FURTHER INVESTIGATION OF EXTRAVERSION-INTROVERSION AND SUBSEQUENT RECIDIVISM/FOR A SELECTED GROUP OF YOUNG ADULT OFFENDERS

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CURRICULUM STUDIORUM

Frank Julius Blum was born February 6, 1935, in Ofen, Hungary. He received the Bachelor of Arts degree, with honours in Sociology, from McGill University, Montreal, in 1956. He received the Master of Arts degree in Psychology from the University of Ottawa in 1963. The title of his thesis was An Investigation of the Relationship of a Measure of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Offenders.

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INTRODUCTION

The phenomenon of recidivism, the persistent participation in criminal activity, has long been a major concern in the field of corrections. More recently, the problem has come to receive increasing attention from experimental psychologists. This study is intended as a contribution to the understanding of this subject through the examination of some of the parameters of recidivism in the framework of certain concepts and principles of experimental psychology.

In 1956, Franks[1] proposed that the personality dimension extraversion-introversion be regarded as a predictor of recidivism. Studies that have been undertaken to test this hypothesis suffered from one or more of the following weaknesses: a) the designs they employed were not predictive because extraversion-introversion measures were not obtained prior to measures of recidivism; b) the measures of recidivism were grossly inadequate; c) variables that influenced the relationship between extraversion-introversion and recidivism were not sufficiently controlled. The testing of Franks' hypothesis, avoiding these weaknesses, was one of the aims of the present study.

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1 Cyril M. Franks, "Recidivism, Psychopathy and Delinquency", British Journal of Delinquency, Vol. 6, No. 3, January 1956, p. 192-201.

The other aim of this study was to evaluate the relative and joint contribution of three factors (habit strength, conditionability, and exposure to conditioning) to the prediction of recidivism. These factors, common to various learning theories, facilitated the organization and selection of variables pertinent to the extraversion-introversion and recidivism relationship.

This report consists of three main chapters. The first chapter contains a statement of Franks' theory and the review of various studies testing his hypothesis. On the basis of previous empirical findings and through the application of some learning theory concepts and principles, parameters of recidivism to be treated in this study are considered.

In the second chapter, the design of the project is presented. This is followed by the description of the nine variables assessed in the study, and of the sample which consisted of inmates of the Ontario Training Centre, Brampton, released during 1955-57. The chapter concludes with the presentation of the procedures involved in the statistical treatment of the data and the statement of the specific hypotheses that are to be evaluated.

The results obtained in testing these hypotheses are then presented and discussed. The discussion is organised around the three questions the study has attempted to answer.

The discussion ends with the evaluation of the application of general learning theory to the understanding of the problem of recidivism in the light of the present study.

Suggestions for further research are made throughout the discussion and these suggestions are summarized at the end of the report.

CHAPTER I

REVIEW OF THE LITERATURE

This chapter opens with the presentation of Franks' theory[1] of extraversion-introversion,[2] conditionability, and recidivism, followed by a review of recent studies relevant to the theory. Eysenck's comments about the conflicting findings being due to the lack of control for other variables influencing the extraversion-criminality relationship are noted, and some relevant parameters are examined. The chapter ends with the presentation of the variables chosen, the principles used in their selection, and the statement of the questions that the present investigation attempts to answer by utilizing the chosen variables.

1. Franks' Theory of Extraversion-Recidivism.

Within the framework of the Eysenckian theory relating reactive cortical inhibition, learning, and personality, and based on his own findings that individuals with higher scores on the Guilford personality factor scale

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1 "Theory" in this thesis is understood to mean a set of interacting concepts from which behaviour can be predicted.

2 Also referred to as extraversion.

rhathymia acquire conditioned responses more slowly and extinguish them faster than individuals with lower scores on the scale, Franks[3,4] postulates that there are two types of offenders who respond differentially to training and re-education which are seen as instances of attempts at socialization. He suggests that the introverted one, who scores low on the scale and conditions more easily, is more likely to respond to re-education than the extraverted offender, scoring high on the scale and conditioning with greater difficulty. The introvert offender is more likely to acquire new patterns of behaviour than the extravert, who is more likely to persist with his old mode of behaviour, criminal behaviour, and consequently after release the extravert is more likely to commit further offenses and become a recidivist. In concluding the presentation of his theory, Franks states that while it may present an oversimplification of a complex problem, it yields readily testable deductions.[5] In several places in the present paper there will be opportunity to

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3 Cyril M. Franks, "Recidivism, Psychopathy and Delinquency", British Journal of Delinquency, Vol. 6, No. 3, January 1956, p. 192-201.

4 ———, "Conditioning and Abnormal Behaviour", Handbook of Abnormal Psychology, An Experimental Approach, H.J. Eysenck, Editor, New York, Basic Books, 1961, p. 457-487.

5 ———, "Recidivism, Psychopathy and Delinquency", British Journal of Delinquency, Vol. 6, No. 3, January 1956, p. 199.

indicate support for the first and misgivings about the second statement.

Studies Testing the Theory.- Of the four studies cited by Franks in support of his theory, the two that seemed to be directly relevant to it have previously been reviewed by this author,[6] and the value of both was questioned on methodological grounds. Three other studies have also been reviewed;[7] these have designated Franks' theory as the starting point for their research. For two of them, which failed to support the theory, similar methodological objections have been raised.

The third study, supporting the theory and less open to questions on methodological grounds, is described here again because of its relevance to the present study. Bartholomew,[8] in a carefully conducted and reported study, compared fifty consecutive first offenders and fifty consecutive recidivists on scores obtained on the individually

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6 Frank J. Blum, An Investigation of the Relationship of a Measure of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Offenders, unpublished Master's thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1963, p. 1-7.

7 Ibid., p. 8-12.

8 Allen A. Bartholomew, "Extraversion-Introversion and Neuroticism in First Offenders and Recidivists", British Journal of Delinquency, Vol. 10, No. 2, October 1959, p. 192-201.

administered Maudsley Personality Inventory.[9] These individuals, all male, had been referred by the courts for medico-psychological assessment. The average age of the recidivists was 34.56, with a range of 22-54, while the corresponding numbers for the first offenders were 32.70 and 22-45. The first offenders had no indictable offense recorded against them and had never been imprisoned. The recidivists had at least one previous and recent conviction and had been imprisoned at least once; the mean number of offenses recorded by this group prior to the offense causing their remand was 9.29, with a standard deviation of 6.20. Apart from manslaughter and political offenses, the charges for which either group were remanded were of a wide variety, with both first offenders and recidivists being distributed approximately equally in each category. Thirty percent of the recidivists were charged with offenses against the person; fifty percent with offenses against property; and the remainder with a miscellaneous group of other offenses. Using a two-tailed test of significance, Bartholomew found the extraversion scores of the recidivists to be significantly higher, probability being between .05 and .02. However, he cautions about the relevance of the findings for the theory. He suggests that questionnaire responses are

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9 Hereafter referred to as M.P.I.

made to some extent with reference to the immediate situation, and since the prisoner on remand is apt to be worried and concerned, the prisoner is likely to underscore on the extraversion scale. Since, on logical grounds, it could be argued that the first offender is more likely to be concerned than the recidivist, the discrepancy in the scores of the two groups would tend to be increased due to situational factors in the direction predicted by the theory. Without specifying the improvements, he concludes that a more "sophisticated" design would be required to test the adequacy of the theory.[10]

One improvement was introduced by Fitch[11] by his implicit analysis of the concept "recidivist". He compared three groups of adult male remand and sentenced prisoners at a British prison on the E scale of the H.P.I., in that part of his project which is relevant to the present study. There were fifty-five prisoners with no previous conviction in the first group; one hundred and twenty-nine who had previous convictions but had not been to a prison or a borstal in the second; and sixty-one who had had previous prison or borstal experience in the third group. The

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10 Bartholomew, Op. cit., p. 127.

11 J.H. Fitch, "Two Personality Variables and Their Distribution in a Criminal Population", British Journal of Social and Clinical Psychology, Vol. 1, Part 3, October 1962, p. 161-167.

respective mean scores and standard deviations were 26.0 (8.0), 26.9 (7.5), and 25.3 (7.4). The differences were not significant and thus Bartholomew's findings were not confirmed, but unfortunately the report does not allow for an adequate comparison. There is no discussion of the results, and what is more awkward, very little descriptive information about the nature of the sample is provided. For example, the mean age and the age range of the groups is not reported, an oversight more difficult to accept in light of Fitch's finding that there was a significant inverse relationship between age and F scale scores.[12] Without this information, it does not seem to be worthwhile to speculate whether the differences between the findings of Bartholomew and Fitch could possibly be due to the reported different nature of the two groups, prisoners referred for psychiatric evaluation and "regular" prisoners, respectively.

A different improvement was introduced by Blum.[13] He used a predictive design in testing the extraversion-recidivism relationship. The sample consisted of 282 young adult offenders between the ages of sixteen and twenty-five years, with an Otis I.Q. score of at least 80, and with none or very few previous offenses on their records. All individuals

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12 Ibid., p. 162.

13 Blum, Op. cit., ix-84 p.

in the sample were released from the Ontario Training Centre, Brampton, a minimum security "open" institution, during a twelve-month period in 1954-55. A G score on Factor R of the Guilford-Zimmerman Temperament Survey, an inverted scale of the Guilford factor Rhathymia, obtained prior to the individual's admission, served as a measure of extraversion-introversion. Royal Canadian Mounted Police[14] follow-up records with respect to adjudicated criminal behaviour served as the criterion of recidivism subsequent to release; any entry for an indictable offense within five years after release classified the individual as a recidivist. The obtained point biserial coefficient of correlation of -.084 was considered to be indicative of a tendency in the predicted direction (.105 was required for P = .05, one-tailed test), thus in accordance with the findings of Bartholomew obtained using a postdictive design. The subhypothesis that the proportion of extraverts (defined as individuals having a G score between 0-2) who become recidivists was not greater than the proportion of introverts (defined as individuals having a G score between 8-10) was rejected at P = .05, one-tailed test, and thus Franks' theory was supported. Blum[15] pointed out that the findings do not necessarily support Franks'

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14 Hereafter referred to as R.C.M.P.

15 Blum, Op. cit., p. 52-54.

theory in its original form because i) the findings were not sufficiently conclusive; ii) other factors related to recidivism had not been sufficiently taken into account. For example, the mean age of the extravert group was significantly lower than that for the introvert group. Age has been found to be inversely related to subsequent recidivism;[16] consequently, the found difference in recidivism between the two groups could possibly have been due to the age factor rather than extraversion-introversion.

The last two studies to be reviewed below differ from the previous ones in that they do not use adjudicated adult offenders as subjects.

Little[17] made use of scores on the E scale of a shortened version of the M.P.I. obtained from 290 young offenders from three Borstal institutions to test four predictions he has considered to have derived from Eysenck's personality theory. The predictions were; i) that offenders tend to be more extraverted than the general population; ii) that they tend to be either extreme extraverts, or extreme introverts, again in comparison with the general population; iii) that relatively quick release from the institutions to

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16 Thorsten Sellin, "Recidivism and Maturation", NPPA Journal, Vol. 4, No. 3, July 1958, p. 241-250.

17 Allan Little, "Professor Eysenck's Theory of Crime: An Empirical Test on Adolescent Offenders", British Journal of Criminology, Vol. 4, No. 2, October 1963, p. 152-163.

some extent reflects the benefit the individual has derived from being there, and thus the introvert could be expected to be released sooner; and iv) that since according to the findings of Mannheim and Wilkins[18] the three institutions differed in the expected recidivism rates, this difference is reflected in the differences between the mean E scale scores of the three groups. None of the predictions were confirmed, and Little concluded that Eysenck's theory was not applicable to a group of young adolescent offenders. Three weaknesses of the design of the study are explicitly or implicitly suggested by the author himself. In the discussion of his findings, he states that the norms, taken from Eysenck's study,[19] established on a stratified random sample of the general population, were possibly not adequate for comparative purposes for a sample as specialised in age and social class as the Borstal population. He also questions, by referring to Mannheim's discussion of the complex nature of the variable "length of incarceration", whether "relatively speedy release" was an

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18 Herman Mannheim and Leslie T. Wilkins, Prediction Methods in Relation to Borstal Training, London, Her Majesty's Stationery Office, 1955; quoted by Little, Op. cit., p. 157.

19 H.J. Eysenck, "A Short Questionnaire for the Measurement of Two Dimensions of Personality", Journal of Applied Psychology, Vol. 42, No. 1, February 1958, p. 14-17; quoted by Little, Op. cit., p. 160.

adequate index of "improvement".[20] By quoting the findings of one of his own studies[21] which showed that recidivism rates for Borstal institutions have changed since 1955, he implicitly disputes the use of "expected recidivism" as a criterion variable. The fourth, and probably the major weakness of the study, is a theoretical one, and it can be treated in one short sentence. There is no suggestion or implication in any of Franks' or Eysenck's writings that criminals, as a group, are extraverts.

In contrast to Little, Siegman[22] made appropriate deductions and used a more appropriate design in testing several hypotheses derived from the Eysenckian theoretical framework pertaining to social and political attitudes and behaviour. The part of Siegman's report most relevant to the present one was the examination of the relationship between extraversion and antisocial behaviour. The scores of forty-four first-year male medical students on the E scale of the M.P.I., the independent variable, were correlated with

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20 Mannheim and Wilkins, Op. cit., p. 248-253; quoted by Little, Op. cit., p. 159.

21 Little, Op. cit., p. 157.

22 Aron Wolfe Siegman, "A Cross Cultural Investigation of the Relationship between Introversion-Extraversion, Social Attitudes and Antisocial Behaviour", British Journal of Social and Clinical Psychology, Vol. 2, Part 1, October 1963, p. 196-209.

their scores on the Anti-Social Behaviour Scale, the criterion which Siegman describes as a Likert-type scale derived from the delinquency check list of Short and Nye, heavily loaded with items pertaining to acting out aggressive behaviour.[23] The same procedure was repeated for seventy female third- and fourth-year nursing school students. The extraversion and the antisocial behaviour scales correlated positively in the male group, $r = .35$, $P = .05$, and negatively in the female group, $r = -.22$, $P = .10$. For the male group, the result was consistent with Eysenck's hypotheses relating extraversion and socialization and, by implication, with Franks' extraversion-recidivism hypothesis. However, in the female group the findings suggest that the extravert is more socialized, contrary to Eysenck's hypothesis. The relevance of the findings to criminal behaviour can be questioned on two interconnected grounds, namely, i) the relationship between self-reported antisocial behaviour, actual behaviour, and adjudicated behaviour; ii) the applicability of the findings on a highly selected group to the general population or to another highly selected group, the offender. The consideration of these two points is deferred to the next

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23 Ibid., p. 204-207, in describing his own scale, quoting James F. Short, Jr., and F. Ivan Nye, "Reported Behavior as a Criterion of Deviant Behavior", Social Problems, Vol. 5, No. 3, Winter 1957-58, p. 207-213.

section; some indirect and limited support is given by Nye and Short,[24] who claim that their scale differentiates between comparable groups of institutionalized delinquents-non-delinquents. Nevertheless, even though the relevance of the findings to criminal findings can be questioned, the results themselves appear to be representative of findings pertaining to the relationship of extraversion to antisocial behaviour obtained with various groups of offenders: they are conflicting.

These conflicting findings may partly be due to what Eysenck calls the simple-minded and uncritical reading of his theory relating to personality dimensions and the socialization process.[25] Conditionability, he states, is only one of the many variables influencing the development of a conditioned response, and only when these other variables are controlled can the relationship between conditionability (and its psychometric index, extraversion) and criminality be meaningfully evaluated.[26] He also suggests that due to the

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24 F. Ivan Nye and James F. Short, Jr., "Scaling Delinquent Behavior", American Sociological Review, Vol. 22, No. 3, June 1957, p. 326.

25 H.J. Eysenck, "Foreword", Experiments with Drugs: Studies in the Relation between Personality, Learning Theory and Drug Action, H.J. Eysenck, Editor, Oxford, Pergamon, 1963, p. x.

26 ———, "Epilogue: The Place of Theory in Psychology", Experiments in Personality, H.J. Eysenck, Editor, Vol. 2, London, Routledge, 1960, p. 313-314.

widely divergent patterns of behaviour that are subsumed under the heading "crime", it would seem to be more promising to apply deductions from the theory to specific groups within the criminal population,[27] groups presumably more homogeneous with respect to the other variables, and claims that within these particular groups variables other than conditionability could be "vastly more important."[28,29]

The present study aims to explore the above suggestions by continuing the research started by the writer.[30]

2. Some Parameters of the Extraversion-Recidivism Relationship.

The selection of recidivism-relevant variables, to be controlled and analyzed, was done with a view to empirical findings reported in the literature, theoretical considerations, and the availability of reasonably valid and reliable information about the variables chosen for the group studied

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27 ———, commenting on Little's article, Little, Op. cit. p. 161-162.

28 ———, "Epilogue: The Place of Theory in Psychology", Experiments in Personality, H.J. Eysenck, Editor, Vol. 2, London, Routledge, 1960, p. 314.

29 A recently published and undoubtedly pertinent monograph edited by Eysenck, Criminality and Personality, London, Pergamon, 1964, xi-250 p., was not yet available at the completion of the present manuscript.

30 Klum, Op. cit., ix-84 p.

in the present research. The question of availability was, of course, most pertinent and had to be considered jointly with the two other principles of selection.

With respect to empirical findings, the two sources were Glueck's[31] and Sellin's[32] reviews of predictive studies of recidivism. Glueck presented a summary of predictive factors of recidivism which may be found in the various separate and joint publications of E. Glueck and S. Glueck dealing with specific populations. For "Male Offenders in Reformatory - Age Span 17-21", the most appropriate comparable population to the population of the present study, the five major predictive factors found were intelligence (which, to a large extent, was based on the reformatory psychiatrist's subjective estimate),[33] age at first delinquency, grade attained in school, family relationships, and industrial skill. The first three were inversely related to recidivism. Sellin reviewed major European and North American studies insofar as they were pertinent to the relationship of the aging process to criminal careers; he also considered the

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31 Eleanor Glueck, "Status of Glueck Prediction Studies", Journal of Criminal Law, Criminology and Police Science, Vol. 47, No. 1, May-June 1956, p. 18-32.

32 Sellin, Op. cit.

33 Sheldon Glueck and Eleanor Glueck, 500 Criminal Careers, New York, Knopf, 1930, p. 155.

different degrees of persistence of various types of offenses. He concluded that the review confirmed hypotheses generally accepted in the field of criminology about the relationship of aging and crime, and the type of offense and crime. Specifically, he found that: i) the younger a person is when he is first convicted of crime, the greater the likelihood that he be convicted again (which, as mentioned above, was one of the findings reported by Glueck); ii) the risk of subsequent conviction is linearly correlated with the number of previous convictions; iii) the younger a person is, the shorter will be the intervals between his first and subsequent crimes; iv) the risk of recidivism varies with the type of offense, with crimes against property having the highest recidivism risks.

Five of the predictors reported by Glueck and Sellin were chosen for the present study: age and number of previous recorded adult convictions at the time of the particular commitment which was the point of departure for the present study;[34] juvenile offenses (a joint age-conviction index), last grade completed, and intelligence. In various contexts and designs, several recent reports give some degree of confirmation to four of the above five correlates of criminal behaviour in general and/or recidivism in particular.

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[34] Hereafter referred to as age, and adult convictions.

Artilla[35] and Tewari[36] with regard to age, Knapp[37] with regard to last grade completed, and Hurvitz et al.,[38] by implication, with regard to juvenile delinquency-previous convictions, corroborate the findings of Sellin and Glueck. In addition, the work of Artilla,[39] Bacon et al.,[40] Gynther,[41] and Tewari[42] have confirmed the conclusions of Sellin regarding the dependence of recidivism rates on certain types of

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35 I. Artilla, "The Recidivism of Conditionally Sentenced People According to Statistics", Lakimies (Helsinki), Vol. 1, (no number or month of issue), 1963, p. 47-54, in Excerpta Criminologica, Vol. 3, No. 6, November-December 1963, p. 688.

36 S. Tewari, "Recidivism and Correctional Institutions", Journal of Correctional Work, Vol. 9, (no number or month of issue), 1962, p. 99-108, in Excerpta Criminologica, Vol. 3, No. 5, September-October 1963, p. 563-564.

37 Robert H. Knapp, "Personality Correlates of Delinquency Rate in a Navy Sample", Journal of Applied Psychology, Vol. 47, No. 1, February 1963, p. 68-71.

38 Jacob I. Hurvitz, B.R. Hutcheson, and Saul Cooper, "Problems in Refining the Psychiatric Assessment of Juvenile Delinquents", Journal of Health and Human Behaviour, Vol. 2, No. 4, (no month of issue), 1961, p. 276-283, in Psychological Abstracts, Vol. 37, No. 1, February 1963, p. 170.

39 Artilla, Op. cit.

40 Margaret K. Bacon, Irvin L. Child, and Herbert Barry III, "A Cross-Cultural Study of Correlates of Crime", Journal of Abnormal and Social Psychology, Vol. 66, No. 4, April 1963, p. 291-300.

41 M.D. Gynther, "Crime and Psychopathology", Journal of Abnormal and Social Psychology, Vol. 64, No. 5, May 1962, p. 378-380.

42 Tewari, Op. cit.

offense.

The predictor "intelligence" has been considered by Franks[43] in a short review of the literature. He concludes that findings have been conflicting, and that so far no consistent intelligence-recidivism relationship has emerged. In view of the at least partly exploratory nature of the present study, "intelligence" was nevertheless included as one of the presumed predictors of recidivism.

In considering the six predictors of recidivism (the above five and extraversion), it was thought that some basic principles and concepts which have generally been discussed with reference to learning phenomena could also be applied to the phenomenon of recidivism. It was believed that in such a framework a more meaningful analysis of the relationship of the various predictors to the criterion could be made. With the concepts being used in a common sense rather than a technical manner, and with the understanding that the qualifiers "prosocial" and "criminal" are used for lack of more appropriate terms, the schema was as follows:

Recidivism, the behaviour to be accounted for, was considered to be a function of habit strength, conditionability, and the number of conditioning trials actually received. Age,

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43 Cyril M. Franks, "Recidivism, Psychopathy and Delinquency", British Journal of Delinquency, Vol. 6, No. 3, January 1956, p. 192.

and juvenile and adult convictions, were regarded as indices of prosocial and criminal habit strength, respectively. (With respect to age, it was thought that the older the individual at incarceration the more opportunity he had to "practise" non-criminal behaviour and thus strengthen the prosocial behaviour habit.) Last grade completed in school was considered to be an index of the amount of pro-social conditioning exposure received; psychometric measures of extraversion and intelligence were hypothesized to be indices of conditionability. The latter was in accordance with Eysenck's[44] suggestion that intelligence tests be looked upon as instances of mass practice situations. He hypothesizes that the accumulation of reactive inhibition towards the end of the test influences the scores obtained, and that those who accumulate reactive inhibition quickly and dissipate it slowly (a notion that, as had been noted earlier, accounts for individual differences in conditionability), will tend to get lower scores.

Using this theoretical framework, two more variables were added. Due to its presumably weaker dependence on intelligence, "age left school" was thought to be a more appropriate index of the amount of conditioning trials in

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[44] H.J. Eysenck, The Dynamics of Anxiety and Hysteria: An Experimental Application of Modern Learning Theory to Psychiatry, New York, Praeger, 1957, p. 131-133.

prosocial behaviour received than "last grade completed". A psychometric measure of emotionality-neuroticism was added in light of Eysenck's recent thinking that emotionality-neuroticism can be thought of as an index of reactive cortical inhibition existing prior and in addition to the inhibition generated by repeated conditioning trials: the higher the score on emotionality-neuroticism, the more reactive inhibition there is.[45] While these two variables were selected in view of the framework proposed above, it would not be correct to say that no empirical support for their choice was available. For example, Glueck[46] reports the findings of three studies where "age started work", which would appear to be closely related to "age left school", was a predictor of recidivism. Since the population of these three studies differed from the population of the present study on such presumably "confounding" variables[47] as age and type of custodial institutions in which they had been incarcerated, these studies are not reviewed here. With respect to neuroticism, a thorough review of the literature on

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45 H.J. Eysenck, "Foreword", Experiments with Drugs: Studies in the Relation between Personality, Learning Theory and Drug Action, H.J. Eysenck, Editor, Oxford, Pergamon, 1963, p. xii.

46 Eleanor Glueck, Op. cit., p. 31-32.

47 For the term "confounding" see Benton J. Underwood, Psychological Research, New York, Appleton, 1957, p. 90.

neuroticism-criminal behaviour has recently been prepared by Parthun[48] and hence will not be reviewed here. Parthun reports conflicting findings.[49]

In concluding this section on the parameters of extraversion-recidivism, the reader's attention is drawn to a set of parameters not controlled in the present study. These pertain to the relationship of recorded criminality and unrecorded and/or undetected criminal behaviour. This important and yet unresolved issue of criminological research[50] has been considered earlier by the author[51] and will not be examined here, except for the inference that there is sufficient empirical evidence that the relationship is a complex and difficult one from conceptual, practical, and ethical points of view. In a recent discussion of this issue, Short et al.[52] state that official statistics, with all their

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48 Raymond J. Parthun, research in progress, School of Psychology and Education, University of Ottawa, Ontario.

49 ————, personal communication with the author.

50 John C. Ball, Alan Rosa, and Alice Simpson, "Incidence and Estimated Prevalence of Recorded Delinquency in a Metropolitan Area", American Sociological Review, Vol. 29, No. 1, February 1964, p. 70.

51 Blum, Op. cit., p. 18-21.

52 James F. Short, Ray A. Tennyson, and Kenneth I. Howard, "Behaviour Dimensions of Gang Delinquency", American Sociological Review, Vol. 28, No. 3, June 1963, p. 413.

inadequacies, are the most appropriate ones to use as indices of criminal behaviour when general and long range research is kept in mind. Thus, in evaluating the findings of the present study, one has to be aware of the several variables, such as nature of the offense, intensity of law enforcement at a particular place at a particular time, to name only two, that influence the various indices of criminal behaviour used but for which no adjustments could be made.

3. The Questions to be Answered by the Present Study.

The present investigation, as has been suggested earlier, is an attempt to answer two questions raised by Eysenck in his criticism of research done on the relationship of extraversion-introversion to criminality in general, and recidivism in particular. The two questions are:

1) does extraversion-introversion make a significant contribution to the prediction of recidivism when the influence of other predictors is controlled?

2) which of the predictors make(s) the most important contribution(s)?

The design to be used to answer these questions allows the answering of a third question, which facilitates the evaluation of the findings, namely,

3) what is the combined contribution of the predictors used?

These questions are restated in the forms of statistical hypotheses at the end of the following chapter, which describes the experimental design used for testing these hypotheses. Answering the first question is the major goal of this study, since it represents a logical next step to the author's earlier research.[53]

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53 Blum, Op. cit., p. 65-66.

CHAPTER II

EXPERIMENTAL DESIGN

This chapter is divided into four sections. The first begins with a presentation of the sources of the independent variables. There follows a description of these variables and of attempts to obtain estimates of reliability and validity for some of them. The section concludes with comparable information for the dependent variable. In the second section, after a statement of the principles in accordance with which the sample and subsamples were obtained, these groups are described. The chapter ends with the statement of the statistical hypotheses and the considerations involved in the choice of the level of significance at which these hypotheses were to be evaluated.

1. The Variables of the Experiment.

Preliminary Comments.- In Ontario the majority of young adult adjudicated offenders between the ages of sixteen and twenty-five years, who have no or only minor previous offenses registered on their police records, are sent to the reception wing of the Ontario Reformatory, Guelph.[1] During their stay there, letters of inquiry about their educational

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1 Hereafter referred to as Guelph.

history and contact with formal religious institutions are sent out; they are administered a battery of psychological tests and are subsequently interviewed by a psychologist. After the testing and the interview are completed, the offender appears before a selection board which decides if he is to remain at Guelph or be transferred for the remainder of his sentence to either the Ontario Training Centre, Brampton, or the Ontario Training Centre, Burtch,[2] two minimum security institutions. If the inmate is chosen for either of the Training Centres a file containing the psychometric report summarizing the test findings, a psychological report based mostly on the individual interview, and any additional available information pertaining to the inmate's history prior to incarceration, follows him there. After he leaves the institution the files, with information about the offender's stay there added, are preserved and stored. It is the files of those inmates released from Brampton between April 1, 1955, and March 31, 1957, which are the source of the data pertaining to the independent variables of the present study.

These data, however, were not gathered for research purposes, and estimates of their reliability and validity were not available. Since it was not feasible, both for

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2 Hereafter referred to as Brampton, and Burtch.

practical and for ethical reasons, to contact the individuals who comprised the sample, such estimates were obtained for other groups of (more recent) Brampton inmates. That data pertaining to the latter and the data, if it were available, for the sample came from the same universe is supported by the facts that i) the selection standards for Brampton have not changed since 1955, and ii) most of the data used here is gathered by the same individuals and procedures today as it was then. (The scoring and transcribing of scores for the variable restraint has been evaluated and found to be reasonably accurate.)[3] There is also evidence, however, that samples prior to 1960, and more recent samples the reliability of data regarding which is here being extrapolated, differ in respect of certain characteristics.[4] Thus, the reliability/validity estimates of the various statistics presented below have to be considered in light of these limitations.

Variables Obtained from Psychometric Data.- Three psychometric scores, scores on Factor R, restraint, and

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3 Frank J. Blum, An Investigation of the Relationship of a Measure of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Offenders, unpublished Master's thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1963, p. 30-31.

4 Ibid., p. 32; also in M.M. Hooper, S. Keane, et al., "The Brampton Story", Canadian Journal of Corrections, Vol. 4, No. 4, October 1962, p. 226-227.

Factor E, emotional stability, of the Guilford-Zimmerman Temperament Survey,[5] and the intelligence quotient as measured by the Otis Group Intelligence Scale, Advanced Examination[6] were employed as indices of conditionability. Of these, Factor R, a recommended measure of extraversion,[7] was of the most direct importance for the evaluation of Franks' theory.

a) Restraint.- Scores on this variable were obtained from G scores since raw scores were not available. Restraint is one of the ten traits (each obtained by factor analysis) that make up the Survey. To aid in the interpretation of a score on any of the traits, the authors of the Survey have categorized the items scored for each of the temperament variables and suggested that the number of items in each category gives an idea of the weight of each quality in the total score.[8] For restraint they present the following

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5 J.P. Guilford and Wayne S. Zimmerman, Guilford-Zimmerman Temperament Survey, Beverly Hills, California, Sheridan Supply Co., 1949. Hereafter referred to as Survey.

6 Arthur S. Otis, Otis Group Intelligence Scale, Advanced Examination, Yonkers-on-Hudson, New York, World Book Co., 1929. Hereafter referred to as Otis I.Q.

7 Cyril M. Franks, "Recidivism, Psychopathy and Delinquency", British Journal of Delinquency, Vol. 6, No. 3, January 1956, p. 198.

8 Guilford and Zimmerman, Op. cit., Manual of Instructions and Interpretations, p. 3. Hereafter referred to as Manual.

breakdown;[9]

Positive Qualities	Negative Qualities	Number of Items
R-Restraint (opposite of former trait of rhathymia)		
Serious mindedness		8
	Happy-go-lucky; carefree	5
Deliberate	vs Impulsive	5
	Excitement loving	5
Persistent effort		3
Self-control		3

A study attempting to establish the test-retest reliability of the variables of the Survey was carried out by the writer from January 10 to June 7, 1961.[10] During this period new inmates arriving at Brampton were administered the Survey and the scores obtained on each Factor were correlated with the corresponding scores obtained when the Survey was first administered at Guelph. With N = 80, and a median length of time between test and retest of 21 days (with a range of 7-252 days), a Pearson product moment correlation coefficient[11] of .576 was obtained. Since C scores were

9 Ibid., p. 2.

10 Blum, Op. cit., p. 76-78.

11 Hereafter referred to as r or "regular" Pearson r.

used, and since these tend to decrease the value of the correlation coefficient, this result was considered acceptable for the purpose of the writer's previous and present study of the extraversion-introversion and recidivism relationship.

b) Emotional stability.- The same type of information was available for this index of conditionability as for restraint. Guilford and Zimmerman give the following description of the trait:[12]

Positive Qualities	Negative Qualities	Number of Items
E-Emotional stability (opposite to a combination of the former traits of C, cycloid disposition, and D, depressive tendencies)		
Evenness of moods, ... vs	Fluctuation of moods, ...	7
interests, energy, etc.	interests, energy, etc.	
Optimism; cheerfulness vs	Pessimism; gloominess	7
.....	Perseveration of ideas and moods	6
.....	Daydreaming	3
Composure ..... vs	Excitability	2
Feeling in good health vs	Feeling in ill health	2
.....	Feeling of guilt, loneliness or worry	3

12 Guilford and Zimmerman, Manual, Op. cit., p. 2.

The test-retest reliability of this variable was .760.[13]

c) Otis I.Q.- This was the third index of cognition-ability employed in the study. The general procedure for establishing experimental test-retest reliability of this widely-used paper-and-pencil intelligence test was similar to that used for the temperament factors except for the assumption that the time elapsing between test and retest was of lesser importance and hence no attempt was made to control it. Of those who arrived at Brampton between January and June of 1961, fifty-six were still in the institution and available for testing on July 13, 1961. The raw Otis scores, from Forms A or B, obtained at Guelph, were correlated with the respective alternate forms obtained on that day at Brampton. With a median number of 179 days (with a range of 95-246 days) between test and retest, an r of .932 was obtained. This reliability coefficient is similar to those reported in the literature for various populations and versions of the Otis intelligence test.[14]

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13 Jacqueline A. Marshall, A Comparison of Self-Reported and Observed Personality Traits in a Custodial Setting, unpublished Master's thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1964, p. 30. The raw data was collected by Hum, Op. cit. See footnote 10.

14 Raymond F. Vaillancourt, Manifest Structure Analysis in Academic Prediction, unpublished Doctoral thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1961, p. 43.

Variables Obtained from the Psychological Report.- The four independent variables obtained from the psychological report are briefly described below.

a) Age.- The inmate's age at his last birthday prior to the interview by the psychologist at Guelph was taken as the index of prosocial habit strength. No attempt was made to investigate the accuracy of this information since little, if any, distortion was expected in information pertaining to chronological age.[15]

For the other three variables, i.e., last grade completed, age left school, and juvenile conviction, an attempt was made in 1963 to evaluate the stability of the information obtained from the psychological report. On December 4, all the 162 inmates of the institution were given a questionnaire pertaining to educational and criminal history prior to arrival at Brampton. The responses to the questionnaire were then compared with corresponding information in the psychological report. The median number of days between the two sets of responses was 115, with a range of 3-583. Relevant comparisons are summarized in Table I. The agreement between the two scores, where information was available from both, is also presented below in the text dealing with each of the three variables separately.

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15 Edwin H. Sutherland, Principles of Criminology, Fourth Edition, Chicago, Lippincott, 1947, p. 45.

Table I.-

Agreement-Disagreement between Two Sources of Self-Reported Information (Questionnaire and Psychological Report) on Variables Last Grade Completed, Age Left School, and Juvenile Conviction (N = 162).

Variable	Identical		Different[a]		Other[b]
	N	%[c]	N	%	
Last grade completed	135	90.0	15	10.0	12
Age left school	112	79.4	29	20.6	21
Presence or absence of juvenile conviction	138	93.9	9	6.1	15

a To illustrate, for age left school: older on report, 20; younger on report, 9.

b To illustrate, for age left school: no information on report, 10; no information on questionnaire, 3; name missing or illegible on questionnaire, 8.

c Of available comparable information.

Since criminological statistics are notoriously unreliable, the measure of agreement between the two sources may appear high. This may be due to the combined effects of two influences: i) first offenders are possibly not yet acculturated to the "prison culture" where, as an expression of opposition to prison administration, giving false information to staff can be thought of as one of the inmates' values;[16] and ii) the inmates may have been aware of the possibility that their statements could be checked against official documents.

b) Last grade completed and age left school.- These variables pertaining to schooling were used as the two indices of exposure to prosocial conditioning. For last grade completed there was agreement on 135, or 90.0% of the 150 comparisons which could be made; for age left school, which probably represents a somewhat less stable measure[17] than last grade completed, the corresponding values were 112, 79.4 and 141. Of course, the consistency in self-reporting is not identical with accuracy. An estimate of

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16 This argument is supported by the existence of "contraculture" in prisons. See Chapter III, p. 81.

17 Age left school refers to age at last birthday prior to leaving school. However, this specification is not always made by the psychologist during the interview. Leo Schulte, Resident Psychologist, Guelph, personal communication with the author.

the accuracy of the information about last grade completed was obtained by comparing it to available school reports for the institutional population of June, 1962. For fifty-three individuals, about half of the institutional population at the time, information pertaining to education was available from both sources. Forty, or 75.5%, had identical information; for ten, or 18.8%, the value of the psychological report was higher, mostly by one grade; for three, or 5.7%, it was lower. Of all the independent variables, this estimate is the least satisfactory one, and the 75% confirmation has to be evaluated with special reservations. On the one hand, lack of confirmation may be due not to invalid information but to the fact that the school, or schools, specified by the inmate as his last school may not have responded to routine inquiry from Guelph. On the other hand, the large number of inmates for whom no school reports were available raises questions about the representativeness of the group for which information was available; the relationship between response from schools and educational achievement or criminal behaviour is not known.

a) Juvenile conviction.- The presence or absence of juvenile delinquency, employed in the study as one of the two indices of antisocial habit strength, refers to offenses committed and adjudicated before the offender reached the age of sixteen. Juvenile offenders cannot be fingerprinted, and

the recording of their offenses is regarded as "a delicate matter."[18] This fact is reflected in the data available for this study.

This variable was responsible for the exclusion of more individuals from the sample (N = 28) than the other non-psychometric variables combined. Also, in a number of cases the psychological report merely noted that there had been convictions by juvenile courts, but did not state how many and at what age. The comparison of the questionnaire with the psychological report showed that in 117, or 79.4%, of the possible 147 comparisons, the two sources contained the same information. In twenty-one cases the sources differed as to the number of convictions, and in the remaining nine they differed as to whether or not there had been convictions. These inconsistencies in the information pertaining to self-reported juvenile convictions may probably be attributed mainly to the inmates' fallible memory and their insufficient knowledge of the details of their own juvenile court appearances rather than to deliberate distortions.

In spite of the above uncertainties in the data, it was felt that juvenile conviction should be included as an

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18 Report of the Select Committee Appointed by the Legislative Assembly of the Province of Ontario, to Study and Report upon Problems of Delinquent Individuals and Custodial Questions, and the Place of Reform Institutions Therein, W.J. Stewart, Chairman, Mimeographed, Toronto, Government of Ontario, March 1954, p. 312.

independent variable, since it may be regarded as a rough index of "age at first delinquency", which has been found to be a recidivism correlate of considerable generality.[19] However, it was decided to employ juvenile conviction not as a continuous variable, but as a point variable, the presence or absence of conviction being regarded as the two points. With this definition of the variable, the agreement between the questionnaire and the psychological report was 93.9%.

Variables Obtained from the R.C.M.P. Transcripts.-

a) Adult convictions.- The second index of anti-social habit strength refers to the number of adult convictions (convictions for indictable offenses committed by the inmate after his sixteenth birthday, and for which he had been fingerprinted) prior to the individual's release from Brampton. This number was obtained by summing the number of convictions appearing on the transcript of the R.C.M.P. Fingerprint Section Record, Part I. In eleven cases (5% of the sample) there were more than ten previous adult convictions; they ranged from 11 to 31. These individuals were all given a score of ten so that extreme scores would not have undue influence on subsequent calculations.

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19 See Chapter I, p. 15.

No estimate of the validity or the reliability of the R.C.M.P. records was available. Friedland and Mohr[20] imply that the R.C.M.P. identification system yields the most accurate available information about the criminal convictions of adults. Little[21] estimates that 95% of convictions are contained in the records, most of the remainder being convictions taking place outside Canada.

b) Recidivism, the criterion.- Whether or not an inmate became a recidivist subsequent to his release from Brampton was established from the transcripts of the R.C.M.P. Fingerprint Section Record, Part I. The transcripts, obtained for each inmate who left Brampton during the fiscal years of 1955-56 and 1956-57, covered the period from the offender's release until February 1960 and 1961, respectively. In this study a person was considered a recidivist if subsequent to release from the institution there was an entry on his record indicating a conviction with a concomitant sentence for incarceration of at least one year's duration.

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20 M.L. Friedland and J.W. Mohr, "Canadian Criminal Statistics", Criminal Law Quarterly, Vol. 7, No. 2, August 1964, p. 184.

21 William T. Little, A Statistical Study and Survey of the Ontario Training Centre, Brampton, 1947-1959, report submitted to the Department of Reform Institutions, Province of Ontario, April 1959, p. 95; quoted by Blum, Op. cit., p. 43.

In the writer's earlier study, any individual convicted subsequent to release in the selected period was defined as a recidivist. This definition has the advantage of simplicity; however, it may not do justice to the behaviour the term represents, namely, persistent involvement in criminal activities, and may therefore be inadequate when used in a test of Franks' hypothesis. It was therefore considered desirable to attach a somewhat different definition to the criterion. On the basis of consultations with several members of the Department of Reform Institutions of Ontario, it was decided that the receipt of a sentence of one year or more subsequent to release from Brampton would be a more adequate index of recidivism. Defined this way, individuals guilty of occasional offenses, of the type which would fall into the category of misbehaviour rather than crime, were excluded from the criterion. There are, of course, cases of heavy sentences for single, serious crimes, committed for various reasons by individuals who are not habitual offenders. It is the opinion of the writer, however (and others in the field with whom this point was discussed are in agreement), that this is an infrequent phenomenon in the population studied. Any effect it might have on the definition of the criterion can safely be neglected.

(Implicit in the above remarks, of course, are the working hypotheses regarding the persistence of criminal

activity and severity of sentence, and regarding the similarity of sentencing practices in different courts.)

On the empirical level, the analysis of data did in fact indicate the existence of a bimodal distribution of sentences received by those who had further entanglements with the law subsequent to release. This provides additional justification for the distinction between occasional, petty law breakers and recidivists in the present sense (see Table II).

2. The Sample.

Selection.- The sampling pool consisted of 595 individuals -- all the inmates released on parole or at the expiration of their sentences during the period of April 1, 1955, to March 31, 1957 (two fiscal years). The criterion for inclusion in the sample was a threefold one: i) that comparable information on the nine variables dealt with in this study was available for each individual; ii) that the conviction, or at least one of the convictions if there were more than one, was for an offense against property; and iii) that subsequent to his release, there was either no entry for an indictable offense on the R.C.M.P. record or, if there was such an entry (or entries), at least one of them indicated a sentence to a penal institution of at least one year's duration.

Table II.-

Frequency Distribution of the Most Severe[a] Sentence Received by Each Recidivist within Five Years Subsequent to Discharge[b] from Brampton in 1955-57 (N = 290).

Length of sentence, months	Frequency
0[c] - 3	81
4 - 6	31
7 - 11	17
12 - 24 less one day	97
24 and over (penitentiary)	64

a "Severity" is understood to be measured by and be a direct function of the length of sentence received.

b Discharged for any reason.

c Suspended sentence, fine, probation -- not incarcerated as a result of the sentence.

As regards point (i), it was assumed, as is usual in studies of this type, that the representativeness of the sample is not compromised when cases for which insufficient information is available are excluded. Condition (ii) was imposed to provide a measure of control for the effect of "type of offense", which is not a variable studied here. The application of criterion (iii), and the consequent exclusion of "petty repeaters", was made to maximize the differences between recidivists and non-recidivists. To what extent this was effective has not been evaluated.

One hundred and thirteen individuals were excluded by the first criterion; twenty-five by the second, and one hundred and eighteen by the third. The total sample thus consisted of 339 individuals representing the 145 and 194 released during the fiscal years of 1955-56 and 1956-57, respectively.

Description.- A general description of the sample can be obtained from the 1955-56-57 selection standards presented below:[22]

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[22] Selection Standards for the Ontario Training Centre, Brampton, (no place), (no publisher), (no date).

Age:	16 to 24 years inclusive (i.e., up to their 25th birthday at time of admission to Brampton).
Intelligence:	A. An I.Q. of 85 or higher -- less than 85 are sent to Burtch. B. Inmates with an I.Q. of 80 to 84 may be sent to either Brampton or Burtch.
Sentence:	Generally speaking an inmate should have not less than three months of his sentence left to serve at time of screening.
Custodial Risk:	The inmate should be considered to be sufficiently stable to adjust to an open institution.
Criminal Record:	A. Usually the inmate who has already received training at Brampton on a previous conviction will not be considered for further training at that institution. B. At time of screening the inmate should not have had more than three previous adult convictions or have served a sentence of more than six months.
Mental Health:	An inmate should be rejected for training if there is evidence of: A. Psychosis C. Homosexuality B. Severe neurosis D. Arson.

For a more specific description of the sample (those released in 1955-57) and the two subsamples (those released in 1955-56 and 1956-57 taken separately), the reader is referred to Tables III and IV.

Table III.-

Description of the Sample by the Variables Assessed in the Study (N = 339).

Variable	Mean	S.D.	Range
Age	19.04	2.43	16-24
Proportion with recorded juvenile conviction	.307		
Adult convictions prior to release[a]	2.92	2.26	0-10
Last grade completed	8.67	1.42	4-15
Age left school	15.59	1.20	12-23
Restraint	4.66	1.92	0-10
Emotional stability	5.25	1.71	0-10
Otis I.Q.	98.58	8.90	80-120
Proportion of recidivists	.434		

[a] Scores over 10 contracted to 10 (N = 11).

Table IV.-

Description of the Subsamples by the Variables Assessed in the Study

Variable	1955-56 Subsample (N = 145)			1956-57 Subsample (N = 194)		
	Mean	S.D.	Range	Mean	S.D.	Range
Age	19.40	2.63	16-24	18.77	2.23	16-24
Proportion with recorded juvenile conviction	.334			.361		
Adult convictions prior to release[a]	3.03	2.44	0-10	2.89	2.11	0-10
Last grade completed	8.62	1.44	5-15	8.71	1.41	4-15
Age left school	15.43	1.07	12-18	15.71	1.28	13-23
Restraint	4.85	1.80	0-10	4.52	1.99	0-10
Emotional stability	5.32	1.69	0-10	5.19	1.71	0-10
Otis I.Q.	97.20	8.91	80-120	99.58	8.77	80-120
Proportion of recidivists	.365			.484		

a Scores over 10 contracted to 10 (1955-56, N = 6; 1956-57, N = 5).

3. Statistical Treatment of the Data.

Analysis.- To answer the questions posed at the end of Chapter I, a multiple linear regression analysis was undertaken. The technique consists essentially of three stages: i) product moment correlations between the variables are calculated; ii) from the obtained correlation matrix standard partial regression coefficients are derived; and iii) a multiple correlation coefficient is computed from the formula

$$\sum_{i=1}^{n} \beta_{X_i} r_{X_i X_0} = R^2$$

where X_1, X_2 ... X_n are the independent variables, X_0 is the criterion, β_{X_i} is the standard partial regression coefficient of X_i, $r_{X_i X_0}$ is the product moment correlation coefficient of X_0 with respect to X_i, and R is the multiple correlation coefficient.

The major portion of the analysis was carried out with the aid of an electronic computer.[23] The sample as a whole was first analyzed, and the process then repeated for

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23 Least Square Linear Regression Analysis for 1 Dependent and Up to 24 Independent Variables, File Number 06.01.601 B, Canada Department of Forestry, Programme Library for IBM 1620 Computer. Modified for a Bendix G 20 computer installed at Computing Devices of Canada Limited, Bells Corners, Ontario.

each of the two subsamples. Successive stages of the analysis are commented on below.

a) The correlation matrix.- Three kinds of coefficients appeared in the matrix. The correlation coefficient $r_{X_0X_2}$ relating the only two point variables, recidivism (X_0) and juvenile conviction (X_2), was a phi coefficient. For correlations between a point variable and a continuous variable point biserial coefficients were employed. The remaining values of r were "regular" Pearson r coefficients. Thus the relative weights of the coefficients were not the same as they would have been for a matrix of coefficients uniformly of the "regular" Pearson r type.[24] To correct this, two possible approaches were considered, but finally not made use of. The first was the conversion of all coefficients into tetrachoric coefficients. This course was not adopted, in view of a recommendation by Guilford[25] that it be done only for samples greater than three hundred, which would have precluded the analysis of the subsamples. To carry out the conversion for the main sample only was not thought to be worthwhile in view of the additional labour and expense.

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24 Quinn McNemar, Psychological Statistics, Third Edition, New York, Wiley, 1962, p. 188-196.

25 J.P. Guilford, Fundamental Statistics in Psychology and Education, Third Edition, New York, McGraw-Hill, 1956, p. 309.

(The conversion to tetrachoric coefficients would also involve certain controversial assumptions about the distribution of the various independent variables in the population.)

Secondly, the phi coefficient could have been converted either into a "regular" Pearson r or a point biserial coefficient. But this would have implied a normal distribution of juvenile delinquency (as defined here) in the population, which is an assumption that could not be made.

Thus, while the effect of the use of three different types of product moment correlation coefficients is probably a complex one, the reader is reminded that the findings of this study contain this particular uncontrolled variance.

The proper usage of the Pearson product moment correlation coefficient assumes that the relationship between two variables, which is represented by the coefficient, is a linear one. This assumption was checked by inspecting the scattergrams for each coefficient in each of the two subsample matrices. Scattergrams for the 1955-56 subsample contained fifty-eight tallies each, and for the 1956-57 subsample seventy-eight tallies each.[26] The individuals corresponding

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26 These values were arrived at by the combination of: a) the desire to have close to sixty individuals for each scattergram; b) the wish for a simple principle of selection; c) the utilization of graph paper (on which the individuals were listed) which happened to have subdivisions of five lines per square.

to these tallies varied with each scattergram, and were chosen by systematic variation of the order of selection from the list of individuals. There was no indication of curvilinear relationship on any of the scattergrams, thus the condition of linear regression between the variables was considered to have been met.

The standard error of each of the three types of coefficient was estimated by $1/\sqrt{N}$,[27] where N is the number of individuals in a given sample. The significance of the difference between corresponding $\hat{r}$'s[28] in the matrices for the two (independent) subsamples was determined by transforming the $\hat{r}$'s into Fisher's z values.[29] The standard error of the difference between two z's is given by[30]

$$\sqrt{1/(N_1 - 3) + 1/(N_2 - 3)}$$

where N_1 and N_2 are the sizes of the two subsamples, and the ratio of the difference to its standard error was evaluated by means of the t distribution. A significant difference

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27 McNemar, Op. cit., p. 137, 193, and 198.

28 Symbol used for a product moment correlation coefficient of any kind.

29 The transformation of the point biserial and phi coefficients into Fisher's z values was discussed with Professor Lawrence T. Dayhaw, Ph. D., Professor of Statistics, School of Psychology and Education, University of Ottawa, who thought that the transformation was justifiable.

30 McNemar, Op. cit., p. 140.

contributions of the independent variables,[32] since the early selection of a given variable would cause it to be credited with some degree of criterion variance which could also be ascribed to later independent variables with which it is correlated. Thus, criterion variance which arose from more than one independent variable was always ascribed to the variable selected earliest. Since restraint was among the last variables selected in the analysis of all three cohorts, it could be contended that the value of the β weight found for restraint did not credit this variable with the full measure of criterion variance which could be ascribed to it.

To deal with this point, the following procedure was employed:[33] First, a multiple correlation coefficient, R_1, was calculated, for which restraint was the first variable selected. Since it would have been difficult to modify the computer program so as to provide a choice of order of variable selection, this calculation had to be done on a desk machine. To reduce the labour to manageable proportions, only variables with significant individual correlations with

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32 "The fact must be faced that conclusions depend in part on the order in which tests are conducted. The tests are not orthogonal but are interdependent", George W. Snedecor, Statistical Methods: Applied to Experiments in Agriculture and Biology, Fifth Edition, Ames, Iowa, Iowa State College Press, 1956, p. 418.

33 Guilford, Op. cit., p. 400.

the criterion were included in addition to restraint. The calculation of R_1 was accomplished by the Doolittle method as presented by Guilford.[34] Next, a second multiple correlation coefficient, R_2, was computed by the same method, for the same independent variables, but without restraint. Finally, the comparison of R_1 and R_2 provided an evaluation of the importance of restraint as a predictor of the criterion: if it contributed anything at all to prediction when its relationship with other variables is taken into account, then R_1 had to be significantly greater than R_2. This procedure may be regarded as a second method for the evaluation of the importance of the independent variables, applied here to the variable restraint only.

A third means of evaluation is provided by the separate analysis of the two independent subsamples. (The writer is not aware of any technique whereby different β weights of the same sample can be evaluated with respect to each other.) It was thought that if one weight, say β_{X_1}, was found to be significant in both subsamples, while another, say β_{X_2}, was significant in one subsample only, then the contribution of X_1 may be regarded as more general, and hence, in this sense, more important, than the contribution of X_2. It will be noted that, of the three approaches mentioned

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[34] Ibid., p. 406-409.

above, this is the least reliable, since conclusions drawn from it are not based on statistical inference.

c) The multiple correlation coefficient.- This represents the maximum correlation to be expected between the dependent variable and a linearly additive combination of the independent variables. The null hypothesis with respect to this coefficient was tested by the following F ratio:[35]

$$F = \frac{R^2/m}{(1 - R^2)/(N - m - 1)}$$

where N is the number of individuals in the sample, m the number of the independent variables, and R the multiple correlation coefficient. The F table is entered with $n_1 = m$ and $n_2 = N - m - 1$.

The Choice of the Level of Significance.- The level of probability to be adopted for a finding to be called statistically significant may pose an involved question. Eysenck thinks that, since psychology works without "pure" variables, the choice of a low level of significance is unwranted. Statistical significance, he says, even when trivial for practical purposes, may be important from the

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35 McNemar, Op. cit., p. 283.

theoretical point of view.[36] Contrary to Eysenck, McNemar thinks that if the findings are to be used for theory and further hypotheses, "it does not seem unreasonable to require a higher level of significance than the .05 level",[37] the level frequently adopted by Eysenck and others working within his theoretical framework. In the present study, McNemar's suggestion was followed, so that P = .05, which corresponds to P = .025 for a one-tailed test, was adopted as the acceptable level of statistical significance at which predictions were considered to be verified. Thus, for statistical significance in this study, a statistic had to have the predicted sign, and the absolute value of its ratio to its standard error had to equal or exceed 1.96.

Statistical Hypotheses.- In concluding this chapter the questions raised at the end of the previous chapter are stated in the form of four (sets of) statistical hypotheses. The reader is reminded that the signs of the β coefficients in Hypotheses A and C are in the predicted directions, which is positive for age, juvenile conviction, and adult convictions, and negative for the remaining five independent variables.

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36 H.J. Eysenck, "Comments on a Test of the Personality-Satiation-Inhibition Theory", Psychological Reports, Vol. 5, No. 3, September 1959, p. 396.

37 McNemar, Op. cit., p. 64.

A. In a multiple linear regression analysis where age, juvenile conviction, adult convictions, last grade completed, age left school, restraint, emotional stability, and Otis I.Q. are the independent and recidivism the dependent variables, none of the β coefficients for the independent variables significantly differs from zero.

B. There is no significant difference between R_1 and R_2 where:

R_1 is the multiple correlation coefficient representing the relationship between recidivism, the criterion, and the linearly additive combination of restraint and those other independent variables which, when taken individually, have significant correlations with the criterion. R_1 is obtained in such a way that the relative contribution of restraint to the variance accounted for in the criterion is maximized;

R_2 is the same as R_1 with restraint omitted.

C. When the sample is subdivided into two subsamples, inmates released during the fiscal years of 1955-56 and 1956-57 respectively, and with all the eight independent variables considered, none of the β coefficients is significantly different from zero in both subsamples.

D. There is no significant correlation between the linearly additive combination of the eight independent variables and recidivism.

Having presented the experimental design of the study, the next chapter is concerned with the presentation and discussion of the findings.

CHAPTER III

FINDINGS AND DISCUSSION

In this chapter the findings of the study are presented and discussed. The discussion is organized around the three questions which the study has attempted to answer, and in its final section the application of general learning theory to the study of recidivism is evaluated in light of the present investigation. Suggestions for further research are made both explicitly and implicitly throughout the discussion. Certain of these suggestions deal with improvements in experimental design whereby some of the limitations of the present study may be avoided in future work.

1. Findings.

Comments on Certain Coefficients in the Correlation Matrices.- Before presenting the findings yielded by the testing of the hypotheses, three comments are made about the obtained correlation coefficients, which are to be found in Tables V and VI.

a) For the total sample (N = 339), <u>age</u>, <u>juvenile conviction</u>, and <u>adult convictions</u> were significantly correlated with the criterion in the predicted direction. Thus, these three variables in addition to <u>restraint</u> were used for testing Hypothesis 2. The corresponding correlation

Table V.-

Solution of the Multiple Correlation Problem to Test Hypotheses A and D for the Total Sample (N = 339). Part One: Correlation Matrix of Coefficients Obtained between Variables Assessed in the Study.[a]

Variable		X_0	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
Recidivism	X_0	--	-.2548	.2311	.1484	-.0831	-.0897	-.0638	-.0922	.0409
Age	X_1		--	-.2507	-.0387	.1714	.1176	.1174	.0615	-.0070
Juvenile conviction	X_2			--	.0510	-.0986	-.0354	-.0301	-.0441	-.0228
Adult convictions	X_3				--	.0014	-.0017	-.0107	-.0403	-.0566
Last grade completed	X_4					--	.5452	.1152	.1403	.4811
Age left school	X_5						--	.0659	-.0390	.2303
Restraint	X_6							--	.0579	.0583
Emotional stability	X_7								--	.1498
Otis I.Q.	X_8									--

[a] A coefficient of .1064 is required for significance at P = .05; .1401 at P = .01.

Table VI.-

Solution of the Multiple Correlation Problem to Test Hypothesis C. Part One: Matrix of Correlation Coefficients Obtained between Variables Assessed in the Study for the 1955-56 Subsample (Upper Figure, N = 145) and the 1956-57 Subsample (Lower Figure, N = 194) Respectively.[a]

Variable		X_0	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
Recidivism	X_0	--	-.1641	.2222	.1441	-.0686	-.1154	-.0424	-.0693	.0576
		--	-.3131	.2165	.1682	-.1014	-.0996	-.0618	-.1017	.0026
Age	X_1		--	-.1890	-.0253	.1546	.0492	.0909	.0995	.0865
			--	-.2799	-.0634	.2038	.2016	.1136	.0207	-.0592
Juvenile convictions	X_2			--	.0739	.0441	.0524	-.0369	-.0676	.0649
				--	.0449	-.2039	-.1104	-.0377	-.0209	-.1123
Adult convictions	X_3				--	.0698	.0981	.0938	-.1127	-.0749
					--	-.0619	-.0660	-.0987	.0181	-.0319
Last grade completed	X_4					--	.5643	.1815	.2294	.5694
						--	.5375	.0755	.0759	.4129
Age left school	X_5						--	-.0179	-.0186	.3180
							--	.1307	.0598	.1563
Restraint	X_6							--	.0359	.0393
								--	.0674	.0918

(Continued)

Table VI.-

(Continued)

Solution of the Multiple Correlation Problem to Test Hypothesis C.
Part One.

Variable		X_0	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8
Emotional stability	X_7								--	.1362
									--	.1714
Otis I.Q.	X_8									--
										--

a For N = 145, a coefficient of .1627 is required for significance at P = .05 and .2141 at P = .01. For N = 194 the corresponding values are .1407 and .1852, respectively.

coefficients for last grade completed, age left school, restraint, and emotional stability were in the predicted direction but failed to reach the values required for significance. However, these coefficients had the expected signs in both subsamples, which gives some support to the respective predictions. Only the nonsignificant Otis I.Q.-recidivism correlation was contrary to the predicted direction.

b) Inspection of the first row of Table VI shows that differences between corresponding independent variable-criterion correlation coefficients in the two subsamples were small. The greatest difference was .15 (for the age-recidivism relationship). The standard error was .11, so that the maximum t value was only 1.37. (Since all coefficients were low, only a negligible error was introduced when, for the purposes of this illustration, r was taken to be equal to z.) Thus, the differences between these two sets of coefficients were not significantly different from zero.

c) The reader's attention is directed to the restraint-adult convictions correlation coefficients in Table VI. This relationship could be considered as one whereby Franks' hypothesis could be tested in a postdictive sense. The difference between the two subsample coefficients was not significant and the coefficients were roughly of the same value, .10; however, they had opposing signs. This

shows that even in fairly comparable[1] samples the relationship of extraversion to criminal behaviour fluctuates considerably and suggests that obtained indices of the relationship should be evaluated cautiously; one of the restraint-adult convictions correlation coefficients, -.099, was in the predicted direction and approached significance at P = .05, one-tailed test. (A coefficient of -.118 was needed to reject the null hypothesis at this level of significance.)

Results Obtained by the Testing of the Hypotheses.- Data obtained by the solution of the multiple regression equation for the sample and each of the two subsamples, and which was required for the testing of the hypotheses, are presented in Tables VII and VIII.

a) An evaluation of the relative importance of restraint in predicting recidivism was carried out by means of testing Hypotheses A and B.

For the total sample, with the exception of Otis I.Q., the signs of the β coefficients were as predicted. The null hypothesis of no significant β coefficient was rejected for age, juvenile conviction, and adult convictions, and sustained for last grade completed, age left school, restraint, emotional

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1 Of the nine variables assessed in the study, there was a significant difference, at P = .05, between the two subsamples on Otis I.Q. and the proportions with scores on juvenile conviction and recidivism. There was no significant difference on any of the remaining five variables.

Table VII.-

Solution of the Multiple Correlation Problem to Test Hypotheses A and D. Part Two: β Coefficients, Standard Error of β Coefficients, Proportion of Criterion Variance Accounted For, and the Multiple Correlation Coefficient (N = 339).

Variable	β	$S.E_{\beta}$	Proportion of criterion variance accounted for
Age	-.1857[a]	.0544	.04731636
Juvenile conviction	.1344[b]	.0533	.01904496
Adult convictions	.1704[a]	.0517	.03937944
Last grade completed	-.0314	.0696	.00260934
Age left school	-.0611	.0615	.00548067
Restraint	-.0299	.0520	.00190762
Emotional stability	-.0732	.0524	.00674904
Otis I.Q.	.0930	.0595	.00380370
		R^2 =	.12719113
		R =	.3566[a]

a Significant at P = .001.
b Significant at P = .01.

Table VIII.-

Solution of the Multiple Correlation Problem to Test Hypothesis C. Part Two: β Coefficients, Standard Error of β Coefficients, Proportion of Criterion Variance Accounted For, and Multiple Correlation Coefficients[a] for the 1955-56 (Upper Figure, N = 145) and the 1956-57 (Lower Figure, N = 194) Subsamples, Respectively.

Variable	β	$S.E_{\beta}$	Proportion of criterion variance accounted for
Age	-.1154	.0834	.01893714
	-.2558[b]	.0736	.08009098
Juvenile conviction	.1857[c]	.0828	.04126254
	.1364	.0719	.02953060
Adult convictions	.1580	.0828	.02276760
	.1419[c]	.0685	.02329998
Last grade completed	-.0592	.1203	.00406112
	-.0084	.0895	.00085176
Age left school	-.1508	.0993	.01741386
	-.0166	.0818	.00165336
Restraint	-.0368	.0836	.00156032
	-.0111	.0695	.00068598
Emotional stability	-.0308	.0844	.00213444
	-.0991	.0691	.01007847
Otis I.Q.	.1547	.1013	.00891072
	.0031	.0747	.00000806
		R^2 =	.11704794
			.14619919
		R =	.3420[c]
			.3824[b]

a For consideration in connection with Hypothesis D.
b Significant at P = .01.
c Significant at P = .05.

stability, and 9th I.Q. The variables of the equation were selected in an order such that at each stage the variance accounted for in the criterion, recidivism, was at a maximum.

For the same sample, and with the contribution of restraint maximised, the square of the multiple correlation coefficient between restraint, age, juvenile conviction, adult convictions and recidivism was .1131. The square of the same coefficient evaluated without consideration of restraint was found to be .1142, i.e., virtually the same value.

Thus, neither of the two null hypotheses about the contribution of restraint to the prediction of recidivism could be rejected. In answer to Eysenck's question about the contribution of psychometric measures of reactive cortical inhibition to the prediction of criminal behaviour, it can be stated that the particular index of inhibition used in this study makes no contribution to the prediction of one type of criminal behaviour, i.e., recidivism.

b) Conclusions about the relative importance of the eight independent variables were drawn from the testing of Hypotheses A and B.

As stated above, the β coefficients for age, juvenile conviction and adult convictions, but not for the five remaining independent variables, were significantly different from zero. For age and adult convictions the coefficients were significant at $P = .001$; for juvenile conviction, at

P = .01. Considering these findings from the point of view of learning theory, it can be stated that i) various measures of habit strength predict recidivism, and ii) measures of both conditionability and exposure to prosocial conditioning have no predictive importance for the population under study.

Hypothesis C, that none of the independent variables have significant β coefficients in both subsamples, was sustained. Beta coefficients for juvenile conviction (at P = .05), and age (at P = .001) and adult convictions (at P = .01) were significant in the 1955-56 and 1956-57 subsamples, respectively. Thus, if importance is considered in terms of generality, this result suggests that there is no difference in the importance of the three different measures of habit strength as predictors of recidivism.

c) The importance of all independent variables combined was found to be small. Hypothesis D, that there is no significant correlation between the linearly additive combination of the independent variables and the criterion, was rejected; the obtained R of .3564 was significant at P = .001. But even though this P value is somewhat inflated due to the accumulation of chance components, the coefficient of alienation, $1 - R^2$, was equal to .8728. This means that 87% of the criterion variance was accounted for by factors other than the independent variables.

The coefficient of multiple correlation for the 1955-56 subgroup, R = .3420, and for the 1956-57 subgroup, R = .3824, was significant at P = .05 and P = .001, respectively. The writer is not familiar with any technique for the evaluation of the significance of the difference between two independent R's; the difference may reflect discrepancies between the composition of the groups, differences in the nature of the data, lack of stability of the phenomena studied, or a combination of such factors.

2. Discussion.

The Relationship between Extraversion and Recidivism.- Considering the whole continuum of extraversion-introversion, the relationship between positions on that continuum and recidivism predicted by Franks' theory was not confirmed by this study. The same result was obtained in the writer's previous study.[2] Certain criticisms of the research design, pointed out there, are equally applicable here.[3] For the most part, they have to do with the evaluation of the variable restraint. First, the utilization of C scores, due to the

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2 Frank J. Blum, An Investigation of the Relationship of a Measure of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Offenders, unpublished Master's thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1963, p. 47-49.

3 Ibid., p. 54-58.

unavailability of raw scores, meant that the range of restraint was restricted. This restriction tended to diminish both the correlation of the variable with the criterion and its test-retest reliability; the latter, in turn, contributed to a further reduction in the correlation between the variable and the criterion. Secondly, it was pointed out that Factor R of the Inventory of Factors STDCR, and Factor E of the Maudsley Personality Inventory, are probably more appropriate measures of reactive cortical inhibition than restraint of the Guilford-Zimmerman Temperament Survey. One could add a third point, namely, that questionnaires may, in general, provide inadequate measures of reactive cortical inhibition.[4]

Even leaving aside the difficulties of evaluation of the independent variable, the nomological network of Franks' theory remains a complex and controversial one. This is especially true of the phenomenon of conditioning, a key concept in Franks' theory, which has probably been the subject of more systematic study in experimental psychology than any other concept utilized by Franks. The problematical nature of the conditioning process has been pointed out earlier,[5]

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4 R.A. Willett, "Measures of Learning and Conditioning", Experiments in Personality, Vol. 2, H.J. Eysenck, Editor, London, Routledge, 1960, p. 167.

5 Blum, Op. cit., p. 61.

and was again discussed in two recently published studies. Ihsan Al-Issa[6] found that the acquisition of conditioned eye-blink responses was a function of the (experimentally manipulated) attitudes of the subject. Davidson et al.[7] found that conditionability depended on the particular responses required, and that there was no significant correlation between the acquisition of two types of conditioned responses. They question the existence of a general conditionability factor[8] which is implicit in Franks' theory.

Whatever the weaknesses of Franks' theory, the establishment of a relationship between personality characteristics and criminal behaviour presents a challenging problem. It appears to the writer, however, that in place of differential conditionability, other empirically established correlates of extraversion-introversion could prove to be more fruitful in criminological research. Correlates such as risk taking,[9]

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6 Ihsan Al-Issa, "The Effect of Attitudinal Factors on the Relationship between Conditioning and Personality", British Journal of Social and Clinical Psychology, Vol. 3, Part 2, June 1964, p. 113-119.

7 P.O. Davidson, R.W. Payne, and R.B. Sloane, "Introversion, Neuroticism and Conditioning", Journal of Abnormal and Social Psychology, Vol. 68, No. 2, February 1964, p. 136-143.

8 Ibid., p. 141.

9 Y. Rim, "Personality and Group Decisions Involving Risk", Psychological Record, Vol. 14, No. 1, January 1964, p. 42-45.

suggestivity and suggestibility,[10] participation in group activity,[11] vigilance,[12] and perhaps others have a certain immediate common-sense appeal which differential conditionability does not have. It is quite likely that under concentrated study these concepts will prove to be no less complex, and the findings pertaining to them no less variable, than those focusing on the conditioning process in humans. However, the transference from decisions about careers in the world of work[13] to decisions pertaining to careers in the world of crime would seem to have more face validity than Franks'[14] induction from eyeblink responses to the likelihood of being a law-abiding citizen. Eysenck may have been thinking of alternative explanations such as those put forward

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10 Idem.

11 Frederick Elkin, Gerald Halpern, and Anthony Cooper, "Leadership in a Student Mob", Canadian Journal of Psychology, Vol. 16, No. 3, September 1962, p. 201.

12 Gordon Claridge, "The Excitation-Inhibition Balance in Neurotics", Experiments in Personality, Vol. 2, H.J. Eysenck, Editor, London, Routledge, 1960, p. 151.

13 Nim, Op. cit.

14 Cyril M. Franks, "Recidivism, Psychopathy and Delinquency", British Journal of Delinquency, Vol. 6, No. 3, January 1956, p. 194-201.

above when he said, "Our theory may not be correct as it stands, but it is likely to contain certain features which will have to form part and parcel of any theory which may supercede it".[15]

The Relative Contribution of the Independent Variables to the "Explanation" of Recidivism.- A notable feature of the findings was that all three indices of habit strength contributed to the prediction of recidivism, while none of the other independent variables did so. This supports Bindra's observation that the factor of habit strength occupies a special place among the variables which determine the occurrence of a response and that "in general, the greater the habit strength the less the effect that variations in the other variables are likely to have on the response".[16] In the testing of the hypotheses employed in this study, no conclusion could be drawn regarding the relative weights of the prosocial (age) and the antisocial (juvenile conviction and adult convictions) indices of habit strength. It must be remembered, however, that age was probably the most reliable measure used in the study, while information pertaining to

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15 H.J. Eysenck, "Personality and Drug Effects", Experiments with Drugs: Studies in the Relation between Personality, Learning Theory and Drug Action, Oxford, Pergamon, 1963, p. 22-23.

16 Dalbir Bindra, Motivation: A Systematic Reinterpretation, New York, The Ronald Press, 1959, p. 294-295.

criminal behaviour is notoriously unreliable. As stated earlier in connection with restraint, lack of reliability in an independent variable tends to diminish its correlation with the criterion, and thus the results may be regarded as lending support to the view, widely held among law enforcement agencies, that "once a criminal, always a criminal."[17] Of course, the same results may also be considered as evidence for the notion, common among offenders, that one gets into difficulties with the law not because of what one has done, but because of one's criminal record.

It must also be noted that there was no correlation between juvenile conviction and adult convictions, even though both were taken as indices of antisocial habit strength, and both were found to contribute to the prediction of recidivism. This lends some support to Taylor's opinion that the parameters of juvenile and adult recidivism are different.[18]

With respect to the prosocial conditioning to which individuals were exposed, both the indices (last grade completed and age left school) correlated in the predicted

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17 Albert Watson, "Once a Criminal, Always a Criminal", Globe and Mail, 121st year, No. 35,811, September 21, 1964, p. 6, col. 5-8.

18 James Taylor, "Habitual Criminal", British Journal of Criminology, Vol. 1, No. 1, July 1960, p. 35; quoted by Blum, Op. cit., p. 5.

direction with the criterion, but not significantly. From the empirical point of view, this failure to reach significance was not entirely unexpected. The relationship of age and criminal history to recidivism has been established by studies on the Continent, in Britain, and in the United States, while the expectation of significant correlation with schooling was based on the Gluecks' studies of various United Stated populations, and E. Glueck pointed out that these findings may not be applicable outside the United States.[19] From the theoretical aspect, the nature of the concept "conditioning" may be the major problem. It is more elusive than "habit strength", and consequently more difficult to translate into empirical terms, and particularly into accessible and measurable empirical indices. This difficulty may be partly responsible for lack of criterion variance accounted for by the indices of prosocial conditioning.

The predictive value of the indices of conditionability was also found to be negligible. Of the three variables concerned, restraint has already been discussed, and the emotional stability-recidivism relationship is the topic of another dissertation.[20] Only the relationship of these two

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19 Eleanor Glueck, "Status of Glueck Prediction Studies", Journal of Criminal Law, Criminology and Police Science, Vol. 47, No. 1, May-June 1956, p. 22.

20 Raymond J. Parthum, research in progress, School of Psychology and Education, University of Ottawa, Ontario.

variables to antisocial habit strength is commented on here.

Thinking of the socialization process as a whole rather than only of the resocialization of the offender, one may question the appropriateness of evaluating the extraversion-recidivism relationship with the effect of pre-release antisocial behaviour controlled. The extravert may not benefit sufficiently from education, or re-education following conviction.[21] Deficiency in education, and education here is understood to mean the process of acquiring and internalizing prosocial moral values, may manifest itself in antisocial behaviour.[22] Thus, by controlling for the effect of convictions prior to release, either juvenile or adult or both, one is actually eliminating effects which may, in part, be functions of reactive inhibition.

The lack of significant correlation between *restraint* and *juvenile conviction* or *adult convictions* could be explained as being due to the singular or joint effect of instability of the questionnaire measure of extraversion and "functional autonomy"[23] of antisocial behaviour. It was

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21 Franks, *Op. cit.*, p. 198.

22 *Idem.*

23 For the consideration of Allport's "functional autonomy of motives" as "functional autonomy of certain activities" see Bindra, *Op. cit.*, p. 295-310. An early discussion of the "functional autonomy of motives" can be found in Gordon W. Allport, *Personality: A Psychological Interpretation*, New York, Holt, 1937, p. 190-207.

noted that the test-retest reliability of restraint was .576, even when little over a month elapsed between test and retest. It is not unreasonable to assume that, if the two tests were separated by several years, this reliability would be considerably lower, to the point where the correlation between restraint and previous offenses might be reduced to zero. With respect to the notion of functional autonomy, one could argue that while there may have been some relationship between extraversion and the first few antisocial activities in a criminal career, in time these activities may have become self-perpetuating, independent of the conditions that initiated them. Speculations such as these tend to support Eysenck's claim that the relationship between extraversion and criminal behaviour is not a simple one.[24]

Thus, while extraversion may have contributed to the initiation of self-perpetuating antisocial behaviour, the lack of emotional stability may be partly responsible for its maintenance. According to both Spence[25] and Eysenck,[26] anxiety and neuroticism-emotionality may be regarded as

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24 H.J. Eysenck, "Symposium: The Development of Moral Values in Children. VII. The Contribution of Learning Theory", British Journal of Educational Psychology, Vol. 29, No. 1, July 1959, p. 19.

25 K.W. Spence, Behaviour Theory and Conditioning, New Haven, Yale University Press, 1956, (no page); quoted by Eysenck, Ibid., p. 17.

26 Idem.

indices of the general arousal-drive level of the organism, which facilitates the occurrence of habitual responses. One such habitual response could be that of antisocial behaviour, and consequently the interpretation of emotional stability as a "drive" offers an additional and/or alternative view of the emotional stability-recidivism relationship. This interpretation has the advantage of bypassing the controversial problem of "treatment" in a correctional setting, a topic which is essential for the consideration of emotional stability as an index of conditionability.

Only in the case of Otis I.Q., the third such index used in the study, was the variable's correlation with recidivism not in the predicted direction. No interpretation of this reversal is put forward here, since it was noted earlier that the intelligence-recidivism relationship was in any case controversial and that previous findings were conflicting.[27] Inability to reject the null hypothesis in respect of this relationship might have been due to the nature of the technique used to assess intelligence. The Otis test, with its ten interruptions between various sections, may not allow for the building up of reactive inhibition sufficient to influence the final score.

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27 See Chapter I, p. 17.

Finally, it is interesting to note, in this connection, that Eysenck postulates relationships between intelligence test scores and reactive inhibition,[28] and between reactive inhibition and criminality.[29] But he also says that it is unlikely that there is any relationship between intelligence and criminality, except that the more intelligent criminal is less likely to get caught.[30]

The Combined Contribution of the Independent Variables.- The linearly additive combination of the eight independent variables of the experiment failed to account for roughly nine-tenths of the criterion variance. How this proportion could possibly be reduced, or, expressing the same statement negatively, what some of the inadequacies of the present design were, is the subject matter of this section of the discussion.

a) The need for interaction measures.- The multiple regression analysis was employed here partly because it was

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28 H.J. Eysenck, The Dynamics of Anxiety and Hysteria: An Experimental Application of Modern Learning Theory to Psychiatry, New York, Praeger, 1957, p. 131-133.

29 ———, "Personality and Drug Effects", Experiments with Drugs: Studies in the Relation between Personality, Learning Theory and Drug Action, Oxford, Pergamon, 1963, p. 14-16.

30 ———, "Symposium: The Development of Moral Values in Children. VII. The Contribution of Learning Theory", British Journal of Educational Psychology, Vol. 29, No. 1, July 1959, p. 13.

thought that this technique allowed for the relatively straightforward interpretation of the findings. It must be recognized, however, that this method of obtaining relative weights does not consider the effect that may be due to the interaction among the various independent variables. In this sense, it may underestimate the relationship between a combination of predictors and the criterion and, for that matter, the importance of each independent variable for prediction. To take this interaction into account would require appropriate techniques, such as analysis of variance. Undoubtedly, the interpretation of some of the higher-order interactions may be quite involved.

b) The need for increased reliability, validity, and comparability of the measures used.- It is suggested that the reliability, validity, and comparability of the information used in the present study could possibly be appreciably enhanced if such information were originally collected for research purposes and/or if some additional work were undertaken. Methods for improving the reliability estimates of the data can be illustrated by reference to the method used to estimate the stability of the psychometric variables. The establishment of experimental reliability of all variables is, of course, most desirable. If this is not possible, it is suggested that the reliability of all variables be established in the same group, rather than a number of

different groups, as in the present study. It was not considered rewarding, in this study, to speculate on the differences between the stabilities of the three indices of conditionability, which might have been due to such factors as conditions of testing, range of scores, sampling characteristics, and the intrinsic stability of the variables themselves.

The question of inadvertent inaccuracies and conscious falsifications arises prominently for information pertaining to schooling and previous offenses. More energetic and intensive attempts at validation of the inmates' responses could reduce unwitting misinformation. With respect to purposive misrepresentation, it has been the writer's experience that when confidentiality of the given information is reasonably assured, information differing from that in the institutional documents can be obtained from the inmate. Such information, possibly more valid, could be obtained by the resident psychologist after, say, three months' acquaintanceship with the inmate. During such a period, the latter could evaluate the general trustworthiness of the psychologist and the possible use to which the revealed information might be put.

The choice of at least a one-year sentence subsequent to release as the criterion of recidivism clearly brings to attention the need for comparability of the information upon

which the inmates' scores on the variables are based. The decision to use this criterion in further studies should probably be deferred until the available data for those who had conviction subsequent to release, but received less severe sentences, are analyzed. But if such a criterion is to be used again, it would be desirable to weigh the sentences given by the various magistrates for similar offenses in light of their respective sentencing practices, thus making the inmates' recidivism scores more comparable. Recent interest in the problem of sentencing[31] offers hope that, on the one hand, variability in sentencing practices from court to court will tend to be reduced, and, on the other hand, that the rather formidable methodological procedure suggested above would meet with official support.

c) The need for additional parameters.- It will be recalled that the independent variables of this study, thought to be relevant to the extraversion-recidivism relationship, were selected from those characteristics of the offender that were known at the time of institutionalisation. Those who believe that the experience of incarceration influences the offender's conduct after release, and this belief is not held

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31 See, for example, Stuart Jaffary, Sentencing of Adults in Canada, Toronto, University of Toronto, 1963, p. ix-122; The National Conference of Judges on Sentencing, held at the University of Toronto, May 28-30, 1964.

by everyone in the correctional field, may find support in the fact that the independent variables of this study accounted for little more than one-tenth of the criterion variance. They would probably claim that considerably more "explained" variance could be added to this value if variables pertaining to the time spent in a correctional setting were to be taken into consideration. It is the opinion of this writer (who shares this belief) that the concepts, hypotheses, and findings which constitute various theories of learning would be useful for the systematic exploration of these possible intra-institutional parameters of recidivism.

As an illustration of the application of learning theory to the exploration of this set of predictors, some aspects of the notion "correctional treatment" are considered below.

One of the major aims of correctional treatment is to instil in the inmate prosocial attitudes and conduct. The principals entrusted with this task at Brampton are the chief dormitory supervisors, who spend more time with the inmates than any other members of the staff.

The design of this study has been such that differences in treatment to which individual inmates were exposed were not taken into account. That differences do exist is supported by the fact that the allocation of the inmates to

various dormitories is not random.[32] Now, the chief supervisors could probably be arranged on a continuum with respect to the quantity of prosocial activity to which inmates under their respective supervision are exposed. It would not be unreasonable to predict that supervisors occupying the middle of the continuum, and "with everything else being equal", would have less future recidivists under their tutelage than supervisors falling into either end of the continuum. This would be so because the supervisor from the lower end of the scale may not have offered a sufficient number of prosocial conditioning "trials" to cause the inmates to acquire the desired response, while those from the opposite end may have reached the point where words cease to have meaning for the inmate.[33] However, the effectiveness of prosocial conditioning is probably a function of not only the amount the offender is exposed to, but also of the latter's views of it. There is evidence that offenders differ in their attitudes toward

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32 H.M. Hooper, S. Keane, et al., "The Brampton Story", Canadian Journal of Corrections, Vol. 4, No. 4, October 1962, p. 227.

33 Wallace E. Lambert and Leon A. Jacobovits, "Verbal Satiation and Changes in the Intensity of Meaning", Journal of Experimental Psychology, Vol. 6, No. 6, December 1960, p. 376-383.

treatment, both at admission[34] and at release[35] from penal institutions. There is also evidence that the acquisition of a conditioned response is a function of the subject's attitude toward the conditioning process.[36]

It should further be noted that treatment, understood as the acquisition and maintenance of prosocial conditioned responses, does not end with release, since

> Reinforcement continues to be important, of course, long after an organism has learned how to do something, long after it has acquired behaviour. They are necessary to maintain the behaviour in strength.[37]

Thus, the ability to formulate and measure variables pertaining to the amount of prosocial conditioning the inmate has been exposed to while incarcerated, his attitudes toward this exposure, and the type of social context, with respect to prosocial values, he expects to live in after release, may add promising parameters to the study of recidivism. These

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34 Frank J. Blum, "Views of Inmates on Arrival to an Open Correctional Institution", unpublished manuscript, 1962.

35 Raymond J. Corsini and Kenwood Bartleme, "Penology and the Attitudes of Prisoners", British Journal of Delinquency, Vol. 4, No. 1, July 1953, p. 55-58.

36 Ihsan Al-Issa, Op. cit.

37 B.F. Skinner, "The Science of Learning and the Art of Teaching", Teaching Machine and Programmed Learning: A Sourcebook, A.A. Lumsdaine and Robert Glaser, Editors, Washington, Department of Audio-Visual Instruction, National Education Association, 1960, p. 100.

parameters could certainly be selected on the basis of plain common sense. It is thought, however, that learning theory on the whole provides a more systematic and comprehensive approach.

Closely linked to the prosocial exposure aspects of treatment is the frequent violation of institutional regulations by the inmates. Such violations can be considered to fall into the antisocial behaviour category, the extinguishing of which is also a major aim of correctional treatment. One can think of at least two factors, neither of which is easy to measure, that reinforce the prevalence and persistence of such behaviour, which in turn both reduces the effectiveness of prosocial conditioning by reciprocal inhibition, and strengthens the antisocial behaviour habit.

One of these two factors is the approval given by fellow inmates to contravention of institutional regulations. This approval, a manifestation of the prison's "contraculture",[38] may simultaneously be accompanied by staff disapproval. The inmate's position with respect to the differential reinforcement value of these two often conflicting sources of approval may also be considered as influencing the effectiveness of

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38 For the term "contraculture", the normative system containing as a primary element a theme of conflict with the values of the total society, see J. Milton Yinger, "Contraculture and Subculture", American Sociological Review, Vol. 25, No. 5, October 1960, p. 626-635.

treatment, and hence provide a further parameter of recidivism. This illustration also points to the probably special importance of social learning theory,[39] a branch of general learning theory, to the study of the offender and the offense in a psychosocial content.

Conditioned inhibition, a concept used in the Hull-Eysenck framework,[40] gives rise to a second factor reinforcing institutional antisocial behaviour. The applicability of this concept to correctional treatment is less obvious than the relevance of the concepts and principles previously illustrated, and it is based on the following line of reasoning. Incarceration in a correctional institution can be looked upon as a situation where mass practice of legal behaviour is imposed. Mass practice generates reactive inhibition which after a point becomes a drive, the reduction of which is rewarding. This drive dissipates with time, provided the further accumulation of reactive inhibition due to legal behaviour is prevented. Illegal behaviour, by being an interruption of legal behaviour, provides the "rest"

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39 For example, see Julian B. Rotter, Social Learning and Clinical Psychology, New York, Prentice Hall, 1954, xvi-466 p.

40 For consideration of the concept of "conditioned inhibition", see H.J. Eysenck, "Reminiscence, Drive and Personality-Revision and Extension of a Theory", British Journal of Social and Clinical Psychology, Vol. 1, Part 2, June 1962, p. 129.

during which reactive inhibition can dissipate, and consequently, by association with drive reduction, such behaviour is reinforced and its further occurrence enhanced both before and after release.

As already mentioned, differential reinforcement value and conditioned inhibition, two parameters of recidivism, are not readily measurable. However, although a concept like conditioned inhibition may not, at the present time, lend itself to adequate quantitative expression, an awareness of its role in the study of recidivism may be valuable.

The Utility of Learning Theory in the Study of Recidivism.- To conclude the discussion, it seems appropriate to remark, under one heading, on the applicability of learning theory to the study of recidivism, as it has come to light in the present investigation. The meaning of the word "theory", and its role, is disputed in the field of experimental psychology.[41] It is unlikely, however, that there would be disagreement on the following three interpenetrating functions in terms of which the theory may be considered.

The first such function is the organization of conceptually independent or only broadly connected findings. Glueck,[42] in discussing the various empirically-found

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41 Benton J. Underwood, Psychological Research, New York, Appleton, 1957, p. 176-177.

42 Glueck, <u>Op. cit.</u>, p. 29.

correlates of recidivism, explicitly asks for such organization. A major aim under this heading is to keep the number of empirical phenomena requiring separate explanation to a minimum.[43] This goal has been accomplished here by grouping the eight independent variables into three conceptual categories.

The second function of the theory is to bring new relations to light. Judged by this criterion, the success of the theory in the present study was slight. Significant correlations of recidivism with <u>age left school</u> and <u>emotional stability</u> were predicted on the basis of learning theory, but could not be supported. But the fact that these correlations were in the predicted direction in two independent samples may be an incentive for the further exploration of the hypotheses.

The third function is to aid the investigator in fruitful observation and analysis. This, as illustrated by the analysis of correctional treatment, may at times be in conflict with the desire for simplicity, implicit in the first function. Nevertheless, this third function of learning theory may be of most immediate use in the study of recidivism, in that it provides a framework for broad, systematic and continuous research.

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43 Underwood, <u>Op. cit.</u>, p. 180.

SUMMARY AND CONCLUSIONS

In a multiple correlation problem with eight independent variables and recidivism as the criterion the hypothesis of no significant β coefficient was rejected for age, juvenile conviction and adult convictions, the indices of prosocial and antisocial habit strength respectively. The hypothesis was upheld for last grade completed and age left school, two indices of prosocial conditioning the inmate was exposed to, and also for restraint, emotional stability and Otis I.Q., three indices of conditionability.

The contribution of restraint, which was considered as a psychometric measure of reactive cortical inhibition, was also evaluated separately in such a way that its possible contribution to prediction was maximized. This second method of analysis also indicated that restraint made no significant contribution: the square of the multiple correlation coefficient between restraint, age, juvenile conviction, adult convictions and recidivism was virtually identical to the same coefficient calculated without consideration of restraint.

Taking generality of the predictors as an aspect of their importance, the hypothesis that none of the eight independent variables had significant β coefficients in two independent subsamples was sustained. These two subsamples

were obtained by the subdivision of the sample into two groups according to the respective release dates of the inmates.

Finally, the hypothesis of no significant multiple correlation between recidivism and the linearly additive combination of the eight independent variables was rejected at a high level of significance. Less than 13% of the criterion variance, however, was accounted for by the independent variables. The multiple correlation coefficients obtained by separate analysis of the two subsamples were also significant, and the predictors accounted for roughly 12% and 15% of the variance respectively.

It has been suggested that the study of the relationship between a psychometric index of conditionability and recidivism may not be sufficiently rewarding at present. From the learning theory point of view, it is possible that the obtained relative predictive weight of habit strength over exposure to conditioning, and conditionability may, in part, be due to the greater difficulty of finding appropriate indices for the latter two concepts. But even with better indices it seems likely that without the introduction of mediational variables, the inmate's own definition of his situation, the understanding of the phenomenon of recidivism will remain limited. Finally, it is thought that to evaluate the contribution of various independent variables to the prediction of recidivism, a method of analysis should also be

attempted whereby the effect of the interaction between the predictors could also be taken into account.

In the writer's earlier study,[1] eight specific research projects were suggested to explore the extraversion-recidivism relationship. These suggestions still apply; the present study represented the implementation of one of them. Two major suggestions for further research emerge specifically from this study: Firstly, it would seem worthwhile for research with offenders to explore in addition to conditionability other empirically found characteristics of the extravert. Secondly, to increase the understanding and predictability of recidivism, it is suggested that variables pertaining to intra- and post-institutionalization be selected and investigated. This selection, it is thought, would be aided by the systematic application of various learning theories to the problem of recidivism.

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1 Frank J. Blum, An Investigation of the Relationship of a Measure of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Offenders, unpublished Master's thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1963, p. 65-67.

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Al-Issa, Ihsan, "The Effect of Attitudinal Factors on the Relationship between Conditioning and Personality", British Journal of Social and Clinical Psychology, Vol. 3, Part 2, June 1964, p. 113-119.

Finds that the acquiring and extinguishing of some conditioned responses is a function of the subject's attitude. By implication he thus supports Franks' remark that the extraversion-conditionability-recidivism theory, in its present form, represents a considerable oversimplification of a complex problem.

Ball, John C., Alan Ross and Alice Simpson, "Incidence and Estimated Prevalence of Recorded Delinquency in a Metropolitan Area", American Sociological Review, Vol. 29, No. 1, February 1964, p. 90-93.

Using a variety of sources the authors present various estimates of delinquency rates in the United States. They point out that not withstanding the several independent sources the general relationship between the commission of an offense and its official recording is not yet known. Since in this thesis three of the nine variables used were based on recorded unlawful behaviour, the authors' statement about the problematic nature of such data represents one reason for the cautious interpretation of the findings of the present study.

Bartholomew, Allen A., "Extraversion-Introversion and Neuroticism in First Offenders and Recidivists", British Journal of Delinquency, Vol. 10, No. 2, October 1959, p. 192-201.

In a careful study using a comparative design the author found recidivists to be significantly more extraverted than first offenders. The cross-validation of this finding with a predictive design was the specific objective of Blum's 1963 study which, in turn, had been the initiator of the present project.

Bindra, Dalbir, Motivation: A Systematic Reinterpretation, New York, The Ronald Press, 1959, v-301 p.

In this well-written and, in its approach, somewhat oversimplified monograph, the author provides a "systematic presentation of the variety of experimental findings emerging from recent research in the area of psychology labelled motivation". He notes the special importance of "habit strength" which was also found in the present study. He

also stresses the concept of the "functional theory of behaviour", a notion that was used in the discussion of the lack of correlation between extraversion, and juvenile and adult convictions respectively.

Blum, Frank J., An Investigation of the Relationship of a Measure of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Offenders, unpublished Master's thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1963, ix-84 p.

Franks' extraversion-recidivism hypothesis is tested by a predictive design. It is suggested that the evaluation of the hypothesis be deferred until a study controlling for some of the "confounding" variables is undertaken. The present study represents such an attempt.

Claridge, Gordon, "The Excitation-Inhibition Balance in Neurotics", Experiments in Personality, Vol. 2, H.J. Eysenck, Editor, London, Routledge, 1960, p. 107-154.

In a paper which by the author's admission is more pertinent to personality theory than psychopharmacology, the frequently found empirical non-independence of the personality dimensions extraversion-introversion and neuroticism is accounted for by a theoretical and empirical analysis of the link between arousal theory and Eysenck's conception of cortical excitation-inhibition. The significant relationship between sedation threshold, an index of excitation-inhibition and auditory vigilance was one of the findings. This writer had suggested that "vigilance", in addition to "conditionability", be explored in connection with the extraversion-criminality relationship.

Corsini, Raymond J., and Kenwood Bartlema, "Penology and the Attitudes of Prisoners", British Journal of Delinquency, Vol. 4, No. 1, July 1953, p. 55-58.

Based on an attitude survey made on prisoners released from two custodial institutions, Corsini reports the hardly surprising finding that prisoner's participation in, and benefit derived from correctional treatment was a function of the offender's attitude toward such treatment. Both Corsini and Al-Issa point toward a variable not part of Franks' formulation of the theory, namely the role of mediational variables in the acquirement of new responses.

Davidson, P.O., R.W. Payne and R.B. Sloane, "Introversion, Neuroticism and Conditioning", Journal of Abnormal and Social Psychology, Vol. 68, No. 2, February 1964, p. 136-143.

By finding no significant correlations among conditionability on various tasks the authors question the existence of

a general "conditionability" factor. The existence of such a factor is implicit in the derivation of Franks' theory.

Elkin, Frederick, Gerald Halpern and Anthony Cooper, "Leadership in a Student Mob", Canadian Journal of Psychology, Vol. 16, No. 3, September 1962, p. 199-201.

In studying interaction among participants in a mob, the authors find that the extravert gets easily involved. This finding suggests one of the several interpretations of the extraversion-recidivism relationship as an alternative to Franks' formulation.

Eysenck, H.J., The Dynamics of Anxiety and Hysteria; An Experimental Application of Modern Learning Theory to Psychiatry, New York, Praeger, 1957, xiv-311 p.

Eysenck passes from nosology to etiology in this, probably the most controversial, of his many monographs. The specific relevance of this book for this dissertation lay in the suggestion that scores on some intelligence tests may be considered to be influenced by the accumulation of reactive cortical inhibition.

————, "Symposium: The Development of Moral Values in Children. VII. The Contribution of Learning Theory", British Journal of Educational Psychology, Vol. 29, No. 1, July 1959, p. 11-21.

In a sense an antidote to Franks' 1956 article. By using the same learning theory framework Eysenck claims only a modest explanatory value for the theory, and points out that the extraversion-criminality relationship is definitely not a simple one. He also suggests the "drive" interpretation of the personality dimension neuroticism, an interpretation that was thought to have had received some limited support in this study.

————, "Epilogue: The Place of Theory in Psychology", Experiments in Personality, Vol. 2, H.J. Eysenck, Editor, London, Routledge, 1960, p. 303-315.

In a general review of the state of his theory of personality the author claims that some deductions that had been made from his theory about the relationship of certain personality dimensions to the socialisation process in general and criminality in particular were inappropriate because variables relevant to this relationship had not been taken into account. He also points out that conditionability may not by any means be the most important predictor of criminality. In this study an attempt had been made to control the effects of some recidivism relevant variables, and evaluate their importance.

———, "Reminiscence, Drive and Personality- Revision and Extension of a Theory", British Journal of Social and Clinical Psychology, Vol. 1, Part 2, June 1962, p. 127-140.

In presenting some modifications of his theory Eysenck succinctly and in one place describes most of the learning theory concepts employed in his various publications. One such concept, conditioned inhibition, was applied by this author to the phenomenon of recidivism as an illustration that learning theory concepts other than those employed in the present study are available and potentially useful for the analysis of unlawful behaviour.

———, "Personality and Drug Effects", Experiments with Drugs: Studies in the Relation between Personality, Learning Theory and Drug Action, H.J. Eysenck, Editor, Oxford, Pergamon, 1963, p. 1-24.

With specific reference to drugs the author presents a review of the then current status of Eysenck's general behaviour theory. In connection with reactive inhibition-criminality he suggests that while specific formulations of the theory might change, the relationship is nevertheless likely to provide a basis for fruitful theorising. Retaining the basic extraversion-recidivism norms of Franks' theory, some additional and/or alternative interpretations were made in this thesis.

Fitch, J.H., "Two Personality Variables and Their Distribution in a Criminal Population", British Journal of Social and Clinical Psychology, Vol. 1, Part 3, October 1962, p. 161-167.

Reports, without any discussion, some correlates of extraversion and neuroticism for various groups of British prisoners. With respect to extraversion-recidivism the findings do not support Bartholomew's; however, Fitch gives so little information on the nature of his sample that no meaningful comparison could be made.

Franks, Cyril M., "Recidivism, Psychopathy and Delinquency", British Journal of Delinquency, Vol. 6, No. 3, January 1956, p. 192-201.

Initial presentation of the extraversion-recidivism hypothesis the testing of which was the major objective of the present study. The author acknowledges that his hypothesis may be an oversimplification of a complex problem. A short review of the intelligence-recidivism relationship, also considered in this thesis, opens the paper.

———, "Conditioning and Abnormal Behaviour", Handbook of Abnormal Psychology, An Experimental Approach, H.J. Eysenck, Editor, New York, Basic Books, 1961, p. 457-487.

The extraversion-recidivism hypothesis is restated as a part of a broader framework relating conditioning and abnormal behaviour. Several of the studies considered suggest some of the complexities inherent in the hypothesis.

Friedland, M.L. and J.W. Mohr, "Canadian Criminal Statistics", Criminal Law Quarterly, Vol. 7, No. 2, August 1964, p. 170-186.

A recent review of some of the problems inherent in criminological statistics with specific consideration of the status of the problem in Canada. Suggest that the R.C.M.P. identification system, the source for two of the experimental variables of this thesis, yields the most accurate available information on adult convictions.

Glueck, Eleanor, "Status of Glueck Prediction Studies", Journal of Criminal Law, Criminology and Police Science, Vol. 47, No. 1, May-June 1956, p. 15-32.

The findings of the various follow-up studies for which the Glueck husband-wife team has been responsible are reported. Three of the five predictors of recidivism reported for a comparable group were used in the present study. In concluding her presentation the author asks for attempts at explanation of the empirically found correlates of recidivism. In this study such an attempt was made by the application of learning theory to the phenomenon of recidivism.

Hooper, H.M., S. Keane, A.S. Agar, R. Brayshaw, V.C. Gunn, F. Blum, C.J. Warden, W. Robertson, T.J.B. Anderson, "The Brampton Story", Canadian Journal of Corrections, Vol. 4, No. 4, October 1962, p. 221-246.

The most recent and comprehensive description of the Ontario Training Centre, Brampton. In places it is probably somewhat favourably slanted.

Lambert, Wallace E. and Leon A. Jacobovits, "Verbal Satiation and Changes in the Intensity of Meaning", Journal of Experimental Psychology, Vol. 6, No. 6, December 1960, p. 376-383.

Using Osgood's semantic differential technique the authors find that by frequent repetition words tend to become meaningless. By relating this finding to correctional treatment procedures an uncontrolled parameter in Franks' extraversion-recidivism hypothesis has been suggested.

Little, Allan, "Professor Eysenck's Theory of Crime: An Empirical Test on Adolescent Offenders", British Journal of Criminology, Vol. 4, No. 2, October 1963, p. 152-163.
In a study inadequate both in its hypotheses and designs, the author fails to support predictions allegedly derived from Eysenck's extraversion-socialization theory. In his comments on the article Eysenck suggests that rather than thinking of "Eysenck's general theory of criminality", hypotheses derived from his theory be applied and evaluated with respect to specific groups within the criminal population. The present study represents such a specific application.

Little, William T., A Statistical Study and Survey of the Ontario Training Centre, Brampton, 1947-1959, report submitted to the Department of Reform Institutions, Province of Ontario, April 1959, 105 p.
Presents some descriptive information on the Ontario Training Centre, Brampton. A complement to the article by Hooper et al. Offers an estimate of the proportion of convicted offenders whose convictions are recorded by the R.C.M.P., thus contributing to the description of one of the sources of data used in this study.

McNemar, Quinn, Psychological Statistics, Third Edition, New York, Wiley, 1962, vi-451 p.
A textbook by a recognised authority in the field. His suggestion about the advisability of higher than .05 level of significance when findings are to be used for further theorizing and research led to the adoption of the level of significance employed in the present study.

Rim, Y., "Personality and Group Decisions Involving Risk", Psychological Record, Vol. 14, No. 1, January 1964, p. 37-45.
Relates personality characteristics to imaginary risk taking situations in small groups. His finding about the extravert's leadership characteristics and liking for risk taking has been suggested as a possible starting point for the formulation of an alternative interpretation of the extraversion-recidivism relationship.

Sellin, Thorsten, "Recidivism and Maturation", NPPA Journal, Vol. 4, No. 3, July 1958, p. 241-250.
Reviews several North American and European follow-up studies with respect to age, criminal history, and recidivism. Three of the reported predictors of recidivism were used in the present study.

Senecdor, George W., Statistical Methods: Applied to Experiments in Agriculture and Biology, Fifth Edition, Ames, Iowa, Iowa State College Press, 1956, vi-467 p.

A textbook by a prominent statistician. Unlike the popular texts of Guilford and McNemar, he explicitly indicates the importance of the order of selection of the variables in the solution of a multiple correlation problem.

Short, James F., Ray A. Tennyson and Kenneth I. Howard, "Behaviour Dimensions of Gang Delinquency", American Sociological Review, Vol. 28, No. 3, June 1963, p. 411-428.

By factor analysis of field workers' reports on the unlawful behaviour of juveniles the authors give empirical support to the multidimensionality of delinquent behaviour. However, they suggest that for long range research it is the possibly unidimensional official statistics that are likely to remain the most important criterion of delinquent behaviour. In this study data was obtained from such "official" information.

Siegman, Aron Wolfe, "A Cross Cultural Investigation of the Relationship between Introversion-Extraversion, Social Attitudes and Antisocial Behaviour", British Journal of Social and Clinical Psychology, Vol. 2, Part 1, October 1963, p. 196-209.

Using post-secondary school male and female subjects the author related extraversion scores on the Maudsley Personality Inventory to self-reported social attitudes (in Israel) and antisocial behaviour (in the United States). With respect to antisocial behaviour the results were contradictory; the obtained significant correlations confirmed the predictions for men but were contrary to prediction for women. The author presents a thoughtful discussion of Eysenck's reactive inhibition-extraversion-socialization hypothesis, and offers an alternative interpretation for the findings of his study.

Skinner, B.F., "The Science of Learning and the Art of Teaching", Teaching Machine and Programmed Learning: A Sourcebook, A.A. Lumsdaine and Robert Glaser, Editors, Washington, Department of Audio-Visual Instruction, National Education Association, 1960, p. 99-117.

Skinner, in general terms, considers the applicability of learning theory to the principles of teaching. By implication he suggests the need for post-release parameters for the extraversion-recidivism equation.

Sutherland, Edwin H., Principles of Criminology, Fourth Edition, Chicago, Lippincott, 1947, vi-643 p.

In this textbook by the well-known North American criminologist, the unreliability of criminological statistics is frequently drawn to the reader's attention. However, the author suggests that information pertaining to chronological age usually represents an exception; he has been cited in support of not evaluating the stability of the information on variable age in this study.

Taylor, James, "Habitual Criminal", British Journal of Criminology, Vol. 1, No. 1, July 1960, p. 32-36.

An essay on the concept "habitual criminal". The author's suggestion that there may be little in common between juvenile and adult antisocial activities was supported in this study by the non-significant correlation between juvenile and adult convictions.

Vaillancourt, Raymond J., Manifest Structure Analysis in Academic Prediction, unpublished Doctoral thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1961, ix-84 p.

Evaluates manifest structure analysis as a predictive method of academic achievement. The specific Otis intelligence test used in this study has been out of print for a number of years, and no information on its experimental reliability was readily available. The experimental reliability (stability) of this variable was compared to corresponding values considered in Vaillancourt's recent study for other versions of the Otis.

Willet, R.A., "Measures of Learning and Conditioning", Experiments in Personality, Vol. 2, H.J. Eysenck, Editor, London, Routledge, 1960, p. 157-192.

Relates various psychometric measures of extraversion and neuroticism to eyeblink, salivary, verbal, and spatial conditioning respectively and found that no meaningfully significant correlations were obtained. One of his conclusions is that questionnaire measures are probably inadequate for the assessment of extraversion. He also suggests the high correlation found by Franks between extraversion and the conditioning of eyeblink responses was due to sampling fluctuations, and thus, indirectly, he raises questions about Franks' extraversion-recidivism hypothesis since the extraversion-conditionability relationship is basic to Franks' theory, and Franks' eyeblink experiment had been used as a major empirical support for his conceptualization of recidivism.

Yinger, Milton J., "Contraculture and Subculture", American Sociological Review, Vol. 25, No. 5, October 1960, p. 625-635.

An essay asking for the refinement of the concepts "culture" and "subculture". The author suggests that "contraculture", as conceptually distinct from "subculture" is of particular value in the analysis of delinquent behaviour. In the study "contraculture" was used in the discussion of the unexpectedly high "reliability" of some of the independent variables, and also in pointing out some of the complexities of correctional treatment. A simplified notion of the latter is implicit in Franks' theory.

APPENDIX 1

ABSTRACT OF

Further Investigation of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Adult Offenders

APPENDIX 1

ABSTRACT OF

Further Investigation of Extraversion-Introversion and Subsequent Recidivism for a Selected Group of Young Adult Offenders[1]

Franks has suggested that from certain measures of the personality dimension extraversion-introversion it was possible to predict who would not benefit from re-education in a custodial institution and hence recidivate. The literature revealed inconsistent findings and it had been suggested that the inconsistency was due to the failure to control for variables influencing the proposed relationship.

This study had three goals. The primary one was the examination of Franks' theory with the effect of such confounding variables taken into account. These variables were selected on the basis of previous empirical findings, and by the application to the phenomenon of recidivism of certain concepts and principles of the Hull-Eysenck learning theory. The evaluation of the relative and joint contribution of various predictors of recidivism constituted the other two aims of the study.

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1 Frank J. Blum, doctoral thesis presented to the School of Psychology and Education, University of Ottawa, Ontario, May 1965, viii-100 p.

The sample consisted of 339 adjudicated young adult offenders who were released from the Ontario Training Centre, Brampton, during a two-year period in 1955-57. The predictors of recidivism used, eight, were obtained from information available at the onset of the offenders' incarceration at the Training Centre; R.C.M.P. follow-up records of each individual up to 1964 served as the criterion of recidivism subsequent to release. Multiple linear regression analysis was used to evaluate the independent variables-criterion relationship.

With the other seven independent variables controlled, restraint of the Guilford-Zimmerman Temperament Survey, taken as the measure of extraversion-introversion, did not contribute to the prediction of recidivism. Neither did two further indices of conditionability (emotional stability of the same Survey, and Otis I.Q.) nor two indices of exposure to non-criminal conditioning (last school grade completed, and age left school). All three indices of habit strength (age at incarceration, presence or absence of juvenile conviction, adult convictions prior to release) contributed significantly and similarly to prediction. The joint contribution of the independent variables was highly significant but accounted for only 13% of the criterion variance.

It has been suggested that, a) correlates of extra-version-introversion other than conditionability be explored with respect to criminal behaviour; b) different techniques

of analysis also be attempted; c) various learning theories may serve as useful guides for the selection of additional parameters of recidivism.