Students' Family Support, Peer Relationships, and Learning Motivation and Teachers Fairness Have an Influence on the Victims of Bullying in Middle School of Hong Kong

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Abstract: This study aims to explore the effect of students' family socio-economic status, gender, family support, learning motivation and peer relationships and teachers' equity on the victims of school bullying in Hong Kong. Additionally, the model was analyzed by SEM. The participants in this study were 15 year-old middle school students living in Hong Kong. The data were collected from the PISA 2015 database and the valid number was 4856. The results indicating that family support, peer relationships, and teacher fairness have a negative influence on school bullying. Family support affects one's risk of being bullied by influencing learning motivation. Peer relationship affects one's risk of being bullied by influencing learning motivation. Teacher fairness affects one's risk of being bullied by influencing learning motivation.

Keywords: *Victims of bullying, PISA 2015, peer relationship, family support, learning motivation.*

Introduction

With Bullying is one of the most important issues at school and some students are reported to be victims. According to the report of the OECD (2016), nearly 4% of the students from OECD (Organization for Economic Co-operation and Development) member countries were pushed or hit a few times a month. The percentage of the victims varies from 1% to 9.5% according to each country. Moreover, 20% of the students from OECD member countries felt they were treated unfairly by their teachers at least a few times a month (they felt they were offended, teased or severely punished in front of others) (OECD, 2016).

In view of the development of school bullying, several common acknowledgments have been reached: One, the school bullying is not the prank between the students, it is an educational problem which needs to be dealt with seriously (Ma &Yang, 2016), the American government has even enacted special legislation against the school bullying (Stuart-Cassel, Bell, & Springer, 2011) ; Second, the school bully can affect the self-esteem, and interpersonal relationship, anxious emotion and problematic behaviour (National Bullying Prevention Center, 2018; Nakamoto & Schwartz, 2010; Rose, Monda-Amaya & Espelage, 2011) which will cause the negative effect on the school life of the students; Third, it is proven that the management which the school is running can play an active role in prevention of school bullying (Li, He, Chen, Bao, Wang, & Zhao, 2015). The above mentioned fully indicates that the school bully can be a bad influence on students' performance in school and this issue has caused the attention over the world. To the administration of the school, a proper management should be adopted to reduce the school bully.

According to the social interactive theory Lewin (1976), the personal behaviour is affected by the feature himself and the environment and these two elements may generate interactive effect. Based on this view, the school bullying behaviour may also be affected by the variables from student himself and school environment. Bronfenbrenner (1979) introduced an ecological systems theory in terms of a more comprehensive viewpoint on human growth and development. Bronfenbrenner's ecological framework presents the interrelationship between individuals and the environments. The Bronfenbrenner ecological model has been applied to mechanisms of bullying victimization by some researchers. The development of adolescents is affected by their surroundings and other factors such as the interaction

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of their motivation, parents, peers, teachers and the school climate. Hence, the Bronfenbrenner ecological model can be applied to the mechanisms of bullying victimization. Hence, this thesis develops a research model to examine the influence from student and environment on school bullying.

Considering previous studies and data measured in PISA 2015, the variables included in this model are: family social and economic statues (Due, Merlo, Harel-Fisch, Damsgaard, Holstein, Hetland, Currie, Gabhainn, de Matos, Lynch, 2009), gender (Solberg & Olweus, 2003), family support (Lereya, Samara, & Wolke, 2013), learning motivation (Haynes, Emmons, & Ben-Avie, 1997), peer relationship (Li et al., 2015)and teacher fairness (Hoy & Weinstein, 2006). Therefore, the purpose of this study is to explore the effect of students' family socio-economic status, gender, family support, learning motivation and peer relationships and teachers' equity on the victims of school bullying in Hong Kong. Furthermore, it analyzes whether students' family support and peer relationships and teachers' equity indirectly influence victims of bullying through students' learning motivation by SEM (Structural Equation Modeling).

This study examined the following questions:

1. What influences do family support, learning motivation, peer relationships, and teacher fairness have on school bullying victimization?

2. Does family support, peer relationships, and teacher fairness indirectly affect school bullying victimization through learning motivation?

Literature Review

The school bullying and victims

Norwegian scholar (Olweus, 1993) was the first one who began to study the school bullying systematically. Olweus (1993) think, the school bullying is a group or a singular student that has long treated the specified student with negative and attacking behavior; the bullying is long and repeatedly. Bullying is defined as threatening or physically or psychologically harms others on purpose or threatens to cause/actually cause physical injury, death, psychological damage or maltreatment/neglect to a group of individuals or a social group by World Health Organization (2002). Olweus (1993) defines bullying victims as students who have suffered repeated physical harm at the hands of more powerful students.

Nakamoto and Schwartz (2010) have pointed out that a small but significant negative correlation exists between the victim and their level of academic achievement, and the lack of a strong relationship between the two is mainly due to the fact that many factors influence academic achievement and some of those factors are more influential than bullying. In fact, victimhood may be more related to experiences at school, including feelings, motivations, behaviors, awareness of learning aptitudes, etc. (Ladd, Ettekal & Kochenderfer-Ladd, 2017). These factors can all have an impact on victims. However, only a few empirical studies have explored predictors of bullying victimhood (Graham, Bellmore, & Juvonen, 2003; Wynne & Joo, 2011); very few people are focused on school-related factors. However, research has found that individual demographic factors and school characteristics are significantly associated with victimization. Therefore, it is crucial that we conduct research on causal factors with respect to victims of school bullying. By discovering the causes of said behavior, we can come up with ways to stop it.

Ecological theory

During his discussion of a more comprehensive view of human growth and development, Bronfenbrenner (1979), brought forth an ecological model. This model is dominated by the individual's relationship to his environment, but social ecology theory divides human development into interactions between an individual and multiple different systems (family, neighborhood, school and society). Bullying is caused by the complex interactions between individuals and their environments, including proximal (family, peers, school environment) and remote (social and cultural influences) (Swearer & Hymel, 2015). Therefore, a few researchers use ecological models to propose bullying mechanisms. Among these is the concept that adolescent development is influenced by the proximal environment and other environmental contexts, including interactions with parents, classmates, teachers and the school environment (Swearer & Doll, 2001).

Ecological theory actually does provide researchers of bullying with the best theoretical framework, because it describes the complex reciprocal interactions between peers, that is, bullying victims and bullies. The theory takes these relationships as the center of a network of systems, then moving towards various other systems that shape individuals, microsystems, mesosystems, external systems, macrosystems, etc. Some of them exacerbate the negative effects of asymmetrical power relationships at school (Jeong, Kwak, Moon, & Miguel, 2013) and negatively affect bullying victims. Therefore, this research uses the ecological theory framework to explore the impacts of factors such as individuals, families, classmates, teachers and society on victims of bullying.

Family support and victims of bullying

Pernice-Duca, Taiariol, and Yoon (2010) found that parenting styles that were characterized by psychological control and a lack of nurture could lead to social bullying (Kawabata, Alink, Tseng, van Ijzendoorn, & Crick, 2011). The

relationship between bullying and academic performance is complex. Glew, Fan, Katon, Rivara, and Kernic (2005) noted that victims of bullying may be those who have poor academic performance in school. However, Beran (2008) suggested that victims of bullying with less support from their parents and their parents' disengagement in school can lead to a stronger relationship between the victims of bullying and their low academic performance.

Carney and Merrell (2001) suggested several victim characteristics and variables associated with victim behavior and also claimed that parental monitoring and involvement could predict individual behavior. Young people from families that give low parental care, apply harsh and unpredictable discipline, are controlling and in which individuals experience bullying from siblings are at more risk of becoming victims rather than becoming bullies (Pepler, Jiang, Craig, & Connolly, 2008). Zych, Ortega-Ruiz, and Del Rey (2015) claimed that children who were overprotected in their family environment and somewhat naïve were also, more often than not, the victims of bullies. A group of children, whose parents attract their attention and love through relational manipulation, are more likely to experience social bullying (Brendgen, 2012). Therefore, this study proposes the following hypothesis:

H$_1$: Family support significantly influences school bullying victimization.

Peer relationships and victims of bullying

Bullying can have a negative impact on emotional and social development (Kartal & Bilgin,, 2009). Adolescents without close peer relationships are less likely to receive emotional support during stressful times (Hussong, 2000). Without the support of their peers, adolescents may be more vulnerable to the negative effects of conflict. Bullying behavior normally reaches a peak at the early stage of adolescence, as adolescents start to need to be with their companions and romantic partners in order to be socially supported (Yoon, Barton, & Taiariol, 2004).

Caputo (2014) noted that bullying victimization can lead to a negative self-view that can reduce a student's personal sense of power regarding the learning process because of the lack of peer reinforcement. However, for vulnerable pupils, the use of peer support systems can be a critical part of the process of feeling more positive about themselves and dealing with difficulties such as victimization (Houlston, Smith, & Jessel, 2011; Cowie, 2014). Kaltiala-Heino and Frojd (2011) Peer relationships are crucial for adolescent development. Adolescents may suffer from emotion dysregulaiton and low self-esteem after being bullied(Turner, Finkelhor & Ormrod, 2010). Adolescents start to develop socially slower and reduce their self-protection as think they will be edged out by others (Prinstein, Cheah, & Guyer, 2005), which then makes them to become the target for bullies.

H$_2$: Peer relationships influence school bullying victimization.

Teacher fairness and victims of bullying

Chory-Assad and Paulsel (2004) defines teacher fairness by observing whether or not the distribution results and process in the classroom are genuinely fair to the students. That is to say so long as the teacher's way of doing things and treating his students make the them feel that he is fair, the fact that the teacher is unfair sometimes will not affect students' attitude towards the teacher (Chory-Assad, 2002). Rodkin and Hodges (2003) pointed out that teachers are the best resource in terms of preventing school bullying, as the students' perceptions of the teachers' responses to the bullying situations affected the behavior of the victims, the aggressors, and even the spectators (Salmivalli, Voeten, & Poskiparta, 2011). Practices that show disapproval toward bullying demonstrate to the students that teachers care about the interactions in the classroom (Rodkin & Gest, 2011).

Pellegrini (2002) pointed out that the first step is teachers' awareness and attention. Teachers must be aware that if their students experience social bullying. Once the teachers find out that their students are being socially bullied, they should tell the bullies' teachers and discuss the situation with them. Erdogdu (2016) found that the positive attitudes of teachers and their efforts to develop empathy skills in students were important in decreasing school bullying. Therefore, the following hypothesis is proposed:

H$_3$: Teacher fairness significantly influences school bullying victimization.

Learning motivation and victims of bullying

Swearer (2011) suggested that one of the reasons that students get bullied is related to their academic engagement. Nansel, Haynie, and Simons-Morton (2003) found the victims of bullying tend to be those who are less academically engaged and motivated to learn. As a result, students who have a strong learning motivation, can accept challenges and have good academic performance are less likely to be bullied. A number of studies have also showed that some students with a low learning motivation and poor academic achievements became victims of bullying (Glew et al., 2005; Beran, 2008; Swearer, 2011). For example, students having poor academic performance and a lower learning motivation become objects of ridicule among their peers and teachers. Additionally, Sun (2017) argued that academic performance is used to judge whether he or she is a good student or not, which makes the students who are not good at studying escape from school intentionally or unintentionally since "attack" is one of the types of escaping culture. In the long term, those students become the target of bullying.

The Bronfenbrenner's ecological model has been applied to mechanisms of bullying victimization by some researchers (Jeong et al., 2013). The development of adolescents is affected by their surroundings and other factors such as the interaction of their motivation, parents, peers, teachers and the school climate (Swearer & Doll, 2001). Hence, the Bronfenbrenner ecological model can be applied to the mechanisms of bullying victimization. Therefore, this study proposes the following hypothesis:

H_4: Student learning motivation is significantly influenced by school bullying victimization.

H_5: Family support indirectly affect school bullying victimization through learning motivation

H_6: Peer relationships indirectly affect school bullying victimization through learning motivation

H_7: Teacher fairness indirectly affect school bullying victimization through learning motivation

Data Analysis

Study Model

Using ecological systems theory and social interactive theory as the research framework, this study adopted SEM for the analysis to examine whether family support, peer relationships, and teacher fairness indirectly affected school bullying victimization through a reduction in learning motivation. The specific study hypothesis path reference diagram is shown in Figure 1.
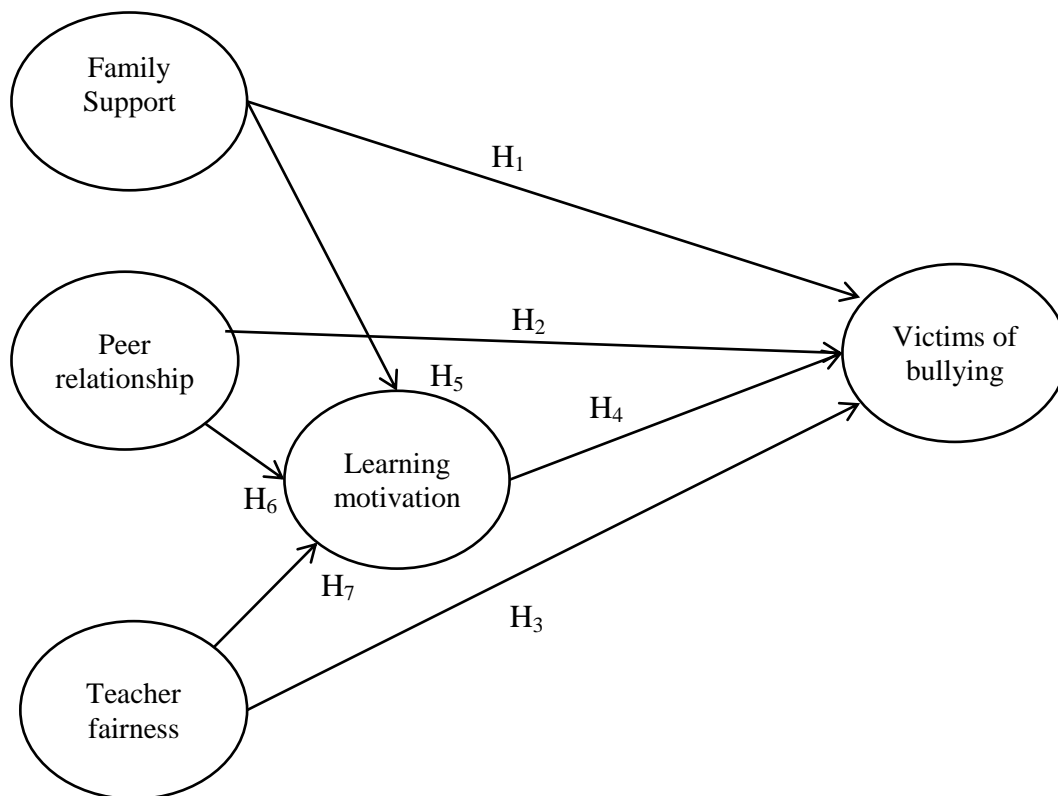

Figure 1. Research framework

Sample

In PISA 2015, the investigation of school bullying was measured by students, providing the valuable data for this study. The application of the PISA 2015 data to do the secondary data analysis was expected to have two benefits. Firstly, PISA 2015 totally gathered over 5 thousand sample in Hong Kong. These large scale investigations went through careful sampling process, and therefore it is better revealing the actual situation of the school bullying of Hong Kong students. Pisa 2015 found that Hong Kong 15-year-olds came third from bottom in life satisfaction (6.48) (OECD, 2018). Studies in Hong Kong consistently point to the heavy price of Hong Kong academic excellence: students are stressed, depressed, and bullied. According to the survey of PISA, 32.2% of the Hong Kong students said they were bullied at least a few times a month by different types of bullying. 26.1% of them were often teased by their classmates. The percentage of these two parts was highest among the results of all participating countries in the PISA survey (OECD, 2018). Therefore, it is of great value to study the bullying of Hong Kong students.

The samples used in this thesis were the students who answered the 2015 Hong Kong PISA. Excluding unanswered and omitted answer samples for the focus variables in this study, the survey results from 4856 data samples from 138 schools were included in the analysis (2437 boys and 2419 girls) (OECD, 2016).

Analysis

Reliability and validity analysis

1. Family support

The variables in the research model first underwent descriptive analysis and reliability analysis. Conducting the reliability analysis, the Cronbach's α of the family support scale, was .830 and its Cronbach's α if Item Deleted, were found to be .700 to .828. The accepted standard for Cronbach's α coefficient should .7 and above Cuieford (1965) showing that the factors are reliable.

Concerning goodness of fit for the model's internal structure, the scale's measurement errors for the observed variables, a negative error variance did not occur. Secondly, all factor loadings ranged from .59 to .88, which is higher than the .50 value proposed by Bentler and Wu (1993) and they have convergent validity as well.

The reliability of individual items for the measurement index (which is squared multiple correlation) mostly exceeded the .20 value proposed by Bentler and Wu (1993). the measurement index of this study's scale ranged from .348 to .774. Furthermore, CR values for latent variables was .834 exceeded the evaluation standard of .60. AVE figures were .562 the figures exceeded the .50 evaluation standard.

2. Learning motivation

Reliability analysis found, the Cronbach's α value was .832 for learning motivation scale. All factor loadings ranged from .61 to .77, which is higher than the .50 value proposed by Bentler and Wu (1993) and they have convergent validity as well. The reliability of individual items for the measurement index mostly exceeded the .20 value. The measurement index of this study's scale ranged from .372 to .593. Furthermore, CR values for latent variables was .835 exceeded the evaluation standard of .60. AVE figures were .504 the figures exceeded the .50 evaluation standard.

3. Peer relationship

Reliability analysis found, the Cronbach's α of the peer relationship, was .783. All factor loadings ranged from .53 to .78, which is higher than the .50 value and they have convergent validity as well. The reliability of individual items for the measurement index mostly exceeded the .20 value. The measurement index of this study's scale ranged from .281 to .608. Furthermore, CR values for latent variables was .773 exceeded the evaluation standard of .60. AVE figures were .410 the figures exceeded the .50 evaluation standard.

4. Teacher fairness

The Cronbach's α value was .799 (which meets the standard) for teacher fairness scale and its Cronbach's α if Item Deleted, were found to be .722 to .815. ST034Q01TA did not meet reliability standard and were therefore eliminated; the Cronbach's α of this dimension was .815.

Concerning goodness of fit of a statistical model internal structure, the scale's measurement errors for the observed variables, a negative error variance did not occur. Secondly, all factor loadings ranged from .55 to .80. The reliability of individual items for the measurement index mostly exceeded the .20 value. the measurement index of this study's scale ranged from .303 to .640. Furthermore, CR values for latent variables was .825 exceeded the evaluation standard of .60. AVE figures were .490 the figures exceeded the .50 evaluation standard.

Results

1. Testing of Direct Effects

This study performed an analysis using SEM overall model fit, following the recommendations in Hu and Bentler (1999). The model's χ^2 value was 4691.391, which reached the level of significance. GFI= .901, AGFI= .873, NFI= .886, NNFI= .849, CFI= .870, IFI= .870 and RFI= .884 were slightly smaller than the ideal threshold value (Byrne, 1994). Although RMSEA= .075 did not reach the ideal threshold value, the quantitative value is between .05 and .08 which shows that the model has a reasonable fitness (Browne & Cudeck 1993; MacCallum, Browne, & Sugawara, 1996).

In Table 1, it can be seen that the structural coefficients of family support, learning motivation, peer relationships, and teacher fairness on school bullying are all statistically significant ($p < .05$), meaning that there are direct effects between these factors and bullying. The standardized coefficients are -.043, .050, -.268, and -.354, indicating that family support, peer relationships, and teacher fairness have a negative influence on school bullying (Figure 2). In other words, the higher the level of family support, the quality of peer relationships, and the level of teacher fairness, the lower the number of school bullying incidents, which is consistent with the findings of Prinstein et al. (2005), Di Stasio et al. (2016) and Beran (2008). However, students' learning motivation is positively correlated with bullying, indicating that

the higher the level of learning motivation of a student, the more likely the student will be bullied. Therefore, hypotheses H_1, H_2, and H3 stand while H4 fails.

Secondarily, the structural coefficients of family support, peer relationships, and teacher fairness on learning motivation are all statistically significant (p< .05), meaning that these factors have direct effects on learning motivation. The standardized coefficients are .233, .83, and -.88, indicating that the higher the level of family support and the quality of peer relationships, the higher the level of learning motivation of a student. Teacher fairness, on the other hand, has a negative impact on students' learning motivation. This indicates that students are less motivated to learn when they believe the teacher is fair.

2. Testing of Mediation Effects

In order to test the multiple mediator model (the mediation effect of learning motivation on peer relationships, teacher fairness, family support, and the risk of being bullied), this study adopts the bootstrapping method proposed by Shrout and Bolger (2002), which is widely recommended in recent years for increasing the accuracy of testing mediation effects. This is a method that uses the resampling procedure to obtain the average value of a mediation effect and a 95% confidence interval. Based on the recommendation by Shrout and Bolger (2002), if the 95% confidence interval for a mediation effect obtained by resampling does not contain 0, then the mediation effect is statistically significant (p < .05).

The indirect effect of learning motivation on family support and the risk of being bullied is .012 (.233*.050) and the confidence interval (.005, .020) does not contain 0, meaning that the effect is statistically significant (p<.05) and that learning motivation has a mediation effect. The direct effect is -.043 and the confidence interval (-.075, -.012) does not contain 0 while the total effect is -.031 (-.043+.012) and the confidence interval (-.062, -.001) does not contain 0, meaning that the effect is statistically significant, and that learning motivation has a partial mediation effect on family support and the risk of being bullied (Table 1 & Figure 2). This indicates that family support affects one's risk of being bullied by influencing learning motivation. Moreover, the total effect is negative, meaning that the higher the level of family support and learning motivation, the lower the risk of being bullied. Therefore, H_7 stands.

The indirect effect of learning motivation on peer relationship and the risk of being bullied is .004 (.083*.050) and the confidence interval (.001, .008) does not contain 0, meaning that the effect is statistically significant (p<.05) and that learning motivation has a mediation effect. The direct effect is -.268 and the confidence interval (-.300, -.234) does not contain 0 while the total effect is -.264 (-.268+.004) and the confidence interval (-.296, -.230) does not contain 0, meaning that the effect is statistically significant, and that learning motivation has a partial mediation effect on peer relationship and the risk of being bullied (Table 1 & Figure 2). This indicates that peer relationship affects one's risk of being bullied by influencing learning motivation. Moreover, the total effect is negative, meaning that the higher the level of peer relationship and learning motivation, the lower the risk of being bullied. Therefore, H_8 stands.

The indirect effect of learning motivation on teacher fairness and the risk of being bullied is -.004 (-.088*.050) and the confidence interval (-.008, -.002) does not contain 0, meaning that the effect is statistically significant (p<0.05) and that learning motivation has a mediation effect. The direct effect is -.354 and the confidence interval (-.389, -.319) does not contain 0 while the total effect is -.358 (-.354-.004) and the confidence interval (-.393, -.324) does not contain 0, meaning that the effect is statistically significant, and that learning motivation has a partial mediation effect on Teacher fairness and the risk of being bullied (Table 1 & Figure 2). This indicates that Teacher fairness affects one's risk of being bullied by influencing learning motivation. Moreover, the total effect is negative, meaning that the higher the level of Teacher fairness and learning motivation, the lower the risk of being bullied. Therefore, H_9 stands.

Table 1 Bootstrap SEM analysis of total, direct, and indirect effects

Direct effect	Estimate	*p* value	Confidence Interval
FS - VB	-.043	< .05	-.075, -.012
LM - VB	.050	< .05	.019, .081
PR- VB	-.268	< .05	-.300, -.234
TF- VB	-.354	< .05	-.389, -.319
FS-LM	.233	< .05	.196, .275
PR-LM	.083	< .05	.042, .12
TF-LM	-.088	< .05	-.125, -.051
Indirect effect			
FS-LM-VB	.012	< .05	.005, .020
PR-LM-VB	.004	< .05	.001, .008
TF-LM-VB	-.004	< .05	-.008, -.002
Total effect			
FS- VB	-.031	< .05	-.062, -.001
PR- VB	-.264	< .05	-.296, -.230
TF- VB	-.358	< .05	-.393, -.324

Note: Victims of bullying, VB; Family support, FS; Peer relationship, PR; Learning motivation, LM; Teacher fairness, TF
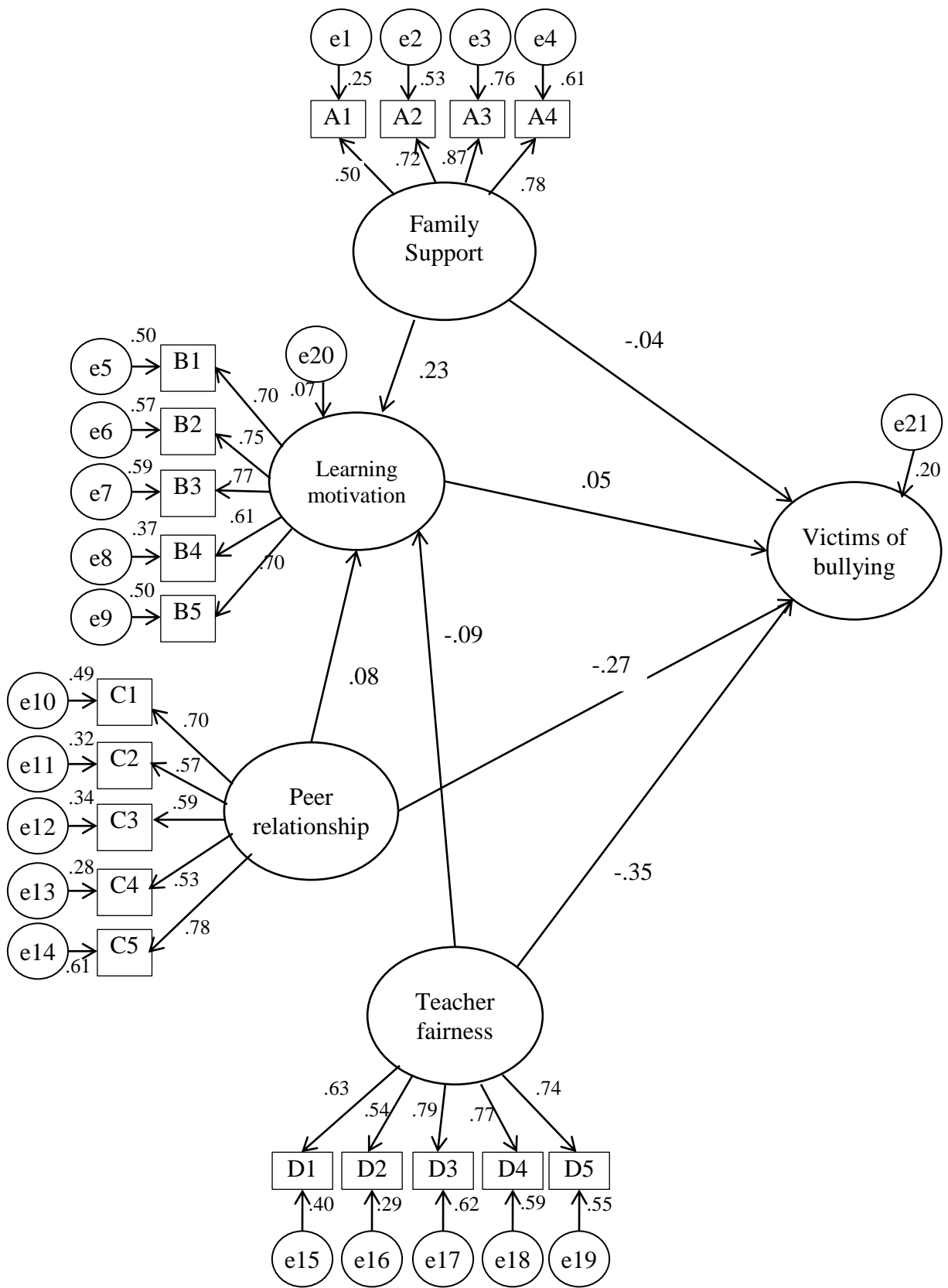
Figure 2. Graphical representation of the model

Conclusion and Suggestions

1. Effects of students family support, learning motivation, peer relationships, and teacher fairness on school bullying victimization

The research findings suggest that family support (Beran, 2008; Brendgen, 2012) received by Hong Kong secondary school students, their peer relationships (Turner et al., 2010; Prinstein et al., 2005), and perceived teacher fairness (Erdogdu, 2016; Rodkin & Hodges, 2003) have a negative correlation with one being bullied. This indicates that if students receive adequate family support, have healthy peer relationships, or feel that the teachers at school are fair, the prevalence of school bullying tends to decrease.

However, the learning motivation among Hong Kong secondary school students has a positive influence on their risk of being bullied, meaning the higher the level of learning motivation of a student, the higher the risk of him/her being bulled. This indicates that well-performed or motivated students may be more susceptible to verbal or physical bullying.

2. Family support, peer relationships, and teacher fairness indirectly affect school bullying victimization through learning motivation

The mediation effect of learning motivation is concerned, family support, peer relationships, teacher fairness, and other factors all have an impact on school bullying through influencing one's learning motivation, the total effects of which are negative. This result has two significant implications. First, secondary school students ought to cultivate a certain level of learning motivation while studying at school. Variables including family support, peer relationships, and teacher fairness all have an impact on the prevalence of school bullying due to their influence on learning motivation. As can be seen, student motivation to learn is a crucial factor in school bullying. Furthermore, learning motivation has a positive correlation with the risk of being bullied. This conclusion has a significant implication. Secondly, family support, peer relationships, teacher fairness, and other variables have a negative impact on school bullying, indicating that the higher the level of family support, the quality of peer relationships, and the perception of teacher fairness which lead to higher student motivation, the lower the prevalence of school bullying. As a result, family support, healthy peer relationships, and teacher fairness are solutions to preventing highly motivated students from being bullied, thus reducing the prevalence of school bullying.

Recommendations

Based on the above conclusion, this study proposed the following suggestions. 1. When the school bullying related research is conducted, student motivation should be taken into consideration. 2. Schools should pay more attention to students' learning motivation as highly motivated students may become the major targets of bullying. 3. Schools should place more emphasis on the level of family support given to students, their peer relationships, as well as whether or not the teachers are fair as these three variables can reduce the prevalence of school bullying and the risk of high motivated students being bullied. To this end, schools should pay more attention to the four variables above in order to reduce school bullying.

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