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Abstract
This study aims to determine the relationship between maternal warmth, motivation for engagement in cyberbullying and cyberbullying involvement among undergraduate students. By using the cluster random sampling method, a total of 398 respondents were involved in this research. Among all the variables, only total hours spent online, maternal warmth and motivation for engagement in cyberbullying were significantly correlated with cyberbullying involvement. Besides, motivation for engagement in cyberbullying was found to be the only predictor of cyberbullying involvement among students. This study concluded that total hours spent online, maternal warmth and motivation for engagement in cyberbullying were the important factors in influencing the level of adolescents' cyberbullying involvement. In conclusion, cyberbullying phenomenon can be controlled if the adolescents' cyberaggression motivation was controlled and they have perceived high maternal warmth.
Keywords: Maternal Warmth, Motivation for Engagement in Cyberbullying, Cyberbullying Involvement, Internet Frequency, Undergraduate Students

Introduction
Children and adolescents are growing up in the digital age, and Information and Communication Technologies (ICTs) have become an integral part of daily life. In addition to a range of available technologies, there are also numerous online activities for social interaction, entertainment, and information seeking (Chen et al., 2020; Denissen et al., 2010; Eurostat, 2015). In Malaysia, school-goers spent the longest average online hours, which is 20.9 hours a week. The percentage of Internet users in 2015 showed a remarkable increase of 11.0 points (2015: 77.6% and 2014: 66.6%) making the online community from two-thirds to three-fourths of the entire national population. The number of Internet users in 2015 was approximately 24.1 million (or 77.6% of all inhabitants in Malaysia).

Due to highly innovative technologies such as the smartphone, cyberbullying and online aggression has increasingly affected individuals across the world. Cyberbullying was defined

as repeated unwanted, hurtful, harassing, and/or threatening interactions through electronic communication media. There are various factors influencing cyberbullying involvement among young adults including internal and external factors.

Maternal warmth was referred to the affection, care, comfort, apprehension, nurturance, support and love that the children perceived or experienced from their mothers (Rohner et al., 2012). Balakrishnan (2017) urged parents to play a bigger role in monitoring the use of the Internet, particularly those at younger ages as parents are generally the media gatekeepers of their children's Internet use and usage. However, inefficient parenting styles, which was 'affectionless control' parenting style with the meaning of high maternal and paternal protection in combination with low maternal and paternal care were associated with perpetrating cyberbullying (Padir et al., 2021; Gomez-Ortiz et al., 2019; Wiederhold & Riva, 2013). In addition, mothers with higher economic characteristics tended to show higher levels of warmth than mothers in other studies as they were more sensitive to their children's abilities and capable of adapting their parenting than mothers with less economic resources (Von Suchodoletz et al., 2011).

Besides, previous studies revealed that individuals from different countries behaved differently when engaged in bullying and cyberbullying and they showed different motivations for engagement in cyberbullying (Law et al., 2012; Shapka & Law, 2013; Ang et al., 2014). East Asian adolescents were more likely to be motivated to engage in cyber-aggression for proactive reasons than reactive reasons, with the opposite found for adolescents of European descent (Shapka & Law, 2013).

Though cyberbullying might not cause any physical damage initially, however, it likely caused destructive psychological effects, like low self-esteem, mental depression, suicide consideration and even suicide (Hon & Varathan, 2015). In sum, according to the previous studies reviewed, the present study focused to investigate the relationship between maternal warmth, motivation for engagement in cyberbullying and cyberbullying involvement among Universiti Putra Malaysia (UPM) students.

Methodology
Research Design and Sampling
A quantitative research design was selected to conduct the present study. The survey research method was selected because this study involved a bigger sample size of respondents. Besides, correlational design was used to determine the relationships between maternal warmth, motivation engagement in cyberbullying and cyberbullying involvement of the respondents and also it could determine the extent to which a variable corresponds to other variables.

A total of 389 undergraduate students aged between 19 to 27 years old in Universiti Putra Malaysia (UPM) were recruited for this study by using the cluster random sampling technique. Four faculties out of 16 faculties in UPM were randomly selected through a lottery method. There were 290 female students and 99 male students. Among 389 respondents, Malay has the highest total number of respondents followed by other minor races of Malaysia.

Instrumentation

An English version self-administered questionnaire comprised of four sections; personal and maternal background, maternal warmth, motivation for engagement in cyberbullying and cyberbullying was adopted for data collection.

Maternal Warmth. Maternal warmth was measured by using the adult version of the Parental Acceptance-Rejection Questionnaire (PARQ) on mothers (Rohner, 1980). The short 24-items form was utilised to measure an individual's perception of parental acceptance-rejection with the meaning of the warmth dimension of parenting. PARQ is consisting four scales, which are warmth/affection, hostility/aggression, indifference/neglect and undifferentiated rejection. The scale was rated on a four-point Likert-type scale (1 =Not True of My Mother: Always Never True to 4 = True of My Mother: Almost Always True). PARQ reliability coefficients for the mother version of the Adult PARQ ranged from 0.86 to 0.95 with a median coefficient of 0.91 in the 1975 validation study (Rohner & Khaleque, 2005).

Motivation for Engagement in Cyberbullying. A modified version of the Reactive-Proactive Aggression Questionnaire (Raine et al., 2006) was used to assess motivation for engagement in cyberbullying, whether was reactively or proactively motivated. Items in this version were modified to specifically focus on online aggression to ensure that they were ecologically valid (Shapka & Law, 2013). The 16 items measure was rated on a three-point Likert scales (1=never, 2=sometimes and 3=often). Higher score indicated a higher level of cyberaggression motivation. Reactive-Proactive Aggression Questionnaire was reliable with Cronbach's alpha coefficient of 0.77 for Reactive Aggression and 0.70 for Proactive Aggression (Shapka & Law, 2013).

Cyberbullying Involvement. Cyberbullying scale (Shapka & Law, 2013) was used to assess cyberbullying involvement. The measure included 12 items, asking participants how often they had engaged in different behaviours relevant to online aggression. The scale was rated on a five-point Likert scale (1=Has Never Happened to 5=Happens Everyday). A higher score indicated a higher level of cyberbullying involvement. Cyberbullying scale was reliable with Cronbach's alpha coefficient of 0.83 (Shapka & Law, 2013).

Data Analysis

The data were collected and analysed using Statistical Package for the Social Sciences (SPSS) software version 21.0 based on the research objectives and hypotheses. Two types of statistical analysis were utilized, which were descriptive statistics and inferential statistics. Descriptive statistics were used to interpret data in the form of frequency distribution, central tendency and dispersion for mother's characteristics (number of education years, monthly income, marital status and number of children), Internet frequency (number of social media involved and hours spent online), maternal warmth, motivation for engagement in cyberbullying and cyberbullying involvement of the respondents. Inferential statistics, was used to test the hypotheses and to infer from the sample (statistics) to the population (parameter). Two types of inferential statistics were used to analyse the collected data, which were Pearson Correlation and Multiple Regression Analysis.

Results

Correlation between Mother's Characteristics and Maternal Warmth

Table 1 shows that there was no significant relationship between the mother's number of education years and maternal warmth ($r = 0.01$, $p > 0.05$). This result was consistent with a previous study where demographic characteristics of the mother such as education level did not affect the misbehaviour of children in cyberbullying activities (Ismail et al., 2014). Similarly, there was no significant relationship between the mother's monthly income and maternal warmth ($r = -0.10$, $p > 0.05$). This result was consistent with a previous study where the monthly income did not affect the misbehaviour of children in cyberbullying activities (Ismail et al., 2014). Besides, the number of children was not significantly correlated with maternal warmth ($r = 0.06$, $p > 0.05$). However, it was inconsistent with the previous study which showed that more siblings distracted the supervision and weaken protection from mothers (Chan, 2014).

Table 1

Correlation Matrix for Maternal Characteristics, Internet Frequency, Maternal Warmth, Motivation for Engagement in Cyberbullying and Cyberbullying Involvement

Variables	1	2	3	4	5	6	7	8
1. Mother's number of education years	1							
2. Mother's monthly income	0.52**	1						
3. Number of children	0.08	0.26**	1					
4. Number of social media involved	-0.08	-0.08	-0.18**	1				
5. Total hours spent online	0.01	0.10	-0.02	0.19**	1			
6. Maternal warmth	0.01	-0.10	0.06	-0.02	0.00	1		
7. Motivation for engagement in cyberbullying	-0.18**	-0.13	0.02	0.03	0.05	0.43**	1	
8. Cyberbullying involvement	-0.05	-0.09	-0.01	0.00	0.11*	0.38***	0.72***	1

Note: *$p < .05$, **$p < .01$, ***$p < .001$; The number of samples for all variables was 389, except for the variable of mother's monthly income with only 207 samples, excluding those samples with no salary. For Maternal Warmth as a bipolar dimension, the lower the score, the higher the maternal warmth.

Correlation between Internet Frequency and Maternal Warmth

The finding showed that there was no significant relationship between the number of social media involved and maternal warmth ($r = -0.02$, $p > 0.05$). Moreover, total hours spent online were not significantly related to maternal warmth ($r = 0.00$, $p > 0.05$). These results were inconsistent with the previous study which stated that maternal warmth was positively associated with the children's internet usage (Lau & Yuen, 2016).

Correlation between Internet Frequency and Motivation for Engagement in Cyberbullying

There was no significant relationship between the number of social media involved and motivation for engagement in cyberbullying ($r = 0.03$, $p > 0.05$). This meant that the number of social media involved did not affect their motivation for engagement in cyberbullying among them. This result was inconsistent with the previous study that mentioned social media as the primary tool for cyberbullying that enhanced cyberaggression motivation

(Balakrishnan, 2015). Furthermore, total hours spent online were not significantly related to motivation for engagement in cyberbullying (r = 0.05, p > 0.05). The result was inconsistent with the previous study which showed that hours spent online related to the motivation for engagement in cyberbullying (Shapka & Law, 2013).

Correlation between Internet Frequency and Cyberbullying Involvement
The finding revealed that there was no significant relationship between the number of social media involved and cyberbullying involvement (r = 0.00, p > 0.05) and it was inconsistent with the previous studies which reported that social media such as Facebook is the primary tool for cyberbullying, followed by mobile phones and emails (Balakrishnan, 2015; Lai et al., 2017; Walker et al., 2011). However, there was a significant relationship between total hours spent online and cyberbullying involvement (r = 0.11*, p < 0.05). This meant that the total hours spent online positively affected the cyberbullying involvement among them. The longer the period spent online, the higher the possibility to involve in cyberbullying. Clearly, this finding was compatible with past research which found that those who spent more time online were significantly engaged more in cyberbullying activities (Balakrishnan, 2015).

Correlation between Maternal Warmth and Cyberbullying Involvement
There was a significant relationship between maternal warmth and cyberbullying involvement (r = 0.38***, p < 0.001). Thus, maternal warmth was strongly and positively affected cyberbullying involvement among them. As this maternal warmth instrument was a bipolar dimension, the lower score was indicating a higher maternal warmth and the higher score was indicating a high maternal rejection. Therefore, the lower the score, the higher the maternal warmth and the lower the cyberbullying involvement. This result was consistent with the previous result that stated that low maternal warmth reduced the probability of cyberbullying involvement among students (Wiederhold & Riva, 2013).

Correlation between Motivation for Engagement in Cyberbullying and Cyberbullying Involvement
Motivation for engagement in cyberbullying was significantly related to cyberbullying involvement (r = 0.72***, p < 0.001). Therefore, the higher the motivation for engagement in cyberbullying, the higher the cyberbullying involvement. The result was consistent with the previous study that showed the cyber aggression motivation was strongly related to cyberbullying involvement (Shapka & Law, 2013). The result was illustrated in Table 1.

Predictors of Cyberbullying Involvement
The result shown in Table 2 revealed that the overall model was significant with an R² of 0.49. This model explains 49% of the variance toward cyberbullying involvement score with F = 27.81, p < 0.001. The finding showed that only motivation for engagement in cyberbullying was found to be the significant predictor of cyberbullying involvement, which had a high Beta Coefficient which is the most important variable that influenced the cyberbullying involvement (β = 0.63***, p<0.001). It was consistent with the findings from a previous study that showed cyberaggression motivation was the predictor of a larger part of violence including cyberbullying involvement as this would influence the psychological and physical development of the individual (Marganski & Melander, 2018).

Table 2
Multiple Regression Analysis for Cyberbullying Involvement

Variables	Cyberbullying Involvement		
	B	β	p
Mother's Characteristics			
Number of education year	0.07	0.07	0.26
Monthly income	0.00	-0.05	0.43
Number of children	0.09	0.03	0.61
Internet Frequency			
Number of social media involved	-0.19	-0.04	0.40
Total hours spent online	0.06	0.06	0.27
Maternal Warmth	0.05	0.11	0.06
Motivation for Engagement in Cyberbullying	0.44	0.63***	0.00

R^2 = 0.49
F = 27.81
sig.F = 0.00, p<0.001

Note: *p < 0.05, **p < 0.01, ***p<0.001, β = Beta Coefficient

Discussion and Conclusion

Overall, the research aimed to determine the relationship between maternal warmth, motivation for engagement in cyberbullying and cyberbullying involvement among UPM students. The finding of this study indicated that there were no significant relationships between a mother's number of education years and mother's monthly income with maternal warmth among undergraduate students. These findings were similar to previous research which mentioned that the mother's education level did not affect the misbehaviour of children in cyberbullying activities (Ismail et al., 2014) and the socioeconomic status of the mother such as monthly income did not affect the misbehaviour of children in cyberbullying activities (Ismail et al., 2014). However, a previous study showed that more siblings distracted the supervision and weaken protection from mothers (Chan, 2014). Thus, it was inconsistent with the result of the present study which revealed that the number of children was not significantly related to maternal warmth. Besides, there was no significant relationship between total hours spent online with maternal warmth and this result was inconsistent with the previous study which stated that maternal warmth was positively associated with the children internet usage (Lau & Yuen, 2016). Moreover, there were no significant relationships between number of social media and total hours spent online with motivation for engagement in cyberbullying among UPM students. Both findings were inconsistent with the past research which showed that social media as the primary tool for cyberbullying that enhance cyberaggression motivation (Balakrishnan, 2015) and hours spent online was related with the motivation for engagement in cyberbullying (Shapka & Law, 2013). Furthermore, there was also no significant relationship between number of social media involved with cyberbullying involvement among UPM students and inconsistent with the previous studies which reported that social media such as Facebook was the main tool for cyberbullying, followed by mobile phones and emails (Balakrishnan,2015; Lai et al., 2017; Walker et al., 2011). However, total hours spent online had a significant positive correlation with cyberbullying involvement. This showed that the longer the total hours spent online, the higher the involvement in cyberbullying. This finding was similar to past research which found

that those who spent more time online were significantly engaged more in cyberbullying activities (Balakrishnan, 2015).

Apart from that, the result showed that maternal warmth and motivation for engagement in cyberbullying were significantly correlated with cyberbullying involvement of the respondents. Maternal warmth had a strong, positive correlation with cyberbullying involvement. The lower the maternal warmth perceived, the higher the involvement of cyberbullying. Motivation for engagement in cyberbullying had a strong, positive correlation with cyberbullying involvement, which meant the higher the cyber aggression motivation for engagement in cyberbullying, the higher the involvement in cyberbullying. Although the current work did not explore mean differences in reactive and proactive aggression, the relative relationship between these forms of aggression and cyberbullying lends support to this hypothesis. Lastly, the result revealed that only motivation for engagement in cyberbullying was the only significant predictor of cyberbullying involvement among UPM students.

In sum, the findings of this present study found that most of the adolescents had high perceived maternal warmth, low cyberaggression motivation for engagement in cyberbullying and low cyberbullying involvement. This implies that the cyberbullying issues may exist and should be a concern by governments, educators, schools, parents, society and other parties so that more precautions can be taken to prevent adolescents from being involved in cyberbullying. Furthermore, most of the undergraduates' relationship with their mothers was also found to be perceived as warmth. This showed that a close relationship between students and their mothers was crucial in preventing any potential unhealthy relationship including cyberbullying. The findings of this study provided a fundamental and baseline understanding of the cyberbullying involvement among young adults in non-Western contexts. Once an understanding of this misbehaviour has been established, strategies to expose this situation can be further developed in future research.

The result of this study also issued some information for parents to understand and know various factors which can influence cyberbullying involvement among students. The findings revealed that motivation for engagement in cyberbullying was the most significant predictor of cyberbullying involvement among students. Thus, parents especially mothers may have to be concerned regarding these sensitive issues. These issues can be resolved by build-up a healthy and positive relationship with young adults by encouraging them to express their feelings, teaching young adults to practice making positive self-statements, always give positive compliments, trying their best to make good times with children, reducing conflict through good communication and intimate positive relationship between mother and child. Above all, as young adults desire more attention and care from their parents, both mothers and fathers should be acting like their friends to ensure they are comfortable in sharing their problems and the consequences faced. Hence, parents should be actively involved in their children's lives and provide useful suggestions for their concerns. This finding also showed that total hours spent online had a positive, significant relationship with cyberbullying involvement, thus, parents should have strict control over children's online period and understand their online behaviours.

In addition, this study is also important as a reference for teachers and schools as they play an important role in disseminating information and knowledge to adolescents in particular

about the motivation for engagement in cyberbullying and cyberbullying involvement in hope that the schools, especially teachers can be one of the media in guiding adolescents to reduce their cyber aggression motivation as well as their cyberbullying involvement. The least they can do is by controlling the possibility of physical bullying as cyberbullying is the extension of 'offline' bullying that would be degrading the self-esteem of the victims. The findings also suggested that the teachers and schools need to think of some strategies, for example, providing counseling services for the students who experienced traditional bullying and cyberbullying in order to let the students speak out about their problems so that some solutions can be taken to overcome the problems.

The results of this study may be useful and can be referenced by local researchers or psychiatrists to encourage more studies will be conducted in the Malaysian context. The result of this study may be helpful in a family study that provided a deeper understanding in identifying the level of parental warmth perceived and the level of motivation for engagement in cyberbullying are related to cyberbullying involvement. Researchers also can contribute or increase knowledge about the same or other factors that are related to this field for future study purposes.

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