

EXTRAVERSION, NEUROTICISM, PSYCHOTICISM AND SELF-REPORTED DELINQUENCY: EVIDENCE FROM EIGHT SEPARATE SAMPLES

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Summary—Eight separate samples of high school and university students (Total $N = 410$) in Britain and Canada were used to test predictions from Eysenck's theory that delinquents should be high scorers on scales of extraversion, neuroticism, and psychoticism. Self-report paper- and pencil-questionnaire measures of both personality and delinquency were administered under conditions that ensured anonymity. The evidence showed clear support for a relationship between high delinquency scores and high scores on both extraversion and psychoticism. These relationships held up across diverse samples and different ways of analyzing the data. No support was found for a relationship between delinquency scores and the dimension of neuroticism.

Prosocial moral behavior is essential for the existence of society. Why do people live with prosocial consideration for others by being honest, generous, helpful, and compassionate, and desist from engaging in such antisocial behavior as lying, cheating, stealing, and aggression? Much evidence suggests that the answer lies in social learning. Without adequate socialization, complex and diverse societies such as those we have today are impossible (Rushton, 1980). Although different learning histories may be a major source of the individual differences in moral behavior that are found, it is also possible that these may interact with genetically inherited personality dispositions. This is a view that has been forcefully presented by Professor Hans Eysenck. The current study is intended to investigate a limited number of predictions from Eysenck's theory.

In his book *Crime and Personality*, Eysenck (1964, 1970, 1977) has stated that according to his theory of personality, criminals should tend to score high on scales of extraversion, neuroticism, and psychoticism. Eysenck's theory is not simply descriptive: the predictions derive from a causal model of central nervous system functioning involving the influences of both genetics and learning, as well as their interaction. It is unnecessary for current purposes to go into detail regarding the biological basis of the theory. This has been outlined elsewhere (Eysenck, 1977; Eysenck and Eysenck, 1976) as well as elaborated on by others (e.g. Gray, 1970). The basic tenets of the theory are as follows. For extraversion (E): high scorers on extraversion are in general less socialized than are low scorers due to their poor conditionability; hence they will engage in more of all types of antisocial behavior. For neuroticism (N): high scorers are higher on anxiety than low scorers; since anxiety is said to act as a drive which multiplies with habit, then high N scorers with habitual antisocial responses will tend to engage in these responses more strongly than low N scorers. For psychoticism (P): high P scorers inherit a nervous system that predisposes them to be solitary in emotion and uncaring for people; this impersonal, self-contained personality-type is unlikely to feel empathy, guilt, or sensitivity to the feelings of others and therefore engages in more antisocial acts than do low scorers on the dimension.

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These ideas, particularly the ones concerning extraversion and neuroticism, have often been put to the test and there is a great amount of data. The preferred method of testing the theory has been the 'known groups' procedure. In this, the researcher enters a prison or a remand home, gives the inmates questionnaire measures of the personality dimensions under consideration, and then compares the means with those of some 'normal' control group (e.g. Eysenck and Eysenck, 1977). Reviews of this literature are divided. Some conclude that the evidence is against Eysenck's theory (Passingham, 1972; Cochran, 1974), while others find support (Feldman, 1977). As all reviewers noted, many of the studies reviewed had major flaws, particularly in regard to both sampling bias and the adequacy of the 'control' groups.

An alternative test of Eysenck's hypotheses is to examine the natural co-variation of both antisocial behavior and personality in 'normal' populations. This eliminates the need for control groups and the attendant problems of matching and sampling biases. This procedure was successfully employed by Shapland *et al.* (1975). To 54 British boys aged 12–14 and 39 British girls aged 16, a self-report measure of delinquency, adapted from Gibson (1967), was given. This measure had previously been shown to relate to present official delinquency and to future delinquency predictions (West and Farrington, 1973). In addition, three different assessments were taken of the children's extraversion and neuroticism. These were: Cattell's High School Personality Questionnaire (HSPQ: Cattell and Cattell, 1969); the Junior Eysenck Personality Inventory for the boys (JEPI: Eysenck, 1965), the Eysenck Personality Inventory for the girls (EPI: Eysenck and Eysenck, 1964); and a Teacher Rating Scale (TRS: Nicholson and Gray, 1972). The correlations are shown in Table 1. All 12 correlations are in the predicted direction, with three out of the six extraversion ones being significantly so.

At least three additional studies have related self-reported misbehaving in school-children to Eysenckian dimensions of personality. Allsop and Feldman (1974) took two measures of misbehavior from 197 11–15 yr old British girls: a 48 item self-report measure and an independently derived teacher scoring schedule concerned with the number of marks lost for bad behavior. Both of these measures were significantly related to (a) each other, and (b) extraversion and psychoticism (although not to neuroticism). Similar results have been found with schoolboys, both British and New Zealand (Allsop and Feldman, 1976; Saklofske, 1977). Given the relatively greater difficulty of measuring stable personality dispositions in 11–16 year olds, these results are highly encouraging for Eysenck's predictions that high scorers on dimensions of extraversion and psychoticism tend to engage in more anti-social behavior. They are a little less encouraging for his prediction about neuroticism.

In the present paper we present additional evidence in regard to Eysenck's predictions using self-report delinquency as our measure of antisocial behavior. Much evidence now supports the view that the use of self-reports of adolescents produces results completely compatible with studies of delinquency that use official records. Self-report measures

Table 1. Correlations between number of self-reported delinquent acts and personality in 54 boys aged 12–14 and 39 girls aged 16*

Personality assessment technique	Sex	
	Boys	Girls
Extraversion		
Cattell's Exvia	+0.23†	+0.15
Eysenck's Extraversion	+0.07	+0.67§
Teacher's Rating Scale	+0.59§	+0.22
Neuroticism		
Cattell's Anxiety	+0.21	+0.43‡
Eysenck's Neuroticism	+0.14	+0.11
Teacher Rating Scale	+0.13	+0.16

† $p < 0.05$; ‡ $p < 0.01$; § $p < 0.001$.

* (Based on data from Shapland *et al.*, 1975).

typically assess the less serious end of the continuum that ranges up to serious criminal behaviors. Both ends of the continuum are valid indicators of the demographic (class, race, sex) characteristics of offenders (within the domain of behavior effectively tapped by each). This is confirmed by evidence from victimization surveys, studies of the reliabilities and validity of self-reports, and studies of biases in criminal justice processing (see Hindelang *et al.*, 1979, for a thorough review of these and related issues). Self-report delinquency measures, therefore, seem a most satisfactory way of proceeding. In the first part we summarize the results of a series of studies carried out by the first author (JPR). These results are presented as simple zero-order correlations. In the second part we present a study that we carried out jointly in order to provide a more detailed statistical treatment of the Eysenckian position. These latter data were gathered and analyzed primarily by the second author (RDC).

PART ONE

A description of the samples tested and assessment techniques used now follows. The results for all the samples will be summarized together.

Sample 1

Seventeen 16-yr old British boys attending a Secondary Modern High School in a lower-middle class area in Oxford were given Cattell's HSPQ, H. J. Eysenck's and S. B. G. Eysenck's EPI, and a 43 item, written Self-Report Delinquency (SRD) Scale based on items used by Shapland *et al.* (1975). Both the HSPQ and the EPI give measures of extraversion and neuroticism (anxiety). The HSPQ also yields a 10 item score of IQ. The SRD-Scale required respondents to endorse either a 'yes' or a 'no' category as to whether they had *ever* engaged in a series of anti-social acts ranging from 'riding a bicycle without lights after dark' to 'breaking and entering' and 'using a weapon such as a knife or a razor or a broken bottle'. The students filled in all the forms anonymously, using as pseudonyms the names of favorite entertainers in sport, pop music, and the like. These data were gathered in the Spring of 1974.

Sample 2

One hundred and twenty-four undergraduates (approximately 40 males, 84 females), ages approximately 18, enrolled in the first author's first year Introductory Psychology class at the University of Toronto, took part in the study as a 'class exercise and demonstration' (needless to say they had no knowledge of the theory being tested before they completed the forms). First they anonymously completed the Eysenck Personality Questionnaire (EPQ: Eysenck and Eysenck, 1975). This provides a measure of Psychoticism (P) as well as updated versions of Extraversion (E) and Neuroticism (N). Subjects also completed a 20 item adaptation of the previously mentioned Self-Report Delinquency Scale. (Some of the more trivial as well as some 'filler-items' of the 43 item-scale were dropped as inappropriate for the use of University students). The 20 items are shown in Table 2. These data were gathered in October, 1976.

Sample 3

Thirty-one 'mature-student' undergraduates (9 males, 22 females) enrolled in the first author's 3rd year Summer School class on the 'Psychology of Personality' at York University in Toronto, took part in the study as a 'class exercise'. Previous to the study they were naive as to the expected predictions. Most of this sample were primary and high-school teachers completing their Honours B.A. degree through part time education. Their ages ranged from 20 to 57 with a mean of 31. They completed the EPQ and Cattell's 16 Personality Factor Questionnaire (16PF: Cattell *et al.*, 1970). This latter allows for the derivation of second-order extraversion and neuroticism scores for each person. It also provides for a 10 item assessment of general intelligence. The Self-Report Delinquency Scale for this sample went through further modification being (a) reduced to 15 items and (b) consisting of not only the yes/no scoring procedure used previously, but

Table 2. The 20-item Self-Report Delinquency Scale*

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1. I have drunk alcohol under the age of sixteen
 2. I have taken an illegal drug.
 3. I have stolen out of a little shop.
 4. I have stolen something from a big shop or supermarket.
 5. I have stolen something out of a car.
 6. I have broken into a big store or a garage or a warehouse.
 7. I have broken into a little store.
 8. I have taken a weapon (like a knife) out with me in case I needed it in a fight.
 9. I have fought with someone in a public place—like in the street or at a dance.
 10. I have broken the window of an empty home.
 11. I have used a weapon in a fight—like a knife or a razor or a broken bottle.
 12. I have taken someone else's car or motor bike for a joy ride and taken it back afterwards.
 13. I have struggled or fought to get away from a policeman.
 14. I have stolen money or goods from someone I worked for.
 15. I have broken or smashed things in public places like in the street, cinema, dance halls, trains or buses.
 16. I have played truant from school under the age of sixteen.
 17. I have taken money from home without returning it.
 18. I have stolen school or university property worth 50¢ or more.
 19. I have trespassed somewhere I was not supposed to go like empty houses or private gardens.
 20. I have bought something cheap or accepted as a present something I knew was stolen.
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* Adapted from Gibson, 1967, and Shapland *et al.*, 1975.

also allowing for a five-point frequency count ranging from 'never' to 'very often'. These data were gathered in July 1977.

Sample 4

Forty-two second year undergraduates at the University of Western Ontario took part. There were 14 males and 28 females and their ages ranged from 18 to 28 with a mean of 20. They were enrolled in the first author's section of 'Personality Theory and Research'. As part of a class project they completed, anonymously, the EPQ and the version of the Self-Report Delinquency Scale described for sample 3. These data were collected in November 1977.

Sample 5

Thirty-one mainly second year undergraduates at the University of Western Ontario enrolled in a second section of 'Personality Theory and Research' took part. They were identical to sample 4 except they were taught by a colleague. The first author was invited in as a 'guest lecturer' and the data (the EPQ and 15 item SRD-scale) were gathered as a class exercise. These data were also gathered in November, 1977.

Sample 6

Twenty-five students (9 male, 16 female) took part. They were similar to Samples 4 and 5 except that they were enrolled in the evening section of the course and were taught by yet another colleague of the authors. They completed the EPQ and the 15 item SRD-scale. These data were also gathered in November, 1977.

Sample 7

Forty-one undergraduate students (11 males, 30 females) took part. They were identical to samples 4 to 6, except this was in the first author's own class the following year. They too completed the EPQ and the SRD-scale. These data were collected in November, 1978.

Results and discussion, Part One

In all seven of the samples, the means and standard deviations of the personality variables were all extremely close to the published norms. They are presented in Table 3, as are the means and standard deviations for the Self-Report Delinquency scores.

For the 20 item SRD scale itemized in Table 2, $\alpha = 0.75$ and $\lambda_6 = 0.81$. In

Table 3. Means and standard deviations of the personality variables and measures of self-report delinquency for seven samples. (Standard Deviations are in brackets)

Sample	Number of subjects	Eysenck's Personality Scales			Cattell's Scales				Self-Report Delinquency Number of items endorsed	Frequency score
		Extraversion	Neuroticism	Psychoticism	Lie Scale	IQ	Exvia	Anxiety		
1	17	13.53 (3.3)	11.06 (4.5)	—	3.34 (1.4)	50th%	55th%	60th%	16.77 (8.6)	—
2	124	13.28 (4.7)	12.33 (5.0)	3.70 (2.8)	7.02 (3.5)	—	—	—	2.87 (2.2)	—
3	31	13.87 (4.9)	9.81 (5.6)	2.42 (2.6)	7.00 (3.1)	70th%	50th%	50th%	2.68 (2.1)	19.19 (4.5)
4	42	13.41 (5.2)	11.60 (6.3)	3.64 (2.8)	5.45 (3.1)	—	—	—	3.60 (2.1)	16.14 (3.9)
5	31	13.42 (5.3)	10.78 (5.2)	2.94 (2.3)	6.48 (3.4)	—	—	—	4.03 (3.4)	16.68 (4.6)
6	25	12.36 (5.0)	10.88 (5.2)	3.68 (2.6)	5.52 (3.1)	—	—	—	3.60 (2.7)	16.32 (5.2)
7	41	15.27 (4.2)	10.69 (4.9)	2.85 (1.9)	5.78 (3.8)	—	—	—	3.24 (2.3)	20.71 (4.1)

general, the items correlated positively, though items 11 and 13 had a large number of near zero or slightly negative correlations with other items. Inspection of individual items revealed that items 5, 6, 7, and 13 had little or no variance associated with responses to them. At the level of the scale, the mean score for males was significantly higher than the mean score for females. The result is in agreement with previous reports of sex differences in self-report delinquency (Braithwaite and Law, 1978; Hindelang *et al.*, 1979). Also as with previous self-report measures a positive skewness was noted in both the male and the female score distributions.

In order to examine the interrelationships between the dimensions of extraversion, neuroticism, psychoticism, and self-report delinquency, as well as the Lie Scale of the EPQ, all variables were intercorrelated. These are presented in Table 4. In addition, for samples 1 and 3, we had measures for Cattell's Scales. As expected Cattell's measures correlated significantly with those of Eysenck's. For extraversion, in sample 1, Cattell with Eysenck was $r = 0.35$ ($p < 0.10$), while in sample 3, $r = 0.60$ ($p < 0.001$). Furthermore, Cattell's extraversion was related to self-report delinquency, very marginally in sample 1 ($r = 0.17$), but significantly in sample 3 ($r = 0.38$; $p < 0.05$). For neuroticism, in sample 1, Cattell with Eysenck was $r = 0.58$ ($p < 0.01$) while in sample 3, $r = 0.83$ ($p < 0.001$). Cattell's neuroticism did not predict self-report delinquency. In neither sample 1 nor 3 was Cattell's 10-item measure of IQ related to either the personality variables or self-report delinquency.

As can readily be seen from Table 4, self-report delinquency was significantly related to

Table 4. Pearson product moment correlations among extraversion (E), neuroticism (N), psychoticism (P), Lie Scale (L), and self-report delinquency (SRD) for seven different samples

Sample	Size of sample	N	P	L	SRD	
Extraversion						
	1	17	-0.02	---	-0.53§	0.37*
	2	124	-0.17†	0.19†	-0.30§	0.34§
	3	31	-0.13	-0.10	0.06	0.33†
(E)	4	42	-0.41‡	-0.11	-0.07	0.40‡
	5	31	-0.18	-0.41	0.00	0.10
	6	25	-0.15	0.02	-0.17	-0.23
	7	41	-0.43‡	-0.05	-0.23	0.34†
Neuroticism						
	1	17			-0.07	0.02
	2	124		0.00	-0.14	-0.16
	3	31		0.08	0.00	-0.31†
(N)	4	42		0.42‡	-0.21	0.01
	5	31		0.01	0.23	0.25
	6	25		0.03	-0.17	-0.17
	7	41		0.10	-0.08	-0.16
Psychoticism						
	1	17			---	---
	2	124			-0.22†	0.30§
	3	31			0.01	0.31†
(P)	4	42			-0.19	0.33‡
	5	31			-0.51§	0.34†
	6	25			-0.10	0.13
	7	41			-0.35‡	0.35‡
Lie Scale						
	1	17				-0.48†
	2	124				-0.38§
	3	31				-0.39‡
(L)	4	42				-0.31†
	5	31				-0.22
	6	25				-0.21
	7	41				-0.37‡

* $p < 0.10$; † $p < 0.05$; ‡ $p < 0.01$; § $p < 0.001$, one tailed).

extraversion on five of the seven samples and to psychoticism on five of the six samples. This provides support for Eysenck's contention that antisocial behavior is predicted by both extraversion and psychoticism. Little support however was found for the view that antisocial behavior is linked to neuroticism. Furthermore we can see from Table 4 that, in the main, the dimensions of personality are quite orthogonal in our Canadian samples. The only deviation for this is the slight tendency for introverts in Canada to be more neurotic than extraverts.

The Lie scale also demonstrated itself to be a significant predictor of self-reported delinquency in five out of seven of our samples, and also to be slightly related to the dimensions of extraversion and psychoticism. Respondents who scored high on the Lie scale tended to be those who had low scores on extraversion, psychoticism, and self-report delinquency. Although high scores on the Lie scale can be interpreted in more than one way (Eysenck and Eysenck, 1975, pp. 7-8), the explanation that makes immediate sense here is that, despite anonymous conditions, some subjects attempted to 'fake good' and thus presented themselves as lower on extraversion, psychoticism and self-reported delinquency, than they might otherwise have done.

PART TWO

Here we will be concerned with the relation between self-report delinquency and personality variables as obtained in factor analytic studies of Eysenck's measures, Cattell's second-order extraversion and anxiety factors, and Jackson's Personality Research Form (PRF-E; Jackson, 1974), a structural inventory of 20 dimensions based on Murray's (1938) need definitions.

Method

Subjects. One hundred and twenty-eight introductory psychology students (52 males and 76 females) attending the University of Western Ontario participated for course credit. Their average age was approximately 18. The data were collected in a group testing session in January, 1978.

Materials. Students completed the Eysenck Personality Questionnaire (EPQ: Eysenck and Eysenck, 1975), the 16-Personality Factor Questionnaire (16PF: Cattell *et al.*, 1970), Jackson's Personality Research Form E (PRF-E: Jackson, 1974), a Life-History Questionnaire and a Self-Report Altruism Scale (Rushton and Chrisjohn, 1978) not analyzed for the present study, and the 20 item version of the Self-Report Delinquency scale (SRD) shown in Table 2. The scale scores for the 16-PF were not directly employed in the study, but were used to compute second order extraversion and anxiety scores for each student, using the equations given in the manual.

Procedure. Subjects entering the room of the experiment were handed an envelope containing the materials. When everyone was present, the experimenter explained the purpose of the study, described the materials, and asked that everyone be as candid as possible in their response to the inventories. Anonymity was assured by asking the subjects to refrain from identifying themselves on any of the materials.

Subjects were excluded from analysis if they obtained a PRF-infrequency scale score of 4 or higher, or if they failed to complete the EPQ, the 16PF, or the PRF. Altogether 29 subjects were dropped, primarily because subjects had failed to notice the second half of the EPQ. Complete data were obtained for 99 subjects (36 males, 63 females).

Results and discussion, Part Two

For the purpose of comparison with the data reported in Table 4, we present the zero-order correlations between SRD and Eysenck's scale: for SRD-extraversion, $r = 0.35$, $p < 0.01$; for SRD-neuroticism, $r = 0.02$, n.s.; and for SRD-psychoticism, $r = 0.20$, $p < 0.05$. This pattern of results is consistent with the results obtained from the previous samples.

Next, the E, P, and N scores of the EPQ, the second-order exvia and anxiety scores from the 16-PF, the 20 content scale scores of the PRF, and the SRD scores for the 99

subjects were intercorrelated and analyzed by the principal components method. Although seven components had eigenvalues greater than 1.0, the last component was a specific. Hence we retained six factors accounting for 64.5% of the total variance, and rotated the six factor solution to an oblique simple structure by direct oblimin. We present only a summary of the solution, reporting loadings over |0.5|. As might be expected from the earlier discussion of delinquency and personality, self-report delinquency did not load any one factor highly, but instead loaded three factors to about the same degree. For SRD, then, we report loadings greater than |0.3|.

Factor I: sociability-extraversion. EPQ-extraversion (0.96); 16-PF-extraversion (0.93); PRF-affiliation (0.84); PRF-exhibition (0.78); SRD (0.34). This factor combines traditional extraversion measure with scales measuring need for affiliation and need to be the center of attention. Self-report delinquency has an appreciable loading on this factor.

Factor II: neuroticism. PRF-aggression (0.88); PRF-defence (0.84); 16-PF neuroticism (0.65); EPQ-neuroticism (0.61). This factor combines neuroticism scales with scales concerning aggressive behavior and suspicion of other's intent.

Factor III: tough vs tendermindedness. PRF-nurturance (-0.76); PRF-autonomy (0.75); PRF-succorance (-0.66); PRF-abasement (-0.61); PRF-harmavoidance (-0.58); SRD (0.38). This factor contrasts need to give and receive affection with an attitude of aloofness, toughness, and unwillingness to accept blame. SRD has its largest loading on this factor.

Factor IV: striving. PRF-achievement (0.84); PRF-endurance (0.73); PRF-play (-0.63); PRF-order (0.62); PRF-cognitive structure (0.55). This factor seems to capture the attitude of orderly achievement, contrasted with need for play.

Factor V: openness to experience. PRF-sentience (0.72); PRF-understanding (0.59); PRF-change (0.55). This factor, which might also be termed "curiosity" connotes the need to experience the world of sensations.

Factor VI: psychoticism. EPQ-psychoticism (0.72); PRF-desirability (-0.58); PRF-impulsivity (0.53); SRD (0.30). This factor features unusual behaviors of an undesirable type, including delinquent behavior. Although impulsiveness is usually thought to characterize extraversion rather than psychoticism, examination of the PRF scale definitions (Jackson, 1974) reveals the impulsivity scale to emphasize more strongly the rashness and unthinkingness aspects of impulse control.

The labels we have given the factors are only approximations, subject to alternative interpretation. However, it is clear that the pattern observed at the zero-order correlation level (see Table 4) is replicated in the factor analysis, with SRD being related to extraversion and psychoticism factors, and not loading the neuroticism factor.

Since we employed an oblique rotation, it is possible to factor the factor intercorrelation matrix to produce a second-order loading matrix. We do not present the results of such an analysis here, first, because the study was not designed as a test of Eysenck's three-factor model; and second, because the variables employed have properties which make a second-order solution difficult to interpret. For instance, Jackson's (1974) scale construction technique of minimizing correlations between scales has the effect of holding down factor correlations even within relatively oblique solutions. We will note, however, that a structure similar to Eysenck's model, with E, N, and P loading different, orthogonal factors, was obtained in second-order analysis. Hence, the pattern of results obtained in the first-order oblique solution was not due to latent correlations between E and P. Further, the second-order extraversion factor was defined by Factors I and III, both of which had appreciable SRD loadings at the first-order level.

CONCLUSIONS

In contrast to the controversial status of much of the previous data concerning Eysenck's theory of criminality, our findings were remarkably consistent. Almost without qualification, within the groups considered, self-report delinquency was significantly associated with extraversion and psychoticism, and was not associated with neuroticism.

Hence, two of Eysenck's predictions cited at the outset of this paper were upheld. This is despite the fact that our procedures (i.e., the range of variables included in Part 2 and the use of populations for whom the EPQ may be less than an ideal test of Eysenck's structure; see Helmes, 1980) gave ample opportunity to disconfirm Eysenck's proposals.

The lack of support for a delinquency–neuroticism link was as manifest as the evidence for the extraversion and psychoticism proposals. There are many conceivable reasons for the failure, including the possibility that Eysenck is simply wrong. It should be noted, however, that within Eysenck's theory neuroticism has an interactional role, strongly influencing the specific form of criminal activity observed. Eysenck's own hypothesis is that neuroticism is simply less important during the early stages of the development of antisocial tendencies. With adults, when the habit has already been formed, the amplification of the habit by anxiety assumes a much greater importance. This remains a hypothesis to be tested. Certainly it is true that, with adult criminals in prison a number of studies have found that N comes out much more strongly than E (see Eysenck and Eysenck, 1977; as well as reviews by Cochrane, 1974; Feldman, 1977; and Passingham, 1972). Additional tests of neuroticism–criminality associations, using a wider range of individuals and different criminal behaviors, will help clarify the present findings.

Of course, evidence supporting Eysenck's predicted associations of delinquency with extraversion and psychoticism is quite different from evidence in support of Eysenck's *explanations* of those associations. Direct tests of Eysenck's (and competing) causal structure are likely to be a more profitable line of research in the future. On the basis of our data, we believe, along with Eysenck, that we have clear evidence that associations exist that are in need of explanation.

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