

CRIME & PERSONALITY

WHERE HAVE WE BEEN, WHERE ARE WE NOW, WHERE ARE WE GOING?

THE EPQ-R REVISITED.

2/ ABSTRACT

This research looks at personality and criminality, in particular viewing the work of Professor Hans Eysenck's model of the criminal personality. It is Hypothesised that Psychoticism, Extraversion and Neuroticism are not able to predict criminality, as previously suggested by Eysenck.

Subjects were divided into three areas, those that admitted to having committed a criminal offence (n = 22) and non-criminals (controls) which was split into two groups, undergraduate students (n = 26) and members of the public (n = 37), they were all given the Eysenck personality questionnaire - revised (EPQ-R) containing scores for psychoticism, Extraversion, neuroticism, criminality, addiction and lie. It can be seen that the Eysenckian theory of criminal personality found support in this study, in its linking of psychoticism and Extraversion to criminality, but not with the component of neuroticism, here students had the highest Neuroticism score. Also, when correlating P, E, and N with criminality it was found that although offenders had the highest Extraversion score they also had the lowest neuroticism score when compared to controls.

It is concluded that Eysenck's work needs further investigation, as the offenders neuroticism score is lower than previously suggested. Further research needs to look at offenders EPQ-R score's for those actually in custody and those that have been released or are awaiting sentence, as it appears that these situational factors may be a contributing determinant to scores on such questionnaires.

3/. INTRODUCTION

Are criminals born or made? This question has baffled psychologists, sociologists and criminologists for many years, and is the very essence of trying to establish the nature of criminality. The born or made argument, known as the "Nature versus Nurture" debate, asks whether criminality is due to genetic factors, and therefore unavoidable, or whether it is the product of social situationalism, environmental surroundings and other external factors.

This study looks at that debate, and asks whether we can predict criminality by looking at factors of an individuals personality.

Lombroso, (1836 - 1909) the criminal anthropologist, regarded by many as the father of criminology, and heavily influenced by Darwin's "The Descent of Man" developed a theory that some people are genetically closer to their primate ancestors than others, he

thus proposed that some people are born with an innate predisposition to criminality and anti-social behaviour (Savitz 1972).

Lombroso believed that the criminal was a separate species that had not evolved in the same way as "normal" humans. He believed that this species was genetically halfway between modern man and his primate ancestors, he called them "Homo Delinquens" and considered them to be mutations or natural accidents living amongst Homo Sapiens (Bartol 1991). Lombroso collected large amounts of data, using Italian prisoners and the military. He concluded that criminals had distinguishing physical features that set them apart from the non-criminal population.

It must be noted however that Lombroso did not use a "normal" control group, and thus the methodology can be seen to be questionable.

The features Lombroso identified were; Flat nose, large ears, fat lips, large jaw bone, and high cheek-bones, he claimed that the "born Criminal" also had a liking for tattoos and cruel and wicked games. He also suggested that they have their own language, through a primeval slang, again a throwback to their savage ancestry (Bartol 1991).

Lombroso modified his theory many times throughout his life, and after a level of criticism accepted that the environment may play a bigger part in criminal behaviour than he had first suggested, although he still maintained the genetic foundation to his theory. Lombroso had many followers, none more so than Goring (1913-1972), he conducted a study on over 3,000 convicts in English jails and a similar number of non-criminals, using Lombroso's theories he measured the physical features of his subjects, and to his surprise found that there were no grounds for the Lombrosian theory, it seems that he may not have considered cross cultural differences. Goring was criticised by Sutherland & Cressey (1978) he considered only a few environmental factors when in reality there are many, he did not consider a cross range of offences, he did not look at females and considered crime to be a male predisposition.

This quickly saw the death of the genetics and crime debate and it is not until recently that the debate has re-emerged, although not with the physical features as a central pivot of the theory.

Lombroso was not alone in believing that there was a link between physical appearance and crime. Hippocrates had tried to link certain body types to personality as well as suggesting that body fluids may influence personality (Hall & Lyndsey 1970).

Sheldon followed on from this type of research (Sheldon & Stevens 1942: Sheldon Hartl & MvDermott 1949) looking at body type and delinquency. Sheldon called this method, Somatotyping, and identified three basic body types; the Endomorphic (fat and rounded), the Ectomorphic (thin and fragile), and the Mesomorphic (hard and muscular).

He used a series of measurements to establish body size, a 7 indicated that the subject was exclusively a specific body type, for example a true mesomorph would have a score of 1-7-1. an endomorph would be 7-1-1 and an ectomorph 1-1-7. thus a perfectly balanced person would be 4-4-4.

Sheldon claimed to have found a strong correlation between somatotype and personality, and thus linked certain body types with certain personality traits. The endomorph likes food and basic comforts, is affectionate and even tempered. The ectomorph is inhibited, reserved, shy, nervous with others and self-conscious. The mesomorph on the other hand seeks and needs vigorous physical activity, enjoys risk taking and is adventurous. We can perhaps see where some of our modern stereotypes on body shape come from. Sheldon argued that the mesomorph is likely to have a high pain threshold, will be aggressive and callous and may be ruthless. (Bartol 1991). Sheldon tested his theory on delinquent boys and "normal" college students over an eight year period, he found a strong connection suggesting a link between the mesomorph and crime.

The college students tended to cluster around the 4-4-4 while the delinquent boys were more likely to cluster around the mesomorph scale. Glueck & Glueck (1950, 1956) found that delinquent boys were proportionately more mesomorphic than non-delinquent boys - 60% mesomorphic and 30% endomorphic (Hall & Lyndsey 1970).

Later research showed little or no connection between crime and physique, McCandless, Person & Roberts (1972) found that on average delinquents tended to be smaller than non-delinquents and reached puberty at a later stage. More recently West & Farrington (1973) found no relationship between height, weight and or physical strength and criminality and delinquency.

Wilson & Herrnstein (1985) in the book "Crime & Human Nature" stated "... some of the evidence does suggest a relationship between body build and crime, but there is also evidence to suggest that there is no relationship ...".

In the early days of solid research into criminality, family trees were used in order to link an individual's criminal behaviour to that of his relatives and ancestors (Douglas 1877). Family studies were primarily done to examine the processes within a criminal family, and to see if they differ in their functioning from non-criminal families, and also to estimate the degree of similarity between the behaviour of the criminal and their biological families.

Later studies (Osborn & West 1979) compared criminal families with non-criminal families, it was suggested that in criminal families 40% of sons became criminal whereas in non-criminal families only 13% of the sons became criminal.

This and similar studies were intended to show that criminality was hereditary, but it can be seen that the criminal behaviour could easily have been learned from the families, or from the family environment. Indeed the Osborn & West study identifies 40% of criminal

who came from criminal families, but they do not mention the other 60%, only just over a third can hardly be seen as conclusive evidence.

A study by Robbins (1966) of children referred to a psychiatric clinic emphasised possible environmental factors. Only 36% of the sample had both parents at home, the percentage of fathers displaying a variety of problem behaviours thought to be associated with criminality were, drinking 32%, neglect 26%, desertion of wife and children 21%, poor work habits 21%, and physical cruelty 20%. This research shows that the environment and socialisation must not be disregarded when considering the nature of criminality. Perhaps the best way to view this dichotomy is to look at twin studies.

Twin studies assume that the two members of a twin pair experience on average the same environment and so any major differences between the members of a pair must be due to genetic variation.

Studies involving monozygotic (identical) and dizygotic (non-identical) twins (Lange 1929, Legras 1932, Rosenoff 1934, Rosenoff, Handy & Plesset 1941, Krantz 1936, Stumpfi 1936, Borgstrom 1939) appeared to give support to criminality being genetically based, showing that on average 75% of identical twins were both criminal, whereas only 24% of non-identical twins were both criminal.

However, the criteria in these studies for identical twins, was that they were only identical in physical appearance, also some of the sample groups were very small, Legras (1932) and Borgstrom (1939) for example both only used 4 pairs of identical and five pairs of non-identical twins (Hollin 1992).

More recent twin studies have managed to identify true monozygotic twins, by blood typing, these studies report a concordance between identical twins although not as high as the earlier studies, on average 48% where both identical twins were criminal and 20% where both non-identical twins were criminal (Yoshimasu 1961, 1965, Hayashi 1967, Dalgaard & kringlen 1976, Christiansen 1977).

From these studies we could say that criminal behaviour has a genetic basis, although many other factors have not necessarily been considered. It could be argued that twins share the same environment, may go to the same school, may be treated in a similar way, are more likely to share friends etc. Conversely, some identical twins may strive to be unlike so as to be distinguishable from each other (Eysenck 1964).

In an attempt to gain further insight into genetic influences on criminality, and to compensate for the shortcomings of twin studies, adoption studies have been used. Research carried out by Hutchings & Mednick (1975) and Mednick, Gabrielli & Hutchings (1984) compared the behaviour of adoptees to their biological parents, a genetic link may be made if such behaviour is similar. The studies showed that of the male adoptees who had criminal biological parents but non-criminal adoptive parents, 20% had a criminal record. This contrasted with 14% where male adoptees had neither biological nor adoptive parents that were criminal.

Of the adoptees with both biological and adoptive parents that were criminal, 25% had criminal records and where biological parents were not criminal but adoptive parents were, 15% had criminal records. These studies, do, to a certain degree, lend support to the origins of criminal behaviour being hereditary, but, the evidence is by no means conclusive or absolute.

For a period in the 1970's there was a school of thought that believed criminals were born with an extra Y chromosome, it was claimed that this extra chromosome was found in proportionately more prison inmates than in the non-criminal population (Jarvik, Klodin & Matsuyama 1977).

It was originally believed that this extra chromosome (normal males have one X and one Y) led to aggressive behaviour. However, Watkins et al (1977) found that of these men who were in prison, most were convicted for petty crime, rather than violent crimes. Further, the occurrence of an extra Y chromosome is so rare that its significance is negligible (Williams 1991)

In the 1950's it was thought that home life, upbringing, inconsistent affection, physical abuse and inconsistent discipline could result in criminality. Bowlby (1946) suggested that early maternal deprivation was related to delinquency, by comparing children who had stolen with children who had not. He found that the delinquent children were more likely to have had a history of separation from their mothers. This work was quite controversial and it has since been reported that any break of relationship or stable bond between an adult and a child can have damaging effects, not necessarily just separation from the mother.

Some of the most studied research into the origins of crime and personality has been that done by Professor Hans Eysenck.

Eysenck believes that sociological theory has nothing to offer society on the causes of crime, but instead insists that psychological theories hold all the answers (Eysenck & Gudjonson 1989). Eysenck suggests that criminal behaviour is not the product of either environment or biology alone, but rather is an interaction of both (Eysenck 1973). This is a move on from his original belief that biology played the largest part in determining criminality when he first declared his theory on criminality in his book "Crime and Personality" (1964). Eysenck suggests that some people are born with cortical and autonomic nervous systems that effect their ability to learn from their environment (Hollin 1989).

Eysenck & Eysenck (1968) defined three basic elements of personality, Extraversion (E), Neuroticism (N) and Psychoticism (P). Each of these dimensions runs from a high to a low scale, the extraversion scale runs from high (extravert) to low (introvert). Neuroticism runs from high (neurotic) to low (stable) and similarly with psychoticism. Eysenck claims that most people will fall In the middle of this scale (see appendix 6).

Eysenck suggests that children learn to control anti-social behaviour through the formulation of a conscience, this being a conditioned emotional responses

Eysenck further believes that the speed a person will be conditioned depends on an individuals personality, and particularly in terms of E and N. (Eysenck 1977). The theory predicts that high E and high N combinations lead to poor conditioning and thus such individuals will lack social control and will therefore be over represented in offender populations.

Conversely low E and low N would lead to effective control and socialisation and would therefore not be represented in offender populations. The high E individual is considered to be cortically under aroused, and is therefore constantly seeking stimulation to maintain cortical arousal. It can be seen from this that the extravert needs to be impulsive and needs to seek extra excitement so as to keep a balance within the cortex. The introvert, on the other hand, is cortically over aroused, and therefore must avoid stimulation and excitement to keep a balance, introverts are therefore characterised by quiet, reserved people.

In terms of conditioning, Eysenck argues that extraverts may condition less well than introverts, due to levels of neuroticism or emotionality, neuroticism is suggested to be related to the workings of the Autonomic Nervous System (ANS). High N individuals may have an unstable ANS and may show mood swings and anxious behaviour, while low N individuals have a stable ANS and therefore display calm even tempered behaviour. It is suggested that high N affects conditioning because of the effects of anxiety.

When combining the scores of E and N it can be seen that those that score high on both E & N will condition least well of all individuals, and these are the people who are likely to show criminal tendencies. It is claimed, however, that the high P, E, & N scores will depend on the type of crime, and that this model, of high scores on all three components only applies to violent criminals (Hollin 1991).

Critics of Eysenck's (Little 1963: Hoghugh & Forrest 1970) theory comment on the fact that he bases his theory on the genetic basis for personality traits, and takes his evidence from twin studies, which have been shown to be unreliable, as in the case of Goring. Little (1963) also comments that Eysenck did not consider recidivism (repeat offending) and any link between extraversion and introversion. Little's own study looked at three young offender institutions, this is reported to show that those that had been released, or recidivism rates could be related to either extraversion or introversion, this work not only questions Eysenck's work, but all work in relation to crime and personality (Williams 1991).

Another area that may, or may not suggest an individuals personality is likely to cause criminal behaviour is that of psychopathy.

The term psychopathy is used to describe people that display what is considered to be anti-social behaviour, and, as a word is frequently mixed up with terms such as sociopath or antisocial personality. DSM III -R (Diagnostic & Statistical Manual) defines antisocial personality as;

" ... individuals who are basically unsocialised and whose behaviour pattern brings them into conflict with society. They are incapable of loyalty to individuals, groups or social values. They are grossly selfish, callous, irresponsible, impulsive and unable to feel guilt or to learn from experience...".

Cleckley (1976) suggests that psychopathy is distinctively different from criminality in that,

"...the majority of psychopaths are not criminal, and the majority of criminals are not psychopaths...".

It is argued that the typical psychopath is different from the criminal in that his actions are less purposeful, his goals are unclear and he tends to cause himself shame, and if he commits crime it tends not to be violent crime (Cleckley 1976). It is suggested that psychopathy originates in the personality, it is possible however, that there are causes other than personality for psychopathy and antisocial personality. Yablonsky (1970) argued that leaders of violent gangs were in fact sociopaths who led the gang so as to act out their own violence and aggression. It can be seen that such things as peer influence and pressure may cause a gang member to act in a violent way and not necessarily a violent or aggressive personality (Vold & Bernard 1986).

Guze (1976) suggested that sociopathy along with drug addiction and alcoholism were the only psychiatric conditions that were associated with criminality, Guze went on to consider whether sociopathy should or should not be considered a psychiatric condition. It is clear that a terminology problem exists around the whole area of descriptive words such as sociopath, psychopath and antisocial personality.

This work examines Eysenck's hypothesis that the personality dimensions of

P, E & N will have a positive correlation with criminality, and will show that in this study, this was not in fact the case, also, that we must consider many other factors when looking at criminality and personality, suggestions for further research in the area are made. The hypothesis of this work is that; Eysenck's personality dimensions of P, E & N cannot predict criminality.

4/. METHOD

4.1/. SUBJECTS

Subjects came from three distinct groups. Offenders; (n = 22) age range

0 - 51 with a mean of 25.9. All of whom were resident at, or compulsory visitors to, a bail hostel in Bedfordshire. The second group were members of the public (n = 37), range 12 - 68, mean 40.73. These were selected at random from friends, family and colleagues. The third group were undergraduate students at the University of Luton (n = 26) age range was 18 - 41 and the mean age was 27.23. The gender of subjects was not considered in this study.

4.2/. DESIGN

This study was primarily a correlational study, although various other statistical tests were used, simply to view any data that may have caused further interest. The other tests considered were, multiple regression, and paired t-test's.

The Dependent Variable (DV) was the personality dimensions stipulated by Eysenck, Psychoticism, Extraversion, Neuroticism, Extraversion, Addiction, Criminality and Lie. The Independent Variable (IV) were the three groups, Public, Students and Offenders.

Replication of the study undertaken by Eysenck & Eysenck (1977) would have been preferred, but due to lack of access to prisons, the study has looked at those that committed a criminal offence but who are not actually in prison at the present time.

4.3/. MATERIALS

Each subject was given a 14 page questionnaire booklet, the front cover being a consent sheet. Included in the booklet was the EPQ-R, the IVE questionnaire, as well as two other questionnaire's. The other things included in the booklet were, an attitude to crime and background study, and a Locus of Control sheet. These were used by other undergraduates, all three questionnaire packs were put together for ease, and to maximise subject numbers.

4.4/. PROCEDURE

Both students and public received the same instructions, but the offender group may have varied slightly. Students and public were given the questionnaire booklet and a pen, were asked first to read the consent form on the front cover, (see appendix 7) after signing the consent form they were asked to fill out the booklet making sure they answered all the questions, and restating to them that all information was totally confidential. On completion, approximately 15 minutes, they were given a brief outline of what the research was about and were told to contact the author in the near future if they were interested in the findings.

The offender group was slightly different, here the questionnaire's were left with a member of staff at the bail hostel, who was left the same instructions as detailed above,

what can not be certain is if these instructions were followed correctly, although the author has no reason to doubt the integrity of the bail hostel staff.

5/. RESULTS

Univariate Statistics

Table 1, 2, + 3. shows the mean and standard deviation (SD) for P, E, N, and for A, C and L for each group, as well as the score from the IVE questionnaire.

PUBLIC		
VARIABLE	MEAN	SD
PSYCHOTICISM	7.541	4.073
EXTRAVERSION	13.459	4.845
NEUROTICISM	11.703	5.666
ADDICTION	11.324	4.472
CRIMINALITY	11.784	5.127
LIE	8.703	4.737
IMPULSIVITY	8.405	3.826
VENTURESOMENESS	6.595	3.555
EMPATHY	12.595	3.811

TABLE 1.

STUDENTS		
VARIABLE	MEAN	SD
PSYCHOTICISM	7.308	4.126
EXTRAVERSION	14.115	4.528
NEUROTICISM	14	5.523
ADDICTION	14	4.561
CRIMINALITY	14.192	4.364
LIE	6.462	3.313
IMPULSIVITY	10.077	4.417
VENTURESOMENESS	8.038	4.762
EMPATHY	13.615	3.453

TABLE 2.

OFFENDERS		
VARIABLE	MEAN	SD
PSYCHOTICISM	12.182	5.315
EXTRAVERSION	16.5	4.138
NEUROTICISM	12.636	4.457
ADDICTION	15.955	3.287
CRIMINALITY	16.682	3.695
LIE	5.136	2.965
IMPULSIVITY	13.182	3.541
VENTURESOMENRSS	10.273	3.978
EMPATHY	11.364	4.604

TABLE 3.

Bivariate Statistics.

Table 4. Correlation Matrix for Public.

	P	E	N	A	C	L	I	V	EMP
P	1								
E	-.117	1							
N	-.08	-.066	1						
A	.248	-.193	.789*	1					
C	.217	.124	.821*	.866*	1				
L	-.215	.038	-.137	-.403	-.123	1			
I	.287	.15	.275	.335	.318	-.272	1		
V	.342	.258	-.119	-.014	-.055	-.275	.125	1	
EMP	-.415	.069	.667*	.393	.492	-.111	.065	-.328	1

Table 5. Correlation Matrix for Students

	P	E	N	A	C	L	I	V	EMP
P	1								
E	.201	1							
N	-.013	-.337	1						
A	.389	-.213	.799*	1					
C	.328	-.113	.837*	.906*	1				
L	-.555	-.249	.143	-.273	-.098	1			
I	.64	.378	.123	.488	.391	-.587	1		
V	.413	.339	-.296	.098	.007	-.513	.409*	1	
EMP	-.348	-.301	.765*	.592*	.552*	.055	-.016	-.259	1

Table 6. shows Correlation Matrix for Offenders

	P	E	N	A	C	L	I	V	EMP
P	1								
E	.247	1							
N	-.311	.176	1						
A	.21	.145	.613*	1					
C	.304	.512*	.554*	.81	1				
L	-.379	-.266	.08	-.126	-.122	1			
I	.33	.559*	.249	.287	.365	-.17	1		
V	.324	.353	-.094	.107	.103	-.209	.294	1	
EMP	-.517	-.14	.455*	.096	-.035	.09	.206	-.419	1

Table 6 shows that the offender group had the lowest criminality and Neuroticism correlation of .554, compared to .837 for students and .821 for public.

* Figures in bold, are those considered to be significant.

In view of Eysenck's theory that criminality would show increased scores on Extraversion (E), neuroticism, (N) and psychoticism (P), Table 7. shows the correlation's of P, E, and N, as well as addiction (A), the Lie scale and the scores for the IVE questionnaire. for each group when correlated with criminality.

	P	E	N	A	L	I	V	E
PUBLIC	.217	.124	.821	.866	-.123	.318	-.055	.492
STUDENTS	.328	-.133	.837	.906	-.098	.391	.007	.552
OFFENDERS	.304	.512	.554	.810	-.122	.365	.103	-.035
ALL	.357	.216	.738	.888	-.246	.458	.132	.292

Table 7.

Level of significance = .189 $p < .05$

Table 8 shows the Lie scores for each group when correlated with Psychoticism, Extraversion, Neuroticism, Addiction and criminality.

	P	E	N	A	C
PUBLIC	-.215	.038	-.137	-.403	-.123
STUDENTS	-.555	-.249	.143	-.273	-.098
OFFENDERS	-.379	-.266	.08	-.126	-.122

Table 8.

Multivariate Statistics

Table 9. shows Paired t-test, Criminality and P, E, N. for the Public group.

	DF:	MEAN	PAIRED T VALUE	PROB: (1-TAIL)
P	36	4.243	4.44	.0001
E	36	-1.676	-1.543	.0657
N	36	-0.81	.151	.4405

Table 10. shows Paired t-test, Criminality and P, E, N. for the Student group.

	DF:	MEAN	PAIRED T VALUE	PROB: (1-TAIL)
P	25	6.885	7.126	.0001
E	25	.077	.059	.4767
N	25	.192	.343	.3672

Table 11. shows Paired t-test, Criminality and P, E, N. for Offenders group.

	DF:	MEAN	PAIRED T VALUE	PROB: (1-TAIL)
P	21	4.5	3.855	.0004
E	21	.182	.219	.4143
N	21	4.045	4.854	.0001

Table 11 shows that the offender group had a probability of .0001 on criminality and Neuroticism, compared to .3672 for students, and, .4405 for public.

6/. DISCUSSION

Eysenck & Eysenck (1977) predict that criminality when equated between prisoners and controls would show the prisoners with elevated score for Extraversion, Neuroticism and Psychoticism.

This research has looked at the relationship between P, E, & N and criminality, for three groups, public, students and offenders, and although the work of Eysenck found support in relation to Psychoticism and Extraversion this is not the case with Neuroticism, and so the hypothesis that P, E, & N cannot predict criminality is supported.

The scores for Psychoticism show a mean of; 7.541 (SD 4.073) for public. Students mean is; 7.308 (SD 4.126) and offenders P score mean was 12.182 (SD 5.315). This shows a significantly high P score for offenders when compared to the two other groups. There is a similar pattern with the scores for Extraversion. Public 13.459 (SD 4.845), Students 14.115 (SD 4.528) and Offenders 16.5 (SD 4.138). Where Eysenck's theory is not supported, is on the scores of Neuroticism, here the Public mean score was; 11.703 (SD 5.666), students mean N score was 14. (SD 5.523) and Offenders scored a mean of 12.636 (SD 4.457). It can be seen that although the Offenders scored higher than the public on Neuroticism, they scored significantly lower than the students on N. This is interesting when we look at the personality dimensions of P, E, & N when correlated with criminality. Here, (see table 7) when we look at P with C the correlation for Public is .217, for students .328 and for offenders .304.

It can again be seen that Offenders scored lower than students, thus again going against what Eysenck has suggested (Eysenck & Eysenck 1977). When we consider the dimension of E correlated with C, offenders come out highest with .512. But, it is again on the N scale that Offenders are shown to have a low score. The correlation between N and C for offenders is .554 compared to .837 for students, and .821 for public. Also on the addiction score when correlated with criminality offenders are the lowest, offenders .810, students .906 and public .886. As expected offenders had the highest scores for impulsivity and venturesomeness, and the lowest score for empathy.

Eysenck is very keen to point out that the lie scale is not considered in many studies, this particular work shows lie scale when correlated with criminality (see Table 8). This shows that Offenders are by no means the highest in relation to lie and criminality, indeed, neuroticism actually shows the lowest correlation for the offender group .08. A study by Eysenck & Eysenck (1977) shows lie scores when correlated with each of the personality dimensions, this shows in fact a similar score to that shown in this study, so the argument that studies do not look at or consider the lie scale is to some extent irrelevant in this case.

Eysenck states that there may be many variations in results and that there are various reasons for any differences in similar studies looking at P, E, N and criminality (Eysenck 1994) Eysenck further claims that some studies have used unsatisfactory control groups, such as the usual student group. This study overcame this by using two control groups, students and members of the public.

Eysenck also claims that many studies are invalid as they do not look at the high lie score which could invalidate the results, as mentioned above this study does take lie scores into consideration and correlates them with P, E, & N score for ALL groups.

Where this study does differ is in the selection of the subjects. In the studies by Eysenck and other similar studies the main group under observation has been prisoners, this study looks at those that have committed a criminal offence, and may have just come out of prison, or, are just about to go into prison. This, by its very nature could possibly cause the difference seen in the scores, as it can be seen that there may be many factors that influence someone, both, social and environmental when inside an institution such as a prison.

It is also worth noting that at no stage does Eysenck define what he means by crime, criminality, or, anti-social behaviour.

Professor Eysenck believes that the criminal is an extravert, he bases this theory on various studies that look at the speed to which extraverts and introverts will condition. (Little 1963) He argues that the extravert is slow and therefore difficult to condition, whereas the introvert is quicker and easier to condition. The theory suggests that it is therefore the criminal, and in particular the recidivist, that does not learn by his/her own mistakes, and does not adjust to what society expects from each individual, and therefore becomes delinquent. Various early studies have found support for this view, Jenson (1961), Siegal (1958) and Bartholomew (1959).

Eysenck (1994) further suggests that anti-social behaviour is egocentric and demands immediate gratification, he argues that because the introvert conditions better they are more likely to adapt to socially acceptable behaviour.

He then postulates that individual differences in the speed of conditioning will lead to a relationship between personality and criminality. What is interesting is that he believes

that neuroticism or emotional instability will multiply with the onset of socialised or anti-social habits. Where does that leave this study which showed offenders with the lowest rate of neuroticism out of a three group population?.

What seems to be lacking in this theory, is that although we may accept that extraverts may not condition as well as introverts, there is little evidence to connect this to criminality, apart from the crime and personality studies, that have been shown by this study, which, have been shown to be inconclusive. Also, it seems that no research has been done on other populations to see if there is a correlation with high P, E & N and a specific trait. By their very nature, actors, racing drivers and politician may score high on the P, E & N dimensions, but does this suggest that they will necessarily be criminal? Indeed Eysenck (1973) has acknowledged that in many studies the scores on extraversion sometimes do not show differences between prisoners in similar circumstances.

Eysenck uses his studies (Eysenck 1964) as well as others, such as Wilson & Mclean (1974) to carry forward his hypothesis that delinquents will score higher on extraversion and neuroticism, this he believes strongly reinforces the theory that the extravert who also scores high on neuroticism is more likely to engage

in antisocial behaviour than normal controls (McGurk & McDougall 1981).

As already mentioned Eysenck believes in a three factor dimension to personality, consisting of Psychoticism (P), Extraversion (E), and

Neuroticism (N). Royce & Powell (1983) have looked at the studies on Eysenks theory, and summarise that the three factors deal with, social interactions being displayed via Extraversion - introversion, emotionality and anxiety in Neuroticism, and aggression and egocentric impulsiveness with Psychoticism. While being quite assertive with his theory, Eysenck does consider that there is still not overwhelming support,

"... Let us mainly stress that the personality traits and dimensions dealt with have a strong genetic component, this does not prove, but it does suggest, that genetic factors may also play an important part in the genesis of anti-social and criminal behaviour..."

(Eysenck 1994)

Psychoticism and Neuroticism can both be seen as misleading and confusing concepts (Blackburn 1995) The terms derive from the assumption that N and P are phenotype expressions of genetic predisposition's to develop psychiatric disorders. Thus, Neuroticism is what "Neurotics" suffer from. Neuroticism is reported as dealing with intensity of emotional reactions and is believed to occur in the general population at the same rate as extraversion, with 16% of the population falling above and below one standard deviation from the mean. People who score high on the N scale are said to react intensely to stress, even with low stress levels the person is likely to be moody and touchy, anxious, sensitive and is also likely to complain of illness, particularly headaches.

They also tend to overreact to stress. People with high N also tend to develop neurotic disorders such as phobias and obsessions (Corulla 1995).

People at the lower end of the N scale tend to be stable, calm and even tempered, they keep calm under stressful and excitable situations and are able to select appropriate emotional responses. The theory behind N come from psychoanalysis and has no firm meaning outside of this concept. If high N does measure trait anxiety, the reported high N of criminals is difficult to reconcile with a lack of conditioned anxiety. It is believed that Neuroticism is linked to the Autonomic Nervous System (ANS) which itself is divided into the sympathetic and parasympathetic nervous system. The Sympathetic system activates the body for emergency situations by increasing blood flow, increasing the heart rate and respiration (Fight or Flight). The Parasympathetic system brings the body back to a state of normality after the actions of the sympathetic system.

Uncertainty also exists around the meaning of Psychoticism, there is nothing to suggest that P measures a genetic predisposition to psychosis or psychotic disorder (Howarth 1986). Bartol (1991) suggests that P is characterised by, social insensitivity, cold cruelty, unemotionality, troublesome behaviour, disregard for danger, dislike of others and an attraction to the unusual. It is possibly quite dangerous to label people as suffering from high P as defined by Eysenck, as there is similarity in the clinical explanation, only that here psychotics are defined as being out of touch with reality. Eysenck claims that psychoticism will be present in the criminal population, particularly in the violent criminal (Eysenck 1983).

It is important to consider other areas of possible causes of criminality, which to a certain extent is either overlooked or not discussed in some of the studies mentioned above. Raine and Venables (in press) in a study looking at child and juvenile anti-social behaviour, have concluded that,

"...the genetic bases of early antisociality was weaker than for adult criminality."

Cloninger & Gottesman (1987) in a review of twin studies on juvenile delinquents, arrived at the conclusion that genetic factors were "unimportant" in determining anti-social behaviour in juveniles (Raine & Dunkin 1990).

These works seem to suggest that environmental factors are more likely to play a role in young rather than older anti-social people. But, Eysenck (1977) cited concordance rates of 87% and 43% for children with behaviour disorders, similarly, Ghodsian-Carpey and Baker (1987) report heritabilities between .24 and .94 for ratings of aggressive behaviour in 4 - 7 year old twins. O'Connor, Foch, Sherry and Plomin (1980) cited correlation's of .72 for monozygotic, and .42 for dizygotic twins for behaviours such as bullying in 6 and 7 year olds.

However, it may be that the support given to heritability for anti-social behaviour in young children is greater than that for teenage delinquents because delinquency is less detected in the older age group. Children's behavioural problems are normally picked up quite quickly as they are normally supervised, whether at home or at school. The only self report study among delinquents on levels of criminality and anti-social behaviour showed heritability levels of 70% (Rowe 1983).

Sex may also play a part in respect of genetic factors. Widom & Ames (1988) and, Sigvardsson, Cloninger, Bohman & Von Knorring (1982) have proposed that genetic loadings for anti-social behaviour may be greater in women than in men.

Baker, Mack, Moffitt & Mednick. (1989) conducted an analysis of sex differences in criminal convictions of adoptees and supported this view. Why is this the situation? one reason for this finding is that In order to overcome the stronger socialisation pressures against the expression of anti-sociality in females, women may possess stronger biological predispositional factors than men to become criminal. Some studies have also shown that heritability for crime was stronger in twins from a higher social class and those that lived in a heavily rural area (Christiansen 1977). It would seem that when social and environmental causes of crime are less, biological and genetic factors may play a major role in the causes of crime. Thus, we could suggest from this, that if someone is male, living in an urban area and from a lower socio-economic class we may look more to the environment as the cause of anti-social behaviour.

Another area of consideration when looking at the causes, or possible causes, of criminality and anti-social behaviour is the "genetics by environmental factors" discussion. Cloninger, Sigvardsson, Bohman, & Von Knorring (1982) report in an adoption study, that, the rate for criminality in adoptees who had

non-criminal adoptive and biological parents was 2.9%.

The rate increased to 6.7% when it was only the adoptive parents who were criminal, this can be seen as an environmental factor, the rate then increased to 12.1% when only the biological parents were criminal, thus suggesting a genetic link. Where both the adoptive and biological parents were criminal the rate rose to 40%. of those that would themselves become criminal. This, it is suggested, shows that the interaction between environment and genetics is more influential than either factor on its own, and suggests that environmental factors are far more influential when interacting with genetics and heritability.

This interactionist view would indicate that if changes in the environmental factors that are influencing the genetics were to be manipulated, that a decline in the predisposition to crime may occur.

We might therefore suppose, that it is possible to suppress the genetic predisposition for adult crime in a young anti-social child by intervening on the behaviour of the anti-social or criminal parents.

When considering this genetic debate it is important to remember that there has not as yet been any evidence to support the theory of the "Criminal Gene". Instead we must consider the brain functions, and in particular the cortex and Autonomic Nervous System (ANS) which might themselves influence Psychophysiological and other biological characteristics that, depending on environmental and developmental factors, may or may not give rise to criminality and or anti-social behaviour.

It seems clear the genetic factors do play a part in determining anti-social behaviour, but very little solid research has been done in this area.

Raine & Dunkin (1990) suggest that it is possible that the genetic predisposition for criminality may find its base in the ANS and Central Nervous System's (CNS) underarousal, this is because Psychophysiological measures of arousal have been shown to have a heritability basis (Zahn 1977). Although many studies have looked at the Psychophysiological bases for criminality, (Hare & Schalling 1978; Venables 1987) they have not considered how anti-social behaviour and criminality are expressed through the ANS or CNS.

Eysenck postulates that criminals, as a population, will score higher on the personality dimensions of P, E, and N.

He suggests that they will show low levels of cortical arousal, leading to extraversion, high levels of autonomic (Sympathetic) arousal leading to neuroticism, and will be tougher minded, showing psychoticism. Many researchers have agreed with the Eysenckian theory and many have found criticism. Farrington, Biron and LeBlanc (1982) found little support for Eysenck's theory, and concluded;

"...At the present time, it seems unlikely that the Eysenck theory, the Eysenck scales, or the Eysenck items are of much use in the explanation of delinquency..."

It is important not to totally disregard Eysenck's theory, for although it has received many criticisms, and has on occasions failed to find support in similar studies, this one included, it has on the other hand, received much support. It must also be remembered that the Eysenck theory of criminality was one of the first theories to look at any correlation between crime and personality, and thus is bound to be the butt of many other researchers' misgivings.

Perhaps what is needed is a modification to Eysenck's theory and in particular to the studies themselves. We need a firmer definition of what is meant not only by crime but also a stronger meaning to the term Criminality.

Lombroso claimed that there was a "born criminal" who was physically different from the rest of the population, and predisposed to act in a delinquent and anti-social manner. Although Lombroso's theory was finally left in the cold, it is important to remember that

it was from this point that many researchers have taken their studies, remembering that there is more to crime and crime causation than social and environmental factors alone.

Questionable methodology made the work of Sheldon, and the other theorists looking at body build and crime, seem inappropriate, but, we still do not know to what extent physical characteristics may or may not influence criminal behaviour. Twin studies and adoption studies have often shown a correlation with criminality, by looking at identical twins that are engaged in crime, even those separated at birth have shown similar predisposition's to criminality and anti-social behaviour. Eysenck has suggested that criminality as an interaction between environmental factors, though levels of conditioning, working alongside genetic features of our nervous system. Eysenck believes that emotionality, otherwise called neuroticism, intensifies bad habit's, which in many areas may be deviant ones. It is also postulated that psychoticism will correlate with features that are seen in the psychopath. We can see that the Eysenckian theory needs much refinement, the theory concentrates on traditional Pavlovian type classical conditioning without looking at any possible cognitive processes or looking at any form of social learning.

This study has shown that there are flaws in the Eysenckian theory, with offenders not scoring, as Eysenck would predict, higher on neuroticism than controls. As pointed out above there is a slight difference in the studies, in that this study uses those that are not actually in prison, and therefore shows that there may be situational factors that need to be considered.

It is suggested that more research is needed in the area, primarily in the area of socialisation and situationalism, which may drastically effect scores on questionnaires such as the EPQ-R. Also, when looking at controls, we need to look at a bigger cross section, and divide the controls into sub-groups so as to give a more accurate picture.

All in all the Eysenckian theory is a good beginning to formulating a reliable theory to the causes of criminality and anti-social behaviour, once that is, when we have created a reasonable and acceptable definition of crime itself.