Perceptual reactance, personality, and criminal risk-taking.

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PERCEPTUAL REACTANCE, PERSONALITY, AND CRIMINAL RISK-TAKING

by

Derek Truscott

A thesis
presented to the University of Windsor
in fulfillment of the
thesis requirement for the degree of
Master of Arts
in
Psychology

Windsor, Ontario, 1985

(c) Derek Truscott, 1985
To Alexandra

whom I followed to the library
ABSTRACT

The purpose of this study was to investigate the differential perception of criminal risk by Reducers, Augmenters, and Moderates, refine the construct of perceptual reactance in relation to sensation seeking, extraversion, and general psychological functioning, and to gather further evidence for the validity of the Vando R-A Scale. The Behavior Prediction Scale, Arousal Seeking Tendency scale, Sensation Seeking Scale, Eysenck Personality Inventory, 16PF, and Vando R-A Scale were administered to 220 subjects drawn from a university undergraduate population. In addition, Petrie's kinesthetic aftereffect measure of perceptual reactance was individually administered to a subgroup of 46 of these subjects. Reducers were found to be willing to take criminal risks, Moderates unwilling to, and Augmenters least willing to. This was not due to differences in sensitivity to the experiencing of pain by others, contrary to expectations. Perceptual reactance was found to be related to one aspect of sensation seeking, but not to extraversion. Although differences were found between Reducers, Moderates, and Augmenters on measures of psychological functioning, as hypothesized, they were relatively few and not as expected.
The Yando G-A Scale was not found to be a valid measure of perceptual reactance. The implications of these findings and suggestions for further research are discussed.
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Chapter I

INTRODUCTION

There are differences in the way individuals process stimulation. When reacting to stimuli, some individuals maintain perceptions that accurately represent the stimuli, others reduce their sensory input so that their percept underrates the stimuli, and others augment what they sense so that their percept overrates the stimuli. Petrie (1967) has labeled individuals Moderates, Reducers, and Augmenters, respectively, according to their standing along this continuum and has argued that this perceptual reactance is a stable and pervasive personality trait.

This difference in reacting to sensation affects many aspects of how individuals act. Compared with Augmenters, Reducers are less responsive to and more tolerant of pain and noxious stimuli (Petrie, 1967; Ryan & Foster, 1967; Sweeney, 1966), less tolerant of sensory deprivation (Petrie, Collins, & Solomon, 1960), and likely to judge time as passing more slowly when their movements are restricted (Petrie et al., 1960; Ryan & Foster, 1967). Reducers are more likely to prefer complex stimuli, engage in more self-stimulating behavior, participate more actively in group discussions (Sales, 1971, 1972), engage in smoking behavior
at an earlier age and smoke more cigarettes per day (Baker, Mishara, Kostin, & Parker, 1976; Petrie, 1967), and participate in contact athletics to a greater degree (Ryan & Foster, 1967). They tend to be outgoing, affected by their feelings, happy-go-lucky, and undisciplined (Mahoney & Brown, 1982). They need "to do things" and to have things happen. They seek "action" and are intolerant of monotony and restriction of activity.

It has also been suggested that perceptual reduction is a predisposing factor of criminal behavior (Nettler, 1982). Serious young offenders of both sexes are overly represented by Reducers (Baker, Mishara, Kostin, & Parker, 1974; Compton, 1967; Petrie, McCulloch, & Kazdin, 1962). It seems that their greater need for stimulation (Farley & Parley, 1972; Sales, 1971, 1972) and risky attitude (Kozlowski, 1977, cited in Strelau, 1983) eventually run them afoul of the law. As Petrie (1967) reports of one young offender, she said she "hung around with those kids [other young offenders] because they were always doing something. Regular people don't do nothing" (p. 87).

Petrie (1967) also notes that perceptual reduction may play a role in the preference among young offenders for the painful ornamentation of tattooing (Taylor, 1974) and self-inflicted injuries such as cigarette burns to the skin, particularly when in solitary confinement. The stimulation they receive in the form of pain appears to be preferable to
the suffering caused by a lack of sensation. Reducers's low sensitivity to stimuli may also account for the often-noted more frequent enuresis among young offenders (Michaelis, 1955) who may be insensitive to the internal stimulation of a full bladder.

Apart from simply "getting into trouble" as a consequence of being more active and risk-taking, Reducers should also be less likely to refrain from acting in ways that will inflict pain upon other people. Petrie (1967) argues that since Reducers have a greater tolerance for pain, they are less able to sympathize with the pain experienced by Moderates and Augmenters. When considering an action, therefore, Reducers should be differentially sensitive to the situational determinants of their environment. They should be particularly insensitive to the consequences of their actions for others.

**THE PERCEPTION OF CRIMINAL RISK**

Working from the postulate that criminal behavior varies as a function of perceived risk, Pettig and his colleagues employed the Behavior Prediction Scale (BPS; Pettig & Rawson, 1963) to determine to what extent the following situational determinants influence an individual's decision to undertake a criminal act: the reinforcement value of gain (i.e., amount of reward; RVgain); the expectancy of gain (Egain); the expectancy of censure (Ecensure); and the
reinforcement value of censure (i.e. amount of punishment: RVcensure). Each determinant is included at high and low levels within a basic situation involving the theft of money. In each item one or more of the determinants are changed until all possible combinations have been presented; 16 situations in all.

With American and Asian college students studying in America, results have been consistent; each of these factors has a significant effect on predictions of the likelihood that a hypothetical individual will steal (Bettig, 1964; Bettig & Pasamanic, 1964; Bettig & Rawson, 1963; Bettig & Singh, 1963). Individuals who practice deception on a laboratory task also differ in their response to the EPS from those who do not practice such deception, particularly in response to RVcensure (Bettig & Pasamanic, 1964).

Individuals are differentially sensitive to criminal risk conditions as a result of having had different experiences, however. When prisoners (mainly sentenced for forgery, or possession of government securities) were compared with a group of students matched for age, sex, and socio-economic status, Bettig (1964) found that the prisoners were less sensitive to Egain, RVgain, and Ecensure. The groups were equally sensitive to RVcensure. Krauss, Robinson, Janzen, and Cauthen (1972) similarly report that male prisoners are sensitive to RVcensure and not RVgain or Ecensure. They also found, however, that when
broken down into groups of psychopathic and non-psychopathic prisoners (on the basis of MMPI scale elevations), the psychopathic group was sensitive to Egain. Stefanowicz and Hannum (1971) found that for female prisoners the only significant determinant was RVgain. None of the other factors, including RVcensure, significantly influenced their predictions of likelihood of stealing.

An individual's personality is an index of their style of approaching a given situation. This style shapes how they will experience situations. Individuals with similar personality styles will, therefore, have shared some common experiences. Some of these experiences are relevant to an individual's sensitivity to criminal risk conditions. The failure of other researchers to find a relationship between Ecensure, RVcensure, and criminal risk-taking (e.g. Bailey & Lott, 1976; Stewart & Hemsley, 1979; Teevan, 1976) is likely due in part, therefore, to their not having taken into account personality factors which influence an individual's perception of criminal risk. Stewart and Hemsley (1984), for example, expanded upon their previous study (Stewart & Hemsley, 1979) and found that neuroticism and psychoticism (as measured by the Eysenck Personality Questionnaire; Eysenck & Eysenck, 1975) were related to the perception of criminal risk within their original sample.

Perceptual reactance is a personality dimension which should influence an individual's perception of criminal
risk. Specifically, Reducers, due to a relative insensitivity to pain, should be insensitive to the experiencing of pain by others. Their perception of criminal risk, therefore, should not vary as a function of harm to others. Augmenters, due to a history of acutely experiencing pain, should be more sensitive to the experiencing of pain by others and, therefore, likely to perceive a situation as more risky when others will be harmed. The more risky a situation is perceived to be, the less likely an individual will take a criminal risk. This differential perception of criminal risk should render Reducers more likely to take criminal risks, Moderates less likely to, and Augmenters unlikely to.

**The kinesthetic aftereffect**

To measure the trait of perceptual reactance, and thereby identify Reducers, Augmenters, and Moderates, Petrie adapted the kinesthetic aftereffect (KAE) task of Kohler and Dinnerstein (1947). Subjects are blindfolded and asked to make four prestimulation judgments of the width of a wooden test block held between the thumb and forefinger of their dominant hand. These fingers are then rubbed along the sides of a larger block. The subject is then asked to make eight poststimulation judgments of the width of the original test block. Reducers are identified as those who show a relatively large mean perceived decrease in the width of the
test block following stimulation, Augmenters as those who show a relatively large mean perceived increase, and Moderates as those who maintain relatively accurate judgments.

Petrie (1967) reports split-half reliabilities of .98 for 25 public school children and .97 for 33 student nurses, and test-retest reliabilities of .60 for 13 female students and .77 for a heterogeneous group of 28 adults. Subsequent investigators, however, are in disagreement over the reliability of the KAE.

Reliability and the KAE

Barnes (1976), in a comprehensive review of the literature on perceptual reactance, concluded that the within session reliability of the KAE is adequate. The retest reliability had yet to be decided, however, since two studies had reported high retest reliabilities (Eysenck, 1955; Spitz and Lipman, 1960) and three had reported low retest reliabilities (Morgan & Hilgard, 1972; Morgan, Lezard, Prytulack, & Hilgard, 1970; Platt, Holtzman, & Larsen, 1971).

Since Barnes's review, a number of articles have been published which focus on the retest reliability of the KAE. Baker et al. (1976), Baker, Mishara, Parker, and Kostin (1978), Hoff (1979), and Mishara and Baker (1980) have argued and demonstrated that second session prestimulation
judgments are functionally more similar to first session poststimulation judgments than to first session prestimulation judgments. That is, exposure to the KAE task results in an enduring change in subsequent prestimulation judgments. Baker et al. (1978) conclude that retest reliability is not, therefore, an appropriate statistic for evaluating the KAE.

This finding has further implications for the KAE. The method of identifying Augmenters and Reducers recommended by Petrie (1967) involves a second testing session for each subject. Given the bias introduced by the second session, this procedure is contraindicated. Mishara and Baker (1980) note, in support of this contention, that of the validity studies of the KAE reported since 1969, three of those which were nonsupportive involved two or more sessions (Morgan et al., 1970; Weintraub, Green, & Herzog, 1973; McDonald, 1974), and only one involved a single session (Herzog & Weintraub, 1977). All but one (Friend & Maliszewski, 1978) of the reported supportive studies involved a single session (Baker et al., 1976, 1979; Deaux, 1976; Gupta, 1974; Gupta & Kaur, 1978; Hartnett & Rosen, 1979; Hughes & Mahoney, 1978; Mahoney & Brown, 1982; Robertson, Gillespie, Hiatt, & Rose, 1977; Sales, 1971, 1972; Sales & Throop, 1972; Schooler, Buchsbaum, & Carpenter, 1976).

Despite the apparent resolution of this issue, the KAE remains a rather cumbersome technique. The ease of
administration associated with questionnaires has prompted the development and use of a paper-and-pencil test of perceptual reactance.

**The Vando R–A Scale**

Vando (1970) was interested in examining the relationship between cortical augmenting–reducing and personality. He argued that if people require a certain level of perceived stimulation for homeostasis, then those who reduce incoming stimulation should be relatively "stimulus hungry" while those who augment incoming stimulation should be relatively "stimulus bombarded". Reducers, therefore, should tend to seek out high levels of stimulation and avoid low ones, while Augmenters should tend to seek out situations of low stimulation and avoid high ones (Vando, 1974). Vando therefore pooled 142 forced-choice item-pairs describing situations of contrasting stimulus intensity across all sensory modalities. Fifty-four item-pairs were retained on the basis of being endorsed in the expected direction by at least half of high and low pain-tolerant subjects (as defined by the range, in millimeters or mercury, between pain threshold and quit point in response to the inflation of a sphygmomanometer, with a plastic projection attached to the inside, wrapped around the shin of the subject).

Scores on the R–A Scale were found to correlate .84 with his pain tolerance measure. A split-half reliability
or .89, and a test-retest reliability (after five months) of .74, were obtained.

Mahoney, Shumate, and Worthington (1980), the only researches to independently investigate the validity of Vando's scale to date, found individuals identified as Reducers (high scorers on the R-A Scale) to report less discomfort in response to having their hands immersed in cold water, and to underestimate the amount of time that they experienced the pain, than Augmenters. Both of these findings are consistent with the literature on perceptual reactance. High scorers were not, however, found to be more tolerant of pain (as measured by the amount of time they were willing to keep their hands immersed in the cold water). Also, the first two correlations, though statistically significant, accounted for only four and six percent of the variance. Mahoney et al. concluded that the R-A Scale is not an adequate measure of perceptual reactance.

The validity of the R-A Scale has yet to be fully determined. A direct comparison has yet to be made between scores on the Vando R-A Scale and KAE scores. That the scale items concentrate on activity situations suggests that it may be measuring only experience seeking and that the full spectrum of behaviors associated with perceptual reactance is not being sampled. Indeed, Kohn, Hunt, and Hoffman (1982) have found that, for men, the R-A Scale

Vando's original rationale for the development of the R-A Scale, however, that Reducers should seek-out stimulating situations while Augmenters avoid them, is consistent with Petrie's and others' (e.g. Strelau, 1983) theorizing and has been investigated by a number of researchers.

**SENSATION SEEKING AND PERCEPTUAL REACTANCE**

Petrie (1967) noted that the desire for activity is associated with perceptual reduction whereas the desire for calm is more characteristic of augmenting. Sales (1971, 1972) tested this observation by conducting a series of studies designed to investigate the relationship between the KAE and sensation seeking.

In the first experiment, Sales (1971) reasoned that individuals with a high need for stimulation should prefer complex, visually interesting stimuli, while individuals
with a low need for stimulation should prefer simple, visually "quiet" stimuli. If Reducers have a high need for stimulation, they should display a preference for more complex Scottish tartans than Augmenters. This was found to be the case.

In his second experiment, Sales (1971) found Reducers to engage in more activities than Augmenters when left alone in a room for seven and a half minutes. Raters observed the subjects through a one-way mirror and scored them for amount of activity. Reducers were significantly more likely to look through their purses, read magazines, or walk around the experimental room. Presumably, when environmental stimulation is insufficient, Reducers generate their own in order to maintain homeostasis.

In the third experiment, subjects were placed in same-sexed groups of two to four and asked to work together on a "brainstorming" task for eight minutes. Sales (1971) reasoned that if Reducers have a high need for stimulation, they should exhibit higher levels of talking during the group discussion than Augmenters. A small (.25) but statistically significant correlation in the expected direction was found.

In the final experiment of this series, Sales (1971) presented subjects with a taped monologue and dialogue and asked them to "pay particular attention to the monologue". They were then asked to answer factual questions about both
of the presentations. Reducers were found to remember more of the dialogue than did the Augmenters, and just as much of the monologue. This suggests that Reducers preferred the more complex audio stimuli and that they may be more vigilant than Augmenters.

In another study, Sales (1972) found subjects who tended to reduce on the KAE to be much more likely to enjoy complex, intense stimulation (in the form of a "psychedelic party" with incense, strobe and black lights, music, and motorcycle noises) and to report that they exposed themselves quite frequently to situations similar to those presented in the experiment and avoided dull situations.

The results of these investigations are compelling. Zuckerman, in his book Sensation Seeking (1979), however, states flatly that "the correlates of sensation seeking are not in accord with the predictions that would be logically made from Petrie's augmenting-reducing theory. If anything, sensation seekers seem to lean toward the characteristics of the augmenter" (p. 228). Zuckerman bases this conclusion on three pieces of evidence: (1) Although there is some support (Kish, Frankel, Masters, & Berry, 1976) for high pain tolerance in high sensation seekers (in accord with Petrie's theory), pain threshold has been found to be lower in high than in low sensation seekers (Vagg, 1976); (2) In an unpublished study, Sales found a low but statistically significant positive correlation (.28) between KAE change
scores and Zuckerman's Sensation Seeking Scale, which he could not replicate. The direction of the correlation suggests that sensation seeking is characterized by augmenting rather than reducing; (3) Zuckerman, Martaugh, and Siegal (1974) applied the average evoked response (AER) method of Buchsbaum and Silverman (1968), for assessing cortical augmenting-reducing, and found a statistically significant positive correlation (.50) between the slope of the AER amplitude in response to increasing stimulus intensities and the Disinhibition subscale of the Sensation Seeking Scale. A positive AER slope is interpreted by Buchsbaum and Silverman (1968) as cortical augmenting. The direction of the correlation again suggests that sensation seeking is characterized by augmenting. Each of these points will be dealt with in turn.

In response to: (1) Zuckerman has clearly failed to heed Petrie's (1967, p. 26) caution against equating pain tolerance with pain threshold. Perceptual reactance is related to pain tolerance, not pain threshold. The evidence Zuckerman presents is in support of reducers being sensation seekers; (2) It is difficult to evaluate Sales' unpublished results, but the compelling evidence from his own published studies (which Zuckerman does not cite) supports Petrie's theory; (3) The disagreement between the findings of Petrie (1967) and Sales (1971, 1972) on the one hand, and Buchsbaum and Silverman (1968) and Zuckerman et al. (1974) on the
other, appears to be a semantic one based on the nature of
the AER method. Those labeled as "augmenters" are those
persons who show an overall positive slope of AER amplitude
across stimulus intensities, and "reducers" those who show
an overall negative slope. This slope, however, reflects
the cortical response to increasing stimulus intensities.
Petrie's Augmenters augment low levels of stimuli, and
augment stimuli to a lesser extent in response to increasing
intensities. Petrie's Reducers reduce low levels of
stimuli, and reduce higher levels of stimuli to a lesser
extent. The result is a positive slope for Reducers, thus
the "augmenter" label from Buchsbaum; a less positive or
negative slope for Augmenters and a "reducer" label from
employed the AER method and, for reasons which they do not
explain, correctly labeled as Reducers those individuals who
display a positive slope and Augmenters those who display a
negative slope. They conclude that Reducers are more
sensation-seeking than Augmenters (as measured by
Zuckerman's Sensation Seeking Scale). As Davis, Cowels, and
Kohn (1983) state, "there seems to be little doubt that the
behavioral, physiological and psychometric profiles of the
augmenter and reducer are fairly consistent across camps if
the labels used by Buchsbaum and Silverman (1968) are
reversed" (p. 493). This position is endorsed by Strelau
(1982).
Contrary to Sales's unpublished study cited in Zuckerman (1979), therefore, scores on measures of sensation seeking should be negatively correlated with KAE change scores.

The description of the sensation seeking Reducer, distilled from the studies presented, as outgoing, happy-go-lucky, affected by feelings, liking parties and having other people to talk to, disliking being alone and unstimulated, and craving excitement and change, is not unlike Eysenck's (1970) typical extravert. This point has not gone unnoticed.

EXTRAVERSION AND PERCEPTUAL REACTANCE

Very early in her work, Petrie (1952) noticed that "taken as a whole, the constellation of personality changes after brain operations increasing tolerance for pain shows the patient to be more 'extraverted' and less 'introverted' after the alteration" (Petrie, 1967, p. 34). In a sample of 65 subjects blind-rated into two groups, most tolerant and least tolerant of pain, higher extraversion scores (as measured by the Maudsley Personality Inventory; Eysenck, 1959) were found in the best tolerators of pain. Those who were least tolerant had lower extraversion scores (Petrie, 1967). Barnes (1975), in a review of the evidence for the hypothesis that extraverts have greater pain tolerance than introverts, combined nine comparable studies (Brown, Fader,

In response to sensory deprivation, those who tolerate the stress of isolation best have been found to have lower extraversion scores than those who tolerate it poorly (Petrie, 1967; Petrie et al., 1960; Zakay & Lobel, 1983). Also, extraverts tend to prefer stimulating to non-stimulating tasks (Kim, 1980) and to be sensation seekers (Bone & Montgomery, 1970; Eysenck & Zuckerman, 1978; Farley & Farley, 1967, 1970; Furnham, 1984; Khavari, Humes, & Mabry, 1977; Zuckerman, Bone, Heary, Mangelsdorf, & Brustman, 1972; Zuckerman & Link, 1968).

All of these findings support the notion that Reducers are Extravers and vice versa, one that has been put forward by more than one author (e.g., Davis, Cowles, & Kohn, 1983; Strelau, 1982).

In the only direct test of this idea, Petrie (1967) reported that Reducers provided statistically significantly higher extraversion scores than did Augmenters. Similarly, Friedman and Meares (1979) found extraverts to show reducing tendencies (as identified by their AE2R slope1); introverts

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1 I have taken the liberty of reversing Friedman and Meares's terminology. They report extraverts as showing
augmenting tendencies. Also, Haier et al. (1984) report that Reducers are more extraverted than Augmenters, as identified by their AER slope.

**HYPOTHESES**

From the preceding discussion, the following hypotheses are established:

1. Reducers, Augmenters, and Moderates will differ in their perception or criminal risk as a function of the reinforcement value for others (R/others) factor of the Behavior Prediction Scale (BPS). Augmenters's predictions of likelihood of stealing will vary as a function of R/others, while Reducers's will not, or will vary to a lesser extent.

2. Reducers, Augmenters, and Moderates will differ in their response to measures of personality functioning. These groups will differ in their response to the Arousal Seeking Tendency measure, the Thrill and Adventure Seeking, Disinhibition, and Experience Seeking subscales of the Sensation Seeking Scale, the Extraversion scale of the Eysenck Personality Inventory, and the Warmth, Impulsivity, Emotional stability, Boldness, Imagination, Self-discipline, and Extraversion factors of the 16PF. These measures will also be linearly related to KAR change scores.

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augmenting tendencies in their AER based on the criteria of Buchsbaum and Silverman (1968). See the discussion in the section Sensation Seeking and Perceptual Reactance.
3. The Vando R-A Scale is a valid measure of perceptual reactance. Reducers, Augmenters, and Moderates will differ in their response to the Vando R-A Scale. Scores on the R-A Scale will be related to KAE change scores, and those personality measures with which KAE change scores are related.
Chapter II
METHOD

The purpose of this study was to investigate the differential perception of criminal risk by Reducers, Augmenters, and Moderates, to refine the construct of perceptual reactance in relation to sensation seeking, extraversion, and general psychological functioning, and to gather further evidence for the validity of the Vando R-A Scale.

SUBJECTS
Undergraduate students enrolled in a university-level introductory psychology course were approached to participate. Potential subjects were told they would receive a two percent credit in the course for participating in the questionnaire portion of the study, and an additional one percent credit for the KAE portion.

Approximately 300 students agreed to participate, and 225 completed the questionnaires. Five were dropped from the analysis for having EPI L scores of 6 or more. One hundred, fifty-five were women, sixty-five were men. The average age was 20.4 (sd = 4.34), and ranged from 17 to 51.
From this population, 50 subjects agreed to participate in the KAE portion of the study, and 46 completed the task. Twenty-three were women, twenty-three were men. The average age was 19.8 (sd = 1.95) and ranged from 18 to 26.

MATERIALS

The following measures were administered in group form:
- Mehrabian's (1980) measure of Arousal-Seeking Tendency²
  (AST), a 34-item questionnaire with a 5-point agree–disagree Likert scale; Zuckerman's (1979) Sensation-Seeking Scale,
  Form V³ (SSS), a 40-item forced-choice questionnaire yielding scores on Thrill and Adventure Seeking (T/A),
  Experience Seeking (ES), Disinhibition (Dis), and Boredom Susceptibility (BS); Vando's (1970) Reducer-Augmenter Scale⁴ (R-A), a 54-item forced-choice questionnaire; the
  Extraversion (E) and social desirability/Lying (L) scales of Eysenck and Eysenck's (1963) Eysenck Personality Inventory
  (EPI), a 33-item forced-choice measure; Cattell's (1969) 10PF, Forms A and B, a 187-item questionnaire of multiple-choice format yielding scores on sixteen primary and four second-order personality dimensions; and a modified version of Rettig's (1964) Behavior Prediction Scale⁵ (BPS), a

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² See Appendix A
³ See Appendix B
⁴ See Appendix C
⁵ See Appendix D
A 16-item measure portraying a student in conflict about taking money which belongs to someone else, with a 5-point Likert scale.

The BPS was modified to include a reinforcement value for others (EVothers) factor. The Ecensure factor of Bettig (1964) was dropped as it has been found to be least discriminating (Feldman, 1977) and because its inclusion along with the EVothers factor would necessitate 32 (2^5) situations, a cognitively overwhelming task. Each item includes four sources of variation (see below) presented in the same sequence, but varying in level of any one treatment (high and low) from item to item. This combination of levels required 16 items. Subjects were asked to read each item carefully and then indicate on a scale ranging from -2 (will definitely not steal the money) to 2 (will definitely steal the money) their estimate of the likelihood that the student would steal. The high and low levels of each factor were stated as follows:

1. Reinforcement value of gain (EVgain): high—the money is needed for a crucial operation; low—the money is needed to pay a debt.

2. Expectancy of gain (EGain): high—the operation is guaranteed to cure the illness, the money will pay the entire debt; low—the operation is not guaranteed to cure the illness, the money will pay for only a small part of the debt.
3. Reinforcement value for others (RVothers): high—the missing money will be recovered by deductions from the pay of the other tellers; low—the missing money will be recovered by deductions from the yearly profits of the bank.

4. Reinforcement value of censure (RVcensure): high—criminal charges will be laid and loss of job; low—the matter will be dealt with privately with no loss of job.

Additional instructions emphasized that they were only to indicate whether or not they thought the student would take the money, not how right or wrong it may be to do so.

For the KAE task, the apparatus used are described fully by Petrie (1967). Briefly, they are a 5.08 cm-wide test block, a 6.35 cm-wide inducing block, and a 76.20 cm-long tapered (1.27 cm- to 10.16 cm-wide) block, all of smooth, unpainted wood.

PROCEDURE
The questionnaires were administered in six groups of approximately 40 subjects each. Subjects were instructed to complete the questionnaires anonymously, and were offered a synopsis of the research after the study was completed.

The following procedure for the KAE administration follows that of Petrie (1967) but for changes recommended by more recent research.
Each session began by having the subject seated at a table with palms up to avoid stimulation for 10 min (Penn & Starford, 1982, 1983). The subject was then blindfolded and asked to judge the width of the test block held with the thumb and forefinger of their dominant hand by moving the thumb and forefinger of their nondominant hand along the tapered block (starting at the narrow end) to the point where the width of the tapered block and the test block seemed equal. Two practice judgments were followed by four prestimulation judgments. The subject then rubbed the inducing block with the thumb and forefinger of their dominant hand (while resting their non-dominant hand) for 180 s (Robertson, Gillespie, & Huatt, 1976). Four poststimulation judgments were then made on the original test block without the subject being told that it was the same block as used for the prestimulation judgments. Another period of stimulation, this time for 120 s, was followed by four more poststimulation judgments. A second session was not undertaken (Baker et al., 1978; Mishara & Baker, 1980).

The KAE score for each subject was obtained by subtracting the mean of the four prestimulation judgments from the mean of the eight poststimulation judgments. If this score exceeded 0 cm, the subject was classified an Augmenter; if it was less than −.6 cm (1.8 inches as measured along the ruler on the tapered block), the subject
was classified a Reducer; and if it fell between these two
points, the subject was classified a Moderate (Mishara,

**STATISTICAL ANALYSES OF THE DATA**

To test the hypothesis that Reducers, Augmenters, and
Moderates differ in their perception of criminal risk
(Hypothesis 1), an analysis of variance (ANOVA) was employed
to determine whether differences existed between these
groups in their predictions of likelihood of stealing in
response to the **Wothers factor of the Behavior Prediction
Scale (BPS). This was imbedded in an analysis which also
included the three other factors of the BPS.

To test the hypothesis that Reducers, Augmenters, and
Moderates differ in their response to measures of
psychological functioning (Hypothesis 2), a multivariate
analysis of covariance (MANCOVA) was employed to determine
whether differences existed between these groups as measured
by the Arousal Seeking Tendency scale, the four subscales of
the Sensation Seeking Scale, the Extraversion scale of the
EPI, and the factor and second-order scales of the 16PF,
after adjustment for age and sex as covariates. In
addition, these dimensions were correlated with KAE scores
and then entered as independent variables in a multiple
regression analysis.
To test the hypothesis that the Vando R-A Scale is a valid measure of perceptual reactance (Hypothesis 3), scores on the R-A Scale were correlated with KAE scores. An analysis of covariance (ANCOVA) was employed to determine whether Reducers, Augmenters, and Moderates (as identified by KAE scores) differed in their response to the R-A Scale, after adjustment for age and sex as covariates. The Arousal Seeking Tendency scale, the four subscales of the Sensation Seeking Scale, the Extraversion scale of the EPI, and the factor and second-order scales of the 16PF were correlated with R-A Scale scores and then entered as independent variables in a multiple regression analysis.
Chapter III
RESULTS

The purpose of this study was to investigate the differential perception of criminal risk by Reducers, Augmenters, and Moderates, refine the construct of perceptual reactance in relation to sensation seeking, extraversion, and general psychological functioning, and to gather further evidence for the validity of the Vando R-A Scale.

HYPOTHESIS 1: THE PERCEPTION OF CRIMINAL RISK

Each of the 46 subjects who were administered the KAE task were assigned to one of the three levels of group membership (Reducer, Moderate, and Augmenter) on the basis of their KAE score. Scores ranged from -3.72 to 2.23, with 16 subjects identified as Reducers, 17 as Moderates, and 13 as Augmenters. To test the first Hypothesis, that these groups differ in their perception of criminal risk as a function of the Walters factor of the BPS, a 3 x 2 between- and within- groups analysis of variance with repeated measures upon the last factor was performed. This analysis was imbedded in a 3 x 2 x 2 x 2 x 2 analysis of variance which included the other three factors of the BPS.

Results of this analysis are summarized in Table 1.
TABLE 1

Analysis of Variance of Predictions of Likelihood of Stealing Between Reducers, Moderates, and Augmenters and Across High and Low Levels of the Situational Determinants of the BFS

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Adjusted SS</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group membership</td>
<td>7.367</td>
<td>2,725</td>
<td>2.93*</td>
</tr>
<tr>
<td>RVothers</td>
<td>23.186</td>
<td>1,725</td>
<td>18.47**</td>
</tr>
<tr>
<td>Group x RVothers</td>
<td>0.658</td>
<td>2,725</td>
<td>0.26</td>
</tr>
<tr>
<td>RVgain</td>
<td>82.579</td>
<td>1,725</td>
<td>65.78**</td>
</tr>
<tr>
<td>Group x RVgain</td>
<td>0.773</td>
<td>2,725</td>
<td>0.31</td>
</tr>
<tr>
<td>Egain</td>
<td>35.500</td>
<td>1,725</td>
<td>28.28**</td>
</tr>
<tr>
<td>Group x Egain</td>
<td>5.648</td>
<td>2,725</td>
<td>2.25</td>
</tr>
<tr>
<td>RVcensure</td>
<td>111.652</td>
<td>1,725</td>
<td>88.94**</td>
</tr>
<tr>
<td>Group x RVcensure</td>
<td>4.585</td>
<td>2,725</td>
<td>1.83</td>
</tr>
<tr>
<td>Error</td>
<td>849.025</td>
<td>688</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1448.505</td>
<td>735</td>
<td></td>
</tr>
</tbody>
</table>

* p < .05. ** p < .0001.

The first hypothesis was not upheld, with no significant interaction effect found between group membership and RVothers.

Also, when all four factors were considered, no significant interaction effect was found between group membership and any of the three other situational determinants.
Predictions of likelihood of stealing did vary significantly with group membership, however. Examination of least squares means reveals that predictions of greater likelihood of stealing are associated with Reducers (least squares mean = 0.055), predictions of lesser likelihood with Moderates (least squares mean = -0.107), and predictions of least likelihood with Augmenters (least squares mean = -0.0183). Only a small proportion of the variance in predictions of likelihood is accounted for by this relationship, however, with $\eta^2 = .01$.

Predictions of likelihood of stealing also varied significantly with the high and low levels of all four of the situational determinants.

**Additional Analyses**

Although there were no significant interaction effects between group membership and RVothers or the three other situational determinants, separate $2 \times 2 \times 2 \times 2$ within-groups repeated-measures analyses of variance were performed to examine between- and within-group trends. Results of this analysis are summarized in Table 2.

Contrary to the first Hypothesis, Reducers, rather than Augmenters, are most sensitive to RVothers. The three groups differed most in their response to Egain, with Reducers most sensitive and Augmenters insensitive to the expectancy that stealing money would resolve the financial difficulties posed in the BPS.
### TABLE 2
Separate Analyses of Variance of Predictions of Likelihood of Stealing for Reducers, Moderates, and Augmenters Across High and Low Levels of the Situational Determinants of the BPS

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>Adjusted SS</th>
<th>df</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reducers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RVgain</td>
<td>23.766</td>
<td>1,245</td>
<td>23.27****</td>
</tr>
<tr>
<td>Egain</td>
<td>27.562</td>
<td>1,245</td>
<td>26.99****</td>
</tr>
<tr>
<td>RVothers</td>
<td>10.562</td>
<td>1,245</td>
<td>10.34***</td>
</tr>
<tr>
<td>RVcensure</td>
<td>52.562</td>
<td>1,245</td>
<td>51.46****</td>
</tr>
<tr>
<td>Error</td>
<td>244.110</td>
<td>239</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>379.234</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td><strong>Moderates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RVgain</td>
<td>25.327</td>
<td>1,261</td>
<td>20.51****</td>
</tr>
<tr>
<td>Egain</td>
<td>11.121</td>
<td>1,261</td>
<td>9.01**</td>
</tr>
<tr>
<td>RVothers</td>
<td>5.033</td>
<td>1,261</td>
<td>4.08*</td>
</tr>
<tr>
<td>RVcensure</td>
<td>48.621</td>
<td>1,261</td>
<td>39.38****</td>
</tr>
<tr>
<td>Error</td>
<td>314.823</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>415.908</td>
<td>271</td>
<td></td>
</tr>
<tr>
<td><strong>Augmenters</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RVgain</td>
<td>29.250</td>
<td>1,197</td>
<td>19.79****</td>
</tr>
<tr>
<td>Egain</td>
<td>2.769</td>
<td>1,197</td>
<td>1.87</td>
</tr>
<tr>
<td>RVothers</td>
<td>6.942</td>
<td>1,197</td>
<td>4.70*</td>
</tr>
<tr>
<td>RVcensure</td>
<td>15.077</td>
<td>1,197</td>
<td>10.20**</td>
</tr>
<tr>
<td>Error</td>
<td>282.270</td>
<td>191</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>339.058</td>
<td>207</td>
<td></td>
</tr>
</tbody>
</table>

**** p < .0001  *** p < .001  ** p < .004  * p < .04
HYPOTHESIS 2: MEASURES OF PSYCHOLOGICAL FUNCTIONING

To test the second Hypothesis, that Reducers, Moderates, and Augmenters differ in their response to measures of psychological functioning, a one-way multivariate analysis of covariance was performed on twenty-seven measures of personality. These were the Arousal Seeking Tendency scale, the four subscales of the Sensation Seeking Scale, the Extraversion scale of the Eysenck Personality Inventory, and the factor and second-order scales of the 16PF. Adjustment was made for the covariates age and sex. A logarithmic transformation of the variable age was performed in order to deal with severe negative skewness.

The effects of group membership on the dependent variables after adjustment for covariates were investigated in univariate analysis. Results of this analysis are summarized in Table 3.

In support of the second Hypothesis, after statistically adjusting for differences in LOGage and sex a reliable difference was found to be present between Reducers, Moderates, and Augmenters on three of the measures of psychological functioning, namely; the A, I, and L scales of the 16PF. Further investigation of these differences, via least squares means as displayed in Table 4, reveals that Augmenters are more outgoing, Reducers less so, and Moderates are more reserved. Moderates are more tender-minded, Reducers less so, and Augmenters are more tough-
### TABLE 3

Analysis of Variance of Group Membership Adjusted for LOGage and Sex

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Adjusted SS</th>
<th>df</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>AST</td>
<td>251.117</td>
<td>2/41</td>
<td>1.22</td>
</tr>
<tr>
<td>SSS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T/A</td>
<td>22.574</td>
<td>2/41</td>
<td>2.13</td>
</tr>
<tr>
<td>ES</td>
<td>24.460</td>
<td>2/41</td>
<td>2.71</td>
</tr>
<tr>
<td>DIS</td>
<td>21.460</td>
<td>2/41</td>
<td>1.54</td>
</tr>
<tr>
<td>BS</td>
<td>14.796</td>
<td>2/41</td>
<td>1.50</td>
</tr>
<tr>
<td>EPI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>12.124</td>
<td>2/41</td>
<td>0.37</td>
</tr>
<tr>
<td>16PF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>26.176</td>
<td>2/41</td>
<td>3.54*</td>
</tr>
<tr>
<td>B</td>
<td>6.277</td>
<td>2/41</td>
<td>0.81</td>
</tr>
<tr>
<td>C</td>
<td>2.425</td>
<td>2/41</td>
<td>0.35</td>
</tr>
<tr>
<td>E</td>
<td>4.751</td>
<td>2/41</td>
<td>0.64</td>
</tr>
<tr>
<td>F</td>
<td>5.826</td>
<td>2/41</td>
<td>0.78</td>
</tr>
<tr>
<td>G</td>
<td>7.681</td>
<td>2/41</td>
<td>1.13</td>
</tr>
<tr>
<td>H</td>
<td>4.522</td>
<td>2/41</td>
<td>0.49</td>
</tr>
<tr>
<td>I</td>
<td>39.658</td>
<td>2/41</td>
<td>4.57**</td>
</tr>
<tr>
<td>L</td>
<td>25.951</td>
<td>2/41</td>
<td>3.63*</td>
</tr>
<tr>
<td>N</td>
<td>10.147</td>
<td>2/41</td>
<td>1.79</td>
</tr>
<tr>
<td>O</td>
<td>14.058</td>
<td>2/41</td>
<td>1.72</td>
</tr>
<tr>
<td>Q1</td>
<td>0.551</td>
<td>2/41</td>
<td>0.09</td>
</tr>
<tr>
<td>Q2</td>
<td>2.011</td>
<td>2/41</td>
<td>0.31</td>
</tr>
<tr>
<td>Q3</td>
<td>2.318</td>
<td>2/41</td>
<td>0.20</td>
</tr>
<tr>
<td>Q4</td>
<td>7.972</td>
<td>2/41</td>
<td>1.99</td>
</tr>
<tr>
<td>ANXIETY</td>
<td>3.183</td>
<td>2/41</td>
<td>0.58</td>
</tr>
<tr>
<td>EXVIA</td>
<td>6.815</td>
<td>2/41</td>
<td>0.59</td>
</tr>
<tr>
<td>TOUGH POISE</td>
<td>2.335</td>
<td>2/41</td>
<td>0.26</td>
</tr>
<tr>
<td>INDEPENDENCE</td>
<td>1.984</td>
<td>2/41</td>
<td>0.21</td>
</tr>
</tbody>
</table>

* p < .04, ** p < .01.
mind. Reducers are more suspicious, Augmenters less so, and Moderates are least suspicious.

### TABLE 4

Selected Least Squares Means for Measures of Personality Functioning Adjusted for LOGage and Sex

<table>
<thead>
<tr>
<th>Scale</th>
<th>Reducers</th>
<th>Moderates</th>
<th>Augmenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5.913</td>
<td>4.820</td>
<td>6.727</td>
</tr>
<tr>
<td>L</td>
<td>7.565</td>
<td>5.875</td>
<td>6.083</td>
</tr>
</tbody>
</table>

Since differences between Reducers, Moderates, and Augmenters have been established (if only in three cases), an analysis of the linear relationship between perceptual reactance and measures of personality functioning was undertaken. KAE scores were correlated with the Arousal Seeking Tendency scale, the four subscales of the Sensation Seeking Scale, the Extraversion scale of the EPI, and the factor and second-order scales of the 16PF. Results of this analysis are summarized in Table 5.
### TABLE 5
Correlations Between KAE Scores and Measures of Psychological Functioning

<table>
<thead>
<tr>
<th>Variable</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>AST</td>
<td>-0.147</td>
</tr>
<tr>
<td>SSS</td>
<td></td>
</tr>
<tr>
<td>T/A</td>
<td>0.012</td>
</tr>
<tr>
<td>ES</td>
<td>-0.246</td>
</tr>
<tr>
<td>WIS</td>
<td>-0.188</td>
</tr>
<tr>
<td>BS</td>
<td>0.289*</td>
</tr>
<tr>
<td>EPI</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>-0.062</td>
</tr>
<tr>
<td>16PF'</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.036</td>
</tr>
<tr>
<td>B</td>
<td>-0.228</td>
</tr>
<tr>
<td>C</td>
<td>0.096</td>
</tr>
<tr>
<td>E</td>
<td>-0.036</td>
</tr>
<tr>
<td>F</td>
<td>-0.108</td>
</tr>
<tr>
<td>G</td>
<td>-0.198</td>
</tr>
<tr>
<td>H</td>
<td>0.000</td>
</tr>
<tr>
<td>I</td>
<td>0.299*</td>
</tr>
<tr>
<td>L</td>
<td>-0.241</td>
</tr>
<tr>
<td>M</td>
<td>0.156</td>
</tr>
<tr>
<td>N</td>
<td>0.048</td>
</tr>
<tr>
<td>O</td>
<td>0.010</td>
</tr>
<tr>
<td>Q1</td>
<td>0.080</td>
</tr>
<tr>
<td>Q2</td>
<td>0.016</td>
</tr>
<tr>
<td>Q3</td>
<td>0.209</td>
</tr>
<tr>
<td>Q4</td>
<td>-0.179</td>
</tr>
<tr>
<td>ANXIETY</td>
<td>-0.176</td>
</tr>
<tr>
<td>EXVIA</td>
<td>0.059</td>
</tr>
<tr>
<td>TOUGH POISE</td>
<td>0.044</td>
</tr>
<tr>
<td>INDEPENDENCE</td>
<td>0.016</td>
</tr>
</tbody>
</table>

* P < 0.05
KAB scores were found to be significantly correlated with only two of the twenty-seven measures, namely; the Boredom Susceptibility subscale of the SSS and the I scale of the 16PF.

To test the relative importance of these data, a standard multiple regression was performed. Adjustment was made for LOGage and sex.

None of these measures of psychological functioning contributed significantly to the variance in KAB scores.

**HYPOTHESIS 3: THE VANDO R-A SCALE**

To test the third Hypothesis, that the Vando R-A Scale is a valid measure of perceptual reactance, scores on the Vando R-A Scale were correlated with KAB scores. No significant linear relationship was found ($r = .09, p > .53$).

To test for the presence of a non-linear relationship, a one-way between-groups analysis of covariance was performed. Adjustment was made for LOGage and sex.

After adjustment by covariates, no significant relationship was found ($F[2, 41] = 0.29, p > .75$), as is evident in Table 6, where least squares means are displayed.
TABLE 6
Least Squares Means of Vando R-A Scale Scores Adjusted for LOGage and Sex

<table>
<thead>
<tr>
<th>Reducers</th>
<th>Moderates</th>
<th>Augmenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.29</td>
<td>30.39</td>
<td>29.74</td>
</tr>
</tbody>
</table>

Additional Analyses
To test what the Vando R-A Scale is measuring, R-A Scale scores were correlated with the Arousal Seeking Tendency scale, the four subscales of the Sensation Seeking Scale, the Extraversion scale of the EPI, and the factor and second-order scales of the 16PF. Results of this analysis are summarized in Table 7.

The Vando R-A Scale was found to be significantly correlated with the Arousal Seeking Tendency scale, the Thrill and Adventure Seeking, Experience Seeking, Disinhibition, and Boredom Susceptibility subscales of the SSS, the Extraversion scale of the EPI, and the F, G, H, N, Q3, Exvia, Tough Poise, and Independence scales of the 16PF.

To test the relative importance of these data, a standard multiple regression was performed. Adjustment was made for LOGage and sex. Results of this analysis are summarized in Table 8.
### TABLE 7

Correlations between Vando k-n Scale Scores and Measures of Psychological Functioning

<table>
<thead>
<tr>
<th>Variable</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>AST</td>
<td>.414***</td>
</tr>
<tr>
<td>SSS</td>
<td></td>
</tr>
<tr>
<td>T/A</td>
<td>.612***</td>
</tr>
<tr>
<td>ES</td>
<td>.347***</td>
</tr>
<tr>
<td>DIS</td>
<td>.515***</td>
</tr>
<tr>
<td>BS</td>
<td>.553***</td>
</tr>
<tr>
<td>EPI</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>.645***</td>
</tr>
<tr>
<td>16PF</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>.075</td>
</tr>
<tr>
<td>B</td>
<td>-.019</td>
</tr>
<tr>
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<td>.238</td>
</tr>
<tr>
<td>F</td>
<td>.540***</td>
</tr>
<tr>
<td>G</td>
<td>-.340**</td>
</tr>
<tr>
<td>H</td>
<td>.509***</td>
</tr>
<tr>
<td>I</td>
<td>-.109</td>
</tr>
<tr>
<td>L</td>
<td>-.191</td>
</tr>
<tr>
<td>M</td>
<td>-.003</td>
</tr>
<tr>
<td>N</td>
<td>.338**</td>
</tr>
<tr>
<td>O</td>
<td>-.152</td>
</tr>
<tr>
<td>Q1</td>
<td>.075</td>
</tr>
<tr>
<td>Q2</td>
<td>-.264</td>
</tr>
<tr>
<td>Q3</td>
<td>-.285*</td>
</tr>
<tr>
<td>Q4</td>
<td>-.098</td>
</tr>
<tr>
<td>ANXIETY</td>
<td>-.257</td>
</tr>
<tr>
<td>EXVIA</td>
<td>.564***</td>
</tr>
<tr>
<td>TOUGH POISE</td>
<td>.533***</td>
</tr>
<tr>
<td>INDEPENDENCE</td>
<td>.472***</td>
</tr>
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</table>

*** p < .01. ** p < .02. * p < .05.
TABLE 8

Standard Multiple Regression of Measures of Psychological Functioning on Vando E-A Scale Scores After Adjustment for LOGage and Sex

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>B</th>
<th>SE²</th>
<th>P</th>
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<tr>
<td>AST</td>
<td>-0.136</td>
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<tr>
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<tr>
<td>BS</td>
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<td>0.000</td>
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<tr>
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<tr>
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<tr>
<td>E</td>
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<tr>
<td>F</td>
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<tr>
<td>G</td>
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<tr>
<td>H</td>
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<tr>
<td>I</td>
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<td>O</td>
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<td>EXVIA</td>
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<tr>
<td>INDEPENDENCE</td>
<td>-0.396</td>
<td>0.005</td>
<td>0.41</td>
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* P < 0.01.
Only the Thrill and Adventure Seeking subscale of the SSS contributed significantly to the variance in Vando R-A Scale scores.

An analysis of variance of predictions of likelihood of stealing was planned employing the Vando R-A Scale to assign each of the total sample of 220 subjects to one of the three levels of group membership (Reducer, Moderate, and Augmenter), had the R-A Scale been found to be valid. This analysis was not performed.
Chapter IV
DISCUSSION

The purpose of this study was to investigate the differential perception of criminal risk by Reducers, Augmenters, and Moderates, refine the construct of perceptual reactance in relation to sensation seeking, extraversion, and general psychological functioning, and to gather further evidence for the validity of the Vando R-A Scale.

HYPOTHESIS 1: THE PERCEPTION OF CRIMINAL RISK

The first hypothesis, that Reducers, Moderates, and Augmenters differ in their perception of criminal risk as a function of the consequences of their behavior for others, is not validated. The Reducer's greater willingness to take criminal risks is not a result of being less sensitive to risk conditions, since no statistically significant interaction effect was found between sensitivity to the consequences for others and group membership. Indeed, analysis of estimates of criminal risk broken down by group reveals that Reducers are actually more concerned with the consequences for others of their actions than are Moderates and Augmenters. It is not, therefore, a lack of sensitivity
to these consequences which renders reducers more likely to take criminal risks.

Reducers did display an over-all greater willingness to take criminal risks than did moderates and augmenters, however. Reducers's predictions of the likelihood of a hypothetical student stealing money were higher than augmenters's. Moderates fell between reducers and augmenter's in willingness to take criminal risks. These relative positions are in the direction expected from previous research. That this relationship between group membership and criminal risk-taking is weak is understandable in light of the nature of the subject pool, which would not be expected to contain a significant proportion of persons with extreme reducing or augmenting tendencies as it, in fact, did not.

A more accurate understanding of the relationship between perceptual reactance and the perception of criminal risk (based on a proposal by Rettig and Pasimanic [1964] to explain the differential sensitivity of cheaters and non-cheaters) may be this: Reducers, who are more likely to engage in criminal acts, are more sensitive to risk conditions because these conditions are relevant to their consideration of such acts. Augmenters, who are unlikely to engage in criminal acts, are less sensitive to low- and high-risk conditions because these conditions do not enter into their decision to undertake an action. It can not be
said that Reducers fail to refrain from acting in ways that cause pain for others because they are less able to sympathize with that pain.

**HYPOTHESIS 2: MEASURES OF PSYCHOLOGICAL FUNCTIONING**

In relation to the second Hypothesis, there do exist statistically significant differences between Reducers, Moderates, and Augmenters in their response to measures of psychological functioning. Since these differences are few (three) in relation to the number of psychological measures employed (twenty-seven), however, interpretation of the results must be considered tentative.

Statistically significant differences were found on the A, I, and L scales of the 16PF. The following descriptions are derived from research presented by Cattell, Eber, and Tatsuoka (1970) regarding the 16PF.

Based on their A scale scores, Augmenters are characterized as being more outgoing, having greater preference for occupations dealing with people, greater enjoyment of social recognition, willingness to compromise, and generosity in personal relationships, than Reducers and Moderates.

In terms of the I scale, Moderates are described as being more tender-minded, fidgety, expecting of affection, attention, help, and sympathy from others, artistically fastidious, imaginative, and likely to engage in
sociopathic, drug addiction, and smoking behavior than reducers and augmenters. The lower I scores of augmenters are associated with a history of fewer illnesses and operations, more aggressiveness, and a greater participation in athletics and sports.

On the basis of the I scale, reducers are described as being more suspicious, jealous, dogmatic, dwelling upon frustrations, tyrannical, demanding, and irritable than moderates and augmenters.

These descriptions are not completely in agreement with the theoretical or empirical literature on perceptual reactance.

KAE scores were found to correlate with the boredom susceptibility subscale or the sensation seeking scale, accounting for eight percent of the variance in KAE scores. The statistical significance of this relationship disappeared, however, when the variance due to the other measures of psychological functioning was partialled out. In fact, none of the measures of psychological functioning included in this study contributed statistically significantly to KAE scores in multiple regression analysis. The most notable failures were the other three subscales of the SSS and the extraversion scales of the EPI and 16PF. This finding is contrary to the second hypothesis, and the theory and research concerning perceptual reactance.
It is very difficult to resolve the discrepancies between the present findings and the literature on perceptual reactance. Mahoney and Brown (1982), most glaringly, report a statistically significant linear relationship between KAE scores and scales A, C, F, N, and Q3 of the 16PF, which is inconsistent with the results of the analyses presented here. As the 16PF is a well-established measure, the stability of the KAE is placed in question, yet again.

In the case of sensation seeking, the bulk of the studies relating it with perceptual reactance have employed behavioral indices of personality functioning. Those studies which have employed questionnaire measures of sensation seeking (e.g., Kohn et al., 1982), have also employed the Vando R-A Scale as a measure of perceptual reactance, the validity of which is in question. It may be that the operationalization of sensation seeking in the behavioral studies is not equivalent to what is measured by sensation seeking questionnaires. Sales's (1971, 1972) findings are consistent with a description of Reducers as being better able than Moderates and Augmenters to avoid becoming bored. The present findings support Zuckerman's (1979) conclusion that perceptual augmenting, rather than reducing, is associated with sensation seeking.

The other line of support for a relationship between perceptual reactance and sensation seeking comes from the
cortical AER literature. As already described, the relationship between AER slope and perceptual reactance is not clearly defined. The present findings, albeit indirectly, suggest that conclusions drawn from one method are not transferable to the other.

In regard to extraversion, the only direct test of the relationship between it and perceptual reactance was done by Petrie (1967). She reports having found Reducers to provide higher extraversion scores than Augmenters. The rest of the support is indirect (e.g. Barnes, 1975). The findings from the present study do not support a simple relationship between extraversion and perceptual reactance.

Overall, the present results do not correspond to those reported by previous researchers. In this study, chance factors appear to be playing a significant role not encountered in previous research.

**HYPOTHESIS 3: THE VANDO R-A SCALE**

The third Hypothesis, that the Vando R-A Scale is a valid measure of perceptual reactance, is not supported. R-A Scale scores behaved as expected from previous research (e.g. Kohn et al., 1982), as did KAE scores, producing three approximately equal groups. The Vando R-A Scale did not correlate with KAE scores, however, nor was it differentially endorsed by Reducers, Moderates, and Augmenters.
In terms of the Boredom Susceptibility subscale of the SSS, both the R-A Scale and KAE correlated positively with it, in perfect disagreement with expectations. (If the R-A Scale and KAE were comparable measures, the correlation coefficients would be in opposite directions.)

In sum, the KAE and Vando Scale do not appear to be measuring the same trait. All evidence points to the Vando R-A Scale tapping sensation seeking, as intended (Vando, 1974). This does not, however, encompass the full spectrum of behaviors associated with perceptual reactance and KAE scores. In light of the findings of the present study, it may not encompass any of them.

**SUGGESTIONS FOR FURTHER RESEARCH**

Although the present study provides further evidence for the Reducer's greater willingness to take criminal risks, an adequate rationale has yet to be found. It is not due to an insensitivity to the suffering of others, nor to a sensation/thrill seeking tendency. The role of perceptual reduction in socialization, as proposed by Petrie (1967), is one avenue which has yet to be empirically explored. Reducers's greater tolerance for pain may contribute to a lack of motivation for avoiding punishment, a prominent reinforcer in social learning. That this would render Reducers more sensitive to pleasurable outcomes than Augmenters is consistent with the findings of this study.
The relationship between the KAE and measures of psychological functioning remains troublesome. Incompatible results continue to be reported. Further research into conditions for the administration of the KAE which maximize the reproducibility of results is warranted.

The continued use of the Vando R-A Scale as a measure of perceptual reactance is contraindicated. The development of a valid paper-and-pencil measure of perceptual reactance would facilitate research in this area greatly, however, and is strongly encouraged.

**SUMMARY**

Reducers, Moderates, and Augmenters were found to differ in their perception of criminal risk. Contrary to expectations, however, Reducers were more sensitive to situational variations in the consequences for others than were Moderates and Augmenters. Consistent with the literature, though as yet unexplained, Reducers were found to be more willing to take criminal risks, Moderates unwilling to, and Augmenters least willing to. This is not due to differences in sensitivity to the experiencing of pain by others.

Although differences were found between Reducers, Moderates, and Augmenters on measures of psychological functioning, they were relatively few and not as expected. That chance factors may have influenced the results must be seriously considered.
The Vando R-A Scale did not correlate with KAE scores, nor was it differentially endorsed by Reducers, Moderates, and Augmenters. It cannot be regarded as a valid measure of perceptual reactance.
REFERENCES


Appendix A

MEHRABIAN'S (1980) MEASURE OF AROUSAL-SEEKING TENDENCY

Use the following scale to indicate the degree of your agreement or disagreement with the following statements.

A = strongly agree
B = agree
C = neither agree nor disagree
D = disagree
E = strongly disagree

1. Designs or patterns should be bold and exciting.
2. I would like the job of a foreign correspondent for a newspaper.
3. I don't pay much attention to my surroundings.
4. I don't like the feeling of wind in my hair.
5. I prefer an unpredictable life that is full of change to a more routine one.
6. Sometimes I really stir up excitement.
7. I never notice textures.
8. I like surprises.
9. My ideal home would be peaceful and quiet.
10. I eat the same kind of food most of the time.
11. I don't like to have lots of activity around me.
12. I am interested only in what I need to know.
13. I like meeting people who give me new ideas.
14. I would be content to live in the same town for the rest of my life.
15. I like continually changing activities.
16. I like a job that offers change, variety, and travel, even if it involves some danger.
17. I avoid busy, noisy places.
18. I wouldn't enjoy dangerous sports such as mountain climbing, airplane flying, or sky diving.
19. I like to experience novelty and change in my daily routine.
20. Shops with thousands of exotic herbs and fragrances fascinate me.
21. I much prefer familiar people and places.
22. When things get boring, I like to find some new and unfamiliar experience.
23. I like to touch and feel a sculpture.
24. I don't enjoy doing daring, foolhardy things just for fun.
25. I like to go somewhere different nearly every day.
26. People view me as a quite unpredictable person.
27. I like to run through heaps of fallen leaves.
28. I sometimes like to do things that are a little frightening.
29. I prefer friends who are reliable and predictable to those who are excitingly unpredictable.
30. I am interested in new and varied interpretations of different art forms.
31. I seldom change the pictures on my walls.
32. I am not interested in poetry.
33. It's unpleasant seeing people in strange, weird clothes.
34. I am continually seeking new ideas and experiences.
Appendix B

ZUCKERMAN'S (1979) SENSATION-SEEKING SCALE

Each of the items below contains two choices, A and B. Please indicate which of the choices most describes your likes or the way you feel. In some cases you may find items in which both choices describe your likes or the way you feel. Please choose the one which better describes your likes and feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike least.

It is important you respond to all items with only one choice, A or B.

1.
A) I like "wild" uninhibited parties.
B) I prefer quiet parties with good conversation.

2.
A) There are some movies I enjoy seeing a second or even a third time.
B) I can't stand watching a movie that I've seen before.

3.
A) I often wish I could be a mountain climber.
B) I can't understand people who risk their necks climbing mountains.

4.
A) I dislike all body odors.
B) I like some of the earthy body smells.
5. A) I get bored seeing the same old faces.
   B) I like the comfortable familiarity of everyday friends.

6. A) I like to explore a strange city or section of town by myself, even if it means getting lost.
   B) I prefer a guide when I am in a place I don't know well.

7. A) I dislike people who do or say things just to shock or upset others.
   B) When you can predict almost everything a person will do and say, he or she must be a bore.

8. A) I usually don't enjoy a movie or play where I can predict what will happen in advance.
   B) I don't mind watching a movie or play where I can predict what will happen in advance.

9. A) I have tried marijuana or would like to.
   B) I would never smoke marijuana.

10. A) I would not like to try any drug which might produce strange and dangerous effects on me.
    B) I would like to try some of the new drugs that produce hallucinations.

11. A) A sensible person avoids activities that are dangerous.
    B) I sometimes like to do things that are a little frightening.
12.
A) I dislike "swingers".
B) I enjoy the company of real "swingers".

13.
A) I find that stimulants make me uncomfortable.
B) I often like to get high (drinking liquor or smoking marijuana).

14.
A) I like to try new foods that I have never tasted before.
B) I order the dishes with which I am familiar, so as to avoid disappointment and unpleasantness.

15.
A) I enjoy looking at home movies or travel slides.
B) Looking at someone's home movies or travel slides bores me tremendously.

16.
A) I would like to take up the sport of water-skiing.
B) I would not like to take water-skiing.

17.
A) I would like to try surf-board riding.
B) I would not like to try surf-board riding.

18.
A) I would like to take off on a trip with no pre-planned or definite routes or timetable.
B) When I go on a trip I like to plan my route and timetable fairly carefully.

19.
A) I would not like to learn to fly an airplane.
B) I would like to learn to fly an airplane.
A) I prefer "down-to-earth" kinds of people as friends.
B) I would like to make friends in some "far-out" groups like artists or "hippies".

A) I prefer the surface of the water to the depths.
B) I would like to go scuba diving.

A) I would like to meet some persons who are homosexual (men or women).
B) I stay away from anyone I suspect of being "queer".

A) I would like to try parachute jumping.
B) I would never want to try jumping out of a plane with or without a parachute.

A) I prefer friends who are excitingly unpredictable.
B) I prefer friends who are reliable and predictable.

A) I am not interested in experience for its own sake.
B) I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional or illegal.

A) The essence of good art is in its clarity, symmetry of form and harmony of colors.
B) I often find beauty in the "clashing" colors and irregular forms of modern painting.
27.  
   A) I enjoy spending time in the familiar surroundings of home.
   B) I get very restless if I have to stay around home for any length of time.

28.  
   A) I like to dive off the high board.
   B) I don't like the feeling I get standing on the high board (or I don't go near it at all).

29.  
   A) I like to date members of the opposite sex who are physically exciting.
   B) I like to date members of the opposite sex who share my values.

30.  
   A) Heavy drinking usually ruins a party because some people get loud and boisterous.
   B) Keeping the drinks full is the key to a good party.

31.  
   A) The worst social sin is to be rude.
   B) The worst social sin is to be a bore.

32.  
   A) A person should have considerable sexual experience before marriage.
   B) It's better if two married persons begin their sexual experience with each other.

33.  
   A) Even if I had the money I would not care to associate with flighty persons like those in the "jet set".
   B) I could conceive of myself seeking pleasure around the world with the "jet set".
A) I like people who are sharp and witty even if they do sometimes insult others.

B) I dislike people who have their fun at the expense of hurting the feelings of others.

A) There is altogether too much portrayal of sex in movies.

B) I enjoy watching many of the "sexy" scenes in movies.

A) I feel best after taking a couple of drinks.

B) Something is wrong with people who need liquor to feel good.

A) People should dress according to some standards of taste, neatness, and style.

B) People should dress in individual ways even if the effects are sometimes strange.

A) Sailing long distances in small sailing crafts is foolhardy.

B) I would like to sail a long distance in a small but seaworthy sailing craft.

A) I have no patience for dull or boring persons.

B) I find something interesting in almost every person I talk with.

A) Skiing down a mountain slope is a good way to end up on crutches.

B) I think I would enjoy the sensations of skiing very fast down a high mountain slope.
Appendix C
"VANDO'S (1970) B-A SCALE

Below you will find a series of paired statements which you are asked to regard as choices. In some cases you will like both choices. In some cases you will dislike both choices. In other cases you will find the choices neutral. No matter how the items strike you, however, you are asked to choose between them. In each case you are asked to decide which of the alternatives you prefer in comparison to the other alternative. It is best to work as rapidly as possible.

1.
A) see a war drama
B) see a situation comedy

2.
A) play sports requiring endurance
B) play games with rest stops

3.
A) raunchy blues
B) straight ballads

4.
A) jazz combo
B) 1001 strings

5.
A) stereo on too loud
B) stereo on too low
6.
A) own a goldfish
B) own a turtle

7.
A) conservatism
B) militancy

8.
A) too much sleep
B) too little sleep

9.
A) danger
B) domesticity

10.
A) passenger car
B) sports car

11.
A) have several pets
B) have one pet

12.
A) be a shepherd
B) be a cowboy

13.
A) motorcycle
B) motorscooter

14.
A) see the movie
B) read the book
15.  
A) cocktail music  
B) disco music

16.  
A) do research in the library  
B) attend a classroom lecture

17.  
A) a hot drink  
B) a warm drink

18.  
A) a drum solo  
B) a string solo

19.  
A) too much exercise  
B) too little exercise

20.  
A) loud music  
B) quiet music

21.  
A) prepare medications  
B) dress wounds

22.  
A) a driving beat  
B) a nice melody

23.  
A) hardrock music  
B) regular popular music
24.  
A) like athletics  
B) dislike athletics

25.  
A) unamplified music  
B) electrically amplified music

26.  
A) smooth-textured foods  
B) crunchy foods

27.  
A) mind-expanding drugs  
B) alcohol

28.  
A) speed  
B) safety

29.  
A) soccer  
B) golf

30.  
A) excitement  
B) calm

31.  
A) the Beatles  
B) 1001 strings

32.  
A) a family of six  
B) a family of three
33. 
   A) thrills
   B) tranquility

34. 
   A) play contact sports
   B) play noncontact sports

35. 
   A) live in a crowded home
   B) live alone.

36. 
   A) share intimacy
   B) share affection

37. 
   A) games emphasizing speed
   B) games paced slowly

38. 
   A) thinking
   B) doing

39. 
   A) competitive sports
   B) non-competitive sports

40. 
   A) emotionally expressive, somewhat unstable people
   B) calm, even-tempered people

41. 
   A) be a nurse on an acute care ward
   B) be a nursing supervisor
42. A) be a NASA scientist  
B) be an astronaut

43. A) be a stuntman  
B) be a propman

44. A) a job which requires a lot of traveling  
B) a job which keeps you in one place

45. A) climb a mountain  
B) read about a dangerous adventure

46. A) body odors are disgusting  
B) body odors are appealing

47. A) keep on the move  
B) spend time relaxing

48. A) have a cold drink  
B) have a cool drink

49. A) being confined alone in a room  
B) being free on the desert

50. A) security  
B) excitement
51.
   A) continuous anesthesia
   B) continuous hallucinations

52.
   A) water skiing
   B) boat rowing

53.
   A) hostility
   B) conformity

54.
   A) Renoir
   B) Picasso
Appendix D

THE BEHAVIOR PREDICTION SCALE

The following paragraphs describe a student in a conflict about taking money which belongs to someone else. Read each one carefully and indicate, using the scale below, your estimate of the likelihood that the student will take the money.

A = will definitely not steal the money
B = will probably not steal the money
C = will be unable to decide
D = will probably steal the money
E = will definitely steal the money

You are to indicate only whether or not you think the student will take the money, not how right or wrong you think it would be to do so.

1. A student has to have some money to pay off a debt. The student is employed as a teller for the summer and is thinking of stealing the money from the bank. The money would pay for the entire debt. The student knows that the missing money would be recovered by deductions from the yearly profits of the bank. However, the student knows that if caught, the matter will be settled privately with the manager and expulsion from the bank is unlikely.

2. A student has to have some money to pay for a crucial medical operation. The student is employed as a teller for the summer and is thinking of stealing the money from the bank. The operation is not guaranteed to cure the illness. The student knows that the missing money would be recovered by deductions from the pay of the other tellers at the bank. However, the student knows that if caught, criminal charges will be laid by the manager and expulsion from the bank is likely.
3. A student has to have some money to pay off a debt. The student is employed as a teller for the summer and is thinking of stealing the money from the bank. The money would pay for only a small part of the debt. The student knows that the missing money would be recovered by deductions from the pay of the other tellers at the bank. However, the student knows that if caught, criminal charges will be laid by the manager and expulsion from the bank is likely.

4. A student has to have some money to pay for a crucial medical operation. The student is employed as a teller for the summer and is thinking of stealing the money from the bank. The operation is not guaranteed to cure the illness. The student knows that the missing money would be recovered by deductions from the yearly profits of the bank. However, the student knows that if caught, the matter will be settled privately with the manager and expulsion from the bank is unlikely.

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A = will definitely not steal the money
B = will probably not steal the money
C = will be unable to decide
D = will probably steal the money
E = will definitely steal the money

9. A student has to have some money to pay off a debt. The student is employed as a teller for the summer and is thinking of stealing the money from the bank. The money would pay for the entire debt. The student knows that the missing money would be recovered by deductions from the pay of the other tellers at the bank. However, the student knows that if caught, the matter will be settled privately with the manager and expulsion from the bank is unlikely.

10. A student has to have some money to pay for a crucial medical operation. The student is employed as a teller for the summer and is thinking of stealing the money from the bank. The operation is not guaranteed to cure the illness. The student knows that the missing money would be recovered by deductions from the yearly profits of the bank. However, the student knows that if caught, the matter will be settled privately with the manager and expulsion from the bank is unlikely.
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VITA AUCTORIS

1959
Born in Halifax, Nova Scotia, Canada
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1978
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Graduated with the degree of Bachelor
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