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Cyberbullying and coping strategies: Their relationships to suicidal ideation among adolescents

Cyberbullying is an act of harassing, bullying, insulting, taunting, intimidating or threatening others. It usually occurs among adolescents and young adults (Campbell, 2005). Cyberbullying is different from face-to-face bullying, as cyber victims are not able to foresee when they would be tormented or how can the despicable act take place. This is because any individual who possesses a smartphone or computer can be bullied or harassed any time and they may not know when they will be bullied by others (Lacherza & Conti, 2013). In addition, Price & Dalgleish (2010) emphasised that cyberbullying can be done anonymously, making it difficult for the authorities to trace the perpetrators. Consequently, it is expected that young people affected by cyberbullying are more likely to have suicidal ideation than those who experience traditional bullying (Hinduja & Patchin, 2010). Suicidal ideation is defined as thoughts and ideas dominated by death, suicide, and self-injurious behaviours (Kim *et al.*, 2006).

Cyberbullying affects both the cyber victims and cyber bullies, as many bullies were themselves victims previously (Hinduja & Patchin, 2010). Studies showed both the cyberbullies and their victims were not only prone to a high risk of anxiety, depression and stress-related disorders, but also could have suffered from psychosomatic problems that ushered suicidal ideation (Hinduja & Patchin, 2010; Roland, 2002).

Hinduja & Patchin (2010) analysed the relationship between involvement in cyberbullying and suicidality among middle school students in the United States of America. Students who were involved as an offender or a

victim had more suicidal ideation and were more likely to attempt suicide compared to those who had not encountered this type of aggression. Moreover, the results highlighted that victims were more likely to have suicidal ideation and behaviours than offenders. A meta-study of 491 articles from 1910 to 2013 also suggested a close connection between peer victimization and suicidal ideation and attempts, regardless of sex, age and study quality. In addition, the connection between cyberbullying and suicidal ideation is stronger than traditional bullying and suicidal ideation (Gini & Espelage, 2014).

If there is no formal channel to resolve cyberbullying, coping strategies are vital in order to address the issue (Brown *et al.*, 2006). Coping is defined as "constantly changing cognitive and behavioral efforts in order to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141) (Folkman & Moskowitz, 2004).

In a study of 67 adolescents aged 13 to 17 years who were hospitalized for attempting suicide in 5 paediatric departments across France, the results showed that adolescents with suicidal ideation made greater use of non-productive coping strategies where they focused on not coping, ignoring problems, and self-blame. Adolescents without suicidal ideation frequently applied productive coping strategies to concentrate on the positive, strive to accomplish, and look for relaxing and redirection (Mirkovic *et al.*, 2015).

Vollink, Bolman, Dehue, & Jacobs (2013) explored the connection between the utilization of coping strategies to handle daily stressors in

general and the utilization of coping strategies to handle cyberbullying. They recruited 501 children in Netherlands aged 11 and 12 years. Their findings revealed that the coping strategies adopted by cyber victims varied significantly from face-to-face bully victims and those who were not involved in cyberbullying; children who were bully victims expressed emotions more frequently by getting angry or irritated rather than palliative coping when they reacted to stressful situations in general. Moreover, victims of cyberbullying applied depressive coping by internalizing the stressors, often feeling useless and incapable after having been cyberbullied.

Due to the close connections between cyberbullying and suicidal ideation (Gini & Espelage, 2014; Hinduja & Patchin, 2010; Roland, 2002), and the coping strategies and suicidal ideation (Bazrafshan *et al.*, 2014, 2014; Mirkovic *et al.*, 2015), it is therefore important to examine the relationships among cyberbullying, coping strategies and suicidal ideation. The research questions, hypotheses and conceptual framework are as follows:

Research Questions

1. What are the relationships among cyberbullying, coping strategies and suicidal ideation among adolescents?
2. Is coping strategy a mediator for the effects of cyberbullying on suicidal ideation among adolescents?

Method

Participants

415 adolescents (45.3% males and 54.7% females) between 15 – 19 years of age participated in the survey.

Measurements

Suicidal Ideation Attributes Scale. Suicidal Ideation Attributes Scale (SIDAS) contains five items to measure suicidal ideation. Participants choose a number (0-Never, 10-Always) to indicate the frequency of having certain suicidal thoughts. The reported internal consistency of SIDAS was 0.91. A higher total score indicated more severe suicidal ideations. (Spijker *et al.*, 2014)

Brief COPE. Brief COPE measures the coping strategies adopted by participants. It contains 28 items and the reported Cronbach's alpha of the original subscales range from 0.5 to 0.9 (Carver,

1997). Participants choose a number (1 = I haven't been doing this at all; 4 = I've been doing this a lot) to indicate the frequency of practising certain coping strategies. Baumstarck *et al.* (2017) recommended a four-factor structure for Brief COPE, which are social support, problem solving, avoidance and positive thinking. The Cronbach's alpha coefficients ranged from 0.71 to 0.82.

Cyberbullying and Online Aggression Survey. This survey includes 32 items with two subscales: 9 items to measure cyberbullying offending and 23 items to measure victimization. It was especially designed for adolescents from 12 to 17 years. Participants choose a number from 0 to 4 for each item (0 = never, 1 = once or twice, 2 = a few times, 3 = many times, and 4 = every day). The Cronbach's alpha for cyberbullying scale was 0.76 and victimization scale was 0.74 (Hinduja & Patchin, 2010).

Procedure

A purposive sampling method was employed to recruit participants from two secondary schools. After getting approval from the principals, questionnaires were distributed to students with assistance from the school teachers. Participants were briefed on aims of the study, their right to refuse participation and assurance of confidentiality. Data were analysed using the SmartPLS ver 3.

Results

Measurement model

Construct reliability and validity. The composite reliability values of all the three scales ranged from 0.794 to 0.948 and the average variance extracted (AVE) ranged from 0.502 and 0.821 (see Table 1), which exceeded the recommended value of 0.7 for the former and the recommended value of 0.5 for the latter (Hair Jr *et al.*, 2016). Therefore, the findings suggest that the latent constructs are acceptable.

Discriminate validity, collinearity statics and coefficient of determination. The Fornell-Larcker criterion was used to examine the discriminant validity of the measurements. As all the indexes of other measurements are lower than the square root of the measurement, the discriminate validity of the measurements is acceptable (Hair Jr *et al.*, 2016) (see Table 2). In addition, the results of variance inflation factor (VIF) are all below 5; thus, there is no multicollinearity issue for the

measurements (Hadi et al., 2016). The R2 value of SIDAS is 0.20. (See Table 3).

Collinearity assessment. The results indicate that there is no multi-Collinearity problem, as all values of VIF are below the threshold of 5 (Wong, 2016) (see Table 3).

Structure Model

The results of bootstrapping with 5000 subsamples (Table 4) show that cyber victims are more likely to have the suicidal ideation but not the cyber bullies. The offending is more likely to use a variety of coping strategies whereas cyber victims are more likely to use avoidance strategy only. Among the four coping strategies, only avoidance is negatively associated with suicidal ideation; participants who use the avoidance strategy more frequently are more likely to have suicidal ideation.

Further examination was conducted on whether coping strategies mediated the effects of cyberbullying on suicidal ideation. Following the decision tree proposed by Zhao (2010), since only the total indirect effect of victimization but not offending on suicidal ideation is significant, it suggests that the effect of victimization on suicidal ideation can be mediated by coping strategies, $T = 2.66$, $p < 0.001$ (see Fig 1). Nonetheless, the results of specific indirect effect of victimization on suicidal ideation indicate only avoidance is significant, $T = 2.04$, $p = 0.042$. Since the direct effect of victimization on suicidal ideation are significant, $T = 3.64$, $p < 0.001$. The signs of the three path coefficients are positive, which suggests a complementary partial mediation. In other words, victims of cyberbullying who frequently use the avoidance coping strategy are more likely to have suicidal ideation.

Discussion

This study aims to find out the relationships among cyberbullying, suicidal ideation and coping strategies, and whether coping strategies mediated the effects of cyberbullying on suicidal ideation. Through the findings of the study, suggestions can be provided to educators and counsellors to design appropriate intervention programs to reduce the impacts of cyberbullying on suicidal ideation.

For the first research question, the findings revealed that cyber victims are more likely to have suicide ideation as compared to cyber

bullies. Even though Roland (2002) suggested that both cyber bullies and cyber victims have suicidal ideations due to the high connection between cyber bullies and cyber victims, our findings are similar to those of Hinduja & Patchin (Hinduja & Patchin, 2010), who suggest that the risk of suicide is higher among cyber victims than cyber bullies.

In the second research question, results pointed to the possibility of victims using avoidance coping strategy only, whereas cyber offenders are more likely to use multiple coping strategies, which include social support, problem solving, avoidance and positive thinking. These findings are consistent with the findings of other studies, in which cyber victims are less likely to use positive coping strategies such as problem-solving coping strategy, but more likely to use negative coping strategies, such as avoidance-emotional coping strategies, or they would blame themselves as having responsibility for the bullying (Nixon, 2014; Völlink *et al.*, 2013).

A possible reason that cyber victims have more suicidal ideations but not cyber bullies can be related to their adopted coping strategies. The results showed that only avoidance coping strategy is relevant to suicidal ideation. In addition, our findings from the mediating analysis showed that avoidance coping strategy is the mediator for the effects of cyber victimization on suicidal ideation, whereas avoidance coping strategy is not the mediator for the effects of cyber offending on suicidal ideation. The connection between the use of avoidance coping strategy among cyber victims and their suicidal ideation could be caused by cyber victims not knowing who the bullies are; hence, they find it difficult to choose an effective coping strategy (Slonje *et al.*, 2013). They are more likely to have the belief that cyberbullying is something that cannot be changed and so many of them come to deny or internalize the problem (Mirkovic *et al.*, 2015).

In conclusion, the results of this study support the views that cyberbullying, especially cyber victims, are more likely to have suicidal ideation. However, suicidal ideation is also caused by the adoption of the avoidance coping strategy by cyber victims in comparison to other coping strategies. Based on the findings, it is strongly suggested that intervention programs be designed to educate and motivate cyber victims

to use more positive coping strategies, which in turn, will be helpful to reduce their suicidal ideation.

As the sample was recruited by using the purposive sampling method, future studies may use the random sampling method to recruit participants from more different schools to examine the robustness of the findings. The qualitative approach can also be employed to find out more information behind the reasons of using avoidance as a coping strategy in comparison to others.

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Table 1: Factor loadings and reliabilities of all measurements

Factors	Items	Composite Reliability	AVE
SIDAS	4	0.948	0.821
Victimization	6	0.867	0.522
Offending	5	0.848	0.530
Avoidance	5	0.857	0.546
Positive thinking	3	0.855	0.747
Problem solving	3	0.835	0.561
Social support	4	0.801	0.502

Table 2: Discriminate validity of all measurements

	SIDAS	Avoidance	Bullying	Positive Thinking	Problem Solving	Social Support	Victimization
SIDAS	0.906						
Avoidance	0.316	0.739					
Bullying	0.329	0.435	0.728				
Positive Thinking	0.201	0.385	0.238	0.864			
Problem Solving	-0.023	0.214	0.114	0.394	0.749		
Social Support	0.132	0.428	0.195	0.554	0.545	0.708	
Victimization	0.403	0.498	0.644	0.220	0.007	0.158	0.722

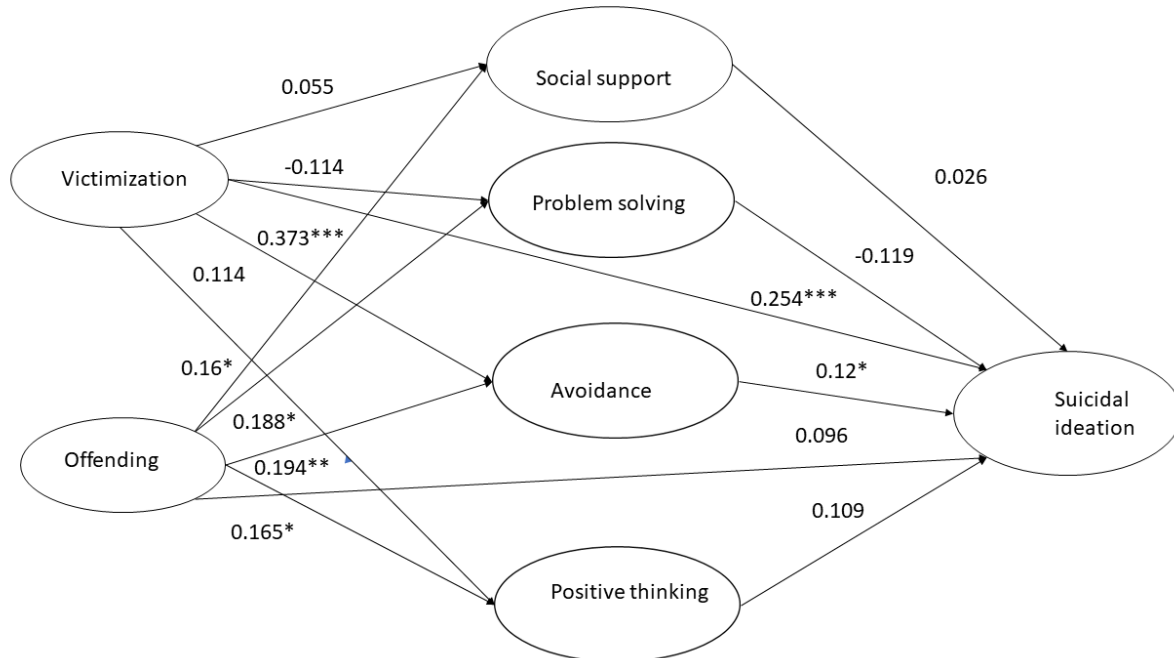
Table 3: Collinearity assessment of all measurements

Dependent variables	Predictors	R2	VIF
SIDAS	Social support	0.20	1.91
	Problem solving		1.48
	Avoidance		1.65
	Positive thinking		1.55
	Victimization		1.96
	Offending		1.79
	Social support		Victimization
Offending		1.71	
Problem solving	Victimization	0.02	1.71
	Offending		1.71
Avoidance	Victimization	0.27	1.71
	Offending		1.71
Positive thinking	Victimization	0.06	1.71
	Offending		1.71

Table 4: Results of path coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Offending -> SIDAS	0.096	0.096	0.064	1.496	0.135
Victimization -> SIDAS	0.254	0.259	0.070	3.635	0.000
Offending -> avoidance	0.194	0.198	0.059	3.309	0.001
Offending -> positive thinking	0.165	0.167	0.070	2.356	0.019
Offending -> problem solving	0.188	0.195	0.081	2.311	0.021
Offending -> social support	0.160	0.170	0.067	2.368	0.018
victimization -> avoidance	0.373	0.375	0.054	6.958	0.000
victimization -> positive thinking	0.114	0.115	0.062	1.835	0.067
victimization -> problem solving	-0.114	-0.116	0.076	1.501	0.133
victimization -> social support	0.055	0.056	0.061	0.897	0.370
avoidance -> SIDAS	0.120	0.117	0.057	2.103	0.036
positive thinking -> SIDAS	0.109	0.105	0.061	1.792	0.073
problem solving -> SIDAS	-0.119	-0.106	0.084	1.414	0.158
social support -> SIDAS	0.026	0.020	0.073	0.362	0.717

Fig 1. Path coefficients for the structure model



(* p < 0.05; ** p < 0.01, *** p < 0.001)

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