VIOLENCE: PSYCHOBIOLOGICAL PERSPECTIVES

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Abstract

The causes of violence by the Criminal psychologists are discussed with emphases on psycho-social variables such as, parental child rearing practice, personality traits, learning by modeling, association with peer group, socio-economic status, etc. other researchers have investigated the influence of biological variables on violent behaviour (for example, Eysenck, 1973; Mednick, 1985 and others). The present paper is an attempt to combine both biological variables (i.e. genetical, neuro-physiological, etc) and social – psychological approaches. The paper argues that bio-psycho-social interdisciplinary model should be the major theoretical concern to study the violent behaviour.

It is an established fact that violence between individuals and between groups of individuals is not a new phenomenon. Archaeological evidence shows that ever since the dawn of human history, human beings were dealing blows to each other. It can be easily said that violence is not purely modern phenomenon. Now-a-days its frequency, intensity and up to some extent form has greatly changed or we can say modernized aggression; violence, terrorism and other such destructive phenomenon are very common these days. Its effect is increasing by deteriorating the fabrics of the society. The frequencies of aggression and violent events have posed a serious question as to why people behave aggressively and violently.

Introduction

The psychologists have defined violence as a coercive behavior, which results in harm and destruction to others. Violent behavior may be directed

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at either animate or inanimate objects. It may be evinced by overt physical action or by intangible psychological or mental behaviour. Although many other factors are involved before, an action can be labeled as violent. Aggression is the basic ingredient in violence. By studying aggression, psychologists have made substantial contribution to society's effort to understand violence and terrorism.

Perspectives on human nature emerge very clearly from the scholarly and research literature on aggression. Some writers and researchers believe that aggressive behavior is basically physiological and genetic in origin. On the other hand, researchers who subscribe to the learning viewpoint believe that, human being learned to be aggressive from social environment, i.e. family, school, peer group, etc. Other researchers remain on a theoretical fence, accepting and rejecting some aspects of each argument.

The present article argues that bio-psycho-social interdisciplinary model should be the major theoretical concern to explain violent behaviour. Many scholars (e.g. Mednick, 1986; 1979; Eysenck, 1977) propose that violent behaviour is the result of an interaction between certain environmental conditions and inherited personality traits. They believe that a comprehensive theory must allow for an examination of the biological make up and socialization history of each individual. A statement that violence is caused by social conditions, such as poverty, poor education, unstable political system, or unemployment is as inaccurate as hereditary and biological explanations. "Violence can not be understood in terms of heredity alone, but it can also not be understood in terms of environment alone." (Eysenck, 1983, p. 171).

The paper presents the evidence in support of the hypothesis that violent behavior can better be understood, if it combines biological and social psychological approaches.

Biological perspective

This perspective explores the evidence for a genetic and bio-chemical predisposition to criminal violence. It also explains the neuro-physiological studies which predispose an individual to act violently.

Genetic studies on violence

Neuro-psychologists believe that, there are indeed genetical traits that predispose a person to violent acts. These traits are transmitted from parents to child through the genes. Three types of samples are used

traditionally for genetic research—nuclear families, twins and adoptees. A brief description of each technique is discussed bellow:

(i) Family studies are useful because the family members share both genes and environment influence. If there were no relationship between family members for certain behaviour, it could be deduced that there is no genetic or shared environmental influence for that behavior. However, if a relationship does exist between family members, there is no way to determine whether that relationship is a function of genes, environment, or both, although an estimate of the upper limit of heritability can be established (Plomin, Defries, and McClearn, 1989). The twin and adoption methods are necessary in order to disentangle the influences of genes and environment.

(ii) The twin design makes use of the fact that monozygotic (MZ) twins share 100% of their genes and dizygotic (DZ) twins share on average 50% of their genes. Thus, a comparison of concordance rates between two types of twin provides an ample evidence of environmental influence. Heritability can be calculated as twice the difference between the MZ correlation and DZ correlation; anything left over is due to environmental influences or errors in measurement. More sophisticated modeling techniques can be used to partition the environmental variance into shared and unique environmental influences (e.g. Fulker and DeFries, 1983; Ploming, Loehlin, and DeFries, 1985).

(iii) The adoption design takes advantage of the fact that adoptees share genes but not rearing environment with their biological parents, and they share environment but not genes with their adoptive parents. A comparison of the correlation of adoptees with biological parents and adoptees with adoptive parents provides an estimate for both heitability and environment. Possible confounds such as selective placement and assertive mating can be controlled with appropriate modeling techniques (Plomin et al., 1989). Convergence of the results from studies using each design provides a powerful support for such studies. Several studies have suggested that genetic factors are involved in adoption and twin studies.

Studies have suggested that genetic factors are involved; both adoption and twin studies have provided support for this hypothesis. In one of the most frequently reported sets of studies on adoptees and

criminality, Mednick and his colleagues (e.g., Hutchings and Mednick, 1975; Mednick, Gabrielli, and Hutchings, 1984,1987) have studied a Danish cohort of adoptees, all of which have shown a clear genetic component for criminality. Strong evidence also has been demonstrated for the importance of the effect of the environment on criminality. The Danish studies showed that the group of adoptees with both adoptive and biological fathers who were violent criminal were themselves the most likely to be violent criminals (24%). The next largest group of violent criminals adoptees were those with only a violent criminal biological fathers (20%). This suggests that genotype is important in criminality outcome, but that environment also has a significant effect in raising up the 13 % base rate.

Cloninger, Sigvardsson, Bohman, and von Knorring (1982) studied violent criminals adoptees and found that men whose adoptive environments included criminal relatives but whose biological parents were not criminal were twice as likely to be violent criminal themselves (6.7%) compared with adoptees with no adoptive or biological criminal background (2.9%). Adoptees whose biological parents were violent criminals but adoptive parents were not criminals and adoptees were four times as likely to be violent criminals (12.1%). Adoptees that had both biological and adoptive criminal parents were 14 times as likely to be criminal (40%). This suggests a multiplicative or truly interaction effect of both genetic and environmental influences; genetic factors played a larger role than did environmental factors, and when both were commend they greatly increased the risk of later violence.

Twin studies have provided results similar to those from the adoption studies. A much higher concordance rate has been shown across several studies for MZ twins than for DZ twins (e.g., Christiansen, 1977; Cloninger and Gottesman, 1987; Dalgaard and Kringlen, 1976). As summarized by DiLalla and Gottesman (1990), the weighted average pair-wise concordance rates across several studies suggest a high heritability for adult criminality. The average concordance for MZ twins is 51% and for DZ twins is 22%. The heritability for the Danish sample originally studied by Christiansen (1977) is 54% (Cloninger and Gottesman). The results for heritability of violent criminality are less clear. Most studies lump violent and nonviolent criminals together rather than calculating heritabilities separately. One twins attempted to correct for this oversight by differentiating the crimes of the twins into crimes against property and crimes against persons. The heritabilities for the two types of crimes were

different but both were high: 76% for property crimes and 50% for crime against persons. The influence of environment clearly is high for violent crimes, but both heredity and environment were vital variables.

Physiological studies on violence

Recent work in neuro-psychological sciences has provided additional information about aggressive behaviour. Neuro-psychologists explain aggression and violence in terms of biochemical and hormonal imbalances.

In 1986, Lines Pauling, twice recipient of Noble prize in chemistry, coined the term 'orthomolecular psychiatry'. He suggested that mental illness and behaviour disorders are caused mostly by abnormal reactions ratio in the body which result from constitutional defects, faulty diet, and abnormal concentrations of essential elements. Later orthomolecular views are reflected in the perspective that has been term the "biochemical approach" (Hippchen, 1978; Hoffer, 1978). Adherents of this approach maintain that various kinds of violent and criminal behaviors are not psychological reactions rather, are indications of metabolic or biochemical imbalances. For example, an adolescent youth may engage in violent behavior not because he or she is the unfortunate victim of maternal rejection or a broken home but because he is suffering from faulty diet, inadequate nutrition, or the presence of some toxic substance in his body such as mercury which adversely affects his general health and mental functioning.

Hypoglycemia is another physiological measure that has been studied in relation to aggressive behaviour. There is much evidence that hypoglycemia could be connected to criminal and violent behavior (Dolton, 1973,1976; Bovill, 1973; Groesbect, D'Asero and Nigro, 1975; Hill and Sargant, 1943; Neziroglu, 1979; Wilder, 1947; Yarhura-Topbias and Neziroglu, 1975, 1981). Hypoglycemia is a condition that occurs when the level of sugar in blood falls below an acceptable range. The brain is particularly vulnerable to hypoglycemia, and such condition can impair its function. Symptoms of hypoglycemia include anxiety, headache, confusion, fatigue and even aggressive behavior. As early as 1943, researchers linked hypoglycemic condition with violent crime, including murder, rape, assault and arson. Subsequent studies found that violent and impulsive male offenders had a higher rate of hypoglycemia than non- criminal controls. For example the work of Virkkunen (1986) who has conducted a series of studies of habitually violent and

psychopathic offenders. In one such study he examined the results of glucose to Tolerance test (used to determine whether hypoglycemia is present or not) administrated to 68 habitually violent offenders, and 20 control subjects. The offenders were found to be significantly more hypoglycemia than control group.

A third physiological measure that has been used in aggression studies is the level of 5-hydroxy iodoleacetic acid (5HIAA), a serotonin (a neurotransmitter) metabolite in the cerebrospinal fluid. The relationship of levels of HIAA to impulsive versus non-impulsive murderers and attempted murderers were investigated by Linnoila et al (1983). The subjects were sixty; 36 violent offenders who had murdered or attempted murderer, and all were alcoholics. The results showed that impulsive and violent offenders had significantly lower levels of 5 HIAA and that lower 5 HIAA was associated with early on set of alcoholism.

A fourth important physiological measure that has been used in aggression studies is the levels of hormones, particularly the testosterone. Evidence exits for the importance of testosterone influencing aggressive behavior in males. Owlets (1987) assumed testosterone levels in a group of 15-17 year old boys and related it to both provoked and unprovoked violent behavior. Results of this study suggested that high level of testosterone is directly related to violent behavior. Ehrenkranz, Bliss and Sheard (1974) found that aggressive prisoners had higher levels of plasma testosterone. Similar findings were confirmed by Kreutz and Roze (1972). A study (e.g. Dalton, 1971) relates the premenstrual syndrome (PMS) that women are at greater risk of aggressive and suicidal behaviour before and during their menstrual period due to certain hormonal imbalances.

Violent Behavior: Social-Psychological Approaches

Many theories of aggression rely heavily on the examination of social-psychological factors that determine when aggression will occur and when people will call a particular action violent. This section examines social-psychological perspectives.

Frustration- Aggression Hypothesis

According to some psychologists (Dollard, 1939; Dollard & Miller, 1970) violent behavior is always a consequence of frustration and it always leads to some form of violent action. Such violent acts may be directed or

displaced in to a scapegoat. Presumably, minorities and members of out-groups are favorite targets for displaced aggressions.

Recently, the F-A hypothesis has been revised by Berkowitz (1969). An important component of the F-A hypothesis is the concept of anticipated goals or expectations. When a specific goal directed behaviour is thwarted, frustration is likely to result. Thus, the person must have been expecting or anticipate the attainment of a goal or achievement. Mere deprivations of goods will not necessary lead to frustration. People who are living under deprived conditions may not frustrate unless they actually expect something better. For instance, poverty stricken groups who have never dreamed of having automobile or new home etc are not frustrated because they have been deprived of these things; they are frustrated only after they have begun to hope.

Somewhat similar phenomenon is seen in a developing country. Like Pakistan. For example, an individual who has passed the academic career with flying colours and is expecting to get good job. However, unfortunately, his anticipated goal could not be fulfilled, (due to social injustice), he might be frustrated. If he has, also biological tendency to behave aggressively then the individual may adopt violent lifestyle. In future, he might join a terrorist group or any other criminal gang to satisfy his expectations and goals.

Social Learning Theory

Another approach to explain the violent behaviour, deals with the issue of why the amount and type of violent behaviour differ among people. Social learning theory states that we learn aggressive behviour by watching aggressive models (Bandura, 1977). Our world is filled with aggressive models, for example, our television features Rambo and Ninja Turtles. Even in homes, children see the parents using aggression (spanking) to bring about the desired behaviour. Each of us has slightly different modes of aggression. Consciously or unconsciously, we are also exposed to aggressive stimulus on our road or at main corners in form of monuments like Armor Tank or Missiles etc. According to social learning theory, learning how to behave aggressively is only first step, however, whether we behave aggressively or not is dependent on the reinforcement available to us. Rewards come in many forms, such as the praise from a parent for "acting like a man". Difference between people in the performance of violent behavior can be explained due to reward structures in their

environment. A recent report of the National Commission on the causes and prevention of violence states: it is reasonable to conclude that a constant diet of violent behaviour on T.V has adverse effect on human character and attitudes. Violence on electronic media encourages violent forms of behaviour, and fosters moral and social values about violence in daily life, which are unacceptable in a civilized society.

Differential Association-Reinforcement (DAR) theory

The DAR theory proposes by Akers(1985) states that people learn to commit deviant acts through interaction with their social environment. He believed that in our intimate personal groups we all learn "definitions" or "Normative Meanings" (messages), favorable or unfavorable to law violation. A person becomes terrorist because of and excess of definitions favorable to violation of law or norms of society, over definitions unfavorable to violation of law. For example, a freedom fighter believes that it is right to blast bomb and kill people to get attention of the state or achieve desired goals.

Akers argues that social and non-social reinforcement play vital role in strengthening the behaviour. Social reinforcements are symbolic and verbal rewards for participation in or agreeing with group norms and expectations. For example, doing something in accordance with group norms is reward with "way to go", "great job", etc.

Conclusion

It appears from the above studies that psycho-social and biological perspectives are the major perspectives to explain violent behaviour. The above discussion maybe summed up that biological factors seems to facilitate the aggressive behaviour, whereas the psycho-social factors, such as frustration, social learning and group justifications or commitments with the group are main causative factors in violent behaviour. It is some what clear that, if one has biological tendency to behave aggressively and have the environment that instigates him then there is significant chances to adopt the violent lifestyles. It is dire need to conduct comprehensive bio-psycho-social interdisciplinary studies to understand the nature of violent behaviour, and eradicate violence and terrorism from the society.

References:

1. Akkers, R.L.. (1985), Deviant Behaviour: a social learning approach (3rd ed.) Belmont, CA: Wadsworth.

2. Bandura, A., (1990), Mechanism of Moral disengagement in terrorism. in W.Reich (Ed.), The Psychology of Terrorism: Behaviour, worldview and states of mind. New York: Cambridge University Press.
3. Bandura, A.D.B.P. (1977), Social Learning Theory, Englewood Cliffs. N.J. Prentice-Hall.
4. Berkowitz, L., (1969), The Frustration-aggression hypothesis revisited. In L. Berkwitz. (Ed.) Root of Aggression, New York: Atherton Press.
5. Christiansen, K.O. (1977), A review of studies: of criminality among twins. in S.A. Mednick and K. O. Christiansen Eds), Biosocial bases of criminal behaviour (pp. 45-88). New York: Gardner Press.
6. Cloninger, D.R. & Gottesman, I.I., (1987). Genetic and environmental factors in antisocial behaviour disorder. In S.A. Mednick, T.E. Moffitt, & S.A. Stack (Eds), *The causes of Crime: New Biological approaches (pp.92-109)*, England: Cambridge University Press.
7. Cloninger, C.R., et al (1982), Predisposition to petty criminality in Swedish adoptees. Cross-fostering analysis of gene-environment interaction. *Archives of General Psychiatry*, 39, 1242-1240.
8. Dalgaard, O.S., & Kriniglen, E., (1976), A Norwegain twin study of criminality. British Journal of Criminality, 16, 213-232.
9. Dilalla, L.F. & Gottesman, I.I. (1990), Delinquency and criminality: Lifespan perspective, *Development and Psychology*, 1, 339-349.
10. Dalton, K., (1971), Menstruction and Crime, *British Medical Journal*, 2 1752-1753.
11. Dollard, J. et al (1939, *Frustration and aggression*, New Haven. CT: Yale University Press.
12. Ehrenkranz, J., Blilss, E., & Sheard, M.H., (1974), Plasma testosterone correlation with aggressive behavious and social dominance in man. *Psychosomatic Medicine*, 36 (6), 469-475.
13. Eysenck, H.J. (1983), Personality, conditioning and antisocial behaviour. In W.S. Lllaufer & J.M. Day (Eds). *Personality theory, moral development and criminal behaviour*. Lexintion, M.A: Lexinton Books.
14. eysenck, H.J., (1977), *Crime and Personality* (2nd ed.) London: Routledge & Kegaan Paul. Hare, R.D., & Schalling, D. (1978). (1978). Psychopathis Behaviour Approaches to research (pp.107-144), New York: Wlley.
15. Hiffer, A. (1978), Some theoretical principles basic to orthomolecular Psychiatric treatment. In L.J. Hipphen (Ed.) *Ecologic-Biochemical Approaches to the Treatment of Delinquency and Criminals*, New York: Van Nostrand Reinhold.
16. Kreutz, I.E., & Rose, R.M. (1972), Assessment of Aggressive Behaviour and plasma testosterone in a young criminal population. *Psychosomatic Medicine*, 34, 321-332.

17. Linnoila, M., et al (1983), Low Cerebrospinal fluid 5-Hydroxyindoleacetic acid concentration differentiates impulsive from non impulsive violent behaviour, *Life Science*, 33, 321-2614
18. Mednick, S.A. et al (1988), Predisposition to violence,- *Aggression Behaviour*, 14, 25-33.
19. Mednick, S.A. et al, (1984), Genetic influence in criminal behaviour: Evidence from adoption cohort, *Science*, 224, 891-893.
20. Mednick, S.A. et al, (1987), Genetic Factors: in the etiology of criminal behaviour. In S.A. Mednick, et al. (Eds.) *The Cause of crime: New Biological approaches* (pp.92-109), Cambridge: England: Cambridge University Press.
21. Mednick, S.A. (1979), Biosocial factors and Primary prevention of antisocial behaviour. In S. A. Mednick (Ed.) *New paths in Criminology: Interdisciplinary and intercultural Explorations,* Lexinton: MA: Lexington Books.
22. Olweus, D., (1987), Testosterone and adrenaline: Aggressive antisocial behaviour in normal males. In S.A. Mednick, et al, (Eds) *The Causes of Crime: New Biological approaches* (pp.92-109).
23. Plomion, R. et al., (1986), Behavioural Genetic methods *Journal of Personality*, 54, 226-261.
24. Plomion, R. et al., (1988), *Behavioural Genetics:* A primer, San Francisco: Freeman.
25. Plomion, R. et al. (1985), Genetic and environmental components of "environmental" influences. *Developmental Psychology*, 21, 391-402.
26. Virkunen, M. (1983), Insulin secretion during the glucose tolerance test in antisocial personality. *British Journal of Psychiatry*, 142, 598-604.
27. Yaarura-Tobia, J.A. (1978), Biological Research on violent Behaviour. In L.J. Hippchen (Ed.) *Ecologic-Biochemistry Approaches to the treatment of Delinquency and criminals*, New York: Van nostrand Reinhold.