

A STUDY ON COGNITIVE FUNCTIONS, IMPULSIVITY AND MORAL DEVELOPMENT AMONG JUVENILE DELINQUENTS

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Abstract

Delinquency is the legal term for a wide variety of socially disapproved behavior that varies with the time, place and the attitudes of those assigned to administer the law. These individuals may have difficulty in planning, processing the cognitive functions, working memory due to which they may act impulsively. They tend to develop moral attitudes based on the parental behaviors, modeling and these individuals are being brought up from a disengaged family environment, family members involving in criminal activities and inconsistency in child rearing practices due to which they show immature Moral Development. The aim is to study the cognitive functions, impulsivity and moral development among juvenile delinquents. The present study was done using an ex post facto research design. Using purposive sampling technique, 60 samples (30 boys and 30 girls) were drawn from Government Observation Home for Boys and Government Children Home for Girls, Chennai; who were selected and screened based on Inclusion and Exclusion criteria. Pearson product moment correlation, Independent sample t-test and Percentage analysis was used to analyze the relationship and difference among Juvenile Delinquents.

Keywords: Juvenile Delinquents, Intelligence, Working memory, Impulsivity and Moral Development

INTRODUCTION

Juvenile delinquency has traditionally been defined as behavior exhibited by children and adolescents that has legal ramifications like engaging in illegal activity. Juvenile delinquents include youth who have contact with law enforcement and those who are going to be through the juvenile court for a crime. The juvenile justice system comprises the statutes and policies, as well as organizations, charged with responsibility for the processing of juveniles who violate state laws and local ordinances (Ross and Miller, 2011).

Chennai, the national first in a number of crimes under special and local laws, accounting for 32.9% of the total such crimes reported in 19 metropolitan cities. Lack of intervention programmes to prevent at-risk youth from taking to a life of crime is reflected in Tamil Nadu's numbers for juvenile offences in 2016. Juveniles were involved in approximately 14 % of all forcible rape arrests, with the majority of those youth being between 15 and 17 years of age (Puzzanchera, 2013).

The connection between intelligence and criminality has long been a favorite topic of research (Ferracuti, 1966). Gibson and West (1970) suggested that the matrices test may be particularly sensitive to poor motivation, since it presents abstract problems of increasing difficulty and allows the subject the opportunity to save himself the bother of concentrating and to finish more quickly by answering at random. Low IQ was particularly characteristic of those delinquents who were first convicted at an early age, since these were the boys who tended to become recidivists. Eilenberg (1961) found that among remand home inmates the younger boys were more likely to have a low IQ than the older ones. Cowie et al. (1968) showed that a low IQ among female delinquents was particularly common among those first convicted at an early age. The verbal and attainment measures did not correlate with delinquency, since it is often said that educational retardation and poor verbal ability are more characteristic of delinquents than low IQ on non-verbal tests. The discrepancy between an individual's verbal and non-verbal intelligence is supposed to be particularly related to delinquency. Hence one would expect low IQ to be an important precursor of juvenile delinquency.

Everyone wishes at some time during his life to ignore his responsibilities, restrictions and duties. After many years of experience with criminal psychopaths, psychologist Robert Lindner observed: determined progress toward a goal unless it is a selfish one capable of immediate realization by a sharply accented spurt of activity. Moral reasoning and development have been the focus of considerable research in the past two decades, stimulated primarily by Kohlberg's formulation of the stages of moral development. Studies of juvenile

delinquents have indicated that youthful offenders are at lower developmental stages of moral reasoning than their non-delinquent counterparts. Some research has also examined patterns among juvenile delinquents with respect to moral judgments, as it is recognized that they are heterogeneous as a group (Carol. V, 1988).

METHODOLOGY

The main aim is to study the cognitive functions, impulsivity and moral development among juvenile delinquents. The Research design was an ex post facto research design. The participants were selected based on Purposive sampling method. The sample for the present study was selected from Government Observation Home for Boys and Government Children Home for Girls, Chennai. The total sample size was 60 (30 boys and 30 girls) who are in the age group of 15-17 were selected to participate in the study and were screened based on Inclusion and Exclusion criteria. The tools used in the present study were Malin's Intelligence scale for Indian Children (MISIC) developed by Sir Arthur Malin in 1966, was used to assess the intellectual functioning, Trial making test and Spatial span which is a subtest for WMS- IV was used to measure the working memory. Barratt Impulsiveness scale (BIS) was developed by Patton et.al., in 1995 to assess the personality or behavioral construct of impulsiveness.

Moral Foundations Questionnaire (MFQ) was developed by Jesse Graham et.al., in 2008 to assess their Moral Development. Pearson product moment correlation, Independent sample t-test and Percentage analysis was used to analyze the relationship and difference among Juvenile Delinquents.

RESULTS AND DISCUSSION

Table 1 – Shows the correlation between IQ and Working Memory among Juvenile Delinquents

Variables	Values	Trial Making A	Trial Making B	Spatial Span
IQ	'r' value	0.560	0.536	0.558
	Level of significance	0.000**	0.000**	0.000**

** Correlation is significant at 1% level

Since the level of significance is 0.00 there is a significant relationship between IQ and working memory. Priyadharshini.S., Rejani. T.G., et.al (2017) studied the neuropsychological profile of offenders, they concluded that offenders were found to have low intellectual functioning and deficit in various executive functioning like attention, verbal memory, set shifting and concept formation. The violent offenders show impaired executive functioning on tasks of attention, working memory and planning (Zou. Z., Meng H., et.al, 2012). Working memory, short-term memory and fluid intelligence were significantly related but separate constructs and that working memory was the best predictor of intelligence (Engel De Abreu).

Table 2 – Shows the correlation between IQ and Impulsivity among Juvenile Delinquents

Variables	Values	Attention	Cognitive Instability	Motor	Perseverance	Self-Control	Cognitive Complexity
IQ	'r' value	0.396	0.227	0.100	0.190	0.018	0.220
	Level of significance	0.002**	0.082	0.447	0.147	0.890	0.092**

** Correlation is significant at 1% level

There exists a negative correlation between IQ and attention (0.002**), IQ and cognitive complexity (0.092**). If individuals have an average level of intellectual functioning, their span of attention will be high and in this study the individuals have a below average level of IQ and in turn decline in attention span, which leads to impulsive behavior.

Cognitive complexity involves the organization of numerous constructs with many inter-relationships among them, which involves the higher order cognition. These delinquents with lower cognition leads to non-planning of certain functions. In other dimensions of impulsivity there exists no relationship between IQ and cognitive instability (0.082), motor (0.047), perseverance (0.147) and self-control (0.890) respectively. Individuals with higher intellectual functioning tend to flexibly adapt to the situations, despite difficulties they are persistent in doing things and have a good self-control. These characteristics are not present in juveniles, as the intelligence level is low and impulsivity is high, there exists a negative correlation between IQ and impulsivity. Delinquent boys with low level of IQ exhibit the highest level of cognitive and behavioral impulsivity (Roos Koolhof., Rolf Loeber., et.al, 2007). Impulsivity is also associated with malfunction in cognitive functions such as attention, attention switching, maintenance of concentration, logical thinking, problem solving, etc... hence in risky behaviors like crime and law-breaking, a risky decision making and impulsivity are seen that are formed by a combination of impairment in cognitive function (Elham Foroozandeh, 2017).

Table 3 - Shows the correlation between IQ and Moral Development among Juvenile Delinquents

Variables	Values	Harm/ Care	Fairness/ Reciprocity	Ingroup/ Loyalty	Authority/ Respect	Purity/ Sanctity
IQ	'r' value	0.211	0.102	0.062	0.018	0.048
	Level of significance	0.106	0.438**	0.640**	0.893	0.715**

** Correlation is significant at 1% level

There exists a significant relationship between IQ and Fairness/Reciprocity (0.438**), negative correlation between IQ and Ingroup/Loyalty (0.640**) and Purity/Sanctity (0.715**). No significant relationship between IQ and Harm/Care (0.106) and Authority/ Respect (0.893). Beibert. M and Hasselhorn Marcus (2016) investigated the relationship between intelligence and individual differences in children's moral development across a range of different moral transgressions. Results demonstrated that no significant correlation between moral development and intelligence were found, but prior research with adolescents & adults showed that morality and intelligence to be related but cannot be extended to younger children. The present study is contradictory to Beibert's investigation but it is supported by the prior studies with adolescents and adults. Juvenile delinquents use lower levels of moral judgement than non- delinquent age mates, lower stage of moral judgment were large for comparisons involving male offenders, late adolescents and delinquents with low intelligence.

Table 4 - Shows the correlation between Working Memory and Impulsivity among Juvenile Delinquents

Variables	Values	Attention	Cognitive Instability	Motor	Perseverance	Self- Control	Cognitive Complexity
Trial Making A	'r' value	0.254	0.136	0.024	0.060	0.033	0.077
	Level of significance	0.051**	0.299	0.855**	0.649**	0.800	0.557**
Trial Making B	'r' value	0.076	0.063	0.197	0.153	0.196	0.089
	Level of significance	0.563**	0.631**	0.131	0.243**	0.132**	0.500
Spatial Span	'r' value	0.172	0.042	0.152	0.036	0.044	0.042
	Level of significance	0.188**	0.752**	0.246**	0.786**	0.741**	0.752**

** Correlation is significant at 1% level

There exists a positive correlation between Trail making A with attention (0.051**) and cognitive complexity (0.557**). Trial making is a subtest of working memory; attention and cognitive complexity all together constitutes executive functioning and therefore it exhibits significant relationship. Trial making A and Motor (0.855**), perseverance (0.649**) have a negative correlation, which implies that if working memory if high the individuals remain less impulsive. Daniel Romer, 2010 aimed to study the executive cognitive functions and impulsivity correlating with risk taking and problem behavior adolescents. This study correlates with the present study, as the working memory was related to less impulsivity and reversal learning was also related to less impulsivity. There is a positive correlation between Trial making B and attention (0.563**) and negative correlation between Trail making B and cognitive instability (0.631**), perseverance (0.243**) and self-control (0.132**). Working memory is highly correlated with cognitive stability and hence in the present study it is negatively correlated with instability, but perseverance and self-control are negatively correlated which is supported by the study conducted by Andrea M. Fabian & Cristian Delcea in 2017. They have reported that young delinquents are more impulsive and have a higher sensation seeking tendency, but their working memory and decision making capacity in risk situations is not significantly different when compared with normal group. The level of significance between spatial span and attention (0.188**), with cognitive instability (0.752**), motor (0.246**), perseverance (0.786**), self-control (0.741**) and cognitive complexity (0.752**) exists a significant relationship.

Table 5 - Shows the correlation between Working Memory and Moral Development among Juvenile Delinquents

Variables	Values	Harm/ Care	Fairness/ Reciprocity	Ingroup/ Loyalty	Authority/ Respect	Purity/ Sanctity
Trial Making A	'r' value	0.116	0.017	0.071	0.164	0.016
	Level of significance	0.379**	0.898	0.591**	0.211**	0.901
Trial Making B	'r' value	0.051	0.063	0.027	0.071	0.014
	Level of sig	0.699**	0.633**	0.835	0.590**	0.913**
Spatial Span	'r' value	0.025	0.005	0.037	0.119	0.129
	Level of significance	0.849**	0.971**	0.780**	0.366**	0.324**

** Correlation is significant at 1% level

There is a negative correlation between Trial making A and Harm/Care (0.379**), Ingroup/Loyalty (0.591**) and Authority/Respect (0.211**). When working memory is high the moral judgement needs to be higher but in this study there exists a negative correlation. Few juvenile delinquents might have given socially desirable responses on the questions of moral foundation. Delinquent adolescents exhibit less mature moral judgements and more cognitive errors, moral judgment and empathy were positively correlated but the moral judgment and cognitive errors are negatively correlated, (Martin Larden, 2007) which is in line with the present study. Trial making B is also negatively correlated with Harm/care (0.699**), Fairness/Reciprocity (0.633**), authority/respect (0.590**) and Purity/Sanctity (0.913**). Juvenile delinquents showing their love, genuineness, respecting the significant others has to be nurtured from the childhood, but due to poor parental behavior, poor families might have made these individuals show less mature moral development. Level of significance between spatial span and dimensions of moral development are positively correlated with Harm/Care (0.849**), Fairness/Reciprocity (0.971**), Ingroup/Loyalty (0.780**), Authority/Respect (0.366**) and Purity/Sanctity (0.324**).

Table 6 – Shows the correlation between Impulsivity and Moral Development among Juvenile Delinquents

Variables	Values	Harm/ Care	Fairness/ Reciprocity	Ingroup/ Loyalty	Authority/ Respect	Purity/ Sanctity
Attention	'r' value	0.059	0.279	0.094	0.226	0.148
	Level of significance	0.655**	0.031	0.474	0.082**	0.261
Cognitive Instability	'r' value	0.112	0.003	0.012	0.059	0.175
	Level of significance	0.396	0.985	0.926	0.656	0.181
Motor	'r' value	0.094	0.130	0.113	0.036	0.204
	Level of significance	0.474	0.322	0.390	0.783	0.118
Perseverance	'r' value	0.003	0.194	0.083	0.047	0.305
	Level of significance	0.981	0.137	0.528	0.724	0.018
Self-Control	'r' value	0.019	0.166	0.014	0.149	0.076
	Level of Sig	0.885	0.204	0.913	0.257	0.562
Cognitive Complexity	'r' value	0.149	0.288	0.117	0.098	0.223
	Level of significance	0.255	0.026**	0.374**	0.457	0.086**

** Correlation is significant at 1% level

There is a negative correlation between attention and Harm/Care (0.655**), Authority/Respect (0.082**) and also a negative correlation between cognitive complexity and Fairness/Reciprocity (0.026**), Ingroup/Loyalty (0.374**) and Purity/Sanctity (0.086**). In all other areas there is no significant relationship between the dimensions of impulsivity and moral development. Anna M. Paluka (1997) investigated the relation of psychological variables of moral judgment, emotional empathy and impulsivity to criminal behavior in young and adult offenders. Results indicated that the offenders were lower on moral judgment and higher on impulsivity than non-offenders. Young offenders were lower on principle of morality and higher on impulsivity than adult offenders.

This study is contradictory to the present study which might be due to the sample size, the quoted study is carried out with different culture, age, ethnic group and it is been limited to male offenders than female delinquents.

Table 7 – Shows the difference between Verbal and Performance IQ of Boys and Girls with Juvenile Delinquents

Variables	Gender	N	Mean	SD	t value	P value
Verbal IQ	Boy	30	2.266	0.639	1.803	0.077 (NS)
	Girl	30	1.933	0.784		
Performance IQ	Boy	30	2.566	0.626	1.637	0.107 (NS)
	Girl	30	2.266	0.784		

NS- Not Significant

There exists no significant difference among gender on Verbal IQ (0.077 NS) and Performance IQ (0.107 NS). Amy E. Lansing, Jason J. Washburn in 2015 stated that males perform more poorly than females on overall intellectual functioning and all other areas. Males showed below average in overall intellectual functioning and nine in ten males had below average receptive vocabulary skills. The above mentioned study is contradictory to the present study, the verbal and attainment measures did not correlate with delinquency, since it is often said that educational retardation and poor verbal ability are more characteristic of delinquents than low IQ on non-verbal tests. The discrepancy between an individual's verbal and non-verbal intelligence is particularly related

to delinquency. Males tend to perform better on performance tests because they are good at visuo-spatial skills than verbal skills but females tend to perform better on both verbal and performance IQ test. Tuominen T. et.al in 2013 also concluded that male prisoners verbal IQ was more impaired than the performance IQ. Boys had lower IQ in the total of the verbal and performance sub test (Amany Ahmed, et.al, 2012).

Table 8 - Shows the difference between Working Memory of Boys and Girls with Juvenile Delinquents

Variables	Gender	N	Mean	SD	t value	P value
Trial Making A	Boy	30	64.43	17.64	0.868	0.119 (NS)
	Girl	30	72.06	19.68		
Trial Making B	Boy	30	132.96	83.54	0.266	0.389 (NS)
	Girl	30	151.76	84.14		
Spatial Span	Boy	30	9.10	1.91	0.287	0.543 (NS)
	Girl	30	8.80	1.88		

NS - Not Significant

There is no significant difference between Working memory of boys and girls on Trial making A (0.119 NS), Trial making B (0.389 NS) and Spatial span (0.543 NS). In general males are better at spatial tasks involving mental rotation and females have superior verbal skills. Females consistently activate more limbic and prefrontal structures and males activate a distributed network inclusive of more parietal regions (Ashley C. Hill., et.al, 2014). The present study contradicts with other literature, the sub-test of working memory like Trial making and Spatial span was found to be difficult for majority of the juvenile delinquents, both gender faced difficulty in completing the test. The gender differences in working memory would be better analyzed when the sample size is increased and any other test of working memory could have been added as an additional source of information. These delinquents have below average level of intellectual functioning, attention span is found to be less, these tests require sustained attention which in turn leads to poor performance on working memory tests. On verbal working memory task, performance of men and women was not significantly different but whereas in tests which measures visual working memory women showed significantly greater recall than men (Harness A., Jacot. L., et.al, 2008). These offenders show impaired executive functioning on tasks of attention, set-shifting, working memory and planning (Zou. Z., Meng H. et.al, 2012).

Table 9 - Shows the difference between Impulsivity of Boys and Girls with Juvenile Delinquents

Variables	Gender	N	Mean	SD	t value	P value
Attention	Boy	30	9.63	2.99	2.714	0.775 (NS)
	Girl	30	9.90	4.11		
Cognitive Instability	Boy	30	6.10	2.36	0.187	0.009**
	Girl	30	7.83	2.57		
Motor	Boy	30	18.06	6.30	0.894	0.852 (NS)
	Girl	30	17.80	4.59		
Perseverance	Boy	30	7.03	2.23	0.223	0.375 (NS)
	Girl	30	6.53	2.09		
Self-Control	Boy	30	14.03	4.55	0.874	0.824 (NS)
	Girl	30	13.76	4.69		
Cognitive Complexity	Boy	30	11.43	3.00	2.719	0.386 (NS)
	Girl	30	10.76	2.90		

** Correlation is significant at 1% level

NS - Not Significant

The difference is found to be significant at 1% level (0.009**) on cognitive instability dimension of impulsivity among juvenile delinquents. The ability to flexibly adapt behavior to changing environmental demands is found to be different among boys and girls. Girls are found to get adapted to the situation better but boys tend to remain impulsive. Boys and girls differ significantly on impulsivity, some researchers suggest that socialization and parenting create different levels of impulsivity, whereas others suggest that cognitive and motor deficits in early life may be the source. Constance L. Chappale and Katherine A. Johnson in 2007 concluded that boys and girls differ significantly on impulsivity due to socialization, parenting and cognition. In attention (0.775), motor (0.852), perseverance (0.375), self-control (0.824) and cognitive complexity (0.386) in these dimensions of impulsivity there exist no significant difference among gender. On the whole prior researchers stated impulsivity is high among boys than in girls but in present study many of the dimensions show no significant difference on gender. It might be due to an alarming increase in female delinquency which grew at two to three times at the rate of male delinquency. The impulsive delinquent shows more violent and non-violent anti-social behavior, quick to act by most of the times and this is becoming common in both gender due to inconsistency in child rearing practices and poor parental behavior.

Table 10 – Shows the difference between Moral Development of Boys and Girls with Juvenile Delinquents

Variables	Gender	N	Mean	SD	t value	P value
Harm/ Care	Boy	30	19.90	2.69	2.449	0.009**
	Girl	30	21.63	2.22		
Fairness/ Reciprocity	Boy	30	19.66	2.38	0.470	0.017**
	Girl	30	21.30	2.76		
Ingroup/ Loyalty	Boy	30	16.96	3.50	0.110	0.640 (NS)
	Girl	30	17.40	3.62		
Authority/ Respect	Boy	30	17.20	3.13	3.876	0.913 (NS)
	Girl	30	17.30	3.86		
Purity/ Sanctity	Boy	30	20.13	2.70	0.021	0.000**
	Girl	30	22.56	2.12		

** Correlation is significant at 1% level

NS – Not Significant

There exists a significant difference on moral development in the areas of Harm/Care (0.009**), Fairness/Reciprocity (0.017**) and Purity/Sanctity (0.000**). Based on the Gilligan's theory adolescent girls found to be more care oriented than boys, it was also inferred that religion is the most important factor which influence the moral judgement and justice oriented approach of boys and girls (Kalsoom Farhat, 2012). The study partially supports Gilligan's theory and it was also concluded that cultural norms do play an important role to make the boys more assertive to boys as compared to girls. It is expected from girls that they should be submissive, introvert and caring as compared to boys. Being humble with care, showing equity, following devotion is present comparatively higher in girls than in boys. Girls tend to have more mature moral judgments and more empathy than boys, moral judgment and empathy were positively correlated which was reported by Martin Larden, 2007.

CONCLUSION AND IMPLICATION

Intelligence, Working Memory, Impulsivity and Moral development are the variables which are highly inter-correlated and to see the relationship among these variables in Indian population is one of the strengths of the present study. Predominantly review of literature suggests that, Juvenile Delinquency is correlated much with boys, and girls in conflict with law have been rarely investigated on. The present study found out the difference between boys and girls among the variables of the study. The tools of the study were not time consuming and the participants were eager to participate in the study and to know about the results of their individual performance. They considered the working memory tests as a game and performed it to the fullest. The individuals who participated in the study were psycho-educated on the level of intellectual functioning and impulsive behavior which made them to be aware of their level of impulsivity and how it affects their interpersonal relationship.

The present study with the available results, the individuals could have been screened on their level of impulsivity and interventions which is focusing on anger management, adaptive coping strategies can be demonstrated in modules and compared the results using Experimental method (Pre-test and Post-test). For investigating the Working memory aspect certain other tests can be added in the future research so that the correlation between the sub-test of working memory can be done. A questionnaire on parenting style could have been used so that the level of impulsivity, moral values can be better understood and discussed based on family dynamics. Type of crime, family history of criminals, substance abuse, learning problems could have been added in the demographic data sheet to find out comorbidity which can be added for more discussion and learning about the juveniles in a holistic manner.

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REFERENCES

- [1] Daniel Offer, Richard C. Marohn and Eric Ostrav. (1979). Psychological World of Juvenile Delinquency. Basic books, Inc: Printed at United States of America.
- [2] Harjit S. Sandhu (1977). Juvenile Delinquents: Causes, Control and Prevention. Mc Graw Hill Inc: United states of America.
- [3] D.J. West and D.P. Farrington. (1977). The Delinquent way of Life. Heinemann Educational Books Limited,

- Great Britain: London.
- [4] Amany A. Abdou., Dalal Amer and Mohamed N. Sadek. (2012). Gender differences in personality characteristics and cognitive abilities in adolescents admitted in correctional institutes in Egypt. *Egyptian Journal of Psychiatry*. Vol. 33(1): 9-14. Retrieved from: <http://new.ejpsy.eg.net/article.asp?issn=1110-1105;year=2012;volume=33;issue=1;page=9;epage=14;aulast=Abdou>
- [5] Amy E. Lansing., Jason J. Washburn., Karen M. Abram., et.al. (2015). Cognitive and academic functioning of juvenile detainees: Implications for correctional populations and public health. *Journal of Correct Health Care*. Vol. 20(1): 18-30. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4292927/>
- [6] Andrea M. Fabian and Cristian Delcea. (2017). Juvenile Delinquent's Decision Making Capacity in Risk Situations: A Multifactorial Approach. *International Journal of Mental Health Psychiatry*. Vol. 3(1). Retrieved from: https://www.scitechnol.com/peer-review/juvenile-delinquents-decision-making-capacity-in-risk-situations-a-multifactorial-approach-Cbd7.php?article_id=5997
- [7] Annemaree Carroll., Julie Bower., et.al. (2006). Impulsivity in Juvenile Delinquency: Differences Among Early-Onset, Late-Onset, and Non-Offenders. *Journal of Youth and Adolescence*. Vol. 35(4). Retrieved from: https://www.researchgate.net/publication/43472776_Impulsivity_in_Juvenile_Delinquency_Differences_Among_Early-Onset_Late-Onset_and_Non-Offenders
- [8] Barbara Menting., Hans M. Koot, Dustin Pardini and Rolf Loeber. (2016). Cognitive impulsivity and the development of delinquency from late childhood to early adulthood: Moderating effects of parenting behavior and peer relationships. *Development and Psychopathology*. Vol. 28(1): 167-183. Retrieved from: <https://www.cambridge.org/core/journals/development-and-psychopathology/article/cognitive-impulsivity-and-the-development-of-delinquency-from-late-childhood-to-early-adulthood-moderating-effects-of-parenting-behavior-and-peer-relationships/432DD1397D36251C69DA55A7309CFFB2>
- [9] Carol. V and Louis Veneziano. (1988). Correlates of moral development in juvenile delinquents. *American Journal of Criminal Justice*. Vol. 13(1): 97-116. Retrieved from: <https://link.springer.com/article/10.1007/BF02890853>
- [10] Constance L. Chapple and Katherine Johnson. (2007). Gender Differences in Impulsivity. *Youth Violence and Juvenile Justice*. Vol. 5(3): 221-234. Retrieved from: https://www.researchgate.net/publication/249634093_Gender_Differences_in_Impulsivity
- [11] Daniel Romer., Laura M. Betancourt., Joan M. Giannetta., et.al. (2009). Executive Cognitive Functions and Impulsivity as Correlates of Risk Taking and Problem Behavior in Preadolescents. *Neuropsychologia*. Vol. 47(13): 2916-2926. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2780004/>
- [12] Daniel Romer., Laura M. Betancourt., Nancy L. Brodsky., et.al. (2012). Does Adolescent Risk Taking Imply Weak Executive Function? A Prospective Study of Relations between Working Memory Performance, Impulsivity, and Risk Taking in Early Adolescence. Vol. 14(5): 1119-1133. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3177153/>
- [13] Emma J. Palmer. (2011). A comparison of patterns of moral development in young offenders and non-offenders. *Legal and Criminological Psychology*. Vol. 3(2): 225-235. Retrieved from: <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.2044-8333.1998.tb00363.x>
- [14] Farhat Kalsoom., Malik G. Behlol., et.al. (2012). The Moral Reasoning of Adolescent Boys and Girls in the Light of Gilligan's Theory. *International Education Studies*. Vol. 5(3). Retrieved from: <https://files.eric.ed.gov/fulltext/EJ1066874.pdf>
- [15] George E. Higgins., Emma Leigh E. Kirchner., L. Ricketts and Catherine D. Marcum. (2013). Impulsivity and Offending from Childhood to Young Adulthood in the United States: A Developmental Trajectory Analysis. *International Journal of Criminal Justice Sciences*. Vol. 8(2): 182-197. Retrieved from: <http://www.sascv.org/ijcjs/pdfs/higginsetalijcjs2013vol8issue2.pdf>
- [16] Hanna M. Beibert and Marcus Hasselhorn. (2016). Individual Differences in Moral Development: Does Intelligence Really Affect Children's Moral Reasoning and Moral Emotions? *Frontiers in Psychology*. Retrieved from: <https://www.frontiersin.org/articles/10.3389/fpsyg.2016.01961/full>
- [17] Ilhong Yun and Julak Lee. (2013). IQ and Delinquency: The Differential Detection Hypothesis Revisited. *Youth Violence and Juvenile Justice*. Vol. 11(3): 196-211. Retrieved from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1032.6698&rep=rep1&type=pdf>
- [18] Martin Larden., Lennart Melin., Ulrika. H and Niklas Langstrom. (2006). Moral judgement, cognitive distortions and empathy in incarcerated delinquent and community control adolescents. *Journal of Psychology, Crime & Law*. Vol. 12(5): 453-462. Retrieved from: <https://www.tandfonline.com/doi/abs/10.1080/10683160500036855?src=recsys&journalCode=ggpc20>
- [19] Pattarawat Sukyirun. (2016). Biosocial Interaction and Juvenile Delinquency Behaviors of Thai Juvenile Delinquents. *International Journal of Criminal Justice Sciences*. Vol. 11(2): 100-113. Retrieved from: <http://www.sascv.org/ijcjs/pdfs/sukyirunijcjs2016vol11issu2.pdf>
- [20] Priyadharshini. S., Rejani. T.G., et.al (2017). Neuropsychological Profiling of Offenders. *International Journal of Medical Research and Pharmaceutical Sciences*. Vol. 4(2). Retrieved from: <http://www.ijmrpsjournal.com/Issues%20PDF/Vol.4/February-2017/7.pdf>
- [21] Rolf Loeber., Barbara Menting., et.al. (2012). Cognitive Impulsivity and Intelligence as Predictors of the Age-

- Crime Curve. *Journal of the American Academy of Child and Adolescent Psychiatry*. Vol. 51(11): 1136-1149. Retrieved from: <https://www.sciencedirect.com/science/article/abs/pii/S0890856712006442>
- [22] Roos Koolhof, Rolf Loeber., Evelyn H. Wei., Dustin Pardini., et.al. (2007). Inhibition Deficits of Serious Delinquent Boys of Low Intelligence. *Criminal Behaviour and Mental Health*. Vol. 17(5): 274-292. Retrieved from: <https://www.ncjrs.gov/App/Publications/abstract.aspx?ID=242911>
- [23] Tuominen. T., Korhonen.T., Temonen.S., et.al. (2014). Neurocognitive disorders in sentenced male offenders: implications for rehabilitation. *Journal of Criminal Behavior and Mental Health*. Vol. 21(1): 36-48. Retrieved from: <https://www.ncbi.nlm.nih.gov/pubmed/23963707>