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## Relationship Between Peer Delinquency And Juvenile Problematic Behavior: Self-Control As A Mediator

Pung Pit Wan<sup>1\*</sup>, Siah Poh Chua<sup>1</sup>, Teoh Xi Yao<sup>1\*</sup>, Tan Soon Aun<sup>1</sup>,  
Gan Su Wan<sup>1</sup>, and Christina Ong Sook Beng<sup>2</sup>

<sup>1</sup> Department of Psychology and Counselling, Faculty of Arts and Social Science,  
Universiti Tunku Abdul Rahman

<sup>2</sup> School of Humanities, Universiti Sains Malaysia

## Abstract

*According to the Malaysian Department of Statistics (2020), the reported juvenile criminal offences were 4,833 cases in 2019. This figure is still considered as high even though it had decreased compared with previous years. Therefore, this study aims to examine the association between peer delinquency, self-control and juvenile problematic behaviours, as well as to determine the mediating role of self-control.*

*Method: A total of 206 juveniles from six juvenile rehabilitation residential schools, commonly known as Sekolah Tunas Bakti in Malaysia (89.1 % male and 10.9% female), participated in this cross-sectional quantitative survey. A Malay version of the Self-Control Scale (Grasmick et al., 1993), The Peer Delinquency Scale (Loeber et al., 1998) and the Strength and Difficulties Questionnaire (Goodman, 1997) were used to examine the relationships among social factors of peer delinquency, self-control and juvenile problematic behaviours.*

*Findings: The direct effect of current findings found that peer delinquency is positively associated with juvenile problematic behaviours. Also, a direct effect of current findings proved that self-control is negatively associated with juvenile problematic behaviours. The key findings revealed that self-control mediates the association between peer delinquency and juvenile problematic behaviours since the relationship between peer delinquency and juvenile problematic behaviours has been widely researched in past studies.*

*Conclusion: In terms of theoretical implications, this study has filled a knowledge gap on the connections between social factors of peer delinquency, self-control factors, and problematic behaviours among juveniles in Malaysia. The findings of this study can be taken into consideration by the Malaysian government and Sekolah Tunas Bakti to improve their policy and to design suitable prevention or intervention programmes that may reduce juvenile offences in the future.*

**Keywords:** Peer delinquency, Self-control, Problematic behaviours, Juvenile

\*Corresponding author.  
Teoh Xi Yao  
Department of Psychology  
and Counselling,  
Faculty of Arts and Social Science,  
Universiti Tunku Abdul Rahman,  
Kampar, Perak, Malaysia  
E-mail: teohxy@utar.edu.my  
(X.Y. Teoh)

## Introduction

### *Juvenile*

According to statistics from the United States Office of Juvenile Justice and Delinquency Prevention, the number of cases involving juvenile problematic behaviours decreased by 38% from 2019 to 2020, but it remains one of the most pervasive risk behaviours in many communities, including Malaysia. The numbers of Malaysian juvenile offenders committing the first offence were 4,952, 4,619, and 4,833 cases in 2017, 2018, and 2019 respectively (Malaysian Department of Statistics, 2020). Although a slight decline is observed, juvenile problematic behaviours are still one of the most pervasive risk behaviours that adolescents are susceptible to. Changes in their physical and emotional states, as well as exposure to different social factors, may affect adolescents' minds and behaviour. This study looks into Malaysian adolescents with juvenile problematic behaviours and investigates the association between peer delinquency and self-control.

This study focuses on Malaysian juveniles aged between 10 and 18 who have committed crimes and had been sent to the juvenile rehabilitation residential schools, commonly known as *Sekolah Tunas Bakti* (STB). An STB is a moral rehabilitation institute created by Section 65 (1) of the Children's Act of 2001 to rehabilitate and care for unruly or criminally involved juveniles. Juveniles who are admitted to the STBs often have problematic behaviours which transgress the laws of society. While incarcerated in such institutions, a juvenile may need to leave school (Hetlevik et al., 2018) and lose his or her liberty. An STB aims to educate juveniles to reduce their problematic behaviours by developing a positive attitude, forming a strong personality and equipping themselves with self-skills such as good self-control that will let them live independently in society.

### *Juvenile problematic behaviours*

According to the APA Dictionary of Psychology, 'problematic behaviours' are patterns of inappropriate behaviours that typically transgress societal expectations but do not significantly hinder an individual's functioning. Problematic behaviours also refer to unwanted behaviours that may cause difficulties in life and require change (Goodman, 1997). Goodman (1997) defined problematic behaviours as (1) conduct or behavioural problems, (2) emotional symptoms, (3) hyperactivity and (4) peer relationship problems. Firstly, conduct problems involve behaviours that could lead adolescents to have conflict with others (Wicks-Nelson & Israel, 2009). Specifically, conduct problems refer to juveniles with high aggression levels, antisocial behaviours and those who exhibit high levels of frustration (Ter-Stepanian et al., 2019). It is also associated with high-risk behaviours such as fighting, losing temper, cheating, stealing, and delinquent as well as disruptive behaviours (Plenty et al., 2014). Secondly, Meilstrup and colleagues (2015) classify emotional symptoms as the everyday occurrence of at least one of the following four symptoms: feeling depressed, being irritable or short-tempered, feeling restless, or having difficulty falling asleep. Most juveniles have experienced emotional symptoms, including anxiety, mood alteration, psychological

distress, and depression (Aparicio et al., 2017). Emotional symptoms may cause negative consequences for juveniles and are a threat to healthy growth. For example, anxiety primarily causes self-harming behaviours and suicide during adolescence (Wasserman et al., 2015). Thirdly, hyperactivity is characterised by difficulty in focussing, the tendency towards impulsivity, and excessive activities (Ter-Stepanian et al., 2019). It interferes with juveniles' development and functioning, ultimately affecting their performance in school, at home, and in interpersonal relationships (Giannotta & Rydell, 2016). Lastly, peer relationships represent a form of social support and are defined as "interpersonal relationships built and established during interactions among peers or individuals with equal degrees of psychological development" (La Greca and Harrison, 2005, p.1, as cited by Wang and Hu, 2021). Juveniles who cannot fulfil peers' demands might experience peer relationship problems (Rubin et al., 2009 as cited by Lam, et al., 2014). Poor peer relationships can lead to feelings of isolation and rejection by peers, which may eventually result in social withdrawal (Jonathan & Song, 2015). Problematic behaviours frequently result in poor academic performance, truancy, substance misuse, anxiety and despair, self-harm, and an increased risk of suicide, violence, and alcohol abuse.

Existing literature has found that peer influence and self-control are proximal risk or protective factors for juvenile problematic behaviours. Peers within adolescents' social circles are important socialising agents who function as both risk and protective influences on adolescents' behavioural development. Risk factors such as poor relationships with parents and/or peers could bring detrimental effects and increase the occurrence of problematic behaviours among adolescents (Karaman, 2013). A recent review on adolescents' problematic behaviours found that peer influence is a proximal risk factor for such problematic behaviours during adolescence (Henneberger, Mushonga & Preston, 2021) and adolescents are susceptible to deviant peer pressure (McCoy et al., 2019). In addition to risk factors, research has shown that self-control is a key protective factor, helping individuals manage impulses and avoid problematic behaviours. Self-control functions as a personal protective factor that helps adolescents consider consequences and then inhibit undesirable or socially inappropriate actions, thereby reducing their likelihood of engaging in juvenile problematic behaviour (Manouchehri et al., 2025). To provide a more comprehensive understanding of juvenile problematic behaviours, it is necessary to examine the predictive role of peer delinquency and self-control on juvenile problematic behaviours. While the literature has found that peer influence and self-control affect problematic behaviour, it has yet to confirm how these factors interact within a single explanatory model, such as a mediation model. By considering the impact of the integrative model in better explaining the sequence of the study variables and contributing to the intervention, this study aims to fill a conceptual gap by examining the mediating role of self-control in the path from peer delinquency to juvenile problematic behaviour.

Despite established results on the association among peer delinquency, self-control, and juvenile problematic behaviours, most studies have focused on problematic behaviours among the general adolescent population (Abdullah et al., 2015; Yap

et al., 2017). Juveniles in residential rehabilitation settings are a particularly vulnerable group whose behavioural development may be different from that of adolescents in the community. However, past studies focusing on institutionalised juvenile populations are scarce (Ruslan et al., 2020), especially quantitative studies, resulting in the underrepresentation of this group in empirical data. Thus, the current study aims to fill this contextual gap by focusing on the residents of juvenile rehabilitation residential schools (*Sekolah Tunas Bakti*, STB).

#### *Peer delinquency and juvenile problematic behaviours*

Numerous factors, including social and self-factors, contribute to juvenile problematic behaviours. Peer delinquency is considered as a social factor which leads to problematic juvenile behaviours (Patterson, 2016; Veenstra et al., 2013). According to the Social Learning Theory, juveniles learn social behaviours from friends. Additionally, delinquent behaviour could be reinforced when the individuals continue to uphold positive attitudes towards those problematic behaviours. Therefore, when an individual adopts certain behaviours that are aligned with the social norms of a particular group, he or she will be accepted in that peer group (Cislaghi & Shakya, 2018). Similarly, King et al. (2017) suggested that individuals are more likely to engage in juvenile problematic behaviours when they are with a delinquent peer group compared to when they are alone. Also, a significant relationship between peer delinquency and juvenile problematic behaviours such as antisocial behaviours was found (Albert et al., 2013; Low et al., 2018; Sijtsema & Linderberg, 2018). Therefore, this study hypothesised that peer delinquency is positively associated with problematic behaviours.

#### *Self-control and juvenile problematic behaviours*

Self-control factors act as an essential self-skill that helps juveniles regulate their behaviours (Sroka et al., 2017). Self-control refers to an individual's ability in regulating one's inner responses including impulses, emotions, thoughts and behaviours to deal with different situational stimuli (Burt, 2020; Tangney, Baumeister & Boone, 2004). According to the General Theory of Crime (Gottfredson & Hirschi, 1990), an individual's decision to commit a crime is driven by short-term, immediate gains without consideration of long-term costs or consequences. In 1990, Gottfredson and Hirschi formulated the Self-Control Theory by propositioning that individuals with high self-control can assess the possible implications of their activities and understand that crime entails more harm than benefit. Therefore, highly self-controlled individuals tend to avoid problematic behaviours. Meanwhile, individuals with low self-control are short-sighted, impulsive, inconsiderate, risk-taking and lack consideration of long-term complications. This means that those with poor self-control are prone to pursue instant impulses without thinking of the long-term effects of their problematic behaviours (Gottfredson & Hirschi, 1990). As a result, they are more likely to participate in criminal and problematic behaviours. The theory was further supported

by Holt and Colleagues (2021) who conducted a study on 1,328 juveniles. The study found that juveniles with low self-control are more likely to engage in problematic behaviours, specifically sexting behaviours. Also, Pechorro and Colleagues (2021) found that self-control significantly affects the criminal/antisocial-related variables examined among Portuguese youth. Thus, this study hypothesised that self-control is negatively associated with problematic behaviours.

#### *Peer delinquency and self-control*

Adolescent delinquency has traditionally been explained through both individual and social perspectives, with self-control and peer delinquency emerging as two of the most robust predictors. According to A General Theory of Crime, low self-control represents a stable individual trait characterized by impulsivity, preference for immediate gratification, and limited consideration of long-term consequences, which predisposes individuals to delinquent behaviour (Gottfredson & Hirschi, 1990). Meta-analytic evidence supports the strong predictive power of self-control across diverse samples (Pratt & Cullen, 2000). However, research increasingly suggests that self-control does not operate in isolation. Social contexts—particularly peer environments—play a crucial role in shaping behavioural outcomes, and solely individual-level explanations are insufficient to account for the complexity of adolescent delinquency.

Emerging empirical evidence indicates that peer delinquency and self-control are dynamically intertwined. Adolescents with lower self-control are more likely to affiliate with deviant peers (Burt et al., 2006; Cho & Lee, 2020; Pung et al., 2015), yet exposure to delinquent peer groups may also erode or weaken self-regulatory capacities over time (Huijsmans et al., 2019; Huijsmans, 2021). Social influences have been shown to contribute to the development of self-control (Na & Paternoster, 2012), while individual differences in self-control shape peer selection and susceptibility to peer influence (Franken et al., 2016; McGloin & Thomas, 2019). Together, these findings suggest that delinquent peer environments may undermine adolescents' ability to regulate impulses and consider long-term consequences. Therefore, it is reasonable to hypothesize that peer delinquency is negatively associated with self-control.

#### *Self-control as mediator between peer delinquency and juvenile problematic behaviours*

Self-control serves as a crucial mediating mechanism in the relationship between peer delinquency and juvenile problematic behaviours. While peers play a significant role in shaping adolescent development, their influence may operate through its impact on adolescents' level of self-control. Empirical evidence consistently identifies self-control as a robust predictor of problematic behaviours (Huijsmans et al., 2021). Furthermore, adolescents with lower self-control are more likely to affiliate with deviant peers (Cho & Lee, 2020), reinforcing their exposure to delinquent norms and behaviours.

Association with delinquent peers may gradually erode adolescents' self-regulatory capacities through social learning processes. As suggested by Holt et al. (2012), juveniles learn and internalise delinquent behaviours by observing and interacting with deviant models. Such exposure may normalise impulsive and risk-seeking tendencies, thereby weakening self-control. Reduced self-control, characterised by poor impulse regulation, present-oriented thinking, and diminished consideration of long-term consequences, increases susceptibility to engaging in problematic and cyber-deviant behaviours. Thus, peer delinquency may not directly result in problematic behaviours; rather, it undermines adolescents' self-control, which in turn heightens their likelihood of engaging in delinquent acts. This highlights self-control as a key psychological mechanism through which peer delinquency exerts its influence on juvenile problematic behaviours.

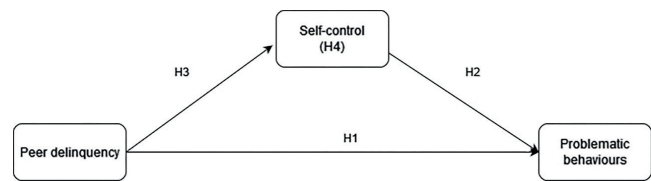
### *The present study*

The current study is guided by Social Learning Theory (Akers, 1998) and Gottfredson and Hirschi's Self-Control Theory in the General Theory of Crime. Akers' Social Learning Theory (SLT) was used to support the relationship between peer delinquency and juvenile problematic behaviours. Akers' SLT suggested that criminal behaviour is learned through social learning processes and that individuals develop a higher tendency towards committing crime through their interactions with people in their social circle (Akers & Jensen, 2006). The observation of such delinquent behaviours and their consequences exert direct influence on adolescents' future problematic behaviours. Thus, peer delinquency that connects an individual with a deviant peer group could influence a juvenile's problematic behaviours. In other words, adolescents tend to learn problematic conduct from their deviant peers.

Gottfredson and Hirschi's (1990) Self-Control Theory (SCT) in the General Theory of Crime proposed that self-control, as an individual's internal control, can explain crime causation. According to the SCT, individuals with low self-control are more likely to engage in crime as they are more impulsive, risk-taking and have no long-term planning. This means that individuals with low self-control are more likely to engage in problematic behaviours. By integrating Akers' Social Learning Theory (SLT) and Gottfredson and Hirschi's (1990) SCT, this study expands on past studies by examining the mediating role of self-control in its association between peer delinquency and juvenile problematic behaviours. A greater level of peer delinquency connecting adolescents with deviant peers can mitigate their ability to control themselves and this can increase the likelihood of such adolescents engaging in problematic behaviours. Adolescents with close interaction with deviant peers are less capable of long-term planning and are insensitive to risk-situational stimuli or negative consequences. Thus, adolescents with low self-control are more likely to engage in problematic behaviours.

In short, the current research investigates the relationship between peer delinquency, self-control and juvenile problematic behaviours among the incarcerated juveniles in six *Sekolah Tunas Bakti* (STB), Malaysia. Figure 1 presents the conceptual model of the study.

Fig. 1. Conceptual Framework of the Study



## Method

### *Participants*

The current study had used a purposive sampling method to identify incarcerated juveniles from six STBs in Malaysia because it specifically targeted juveniles who are formally institutionalized due to their problematic behaviours. An STB is a Malaysian government-run institution which strives to provide support and education to children under 18 who have been involved in criminal activities. Juveniles in Sekolah Tunas Bakti (STBs) are a restricted and specialized population under governmental custody, and access requires official approval from Jabatan Kebajikan Malaysia (JKM), which also named as Social Welfare Department of Malaysia, limited to designated facilities. Consequently, probability sampling was not feasible. Purposive sampling ensured that participants met the predefined inclusion criteria (i.e., aged 12–18 years and currently institutionalized in STBs), consistent with the study's objectives. Also, The current study adopted the Monte Carlo Power Analysis to calculate the sample size (Schoemann et al., 2017) and the required sample size for this study should be more than 108 respondents. The current study recruited 224 juveniles aged 12 to 18 years old (mean = 17 years old; SD = 1.341) from six STBs in Peninsular Malaysia (excluding the location of the pilot study). After the data screening phase, missing data was removed from the analysis. Hence, the total sample consisted of 206 participants (87.9% male and 12.1% female).

### *Procedures*

The data was collected between April and November 2021. After obtaining approval from the university's ethical committee (U/SERC/203/2020), the researchers submitted an online application to the Department of Social Welfare Malaysia for authorization to collect data in six STBs. One of the researchers then approached the six identified STBs in Peninsular Malaysia after the Department of Social Welfare Malaysia had approved the application. After a quick phone conversation to discuss data collection parameters, the research team travelled to the STBs in Peninsular Malaysia to collect data. Since all the respondents are under 18, parental permission was necessary. The guardian consent forms were acquired from all the six STB directors/counsellors before the study. One of the researchers had explained the aim of the survey to the respondents before distributing the questionnaire. The respondents' participation was completely optional, and they were told that they were allowed to leave at any point if they didn't feel comfortable.



Besides, to protect the participants' privacy and confidentiality, only the research team can access the data collected throughout the study. A questionnaire was then given to 229 respondents who agreed to participate in the study. The researchers were on standby to answer any enquiries from the respondents while they were filling in the questionnaire. Respondents who had submitted the questionnaire were given a pen and notebook as a token of appreciation and they took about 40 minutes to complete the questionnaire.

### Instruments

Three different scales namely the Strength and Difficulties Questionnaire, the Peer Delinquency Scale, and the Self-Control Scale were used to achieve the objectives of this study. They are elaborated in the following paragraphs.

*The original SDQ* (Goodman, 1997) was translated into a 25-item Malay version of the self-reported Strength and Difficulties Questionnaire, SDQ (Hassan et al., 2019), which was used to examine juvenile problematic behaviours in this study (i.e., conduct problems, emotional symptoms, hyperactivity, and peer relationship problems) and another five items that assess prosocial behaviours. The current study will use only the 20 items that assess the problematic-behaviour scales of the Malay SDQ (conduct problems, emotional symptoms, hyperactivity/inattention, and peer relationship problems). According to the SDQ scoring practice, the 20 problem items are combined to form the Total Difficulties score, which represents problematic behaviors (Hassan et al., 2019). A three-point rating scale was used to establish whether the adolescent believes the attribute is relevant to them ( $0 = \text{not true}$ ,  $1 = \text{somewhat true}$ , and  $2 = \text{undoubtedly true}$ ) for each item. A sample item includes "*Saya sentiasa gelisah, tidak dapat berdiam untuk masa yang panjang.*" A higher total score means more problematic behaviours. The Chronbach's alpha of the Malay version of SDQ is 0.7, indicating a reliable scale (Hassan et al., 2019). The convergent, discriminate and criterion validity of the measurement has been examined among Dutch adolescents (Vugteveen et al., 2021), and the construct validity has been examined among Malaysian adolescents (Hassan et al., 2019).

*The 15-item Malay version of the Peer Delinquency Scale (PDS)* (Pung et al., 2015) which was translated from the original Peer Delinquency Scale (PDS) was used to measure peer delinquency (Loeber et al., 1998). This scale consists of two components which are delinquency and substance abuse. Higher scores indicate a higher level of peer delinquency. For each item, a 5-point rating scale ( $0 = \text{none of them}$ ;  $1 = \text{Some of them}$ ;  $2 = \text{Half of them}$ ,  $3 = \text{Most of them}$  and  $4 = \text{All of them}$ ) ranks the number of friends who displayed certain behaviours in the past six months. A sample item includes "*Ponteng sekolah tanpa alasan.*" The sum of the 15-item scores is the total score for peer delinquency. Adolescents who score higher on peer delinquency are more likely to mingle with delinquent peers. The internal consistency of the scale among Malaysian adolescents was .88 (Pung et al., 2015). No validity related studies have been found in our literature search.

*The 18-item Malay self-control scale* (Mohammad Rahim et al., 2013) was derived from the 24-item self-control scale (Grasmick et al. 1993) and was used to assess self-control. The Malay version of the self-control measure is a unidimensional scale, consisting of a five-point Likert scale which ranges from 1 (not at all like me) to 5 (very much like me). A sample item includes "*Saya sering bertindak spontan tanpa berfikir.*" The total score indicates the level of self-control. According to Mohammad Rahim et al. (2013), the scores were reverse coded so that high scores indicated a lower level of self-control. However, the current study reverses the score, i.e., higher scores denote a higher level of self-control. The Malay version of the self-control measure demonstrates high internal consistency ( $\alpha = 0.80$ ), which means that the scale is reliable (Mohammad Rahim, et al., 2013). The construct validity of the scale has been examined among male parolees in the United States (DeLisi, et al., 2003), and among prison samples in New Zealand (Williams, et al., 2007).

## Results

### Data Cleaning

Skewness and kurtosis were used to examine the data normality of juvenile problematic behaviours, self-control and peer delinquency. The results showed that the values of the skewness are .382 for juvenile problematic behaviours, .442 for self-control and .499 for peer delinquency. Besides, the values of kurtosis are -.046 for juvenile problematic behaviours, .882 for self-control and -.297 for peer delinquency. Normality of the data for all measurements are acceptable because the skewness and kurtosis values of measurements are in the range of between -2.0 and +2.0 (Kim, 2013). Therefore, the normality test values for all the study variables are within the acceptable range.

### Measurement Model

*Construct Reliability:* According to Hair et al. (2016), the latent construct is acceptable when the composite reliabilities exceed the recommended values of .70. Meanwhile, the composite reliabilities of the 18-item self-control scale is .69. After removing one item with low composite reliabilities from the 18-item self-control scale, the composite reliabilities of this self-control scale is .71. Hence, the findings suggest that the latent constructs of measurements are acceptable.

Tab. 1. Construct reliability of all measurements

| Construct              | Mean  | Standard Deviation | Total Items | Item removed | Composite Reliability |       |
|------------------------|-------|--------------------|-------------|--------------|-----------------------|-------|
|                        |       |                    |             |              | Before                | After |
| Peer delinquency       | 18.71 | 12.47              | 15          | 0            | 0.91                  |       |
| Problematic behaviours | 15.63 | 4.97               | 20          | 0            | 0.74                  |       |
| Self-control           | 48.91 | 11.25              | 18          | 1            | 0.69                  | 0.71  |

### Discriminant Validity

The Heterotrait-Monotrait Ratio of Correlations (HTMT) criterion was used to examine the discriminant validity of the measurements. When the indexes of other measurements of the HTMT is below the 0.90 value, the discriminant validity of the measurements is acceptable (see Table 2) (Henseler et al., 2015). In the current findings, the HTMT values of all latent variables are below 0.90. Therefore, the results show that the discriminant validity has been established among the three reflective constructs.

Tab. 2. Discriminate validities of all measurements

|                           | 1   | 2   | 3 |
|---------------------------|-----|-----|---|
| 1. Peer delinquency       |     |     |   |
| 2. Problematic behaviours | .43 |     |   |
| 3. Self-control           | .49 | .70 |   |

### Coefficient of Determination, Effect Size and Collinearity Statistics of Measurements

The results of the analyses are shown in Table 3. Variance inflation factor (VIF) of scales below 5 indicate no collinearity issue (Hadi et al., 2016). Besides, the results also reveal a medium effect size of self-control on juvenile problematic behaviours (Sullivan & Feinn, 2012).

Tab. 3. Coefficient of determination (R<sup>2</sup>), effect size (f<sup>2</sup>) and collinearity statistics (VIF) of measurements

| Exogenous        | Endogenous             | R square | F square | VIF  |
|------------------|------------------------|----------|----------|------|
| Peer delinquency | Problematic behaviours | .30      | .03      | 1.27 |
| Self-control     | Problematic behaviours | .30      | .24      | 1.27 |

### Structural Model

The current study had used a one-tailed test to predict the association between different variables at a 95% confidence interval.

### Direct effect

The gender and age of the respondents acted as controlled variables in the current study. As shown in Table 4, peer delinquency and self-control are significantly associated with juvenile problematic behaviours. Firstly, peer delinquency is positively associated with juvenile problematic behaviours,  $B = .28$ ,  $SE = .08$ ,  $t(206) = 3.43$ ,  $p < .001$ . Meanwhile, self-control is negatively associated with juvenile problematic behaviours,  $B = -.39$ ,  $SE = .13$ ,  $t(206) = 3.13$ ,  $p < .001$ . Also, peer delinquency is negatively associated with juvenile self-control,  $B = -.41$ ,  $SE = .12$ ,  $t(206) = 3.57$ ,  $p < .001$ .

Tab. 4. Results of the Structural Equation Modelling

| Outcome                         | Predictor        | Hypothesis | Beta | SE  | T Values | P Values | Decision  |
|---------------------------------|------------------|------------|------|-----|----------|----------|-----------|
| Juvenile problematic Behaviours | peer delinquency | H1         | .28  | .08 | 3.43     | <.001    | Supported |

| Outcome      | Predictor        | Hypothesis | Beta | SE  | T Values | P Values | Decision  |
|--------------|------------------|------------|------|-----|----------|----------|-----------|
| Self-control | self-control     | H2         | -.39 | .13 | 3.13     | <.001    | Supported |
|              | peer delinquency | H3         | -.41 | .12 | 3.57     | <.001    | Supported |

### The mediating role of self-control

Self-control mediated the association between peer delinquency and juvenile problematic behaviours. The specific indirect effect of peer delinquency on juvenile problematic behaviours through self-control is significant,  $B = .224$ ,  $SE = .05$ , 95% bootstrap CI [.179, .332]  $p < .001$ , denoting a statistically significant mediating effect.

## Discussion

Juvenile problematic behaviours are recognized as particularly prevalent during adolescence, making it critical to identify contributing factors so that effective preventive interventions can be developed and implemented. Past research has established associations between peer delinquency and juvenile problematic behaviours, between peer delinquency and self-control, and between self-control and juvenile problematic behaviors. These relationships align with the theoretical predictions of Akers' Social Learning Theory (Akers & Jensen, 2006) and Gottfredson and Hirschi's Self-Control Theory within the General Theory of Crime (Gottfredson & Hirschi, 1990). However, each theoretical framework addresses only partial aspects of the phenomenon. Akers's Social Learning Theory predicts an association between peer delinquency and juvenile problematic behaviours but does not adequately account for individual differences in susceptibility to peer influence. Conversely, Gottfredson and Hirschi's Self-Control Theory establishes a link between self-control and juvenile problematic behaviours but lacks consideration of the social interaction processes through which delinquent peer associations may operate.

By integrating these two theoretical frameworks, a more comprehensive model emerges that examines the mechanisms linking peer delinquency, self-control, and juvenile problematic behaviours. Specifically, this integrated framework suggests that self-control may function as a mediator through which peer delinquency exerts its influence on juvenile problematic behaviours. Despite the theoretical rationale for such a mediational model, empirical research systematically examining all three factors within a single analytic framework has been lacking. Consequently, this study was initiated to address this critical gap in the literature by investigating whether self-control mediates the relationship between peer delinquency and juvenile problematic behaviours, thereby contributing to a more nuanced understanding of the developmental pathways toward adolescent problem behaviour.

With regards to peer delinquency and juvenile problematic behaviours, findings showed a positive association between

them. The result of the study found that Malaysian incarcerated juveniles are likely to report more problematic behaviours with deviant peers. Such association is supported by Weng et al., (2016), Heerde and Hemphill (2017), and Blakemore and Mills (2014). Specifically, juveniles magnify the importance of peers (Weng et al., 2016) as peers have become the primary support system compared to other social agents (Heerde & Hemphill, 2017) and peer groups play a prominent role in helping juveniles set behavioural norms and rewards (Blakemore & Mills, 2014) during adolescence. Moreover, Aker's (1998) Social Learning Theory also stated that juveniles acquire social behaviours from their peers. In other words, juveniles are at a higher risk of demonstrating problematic behaviours due to influences from their delinquent peers.

A substantial negative link is noticeable between peer delinquency and self-control in juveniles, which means that Malaysian adolescents who engage with deviant peers usually have low self-control. Moreover, the incarcerated juveniles in the current study reported that higher engagement with deviant peers destroys their self-control. This is particularly true as the social pressure of compliance to the peer group norms tends to destroy self-control in order to fulfil a sense of belonging and connectedness. Deviant peers are believed to have the ability to harm an individual's eventual development of self-control (King et al., 2017; Meldrum & Hay, 2011; Pahigiannis, 2018). Huijsmans et al. (2021) also justify that peer delinquency and self-control are reciprocally related, where individuals with low self-control tend to associate with delinquent peers, and as a result, such deviant peers will weaken their self-control. These results also imply that juvenile self-control is influenced by peers.

The findings demonstrated a substantial negative link between self-control and juvenile problematic behaviours. This suggests that juveniles with higher self-control can better regulate their behaviours and thoughts, which can then prevent them from engaging in problematic behaviours. These findings corroborated with Gottfredson and Hirschi's General Theory of Crime and Ozdemir et al. (2014)'s study who suggested that a lack of self-control is the primary reason for juvenile harmful behaviours (Gottfredson & Hirschi, 1990) and that juveniles with limited self-control have a higher tendency to seek instant pleasure, leading to harmful behaviours (Ozdemir et al., 2014). Hence, Malaysian juveniles with higher self-control are less likely to commit problematic misconduct. This is reinforced by Bleininger (2016), who stressed the importance of self-control in predicting juvenile problematic behaviours.

Self-control is found to be a significant mediator in the relationship between peer delinquency and juvenile problematic behaviours. Also, the findings of this study have successfully verified previous studies which also suggested that peer delinquency impairs one's self-control resulting in problematic behaviours (Cho & Lee, 2020; Holt et al., 2012). Hence, the current findings have provided additional evidence to support self-control as an important mediator in explaining its direct association between the social variables of peer delinquency and juvenile problematic behaviours, particularly among the incarcerated juveniles from the STBs in Malaysia.

### *Implications of the study*

The investigation on Malaysian juveniles has shed light on the potential practical and theoretical contributions of this study, specifically on the connections between peer delinquency and self-control in problematic behaviours. Given the importance of self-control as the underlying mechanism of peer delinquency and problematic behaviours, self-control training workshops should be introduced to incarcerated juveniles to help them resist the negative influence of peers. It is of utmost importance to create programmes or design courses that can enhance self-control among the Malaysian juveniles. Such efforts could also help the counsellors at the Department of Social Welfare and the STBs to reduce the recurrence of juvenile problematic behaviours (which could in turn shorten their stay in the schools).

Also, the government, the social welfare department and the STBs should be aware of the power of peers in the formation of problematic behaviours among the incarcerated juveniles. Therefore, instead of limiting the interaction of incarcerated juveniles in the schools with deviant peers, new policies and arrangements should be made to cut off the influence of deviant peers in the effort to rebuild, revamp and empower the characters of incarcerated juveniles. This is supported by the results of the study; lesser negative peer influences could help incarcerated juveniles regain self-control, which may subsequently reduce the recurrence of problematic behaviours. In addition, counsellors should acknowledge that problematic behaviours are not only determined by social factors such as peer delinquency that are difficult to change. Instead, problematic behaviours can be reduced if juveniles develop high self-control to achieve long-term goals. In terms of theoretical implications, this study has addressed a knowledge gap on the relationships between social factors of peer delinquency, self-control factors, and juvenile problematic behaviours in the Malaysian context by testing the hypothetical mediation model.

### *Limitations and Recommendations for Future Studies*

Several limitations should be taken into account when interpreting the results of the current study. Firstly, the cross-sectional research design limits identification of the causal relationship between the variables of the study, particularly in verifying the hypothetical mediation model of the study. Future studies should consider carrying out a longitudinal study to confirm the mediation results proposed in this study. Secondly, this study was conducted only among incarcerated juveniles from the STBs, in Malaysia, which means that the findings of this study cannot be generalised to Malaysian juveniles who do not reside in the STBs. Thus, future researchers may consider replicating the idea and framework of this study to investigate juveniles in other settings. It may then produce different results affecting juveniles problematic behaviours due to the different environmental conditions. Thirdly, this study had focused on the peer factor (i.e., peer delinquency) and personal factor (i.e., self-control) in understanding their association with juvenile problematic behaviours. Future studies may consider expanding the scope of the study by taking into account other factors, such as family and sociocultural factors, that can lead to a more holistic viewpoint on the formation of problematic behaviours among adolescents.



## Conclusion

In conclusion, peer delinquency has been identified as the most prominent social factor in predicting problematic behaviours among incarcerated juveniles. The self-control factor is found to be substantially linked to problematic behaviours among detained juveniles. The present findings have successfully validated the proposed mediation model, i.e., self-control of a juvenile is influenced by social factors, specifically peer delinquency. Consequently, juveniles with poor self-control are more likely to participate in problematic behaviours.

## Ethical Approval

Ethical approval for this study was granted by the University's Research Ethics Committee (Approval No. U/SERC/203/2020). Following the approval, permission to conduct the study was obtained from the Department of Social Welfare Malaysia (Jabatan Kebajikan Masyarakat Malaysia), enabling data collection across six *Sekolah Tunas Bakti* in Malaysia.

## Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## Conflict of Interests

No potential conflict of interest was reported by the authors

## Author Contributions

Teoh Xi Yao was responsible for data collection and contributed to manuscript preparation. Pung Pit Wan, Siah Poh Chua, Tan Soon Aun, and Gan Su Wan contributed to the conceptualization, interpretation of the findings, and manuscript development. Christina provided English language editing and proofreading. All authors reviewed the manuscript, provided critical intellectual input, approved the final version for publication, and agreed to be accountable for all aspects of the work.

## Supplementary material

Not applicable

## Declaration about the use of generative AI and AI-assisted technologies in the writing process

The authors used ChatGPT (OpenAI) during the writing process to assist with language editing and grammar refinement. All content was critically reviewed, revised, and verified by the authors, who assume full responsibility for the content of this manuscript.

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## References

- Abdullah, H., Ortega, A., Ahmad, N., & Ghazali, S. (2015). Aggressive and delinquent behavior among high risk youth in Malaysia. *Asian Social Science*, 11(16), 62–73. <https://doi.org/10.5539/ass.v11n16p62>
- Akers, R. L. (1998). *Social learning and social structure: A general theory of crime and deviance*. Northeastern University Press.
- Akers, R. L., & Jensen, G. F. (2006). The empirical status of social learning theory of crime and deviance: The past, present, and future. In F.T. Cullen, J.P. Wright, & K.R. Blevins (Eds.), *Taking stock: The status of criminological theory* ( pp. 37-76). Transaction Publishers.
- Albert, D., Chein, J., & Steinberg, L. (2013). The teenage brain: Peer influences on adolescent decision making. *Current Directions in Psychological Science*, 22(2), 114–120. <https://doi.org/10.1177/0963721412471347>
- Aparicio, E., Canals, J., Voltas, N., Valenzano, A., & Arija, V. (2017). Emotional symptoms and dietary patterns in early adolescence: A school-based follow-up study. *Journal of Nutrition Education and Behaviour*, 49(5). <https://doi.org/10.1016/j.jneb.2017.01.015>
- Blakemore, S., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing? *Annual Review of Psychology*, 65(1). <https://doi.org/10.1146/annurevpsych.010213-115202>
- Bleining, M. S. (2016). *An examination of self-control and the family structure* [Unpublished master's thesis]. Kent State University Honors College.
- Burt CH, Simons RL and Simons LG (2006) A longitudinal test of the effects of parenting and the stability of self-control: Negative evidence for the general theory of crime. *Criminology*, 44(2): 353–396. <https://doi.org/10.1111/j.1745-9125.2006.00052.x>
- Burt, C. H. (2020). Self-control and crime: Beyond Gottfredson & Hirschi's theory. *Annual Review of Criminology*, 3, 43–73. <https://doi.org/10.1146/annurev-criminol-011419-041344>
- Cho, S., & Lee, Y. H. (2020). Assessing self-control and strain of delinquent peer association trajectories within developmental perspectives: A latent class growth analysis approach. *Children and Youth Services Review*, 109. <https://doi.org/10.1016/j.chil-dyouth.2020.104745>
- Cislaghi, B., & Shakya, H. (2018). Social norms and adolescents' sexual health: An introduction for practitioners working in low and mid-income African countries. *African journal of reproductive health*, 22(1), 38–46. <https://doi.org/10.29063/ajrh2018/v22i1.4>
- DeLisi, M., Hochstetler, A., & Murphy, D. S. (2003). Self-control behind bars: A validation study of the Grasmick et al. scale. *Justice Quarterly*, 20(2), 241–263. <https://doi.org/10.1080/07418820300095521>
- Department of Statistics (2020). *Children statistics Malaysia, 2020*. [https://dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=333&bul\\_id=NGrOVdLSzJJeURHZ1Vo-bUVxemdNUT09&menu\\_id=U3VPMldoYUxzVzFaYmN-kXZteGduZz09](https://dosm.gov.my/v1/index.php?r=column/cthemByCat&cat=333&bul_id=NGrOVdLSzJJeURHZ1Vo-bUVxemdNUT09&menu_id=U3VPMldoYUxzVzFaYmN-kXZteGduZz09)
- Franken A, Moffitt TE, Steglich CE, Dijkstra JK, Harakeh Z and Vollebergh WA (2016) The



- role of self-control and early adolescents' friendships in the development of externalizing behavior: The SNARE study. *Journal of Youth and Adolescence* 45(9): 1800–1811. <https://doi.org/10.1007/s10964-015-0287-z>
- Giannotta, E., & Rydell, A-M. (2016). The prospective links between hyperactive/impulsive, inattentive, and oppositional-defiant behaviours in childhood and antisocial behaviour in adolescence: The moderating influence of gender and the parent-child relationship quality. *Child Psychiatry Hum Dev*, 47(6), 857–870. <https://doi.org/10.1007/s10578015-0617-0>.
- Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38, 581–586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>
- Gottfredson, M. R., & Hirschi, T. (1990). A general theory of crime. *Stanford University Press eBooks*. <https://doi.org/10.1515/9781503621794>
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford University Press.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford University Press.
- Grasmick, H. G., Tittle, C. R., Bursik, R. J., Jr., & Arneklev, B. K. (1993). Testing the core empirical implications of Gottfredson and Hirschi's general theory of crime. *Journal of Research in Crime and Delinquency*, 30, 5–29. <https://doi.org/10.1177/00224278930300010>
- Hadi, N. U., Abdullah, N., & Sentosa, I. (2016). Making sense of mediating analysis: A marketing perspective. *Review of Integrative Business & Economics Research*, 5(2), 62–76.
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications. <https://doi.org/10.15358/9783800653614>
- Hassan, N. M., Husain, R., Aziz, A. A., Mazubir, N. N., Juhari, S. N., & Daud, N. (2019).
- Validation of the Malay version of the self-rated strength and difficulties (SDQ) questionnaire. *International Journal of Academic Research in Business and Social Sciences*, 9(11), 358–373. <https://doi.org/10.6007/IJARBS/v9-i11/6553>
- Heerde, J. A., & Hemphill, S. A. (2017). Examination of associations between informal help seeking behavior, social support, and adolescent psychosocial outcomes: A meta analysis. *Developmental Review*, 47. <https://doi.org/10.1016/j.dr.2017.10.001>
- Henneberger, A.K., Mushonga, D.R. & Preston, A.M. (2021). Peer influence and adolescent substance use: A systematic review of dynamic social network research. *Adolescent Res Rev*, 6, 57–73. <https://doi.org/10.1007/s40894-019-00130-0>
- Henseler, J., Ringle, C., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115–135. <https://doi.org/10.1007/s11747-014-0403-8>.
- Hetlevik, Ø., Bøe, T., & Hysing, M. (2018). Gp-diagnosed internalizing and externalizing problems and dropout from secondary school: A cross-sectional study. *European Journal of Public Health*, 28(3), 474–479. <https://doi.org/10.1093/eurpub/cky026>
- Hirtlenlehner, H., Bacher, J., Leitgöb, H., & Scharthmueller, D. (2021). Do Morality and Self-Control Protect from Criminogenic Peer Influence? Testing Multidimensional Person–Environment Interactions. *Justice Quarterly*, 39(1), 78–112. <https://doi.org/10.1080/07418825.2021.1903069>
- Holt K.M., Holt T.J., Cale J., Brewer R., Goldsmith A. (2021). Assessing the role of self-control and technology access on adolescent sexting and sext dissemination. *Computers in Human Behavior*, 125. <https://doi.org/10.1016/j.chb.2021.106952>.
- Holt, T. J., Bossler, A. M., & May, D. C. (2012). Low self-control, deviant peer associations, and juvenile cyberdeviance. *American Journal of Criminal Justice*, 37(3), 378–395. <https://doi.org/10.1007/s12103-011-9117-3>
- Huijsmans, T., Nivette, A. E., Eisner, M., & Ribeaud, D. (2019). Social influences, peer delinquency, and low self-control: An examination of time-varying and reciprocal effects on delinquency over adolescence. *European Journal of Criminology*, 18(2), 192–212. <https://doi.org/10.1177/1477370819838720>
- Huijsmans, T., Nivette, A. E., Eisner, M., & Ribeaud, D. (2021). Social influences, peer delinquency, and low self-control: An examination of time-varying and reciprocal effects on delinquency over adolescence. *European Journal of Criminology*, 18(2), 192–212. <https://doi.org/10.1177/1477370819838720>
- Jonathan, L., & Song, J. (2015). Behavioral inhibition and social withdrawal across cultures. *International Encyclopedia of the Social and Behavioral Sciences*, 456–462. <https://doi.org/10.1016/B978-0-08-097086-8.23044-4>.
- Karaman, G. N. (2013). Predicting the problem behavior in adolescents, *Egitim Arastirmalari, Eurasian Journal of Educational Research*, 52, 137–154.
- Kim, H. Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, 38(1), 52–54. <https://doi.org/10.5395/rde.2013.38.1.5>
- King, K. M., McLaughlin, K. A., Silk, J., & Monahan, K. C. (2017). Peer effects on self regulation in adolescence depend on the nature and quality of the peer interaction. *Development and Psychopathology*, 30(4), 1389–1401. <https://doi.org/10.1017/s0954579417001560>
- La Greca, A. M., & Harrison, H. M. (2005). Adolescent peer relations, friendships, and romantic relationships: do they predict social anxiety and depression?. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53*, 34(1), 49–61. [https://doi.org/10.1207/s15374424jccp3401\\_5](https://doi.org/10.1207/s15374424jccp3401_5)
- Lam, C. B., McHale, S. M., & Crouter, A. C. (2014). Time with peers from middle childhood to late adolescence: Developmental course and adjustment correlates. *Child Development*, 85(4), 1677–1693. <https://doi.org/10.1111/cdev.12235>
- Loeber, R., Farrington, D. P., Stouthamer-Loeber, M., & Van Kammen, W. B. (1998). *Antisocial behaviour and mental health problems: Explanatory factors in childhood and adolescence*. Mahwah, NJ: Lawrence Erlbaum.

- Low, S. K., Tan, S. A., Nainee, S., Viapude, G. N., & Kailsan, R. (2018). The association of parental monitoring and peer rejection on antisocial behavior among Malaysian juvenile offenders. *Residential Treatment for Children & Youth*, 35(2), 155–171. <https://doi.org/10.1080/0886571x.2018.1455558>
- Manouchehri, M., Aljaberi, M. A., Lin, Y.-C., Sabah, A., Lin, C.-Y., Alduais, A., Mohammed Ali, A., Bhardwaj, A., & Griffiths, M. D. (2025). The mediating role of self-control between parental attachment and adolescent delinquency. *Deviant Behavior (Advance online publication)*. <https://doi.org/10.1080/01639625.2025.2537450>
- McCoy, S.S., Dimler, L.M., Samuels, D.V. (2019). Adolescent susceptibility to deviant peer pressure: does gender matter?. *Adolescent Res Rev*, 4, 59–71. <https://doi.org/10.1007/s40894-017-0071-2>
- McGloin, J. M., & Thomas, K. J. (2019). Peer influence and delinquency. *Annual Review of Criminology*, 2(1), 241–264. <https://doi.org/10.1146/annurev-criminol-011518-024551>
- Meilstrup, C., Ersbøll, A. K., Nielsen, L., Koushede, V., Bendtsen, P., Due, P., & Holstein, B.E. (2015). Emotional symptoms among adolescents: epidemiological analysis of individual-, classroom- and school-level factors. *European Journal of Public Health*, 25(4), 644–649. <https://doi.org/10.1093/eurpub/ckv046>
- Meldrum, R. C., & Hay, C. (2011). Do peers matter in the development of self-control? Evidence from a longitudinal study of youth. *J Youth Adolescence*. <https://doi.org/10.1007/s10964-011-9692-0>
- Mohammad Rahim, K., Nadiah Syariani, M. S., & Geshina Ayu, M. S. (2013). A unidimensional scale for self-control within Malaysian settings. *Education in Medicine Journal*, 5(4), 60–66. <https://doi.org/10.5959/eimj.v5i4.184>
- Na, C., & Paternoster, R. (2012) Can self-control change substantially over time? Rethinking the relationship between self and social control. *Criminology* 50(2): 427–462. <https://doi.org/10.1111/j.1745-9125.2011.00269.x>
- Ozdemir, Y., Kuzucu, Y., & Ak, S. (2014). Depression, loneliness and Internet addiction: How important is low self-control? *Computers in Human Behaviour*, 34, 284–290. <https://doi.org/10.1016/j.chb.2014.02.009>
- Pahigiannis, K. (2018). Peer influences in self-regulation development and interventions in early childhood. *Early Child Development and Care*, 190(7), 1053–1064. <https://doi.org/10.1080/03004430.2018.1513923>
- Patterson, G. R. (2016). Coercion theory: The study of change. In T. J. Dishion, & J. J. Snyder (Eds.), *The Oxford handbook of coercive relationship dynamics* (pp. 7–22). Oxford University Press.
- Pechorro, P., DeLisi, M., Quintas, J., Gonçalves, R. A., & Maroco, J. (2021). Investigating sex-related moderation effects and mediation effects of self control on delinquency among Portuguese youth. *International Journal of Offender Therapy and Comparative Criminology*, 65(8), 882–898. <https://doi.org/10.1177/0306624X20981037>
- Plenty, S., Ostberg, V., Almquist, Y.B., Augustine, L., & Modin. (2014). Psychosocial working conditions: An analysis of emotional symptoms and conduct problems amongst adolescent students. *Journal of Adolescence*, 37, 407–417. <https://doi.org/10.1016/j.adolescence.2014.03.008>
- Pratt, T. C., & Cullen, F. T. (2000). The Empirical Status Of Gottfredson And Hirschi's General Theory Of Crime: A Meta-analysis. *Criminology*, 38(3), 931–964. <https://doi.org/10.1111/J.1745-9125.2000.Tb00911.X>
- Pung, P. W., Yaacob, S. N., Baharudin, R., & Osman, S. (2015). Low self-control, peer delinquency and aggression among adolescents in Malaysia. *Asian Social Science*, 11(21), 193. <http://dx.doi.org/10.5539/ass.v11n21p193>
- Pung, P. W., Yaacob, C. N., Baharuddin, R., & Osman, S. (2015). Low self-control, peer delinquency and aggression among adolescents in Malaysia. *Asian Social Science*, 11(21), 193–202. <http://dx.doi.org/10.5539/ass.v11n21p193>
- Rubin, K. H., Coplan, R. J., & Bowker, J. C. (2009). Social withdrawal in childhood. *Annual Review of Psychology* 60(1), 141–171. <https://doi.org/10.1146/annurev.psych.60.110707.163642>
- Ruslan, A. R., Hassan, N. C., & Yusoff, M. A. M. (2020). Resilience and criminal behaviour involvement among juveniles in Malaysia: A case study. *International Journal of Academic Research in Business and Social Sciences*, 10(12), 497–507. <https://doi.org/10.6007/IJARBS/v10-i12/8350>
- Schoemann, A. M., Boulton, A. J., & Short, S. D. (2017). Determining power and sample size for simple and complex mediation models. *Social Psychological and Personality Science*, 8(4), 379–386. <https://doi.org/10.1177/1948550617715068>
- Sijtsema, J., & Linderberg, S. (2018). Peer influence in the development of adolescent antisocial behavior: Advances from dynamic social network studies. *Developmental Review*. <https://doi.org/10.1146/10.1016/j.dr.2018.08.002>
- Sroka, I., Isemann, S., & Walther, E. (2017). With or without them: Improving self-control in juvenile offenders. *Basic and Applied Social Psychology*, 39(5), 277–286. <https://doi.org/10.1080/01973533.2017.1350579>
- Sullivan, G. M., & Feinn, R. (2012). Using effect size - Or why the P value is not enough. *Journal of Graduate Medical Education*, 4(3), 279–282. <https://doi.org/10.4300/JGME-D-12-00156.1>
- Tangney, J.P., Baumeister, R.F., & Boone, A.L. (2004) High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72, 271–324. <http://dx.doi.org/10.1111/j.0022-3506.2004.00263.x>
- Ter-Stepanian, M., Martin -Storey, A., Bizier-Lacroix, R., Dery, M. Lemelin, J.-P., & Temcheff, C. E. (2019). Trajectories of verbal and physical peer victimization among children with comorbid oppositional defiant problems, conduct problems and hyperactive-attention problems. *Child Psychiatry & Human Development*. <https://doi.org/10.1007/s10578-019-00903-7>
- Veenstra, R., Lindenberg, S., Tinga, F., & Ormel, J. (2010). Truancy in late elementary and early secondary education: The influence of social bonds and self-control- the TRAILS study. *International Journal of Behavioral Development*, 34(4), 302–310. <https://doi.org/10.1177/0165025409347987>

- Vugteveen, J., de Bildt, A., Theunissen, M., Reijneveld, S. A., & Timmerman, M. (2021). Validity aspects of the strengths and difficulties questionnaire (SDQ) adolescent self-report and parent-report versions among Dutch adolescents. *Assessment*, 28(2), 601-616. <https://doi.org/10.1177/1073191119858416>
- Wang, G., & Hu, W. (2021). Peer relationships and college students' cooperative tendencies: Roles of interpersonal trust and social value orientation. *Frontiers in Psychology*, 12, <https://doi.org/10.3389/fpsyg.2021.656412>
- Wasserman, D., Hoven, C. W., Wasserman, C., Wall, M., Eisenberg, R., Hadlaczky, G., Carli, V. (2015). School-based suicide prevention programmes: The seyle cluster randomised, controlled trial. *The Lancet*, 385(9977), 1536-1544. [https://doi.org/10.1016/S0140-6736\(14\)61213-7](https://doi.org/10.1016/S0140-6736(14)61213-7)
- Weng, X., Ran, M. S., & Chui, W. H. (2016). Juvenile delinquency in Chinese adolescents: An ecological review of the literature. *Aggression and Violent Behaviour*, 31, 26-36. <https://doi.org/10.1016/j.avb.2016.06.016>
- Wilhoit, S. A., & Goodnight, J. A. (2022). Deviant peer affiliation mediates the prospective association from impulsivity to alcohol use in late adolescence. *Journal of Adolescence*, 95(3), 454-467. <https://doi.org/10.1002/jad.12127>
- Williams, M. W. M., Fletcher, R. B., & Ronan, K. R. (2007). Investigating the theoretical construct and invariance of the self-control scale using confirmatory factor analysis. *Journal of Criminal Justice*, 35(2), 205-218.
- Yap, M. H., Koh, D. H., Yap, C. C., Tan, S. A., & Gan, S-W. (2017). *The impact of emotional intelligence on problem behaviour among adolescents in Malaysia*. In N. S. Mat Akhir et al. (Eds.), *Role(s) and relevance of humanities for sustainable development* (Vol. 68, pp. 55-63). *European Proceedings of Social and Behavioural Sciences*. Future Academy. <https://doi.org/10.15405/epsbs.2019.09.6>
- Zhang, R., Qiu, Z., Li, Y., Liu, L., & Zhi, S. (2021). Teacher support, peer support, and externalizing problems among left-behind children in rural China: Sequential mediation by self-esteem and self-control. *Children and Youth Services Review*, 121, 105824. <https://doi.org/10.1016/j.chil-youth.2020.105824>

