
Kaiser-Meyer-Olkin (KMO) Index	KMO value ≥ 0.5	Hair, Hult, Ringle & Sarstedt (2016); Malhotra (2007)

V.RESULT

Return rate of instrument set was considered good where out of 150 sets of distributed instruments, 90.00% or 140 sets of

questionnaire were recovered by the researcher. Descriptive analysis based on respondents' demographic profiles showed acceptable values based on the scale used. The three schools involved in this study were School A (47 students, 33.6%), School B (45 students, 32.1%) and School B (48 students, 34.3%). Table 5 shows the demographic profiles of the respondents involved in this study. A total of 66 male students (47.1%) and 74 female students (52.9%) were involved in the study. Subsequently, the study involved 132 Malay students (94.3%), 3 Chinese (21%), 4 Indians (2.9%) and 1 other ethnicity (.7%). The proportion of respondents based on age was 46 13-year old students (32.9%), 44 14-year old students (31.4%) and 50 16 year students (35.7%). The distribution of respondent based on demographics is as shown in Table 5.

Table 5: Demography of Respondents (n=140)

Variable	Category	Frequency	Percentage (%)
School	A	47	33.6
	B	45	32.1
	C	48	34.3
Gender	Male	66	47.1
	Female	74	52.9
Ethnicity	Malay	132	94.3
	Chinese	3	2.1
	Indian	4	2.9
	Others	1	.7
Age	13 years old	46	32.9
	14 years old	44	31.4
	16 years old	50	35.7

The following table shows the results of the Preliminary analysis. The results showed that the Anti-image correlation values ranged from 0.72 to 0.91. Whereas the KMO value is 0.83, (KMO ≥ 0.5), the Barlett's test of sphericity is 0.00 (p < 0.05) and the Eigen Value is 1.04 (Eigen > 1.0). These values meet the requirements of the EFA recommended by Kaiser (Tabachnick & Fidell, 2007; Hair, Hult, Ringle & Sarstedt, 2016)

Table 6: Output of Preliminary Analysis

Analysis	Output
Anti-image correlation	0.72 - 0.91
KMO	0.83
Barlett's test of sphericity	p < 0.05
Eigen value	1.04

Research question 1: What is the construct validity of bullying types namely physical, verbal, anti-social and cyber using exploratory factor analysis (EFA) with sample of Malaysian Secondary School?

Table 7 shows the result of exploratory factor analysis (EFA) showed 4 factors of bullying which explained 68% of variance. The four types of bullying are (i) physical bullying that are explained by 4 items, (ii) verbal bullying that are reflected by 4 items, (iii) anti-social are explained by 4 items and (iv) cyber bullying are explained by 3 items.



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Table 7: Factor loading and reliability of items

Domain	Item	Factor 1	Factor 2	Factor 3	Factor 4	α
Physical bully	PF1	0.611				0.84
	PF2	0.86				
	PF3	0.91				
	PF4	0.79				
Verbal bully	PV1		0.76			0.81
	PV2		0.81			
	PV3		0.72			
	PV4		0.85			
Anti-social bully	PA1			0.68		0.76
	PA2			0.63		
	PA3			0.83		
	PA4			0.81		
Cyber bully	PS1				0.56	0.81
	PS2				0.89	
	PS3				0.92	

Research question 2: What are the differences of Malaysian secondary students towards bullying (physical, verbal, anti-social and cyber) based on gender and age?

Table 8 shows the results of the T-test which found that there was a difference between physical ($p < 0.05$, $p = 0.007$), verbal ($p < 0.05$, $p = 0.020$) and cyber bullying ($p < 0.05$, $p = 0.008$) based on gender. However, there was no difference between anti-social bullying ($p > 0.05$, $p = 0.0627$) by gender.

Table 8: T-test Analysis of bullying by gender category

Domain	Mean	SD	t	p	D
Physical bully	Male = 1.60	.62	2.74	.007	138
	Female = 1.33	.56			
Verbal bully	Male = 1.83	.75	2.36	.020	138
	Female = 1.56	.61			
Anti-social bully	Male = 1.42	.58	1.88	.062	114.78
	Female = 1.26	.40			
Cyber bully	Male = 1.42	.60	2.68	.008	112.13
	Female = 1.19	.41			

Whereas Table 9 shows the results of the ANOVA test that found that there was a difference between anti-social bully [$F(2,137) = 4.605$, $p < 0.05$, $p = 0.012$] and no difference between physical bully [$F(2,137) = 0.034$, $p > 0.05$, $p = 0.967$], verbal bully [$F(2,137) = 1.232$, $p > 0.05$, $p = 0.295$]

and cyber bully [$F(2,137) = 2.365$, $p > 0.05$, $p = 0.098$] by age.

Table 9: ANOVA analysis of bullies by age category

		Sum of Squares	df	F	p
Physical bully	Between Groups	.025	2	.034	.967
	Within Groups	50.843	137		
	Total	50.868	139		
Verbal bully	Between Groups	1.176	2	1.232	.295
	Within Groups	65.371	137		
	Total	66.546	139		
Anti-social bully	Between Groups	2.171	2	4.605	.012
	Within Groups	32.300	137		
	Total	34.471	139		
Cyber bully	Between Groups	1.248	2	2.365	.098
	Within Groups	36.152	137		
	Total	37.400	139		

Table 10 shows the results of Post Hoc multiple comparison analysis showing that there is a significant difference between a 13-year-old anti-social bully and a 14-year-old anti-social bully whereby a 13-year-old bully is more compared to a 14-year-old (mean difference = 0.287). In addition, the findings found that there is a significant difference between 16-year-old anti-social bully and 14-year-old anti-social bully in which 16-year-old bully is more than 14 years old (mean difference = 0.247).

Table 10: Multiple comparison Post Hoc

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Anti-social bullying	13	14	.28681*	.016	.0442	.5294
		16	.04022	.913	-.1948	.2753
	14	13	-.28681*	.016	-.5294	-.0442
		16	-.24659*	.040	-.4844	-.0088
16	13	-.04022	.913	-.2753	.1948	
	14	.24659*	.040	.0088	.4844	

VI. DISCUSSION

This study showed 4 types of bullying perpetrators for Malaysian secondary school context. These types of bullying was supported by Peck (2019), Papacosta, Paradeisioti and Larou (2014), Olweus (1991), Suckling and Temple (2002) and National Association of Human Rights of Malaysia (2018). The exploratory factor analysis had extracted of 4 items for each construct of physical, verbal and anti-social respectively, while 3 items for cyber bullying perpetrators.



All items had high factor loading of .56 to .92 indicating that each item exceeding the threshold value of .45 as recommended by Hair, 2006. 68% of variance was explained by these 4 constructs which is higher than significant level of 60% set by Hair, Black, Babin, Anderson and Tatham (2006). The internal consistency reliability of items for each construct was achieved in this study. Internal consistency reliability is achieved when items used to measure the construct are “capable of independently measuring the same concept so that the respondents attach the same overall meaning to each of the items” (Sekaran & Bougie, 2016). The result of analysis indicated that each construct are supported by reliable indicators. Physical bullying perpetrators is supported by its 4 indicators with alpha level of .84, verbal with .82, anti-social with .76, and cyber with .82 respectively indicating that all factors in the study are statistically significant and highly reliable. Furthermore, the analysis indicated that perpetrators of bullying are significantly different between genders for 3 categories. Male students is more likely to be perpetrators as compared to female students on these 3 types of bullying; physical ($p=.007$), verbal ($p=.020$) and cyber bullying ($p=.008$) respectively. However, anti-social bullying in terms of gender did not signify any differences. National Health report (2017) showed that male bully more than female among adolescent. This study give further explanation on types of bullying that male is likely to do. Interestingly, the study found that bullying perpetrators is significantly different when it is tested across age. 13 years old students is more likely to be perpetrators for anti-social bullying ($p<.012$) as compared to their elder students. This finding supported the previous results by National Health report (2017). As for other types of bullying; physical, verbal and cyber no significant differences was found across ages.

VII. CONCLUSION

This study confirmed validity of 4 categories of bullying perpetrators among secondary school. The findings are very useful, especially for school to identify different types of bullying might happen in their respective schools. These 4 constructs found to explain 68% of bullying. The study showed that gender has significant effect on bullying. Male student found to be perpetrator of physical, verbal and cyber bullying more as compared to female student. Furthermore, the study found that age play significant effect on anti-social bullying only where younger student is more likely to be perpetrators of anti-social bullying in the school.

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