REVIEW ARTICLE

LINKING PSYCHOLOGICAL TRAITS WITH CRIMINAL BEHAVIOUR: A REVIEW

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Abstract

Objective: **Apart from environmental and social factors, psychological traits is largely linked with criminal and delinquent behaviour. The purpose of this article is to review four critical psychological traits of individuals that may lead to criminal behaviour in a nutshell.** ***Methods:*** **An archival research methodology was employed in this study where relevant search for literatures on these four psychological traits was made across search engines such as Google Scholar with relevant articles selected for this review. The literatures were microscopically reviewed in order to demonstrate the linkage between psychological traits and criminal behaviour.** ***Results:*** **Four psychological traits: personality trait, low self-control, aggression behaviour, and cognitive distortion were chosen to address such linkages. All these four traits were discussed thoroughly in relation to crime and criminality contexts.** ***Conclusion:*** **It is crucial to understand the role of these traits and in-depth understanding of each psychological trait with relation of criminal behaviour offers an opportunity to the public at large to expand their knowledge on the importance of practicing and equipping oneself with healthy psychological traits to hinder from criminal and delinquent acts.** ***ASEAN Journal of Psychiatry, Vol. 16 (2): July – December 2015: XX XX.***

Keywords: Aggression Behaviour, Cognitive Distortion, Criminal Behaviour, Low Self-Control, Personality Traits, Psychological Traits

Introduction

Crime and violence are social perpetual problem and their impacts and consequences are devastating. Crime and violence are extremely detrimental to the moral order and relationships within society. Crime rates, either violent or property crime; are often used as a barometer in reflecting the safety level of a nation.

Crime which is perceived as social mirror [1] constitutes one of biggest social ills and poses a great challenge to eradicate. The fluctuating stream of crime rate worldwide seen as public perplexing problem as it fosters a) public fear, distrust, anger, and perceptual errors, and b) causes grief among family members and friends of the crime victim. Across the world, the horrific nature of crime has prompted in-depth studies concerning the causes and factors that underlie criminal behaviour.

Along this line of thought, large numbers of criminogenic elements were identified as the causal and underlying factors of criminal behaviour in growing body of criminology and sociology literatures. Examples of

criminogenic factors include environmental, social, familial aspect, genetic, psychological traits, and many more. In relation to this, the role of criminal psychological traits of an individual has been receiving growing recognition as one of the most credible criminogenic factor among criminology and psychology scholars worldwide.

The available literatures evidenced psychological traits such as personality traits as important as environmental factor in explaining criminal and antisocial behaviour in an individual [2]. In this current review, four psychological traits will be microscopically explored in order to get an improved idea and understanding of these four traits in relation with criminal behaviour. In a broad sense, criminal behaviour or criminality can be defined as any act that violates the criminal law while crime indicates the specific action of criminal behaviour such as rape and murder [3].

In this current review, psychological traits are operationally defined as four main psychological traits which include personality traits, low self-control, aggressive behaviour and cognitive distortion. With this in mind, the present article aimed to address the linkage between these four psychological traits and criminal behaviour. It should not be perceived as a means to justify the listed psychological traits as causation of criminal behaviour, but as a proactive step to prevent the development or entrenchment of similar traits in vulnerable groups of people such as children, adolescents and 'at-risk' youths.

Methods

The present review employed archival research methodology using available articles on the topic of interest. For identifying articles that focused on these psychological traits with criminal behaviour, the terms such as 'personality/ personality traits', 'low self-control', 'aggression/ aggressive behaviour', and 'cognitive distortion' were used. These terms were searched with the relation of other terms such as 'crime', 'criminality' and 'criminal behaviour'. In addition, snowball search method [4] was also employed in order to retrieve more related articles that were used as reference in one particular article.

All the articles were searched using several databases such as Google Scholar and Elsevier. A large number of related articles were identified and retrieved from search engines which include review articles, letters to editors and original articles as well as empirical and cohort studies articles that focused on these four psychological traits in relation to criminal behaviour. In addition, the information for the current review also collated from other sources such as books, portfolios, and scholarly bulletins. Figure 1 depicts the flow chart of this review process.

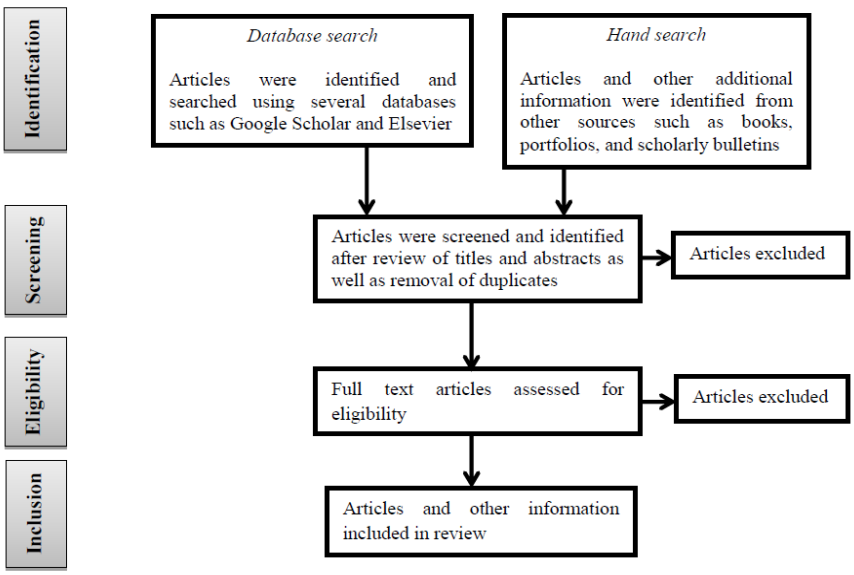

Figure 1. Flow chart of review process

Collating information from various sources ensure the rigour and richness of information on the topic of interest. All of the articles retrieved as well as the information collected from other sources were carefully refined and explored. The most relevant and informative articles were chosen for this current review. The articles and sources that was scrutinised in this review were from the time period of 1961 until 2014.

Results

Personality traits as independent factors of criminality

According to the Diagnostic and Statistical Manual of Mental Disorders [5] of the American Psychiatric Association (APA), personality traits are defined as the enduring patterns of perceiving, relating to, and thinking about the environment and oneself that are exhibited in a wide range of social and personal contexts. From the view of psychologists, personality is referred to as a person's unique long term pattern of thinking, emotions, and behaviour [6-7]. While personality reflects the unique characteristics of an individual, traits are defined as "dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings and actions" [8].

It is theorised that certain personality traits are linked with criminality and malevolent behaviour. It is also worth noting that, personality profiles seem to be very useful in predicting the criminal behaviour and provide a better understanding of how an individual reacts to problems, make decisions and communicate with their surroundings [9]. In order to investigate personality traits of criminals, psychologists and criminologists use a large number of models and concepts to explain the association between personality and criminality. Specific personality inventories such as Big Five personality taxonomy [10], Five Factor Model (FFM) [11-12] and Eynseck Three Factor Model (PEN) [13] were designed to capture the personality traits of normal individuals and criminals. These inventories and psychometrics have been validated and replicated across different languages and cultural settings [14], including the criminal and prison population [13, 15-18].

Big Five and criminal behaviour

Within the criminological literatures, studies have shown that certain traits are highly associated with a wide range of criminal behaviours. For example, Wiebe [18] noted that among the "Big Five" components of trait personality, agreeableness and conscientiousness have been found to be predictive of adult criminal behaviour. Earlier, John et al. [15] found that delinquents aged 12-13 years old who had engaged in burglary, drug dealing, and strong arming behaviour scored lower on Agreeableness, Conscientiousness, and Openness and obtained higher scores on Extraversion than non-delinquents.

Heaven [16] found neuroticism in addition to agreeableness and conscientiousness to be predictive of delinquent behaviour. Furthermore, Heaven [16] reported Neuroticism to be positively, and Conscientiousness and Agreeableness to be negatively related to self-reported vandalism. The antisocial undercontrollers which has been described as the most delinquent subtype, was characterised by extremely low scores on Agreeableness and Conscientiousness, and moderate scores on Extraversion, Openness, and neuroticism compared to non-delinquent adolescents [19].

In studies of gender comparisons, some authors [20-23] have reported that physical aggression in men and women is found to be associated with low agreeableness, low conscientiousness and high neuroticism. Studies in partner violence by Heaven [16] provided some evidence of a correlation between low agreeableness with partner violence for men and women. Partner violence perpetration for women is highly associated with personality type neuroticism (Ibid). In Malaysian studies among criminals, Mohammad Rahim et al. [24] noted significant associations between certain Alternative Five Factor Model personality traits with specific types of aggression.

PEN factors and criminality

Psychoticism, extraversion, and neuroticism are the three essential personality factors in Eynseck's PEN Model [13]. Eynseck's PEN model is one of the few theories that explicitly relate personality traits to criminality [25].

Daderman [17] found that delinquents obtained higher scores in PEN dimensions compared to a non-delinquents control group.

While high neuroticism scores reflect emotional instability, impulsive, and antisocial behaviour [13], psychoticism is usually defined by lack of empathy, cruelty, hostility, psychopathy, aggressiveness, and socialization deficit [13]. Criminological literatures also indicated high scores on psychoticism and neuroticism were found to be associated with juvenile delinquency [26]. Several other studies [16,27] found juvenile delinquency to be positively related with psychoticism and extraversion instead of psychoticism and neuroticism.

High scores on psychoticism and neuroticism and are also often found in adult offender samples [28]. Furthermore, characteristics of psychoticism such as aggressive, hostile, low in empathy, and impulse are the common characteristics shared by criminals and delinquents. However, Blackburn [28] had convincingly stated that high psychoticism scores reflected more serious and persistent offenders.

Individuals with high ImpSS scores are more likely to engage in criminal behaviours since they are used to risky and social unacceptable activities. This engagement in criminal behaviour stems from searching for high arousal and sensation seeking. Studies have found positive associations between sensation seeking and a wide range of imprudent and criminal behaviours such as smoking [29], alcohol and illicit drug abuse [30-32], and risky sexual behaviour [33]. In addition, ImpSS appears to be related to a wide range of troubles [34] such as childhood conduct problems [35], aggressive tendencies [36], and non-psychopathic murder [37].

Self-control as the sole cause of crime

In addition to personality traits, self-control is considered as another important construct in determining the likelihood of an individual's violent behaviour [38]. The growing body of psychological, sociological and criminological literatures [39-44] have evidenced low self-control as a consistent and potential predictor of both criminal and deviant behaviour. In fact, poor self-control is perceived to be the primary cause of criminal and delinquent behaviour [39]. Other studies have linked low self-control to drunken driving [45], drinking, and truancy among college students [46]. Furthermore, low self-control have also been associated with self-reported juvenile delinquency [47] and bullying by juveniles [48].

One of the most widely cited theories on criminal behaviour is Gottfredson and Hirschi's [39] theory of self-control [41,49]. A growing body of literature has empirically assessed the General Theory of Crime (GTC) and supports the claim that low self-control is significantly related to crime and other analogous or imprudent behaviors [41]. Therefore the role of self-control as important predictor of crime and criminal behaviour is well evidenced Gottfredson and Hirschi [39] proposed a theoretical argument that stresses the importance of self-control as the primary cause of crime.

According to GTC, self-control is defined as "the tendency to avoid acts whose long term costs exceed their momentary advantages" [50]. It reflects the ability of an individual to refrain from short term gratification. In other words, individuals who lack self-control are less likely to consider the negative outcomes of their actions and are more readily to indulge in behaviours that produce short term pleasures. In addition, self-control is claimed to be the single "most important individual difference cause of crime and delinquency" [51].

According to Gottfredson and Hirschi [39], GTC provides empirical evidence of the role of self-control as a principal causal agent of criminal behaviour. In addition, GTC is applicable in explaining all types of crimes, across demographic factors and cultures and at all time [39]. This assertion is supported by numerous studies that have been conducted in non-Western societies in China [52]; Title and Botchkovar [53] in Russia; Vazsonyi et al. [54] in Japan; and Vazsonyi et al. [49] in Hungary with promising results.

According to the GTC [39], there are six distinct elements which form self-control. The six elements are impulsivity, simple tasks, self-centeredness, physical activities, risk

taking, and temper. The GTC [39] stressed that people who lack self-control tend to be impulsive, insensitive, physical (as opposed to mental), short-sighted, and are risk takers with low frustration tolerance. Combined, these elements will increase the likelihood for people with low self-control to engage in criminal acts [39].

Gottfredson and Hirshi [39] had stressed that low self-control produced a number of negative effects which include failure in activities, relationships, and social institutions that require planning, delayed gratification, and preferences for verbal and cognitive activities. It was proposed that such elements of self-control are established during early childhood and tend to exhibit such characteristics throughout lifespan and operate in tandem [39]. Most importantly, such elements have been said to be persistent over the lifespan to produce a stable coherent construct within an individual [39]. From the criminology standpoint, these effects are important as social consequences from low self-control are often linked with criminality [39, 40, 51, 55-56].

Aggression as a basic ingredient of crime

Violence and crime which is often addressed as the product of aggression [57-59]. However, Anderson and Bushman [59] claimed that although violence is described as aggression, in many instances it is not considered to be violent. Aggression is described as an overt behaviour carried out intentionally to harm another person who is motivated to avoid the harm [60].

A variety of mechanisms linking aggression and violent behaviour have been proposed. The available evidence indicates that aggression has been of long-standing interest among social scientists especially in violence related studies [61]. Aggression is often assessed in relation to behavioural and conducts problems [62]. A study by Warren et al. [63] established a significant relationship between aggression and antisocial behaviour, which may lead a person's involvement in violent activities, including murder.

Early research on aggression highlighted aggression as the basic ingredient of violent crime [57]. Since then, many theories have been created to determine how it contributes to violent behaviour. According to Buss [64], aggression is characterised as the outcome of the links between emotions (anger), thoughts (hostility), and aggressive behaviour. One of the models that have been used in criminological studies is the Four Structure Aggression Model (AM) by Buss and Perry [65].

Buss and Perry's [65] AM describes four dispositional sub-traits of aggression. The types of aggression are: physical aggression, verbal aggression, anger and hostility [65]. The strong theoretical foundation of these four types of aggression as a global conceptualization of aggression is well evidenced in many violence related literatures [64-67].

According to the AM [65], both physical and verbal aggression reflects the instrumental or motor component of aggression, usually conceived as premeditated means of obtaining some goals and to harm the victim. The facet of physical aggression consists of kicking, beating, and hurting [68]. Examples of verbal aggression include shouting, threatening, and insulting others [68].

The second component of AM is cognitive [65]. Hostility reflects the cognitive component of aggression which involves negative feelings such as feelings of ill will, opposition and injustice directed towards others. Hostility is a cognitive reaction of perceived threat or insult which differentiates it from instrumental aggression.

The third component of aggression is emotional [65]. This emotional component reflects anger. According to AM [65], this emotional component of aggression is usually conceived as impulsive, thoughtless and driven by anger. This emotional component of aggression said to be the result of perceived provocation which motivates to harm the target. In AM, anger often acts as a psychological bridge which connects both instrumental and cognitive components [65].

Aggressive behaviour as negative outcomes

Aggressive behaviour seems to be the outcome of the frustration due to hindrances in goal

attainment [69]. In the neurobiological perspective, aggression has been linked with high levels of testosterone and low levels of certain neurotransmitters such as serotonin [70]. Aggression has also been linked to genetics [71-72] and social learning [73-74].

Other predisposing factors for aggression include genetic factors, the fetal environment, obstetric complications, the rearing environment, biologic factors, and psychiatric disorders such as substance abuse, psychosis, depression, and personality disorders [75]. Ferguson et al. [76] evidenced that personality factors are more critical than environmental factors in developing aggressive traits in an individual. However, it was argued that there is no single factor credible enough to determine the root of aggression [77]. The current consensus is that aggression is multi-determined [78].

Earlier research had highlighted aggression as the basic ingredient of violent crime [57]. The findings from the accumulated literatures [58-59,79-80] indicate that aggression leads to violence. Anderson and Bushman [59] claimed violence as aggression; has the goal of extreme harm, including death.

Types of aggression

In social psychological terms, aggression can be defined as psychological phenomenon which describes a broad category of behaviour which intends to harm another by means of physical or verbal attacks [81]. Other than Buss and Perry's [65] AM, there are many different types of aggression that could manifest in an individual. Fesbach [57] proposed another two types of aggression, known as instrumental aggression and expressive aggression. The types are distinguished by their goals or the rewards that they offer the perpetrator. Instrumental aggression is conceived as a premeditated means of obtaining some goal other than harming the victim, and being proactive rather than reactive [79,82]. This instrumental type of aggression comes from the desire for objects or the status possessed by another person, such as jewellery, money or territory [57].

The expressive aggression is a reflection of hostile reactions [57]. Hostile aggression has historically been conceived as being impulsive, thoughtless (e.g., unplanned), driven by anger, having the ultimate motive of harming the target, and occurring as a reaction to some perceived provocation. It is sometimes called affective, impulsive, or reactive aggression [59]. Fesbach [57] determined that most murders, rapes, and other violent crimes are directed at harming the victims are precipitated by hostile aggression and anger.

Cognitive distortion that justifies the criminal act

In determining the possible factors for crime engagement, the importance of cognitive aspects has been recently examined within the field of criminology and social psychology [83-87]. Several theories have been formulated as attempts to explain the commencement, development, and persistence of antisocial and violent behaviour. In line with this, social-cognitive theories have illustrated cognitive distortion (CD) as a result of antisocial behaviour or deficiency in interpreting social events [86].

In general, cognitive distortion (CD) is defined as inaccurate or biased ways of attending to or conferring meaning upon experiences [85]. Across the criminological literature, there is little consensus on the terminology pertaining to CD. Various terms were provided for CD, for instance, CD represented with "rationalisations" [88], "minimisations" [89], "justifications" [90], "antisocial attitudes" [87], "criminal thinking style" [91], "social cognition" [28], and "self-serving cognitive distortions; SSCD" [85].

Theoretically, CD attempts to explain that individuals are able to block moral judgments in order to justify avoiding responsibility for own behavioural or attitudinal problems. SSCD is often labeled as antisocial attitudes and criminogenic which insulate the individual from blame or a negative self-concept [85]. Past research have provided some evidence of this among the criminal population, for example studies by Andrews and Dowden [84] and Gendreau, Little, and Goggin [92].

The criminological literatures have extensively reported that CDs contribute to problematic emotional and behavioural responses which eventually lead to criminal and deviant behaviour. Earlier studies have acknowledged

the role of CDs as catalysts for a wide range of aggressive and antisocial behaviour. Over the past decades, the importance of CDs as measurable markers for criminal behaviour has been highlighted in which CDs is often linked to externalizing behaviour problems [85,93].

Studies among Malaysian murderers indicated that overall level of CD may affect in the number of killing methods [94]. According to Kamaluddin et al. [94], murderers who used multiple killing methods display higher level of CDs compared to those who killed their victim using a single method. More specifically, murderers who used multiple killing methods tend to display minimization traits, a form of secondary cognitive distortions which are perceived as pre or post-transgression rationalizations [94].

CDs among sexual offenders and juvenile delinquents

Previous researches [95-98] have indicated that CDs are strongly associated with child sexual abuse. In addition, CD has been said to be elevated among the offender population such as adolescents who have committed sexual offenses [99]. Notably, an earlier research by Murphy [89] showed that child molesters exhibit a wide range of CDs such as denial, minimisation, justification, and rationalization of their offending behaviour.

Over the years, CDs are also widely associated with sexual murderers. These CDs are also labeled as offensive-supportive attitudes [90]. According to Ward [100], CDs among sexual offenders emerged from underlying causal theories than stemming from unrelated or independent beliefs. More recently, Beech, Fisher and Ward [101] determined five CDs after interviewing 28 sexual murderers in United Kingdom. These CDs were: dangerous world, male sex drive is uncontrollable, entitlement, women as sexual objects, and women as unknowable and prepared to kill to avoid detection. The available evidence also indicates that CDs have been observed among youths who exhibit delinquency. Barriga et al. [85] found that juvenile delinquents showed higher levels of CDs than non-delinquents. Previous validation studies [86,102] provided more support for this assertion in which results evidenced higher CDs among delinquent compared to non-delinquents.

Conclusion

Based on the review above, it can be fairly concluded that personality traits, low self-control, aggression behaviour, and cognitive distortion act as major psychological factor underlying criminal behaviour within an individual.The present review successfully demonstrated linkage between these psychological trait and criminal behaviour. Identifying such linkages is vital for prevention, intervention, and rehabilitation efforts. Here, the negative psychological traits that inclined towards criminal behaviour can be assessed through psychometric instruments which will be very useful and facilitate early intervention among at risk groups. It is anticipated that through this article, it is able to reach the public on the importance of hindering oneself from such negative psychological traits which may likely lead to criminal engagement.

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Conflict of interest

There is no conflict of interest in this study.

References

1. Kawachi I, Kennedy BP, Wilkinson RG. Crime: social disorganization and relative deprivation. Social Science and Medicine 1999; 48: 719-731.

2. Larsson H, Andershed A, Lichtenstein P. A genetic factor explains most of the variation in the psychopathic personality. Journal of Abnormal Psychology 2006; 115: 221–230.

3. Robinson MB.Why crime? : an Integrated Systems Theory of Antisocial Behaviour. Upper Saddle

River, New Jersey: Pearson Prentice Hall; 2004.

4. Webster J, Watson RT. Analyzing the Past to Prepare for the Future: Writing a Literature Review. MIS Quarterly 2002; 26(2): xiii-xxiii.

5. Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Washington D.C.: American Psychiatric Association. 1994.

6. Mischel W. Toward an integrative science of the person. Annual Review of Psychology 2004; 55: 1-22.

7. Burger JM. Personality. 7th ed. Belmont, CA: Cengage Learning/ Wadsworth; 2008.

8. McCrae RR, Costa PT. (p.23). Personality in Adulthood. New York: Guilford; 1990.

9. Caspi A, Moffit T, Silva P, Stouthamer-loeber M, Krueger R, Schmutte P. Are some people crime-prone? Replications of the personality-crime relationship across countries, genders, races, and methods. Criminology 1994; 32(2): 163-195.

10. Goldberg LR. The development of markers for the Big-Five factor structure. Journal of Personality and Social Psychology 1992; 59: 1216-1229.

11. Costa PTJr, McCrae RR. NEO PI-R Professional Manual. Odessa, FL: Psychological Assessment Resources; 1992.

12. Digman JM. Personality structure: Emergence of the five factors model. Annual Review of Psychology 1990; 41: 417-440.

13. Eysenck HJ. The biological basis of personality. Springfield, IL: CC Thomas; 1967.

14. Eysenck HJ, Haapasalo J. Cross-cultural comparisons of personality: Finland and England. Personality and Individual Differences 1989; 10: 121–125.

15. John OP, Caspi A, Robins RW, Moffitt TE, Stouthamer-Loeber M. The Little Five: Exploring the nomological network of the Five-Factor model of personality in adolescent boys. Child Development 1994; 65: 160–178.

16. Heaven P. Personality and self-reported delinquency: Analysis of the "Big Five" personality dimensions. Personality and Individual Differences 1996; 20: 47–54.

17. Daderman AM. Differences between severely conduct-disordered juvenile males and normal juvenile males: the study of personality traits. Personality and Individual Differences 1999; 26: 827–845.

18. Wiebe R. Delinquent behaviour and the five factor model: Hiding in the adaptive landscape? Individual Differences Research 2004; 2: 38–62.

19. van Aken MAG, van Lieshout CFM, Scholte RHJ. The Social Relationships and Adjustment of the Various Personality Types and Subtypes. Paper presented at the VIIth biennial meeting of the Society of Research on adolescence, San Diego, CA; 1998.

20. Caprara GV, Barbaranelli C, Zimbardo PG. Understanding the complexity of human aggression: Affective, cognitive, and social dimensions of individual differences in propensity toward aggression. Eur J Pers 1996; 10: 133–155.

21. Sharpe JP, Desai S. The revised NEO Personality Inventory and the MMPI-2 Psychopathology Five in the prediction of aggression. Personality and Individual Differences 2001; 31: 505–518.

22. Gleason KA, Jensen-Campbell LA, Richardson DS. Agreeableness as a predictor of aggression in adolescence. Aggression Behaviour 2004; 30: 43–61.

23. Tremblay PF, Ewart LA. The Buss and Perry Aggression Questionnaire and its relations to values, the Big Five, provoking hypothetical situations, alcohol consumption patterns, and alcohol expectancies. Personality and Individual Differences 2005; 38 (2): 337-346.

24. Mohammad Rahim K, Nadiah Syariani MS, Azizah O, Khaidzir I, Geshina Ayu MS. Associations Between Personality Traits And Aggression Among Malay Adult Male Inmates In Malaysia. ASEAN Journal of Psychiatry 2014; 15 (2) July – December: 176-185.

25. Eysenck HJ, Gudjonsson GH. The Causes and Cures of Criminality. New York: Plenum; 1989.

26. Romero E, Luengo M, Sobral J. Angeles Personality and antisocial behaviour: Study of temperamental dimensions. Personality and Individual Differences 2001; 31: 329–348.

27. Aleixo PA, Norris CE. Personality and moral reasoning in young offenders. Personality and Individual Differences 2000; 28: 609–623.

28. Blackburn R. The Psychology of Criminal Conduct: Theory, Research and Practice. Chichester: John Wiley; 1993.

29. Zuckerman M, Ball S, Black J. Influences of sensation, gender, risk appraisal, and situational motivation on Smoking. Addictive Behaviors 1990; 1(5): 209-220.

30. Kohn PM, Coulas JT. Sensation seeking, augmenting-reducing, and the perceived and preferred effects of drugs. Journal of Personality and Social Psychology 1985; 1: 99-106.

31. Stacy AW, Newcomb MD, Bentler PM. Cognitive motivations and Sensation Seeking as long-term predictors of drinking problems. Journal of Social and Clinical Psychology 1993; 12: l-24.

32. Cernovsky ZZ, O'Reilly RL, Pennington M. Sensation Seeking Scales and consumer satisfaction with a substance abuse treatment program. Journal of Clinical Psychology 1997; 53: 779- 784.

33. Newcomb MD, McGee L. Influence of Sensation Seeking on genera1 deviance and specific problem behaviors from adolescence to young adulthood. Journal of Personality and Social Psychology 1992: 61(4): 614-628.

34. Ireland JL, Archer J. Impulsivity among adult prisoners: A confirmatory factor analysis study of the Barratt Impulsivity Scale. Personality and Individual Differences 2008; 45: 286-292.

35. Babinski LM, Hartsough CS, Lambert NM. Childhood Conduct Problems, Hyperactivity-impulsivity, and Inattention as Predictors of Adult Criminal Activity. Journal of Child Psychology and Psychiatry 1999; 40: 347–355.

36. Fossati A, Barratt ES, Borroni S, Villa D, Grazioli F, Maffe C. Impulsivity, aggressiveness, and DSM-IV personality disorders. Psychiatry Research 2007; 149: 157–167.

37. Woodworth M, Porter S. In cold blood: Characteristics of criminal homicides as a function of psychopathy. Journal of Abnormal Psychology 2002; 111 (3): 436-445.

38. Buker H. Formation of self-control: Gottfredson and Hirschi's general theory of crime and beyond.

Aggression and Violent Behavior 2011; 16: 265–276.

39. Gottfredson MR, Hirschi T. A General Theory of Crime. Stanford, CA: Stanford University Press; 1990.

40. Evans TD, Cullen FT, Burton VSJr, Dunaway RG, Benson ML. The social consequences of selfcontrol: Testing the general theory of crime. Criminology 1997; 35: 475-501.

41. Pratt TC, Cullen FT. The empirical status of Gottfredoson and Hirschi's general theory of crime: a meta analysis. Criminology 2000; 38: 931–964.

42. Simpson SS, Leeper-Piquero N. Low self-control, organizational theory, and corporate crime. Law & Society Review 2002; 36: 509-548.

43. Hay C, Forrest W. Self-control and the concept of opportunity: Making the case for a more systematic union. Criminology 2008; 46 (4): 1032–1072.

44. Payne BK, Higgins GE, Blackwell BS. Exploring the link between self-control and partner violence: Bad parenting or general criminals. Journal of Criminal Justice; 2010. Advance online publication. Doi:10.1016/j.jcrimjus.2010.07.0.

45. Keane C, Maxim PS, Teevan JJ. "Drinking and Driving, Self-Control and Gender: Testing a General Theory of Crime." Journal of Research in Crime and Delinquency 1993; 30: 30-46.

46. Gibbs JJ, Giever D. Self-control and its manifestation among university students: An empirical test of Gottfredson and Hirschi's general theory. Justice Quarterly 1995; 12: 231−255.

47. Brownfield D, Sorenson A. Self-control and juvenile delinquency: Theoretical issues and an empirical assessment of selected elements of a general theory of crime. Deviant Behavior 1993; 14: 243–64.

48. Nofziger S. Bullies, Fights, and Guns: Testing Self-Control Theory With Juveniles. New York: LFB Scholarly; 2001.

49. Vazsonyi AT, Pickering LE, Junger M, Hessing D. An empirical test of a general theory of crime: A four-nation comparative study of self-control and the prediction of deviance. Journal of Research in Crime and Delinquency 2001; 38: 91– 131.

50. Hirschi T, Gottfredson MR. The generality of deviance. Stanford, CA: Stanford University Press; 1994.

51. Gottfredson MR. The Empirical Status of Control Theory in Criminology. In F. T. Cullen, J. P. Wright, & K. R. Blevins (Eds.), Taking stock: The status of criminological theory (pp. 77-100). New Brunswick, NJ: Transaction Publishing; 2006.

52. Ngai N, Cheung C. Predictors of the likelihood of delinquency: A study of marginal youth in Hong Kong, China. Youth & Society 2005; 36: 445-470.

53. Tittle CR, Botchkovar VE. Self-control, criminal motivation and deterrence: An investigation using Russian respondents. Criminology 2005; 43: 307-354.

54. Vazsonyi AT, Wittekind JEC, Belliston LM, Loh TDV. Extending the general theory of crime to "the East:" Low self-control in Japanese late adolescents. Journal of Quantitative Criminology 2004; 20: 189-216.

55. Nagin D, Paternoster R. Enduring Individual Differences and Rational Choice Theories of Crime. Law and Society Review 1993; 24: 467-96.

56. Burton VSJr, Cullen FT, Evans TD, Alarid LF, Dunaway RG. "Gender, Self-control, and Crime." Journal of Research in Crime and Delinquency 1998; 35: 123-47.

57. Feshbach S. The function of aggression and the regulation of aggressive drive. Psychological Review 1964; 71: 257-272.

58. Huesmann LR, Miller LS. Long-term effects of repeated exposure to media violence in childhood. In Aggressive Behavior: Current Perspectives, Ed. Huesmann, L.R. pp. 153-86. New York: Plenum; 1994.

59. Anderson CA, Bushman BJ. Human aggression. Annual Review of Psychology 2002; 53: 27-51.

60. Bushman BJ, Huesmann LR. Aggression. In S. T. Fiske, D. T. Gilbert & G. Lindzey (Eds.). Handbook of Social Psychology (5th edn, pp. 833–863). New York: John Wiley & Sons; 2010.

61. Piquero AR, MacDonald J, Dobrin A, Daigle LE, Cullen FT. Self control, violent offending, and homicide victimization: Assessing the general theory of crime. Journal of Quantitative Criminology 2005; 21: 55-71.

62. Goodman M, New A. Impulsive aggression in Borderline Personality Disorder. Current Psychiatry Report 2000; 2: 56-61.

63. Warren JI, Hurt S, Loper AB, Bale R, Friend R, Chauhan P. Psychiatric symptoms, history of victimization, and violent behavior among incarcerated female felons: An American perspective. International Journal of Law and Psychiatry 2002; 25: 129-149.

64. Buss AH. The Psychology of Aggression. New York: Wiley; 1961.

65. Buss AH, Perry MP. The Aggression Questionnaire. Journal of Personality and Social Psychology 1992; 63: 452–459.

66. Zillman D. Hostility and Aggression. Hillsdale, NJ: Lawrence Erlbaum; 1979.

67. Harris JA. Confirmatory factor analysis of the Aggression Questionnaire. Behav Res Ther 1995; 8: 991–993.

68. Trninic V, Barancic M, Nazor M. The five factor model of personality and aggressiveness in prisoners and athletes. Kinesiology 2008; 40: 170–181.

69. Berkowitz L. On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. American Psychologist 1990; 45: 494−503.

70. Dabbs JMJr, Riad JK, Chance SE. Testosterone and ruthless homicide. Personality and Individual Difference 2001; 31: 599-603.

71. Bock GR, Goode JA. Genetics of Criminal and Antisocial Behavior (eds.). Chichester: John Wiley & Sons; 1996.

72. Ferguson CJ, Beaver KM. Natural Born Killers: The Genetic Origins of Extreme Violence. Aggression and Violent Behavior 2009; 14 (5): 286–294.

73. Hale R. The Application of Learning Theory to Serial Murder, or "You Too can Learn to Be a Serial Killer". In R.M. Holmes, & S.T. Holmes, Contemporary Perspectives on Serial Murder 1998; 75-84.

74. Landsford JE. Boys' and girls' relational and physical aggression in nine countries. Aggressive Behavior 2012; 38 (4): 298-308.

75. Citrome L, Volavka J. Treatment of violent behavior. In Tasman, A., Kay, J., Lieberman, J. (Eds.), Psychiatry, 2nd ed. John Wiley & Sons, New York, Chapter 103; 2003.

76. Ferguson CJ, Cruz AM, Martinez D, Rueda SM, Ferguson DE, Negy C. Personality, parental, and media influences on aggressive personality and violent crime in young adults. Journal of Aggression, Maltreatment, and Trauma 2008; 17 (4): 395- 414.

77. Rappaport N, Thomas C. Recent research findings on aggressive and violent behavior in youth: Implications for clinical assessment and intervention. Journal of Adolescent Health 2004; 35: 260-277.

78. Sarchiaopone M, Carli V, Cuomo C, Marchetti M, Roy A. Association between childhood trauma and aggression in male prisoners. Psychiatry Research 2009; 165: 187-192.

79. Berkowitz L. Aggression: A Social Psychological Analysis. New York, McGraw-Hill Book; 1993.

80. Delva-Tauili'ili J. Assessment and prevention of aggressive behavior among youths of color: Integrating cultural and social factors. Social Work in Education 1995; 17 (2): 83-92.

81. Comer R, Gould E. Psychology Around Us. John Wiley & Sons, Inc; 2011.

82. Geen RG. Human Aggression. 2nd ed. Taylor & Francis; 2001.

83. Gibbs JC, Potter GB, Barriga AQ, Liau AK. Developing the helping skills and prosocial motivation of aggressive adolescents in peer group programs. Aggression and Violent Behavior 1996; 1: 283-305.

84. Andrews DA, Dowden, C. A meta-analytic investigation into effective correctional intervention for female offenders. Forum on Corrections Research 1999; 11: 18-21.

85. Barriga AQ, Landau JR, Stinson BL, Liau AK, Gibbs JC. Cognitive distortion and problem behaviors in adolescents. Criminal Justice and Behavior 2000; 27: 36-56.

86. Nas CN, Brugman D, Koops W. Measuring self-serving cognitive distortions with the How I Think Questionnaire. European Journal of Psychological Assessment 2008; 24: 181–189.

87. Andrews DA, Bonta J. (2010). The Psychology of Criminal Conduct. 5th ed. New Providence, NJ: Matthew Bender; 2010.

88. Neidigh L, Krop H. Cognitive distortions among child sexual offenders. Journal of Sex Education and Therapy 1992; 18: 208−215.

89. Murphy WD. Assessment and Modification of Cognitive Distortions in Sex Offenders. In W. L. Marshall, D. R. Laws, & Barbaree (Eds.), Handbook of sexual assault: Issues, theories, and treatment of the offender (pp. 331−342). NY: Plenum; 1990.

90. Abel GG, Gore, DK, Holland CL, Camp N, Becker JV, Rathner J. The measurement of the cognitive distortions of child molesters. Annals of Sex Research 1989; 2: 135−153.

91. Walters GD. The psychological inventory of criminal thinking styles, Part I: Reliability and preliminary validity. Criminal Justice and Behaviour 1995; 22: 307-325.

92. Gendreau P, Little T, Goggin C. A meta-analysis of the predictors of adult offender recidivism: What works! Criminology 1996; 34(4): 575–608.

93. Liau AK, Barriga AQ, Gibbs JC. Relations between self-serving

cognitive distortions and overt vs. covert antisocial behavior in adolescents. Aggressive Behavior 1998; 24: 335–346.

94. Kamaluddin MR, Md. Shariff NS, Nur-Farliza S, Othman A, Hj. Ismail K, Mat Saat GA. Psychological traits underlying different killing methods among Malaysian male murderers. Malaysian J Pathol 2014; 36(1) : 41 – 50.

95. Marshall WL, Barbaree HE. An Integrated Theory of the Etiology of Sexual Offending. In W.L. Marshall, D.R. Laws & H.E. Barbaree (Eds.), Handbook of sexual assault: Issues, theory and treatment of offenders. New York: Plenum Press; 1990.

96. Hall GC, Hirschman R. Sexual aggression against children. A conceptual perspective of aetiology. Criminal Justice and Behaviour 1992; 19 (1): 8-23.

97. Ward T, Siegert R. Toward a comprehensive theory of child sexual abuse: ATheory knitting perspective. Psychology, Crime, and Law 2002; 8: 319−351.

98. Ward T, Polaschek DLL, Beech AR. Theories of Sexual Offending. Chichester, UK: Wiley; 2005.

99. McCrady F, Kaufman K, Vasey MW, Barriga AQ, Devlin RS, Gibbs JC. It's all about me: A brief report of incarcerated adolescent sex offenders' generic and sex-specific cognitive distortions. Sexual Abuse: A Journal of Research and Treatment 2008; 20: 261–271.

100. Ward T. Sexual offenders'cognitive distortions as implicit theories. Aggression and Violent Behavior 2000; 5: 491-507.

101. Beech A, Fisher D, Ward T. Sexual murderer' implicit theories. Journal of Interpersonal Violence 2005; 20: 1366-1389.

102. Barriga AQ, Gibbs JC, Potter GB, Liau AK. How I Think (HIT) Questionnaire manual. Champaign, IL: Research Press; 2001.

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