

ANXIETY AND ITS CORRELATES -- INTROVERSION-EXTROVERSION,
LOCUS OF CONTROL, AND REINFORCEMENT EXPECTATIONS

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The problem with which this study is concerned is that of considering the relationship between neurotic anxiety and several personality variables. Even though anxiety has been the subject of many studies, it is still poorly defined. The basic model to be considered is Eysenck's three-dimensional model between neuroticism and introversion-extroversion. This model is expanded to include Rotter's locus of control and reinforcement expectancy (optimism and pessimism).

The author presents a comprehensive literature survey of the four variables as they relate to the study. This literature survey draws heavily on the work of Eysenck and Rotter and upon the work of their followers. The paper includes the results of a correlational study using 158 college undergraduate students. Four tests: the Myers-Briggs Type Indicator, the Rotter Locus of Control Questionnaire, the State-Trait Anxiety Index, and the Read Reinforcement Expectancy Scale were administered to each subject. The resulting data was treated statistically in order to determine existing relationships between the several variable.

In addition to the literature survey and the correlational study, the paper presents a twenty-item questionnaire regarding reinforcement expectation. The questionnaire attempts to avoid overlap with locus of control. The author contends that contamination from locus of control has biased previous studies on pessimism. He also feels that pessimism, as an overlooked variable, has probably influenced previous studies of introversion and locus of control.

The study demonstrates that a positive correlation exists between anxiety and introversion, anxiety and external locus of control, and anxiety and negative reinforcement expectancy. It also shows a high correlation between negative reinforcement expectancy and introversion and external locus of control. No correlational relationship was demonstrated between introversion and external locus of control. Males demonstrated higher correlation coefficients than females when considering the anxiety versus locus of control variables. Females demonstrate higher correlation coefficients than males when considering the anxiety versus introversion variables.

The results as presented tend to support Eysenck's theory of introversion-extroversion and Rotter's theories regarding locus of control. The paper demonstrates the need for additional variables (such as reinforcement expectations) when developing a model of personality types.

The need for continuing and expanded investigation into these several variables is discussed.

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THESIS

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CHAPTER I

INTRODUCTION

The Problem

Anxiety, its cause and effect, has been the subject of many investigations. Almost every author on personality discusses it at length. It has been defined and redefined, classified, and described; yet it remains clouded in obscurity. Most often the original concept of the researcher predetermines the results. This is because the possible factors involved in anxiety are endless, and any study must involve only a limited number of these. The specific factors a researcher selects to include in his study often determine the result. Because of this, for each study that reaches a significant conclusion regarding anxiety, there are other studies which cast doubt on that conclusion.

This research, as others, by necessity, will be limited. In this case, it will be limited to the relationship between anxiety and introversion-extroversion as H. J. Eysenck (1) presents it and internal-external control as J. B. Rotter (3) presents it. This paper will consider one additional factor, namely, the type of reinforcement (positive or negative) that the subject generally expects in life.

Anxiety and Introversiion-Extroversion

First it is important to look at Eysenck's view of the relationship between anxiety and introversiion-extroversion.

Eysenck presents anxiety (neurotic) as one component in a three-dimensional model. The horizontal vector is neuroticism and the vertical vector is psychoticism. A second horizontal vector which is perpendicular to the neuroticism vector is introversiion-extroversion.

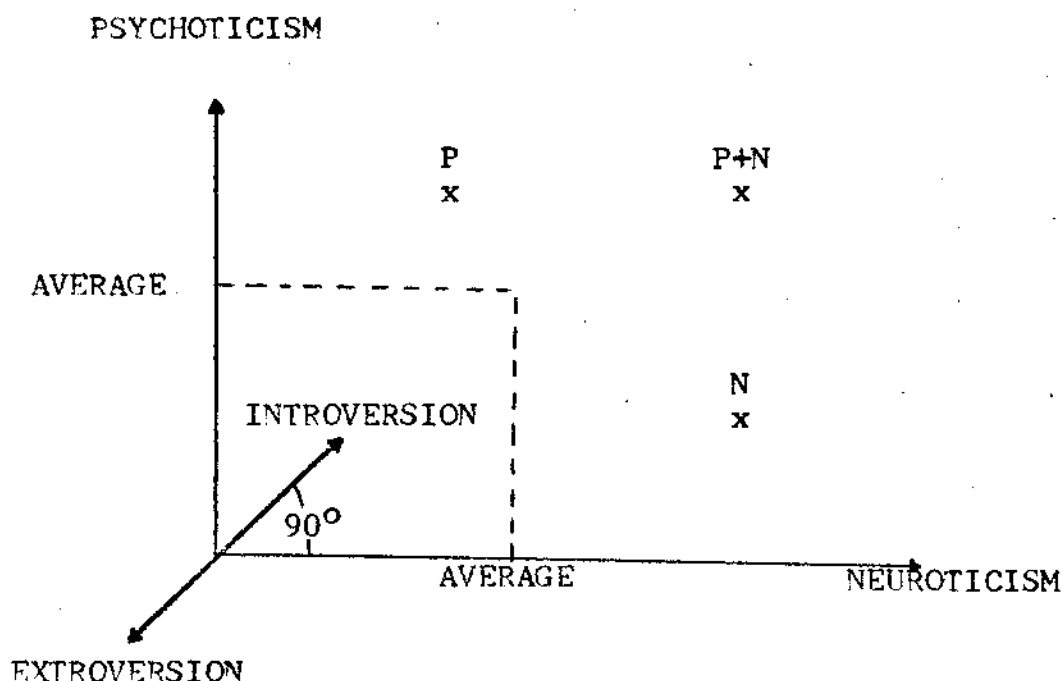


Fig. 1--Diagrammatic representation of three dimensions: psychoticism, neuroticism, introversiion-extroversion.

Eysenck explains this model as follows:

The ordinate and the abscissa respectively represent the factors neuroticism and psychoticism; the average person, in each case, is assumed to lie roughly at the center of these two variates. Representing an individual's position in two-dimensional

space, therefore, position A would indicate the average person's standing, P would indicate the position of the average psychotic, N that of the average neurotic, and P + N that of a person suffering from both a neurotic and a psychotic illness. All other positions on the plane thus generated are possible locations for a given individual, and it will be seen that mixed cases are more likely than pure cases--we are more likely to find individuals in the plane of the diagram than on the ordinate or on the abscissa. This preponderance of mixed cases of course agrees well with clinical experience. Diagnosis, on this showing, should consist in the accurate determination of an individual's position on the plane, rather than, as is now usual, in a simple either-or judgment (1, p. 114).

Eysenck goes on to say,

The picture is of course much more complicated than this. In addition to the two factors depicted in the diagram, we have many others which presumably play their part in determining the nature of the illness. The only one of these to be operationally defined in terms of objective tests is extroversion-introversion. Thus the person who is high on neuroticism and introversion would be seen clinically as a patient suffering from dysthymic disorders (anxiety, reactive depression, obsessional features); the person who is high on neuroticism and extroversion would be seen clinically as a patient suffering from hysterical (or possible psychopathic) symptoms. It is not hypothesized that these are the only dimensions into which personality can be analyzed, and along which measurement should take place; to take but one example, there is the case of intelligence (operationally defined in terms of Thurstone's second-order factor), which is more or less orthogonal to all the dimensions so far discussed. In due course, other dimensions will no doubt be isolated and measured, and much prospecting has already been done by Cattell into possible lines of progress. But regardless of the actual number of independent dimensions which our picture of personality may require, it is clear that categorical diagnosis of the "either-or" kind are not warranted by the experimental findings; what is required is a separate assessment and measurement of each dimension in turn (1, p. 115).

It can be seen that while Eysenck demonstrates a connecting relationship between anxiety and introversion, he does not define this relationship in strong correlatable terms.

Locus of Control

J. B. Rotter and his followers presented a "social learning theory" which emphasized the social aspect of the person's environment. Social learning theory considers social reinforcement as any act strengthening the expectancy that a given behavior or occurrence will be repeated. He discusses the role of reinforcement in his initial monograph.

The role of reinforcement, reward, or gratification is universally recognized by students of human nature as a crucial one in the acquisition and performance of skills and knowledge. However, an event regarded by some persons as a reward or reinforcement may be differently perceived and reacted to by others. One of the determinants of this reaction is the degree to which the individual perceives that the reward follows from, or is contingent upon, his own behavior or attributes versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions (3, p. 1).

Rotter and his followers have investigated the correlation between a person's concept of the source of control over his reinforcement schedule (internal versus external) on his resistance to manipulation, manifest anxiety, ease of conditioning, personality adjustment, and social attitudes. This work has led them to associate higher levels of anxiety with higher levels of belief that one's reinforcement is controlled by society, and not a result of his behavior (external control).

From Rotter's work and that of his followers, it can be seen that some relationship exists between locus of control and anxiety. He indicates that those who feel that the source of their reward is outside of their control (externals) tend to be more anxious. Here there is no clear-cut correlation and no relationship with introversion and extroversion. It seems that more definition is required between the various dimensions.

Other Factors Operating

D. L. Read (2), in a previous unpublished paper, did initial research on the relationships between introversion, locus of control, and anxiety. He found significant correlations at the .01 and .05 level between introversion, external control, and anxiety. He also discovered that much higher levels of significance could be obtained with his data by manual separation of those subjects who best correlated on an introversion-extroversion versus anxiety basis. This left a remainder that correlated exceptionally well on an internal-external control versus anxiety basis.

It seemed then to Read that at least one other factor was needed to explain these correlation results. It also seemed reasonable that this missing factor might help explain the often conflicting research studies reported in literature. Any such factor or group of factors would generally have to relate to the individual's view of reward

and of social involvement. One slightly investigated concept that would fit both of these areas is the type of reinforcement (reward or punishment) that the subject generally expects. If the subject generally expected punishing reinforcements for his efforts, he responds in a different manner than if he generally expected positive reinforcements.

Logically, an external person anticipating negative reinforcement would tend toward anxiety because he has no control over those bad things that happen to him. This situation would be frustrating and anxiety producing. The internal person anticipating positive reinforcement would tend to be non-anxious because he generally expects reward and feels his behavior merits it. Because he is internally controlled, he feels he will be able to continue to perform well in order to receive these rewards. It also seems logical to expect that these two groups would be larger than the positive reinforcement expecting external or the negative reinforcement expecting internal groups in order to allow for the results as reported by Read.

If this logic is valid, the prediction can be made that there will be 1) internals who anticipate positive reinforcement that tend to be extroverted and not anxious, 2) externals who expect negative reinforcement that tend to be introverted and anxious, 3) a small number of negative anticipating internals who tend to be introverted and anxious and, 4) a small number of positive reinforcement anticipating externals who tend to be extroverted and not anxious.

Hypotheses

The following hypotheses will be considered in this paper:

1. A positive relationship exists between the tendency toward introversion and the tendency toward anxiety as measured by the Myers-Briggs Type Indicator and the Trait Scale of the STAI.

2. A positive relationship exists between the tendency to feel that ones locus of control is external and the tendency toward anxiety as measured by the Rotter Locus of Control Scale and The Trait Scale of the STAI.

3. No significant correlation exists between the introversion-extroversion and internal-external locus of control variables as measured by the above instruments.

4. A relationship exists between expectancy of negative reinforcement and anxiety as measured by the Read Reinforcement Expectancy Scale and the Trait Scale of the STAI.

5. There is a significant difference at the .05 level of probability between negative and positive expectancy populations regarding introversion-extroversion, internal-external locus of control, and anxiety as measured by the above instruments.

The .01 level of probability for significance is selected for the first, second, and fourth hypotheses because previous work by Read and others lends confidence to the theory that relationships do exist between these variables.

The .05 level of probability for significance was selected for the third hypothesis in order to minimize a Type I error of labeling the two groups unrelated, when in fact a relationship may exist.

Since no research exists in the area of the fifth hypothesis, the .05 level of probability for significance was selected in order to minimize a Type I error of rejecting an existing relationship between these variables that might preclude future investigation.

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CHAPTER II

LITERATURE SURVEY

A proper understanding of the above factors requires a review of literature to determine what research has been done on these variables. It will be seen that literature is replete with studies on anxiety and that considerable work has been presented involving introversion-extroversion as a personality dimension. Some research has recently been forthcoming on the effect of one's attitude regarding locus of control; however, little has been done regarding the type of reinforcement that an individual primarily anticipates from social interaction.

The literature cited below is selective and chosen to provide bridges between the factors to be investigated. In no way is this an exhaustive literature search of the individual topics themselves.

Anxiety

The concept of anxiety draws much attention in literature, but often there is a considerable difference in the term and in the discussion of its etiology.

Portnoy's article in the American Handbook of Psychiatry, in part describes it as follows: ". . . subjectively experienced uneasiness, apprehension, anticipation of danger,

doom, disintegration, and going to pieces, the source of which is unknown by the individual and toward which he feels helpless, with a characteristic somatic pattern " (42). It goes on to discuss the physiological changes that result from anxiety. This definition is a generalized presentation of the immediate emotional state that most often is labeled anxiety.

Among earlier modern investigators, Freud commands the most attention. He points out the centrality of anxiety on the whole issue of mental health. ". . . the problem of anxiety is a nodal point at which the most various and important questions converge, a riddle whose solution would be bound to throw a flood of light upon our whole mental existence " (19, p. 393). He goes on to delineate between normal or realistic anxiety and neurotic or free-floating (phobic) anxiety which cannot be related to any specific situation.

Realistic anxiety strikes us as something very rational and intelligible. We may say of it that it is a reaction to the perception of an external danger, that is, of an injury which is expected and foreseen. It is connected with the flight reflex and it may be regarded as a manifestation of the self-preservative instinct (19, p. 394).

As this paper considers the question of anxiety, it will usually limit the discussion to neurotic or nonrealistic anxiety.

In their consideration of the definition of anxiety, Martin and Stroufe say,

Anxiety . . . is usually approached from a multiple-response point of view. Few people are

willing to limit their conceptions of anxiety to one response and, for example, say that anxiety is rapid heart rate, or that anxiety is the self-report of a feeling of anxiousness. Common sense tells us that a person's heart may beat more rapidly for a variety of reasons that have no relationship to anxiety, and that what one person reports as a subjective feeling of anxiousness may be quite different from what another person would report (33, p. 216).

It is apparent that an adequate definition of anxiety is difficult to secure. But for this investigation, it is important to have a good definition of persistent neurotic anxiety. An appropriate place to begin this effort is a return to Freud's works.

Anxiety, then, is in the first place, something that is felt. We call it an affective state, although we are also ignorant of what an affect is. As a feeling, anxiety has a very marked character of unpleasure (however) . . . anxiety must have other distinctive features besides this quality of unpleasure . . . we notice that anxiety is accompanied by fairly definite physical sensations, which can be referred to particular organs of the body Analysis of anxiety states, therefore, reveals the existence of (1) a specific character of unpleasure, (2) acts of discharge, and (3) perceptions of these acts (18, pp. 132-133).

This definition only involves a description of the emotional process. It is also necessary to consider etiology and effect.

Dollard and Miller present a definition concerning their learning theory. This approach follows that presented by O. H. Mower. It equates fear with anxiety, or at least makes anxiety a special case of fear. They discuss the acquisition of fear in the following manner:

We say that fear is learned because it can be attached to previously neutral cues . . . we say that it is a drive because it can motivate, and its reduction can reinforce, the learning of new responses . . . therefore, we call fear of a previously neutral cue a learned drive (7, p. 67).

Fear is then learned or learnable by conditioning and, according to their theory, anxiety develops. They also point out that fear can motivate; so, it should be identified as a drive. This learned or "secondary" drive motivates the learning of other, and often inappropriate, responses when these new responses reduce the noxious state of anxiety or fear.

They feel that fear, guilt, and other learned drives are the prime motivating factors in repression, symptom formation, and conflict. Fear, they say, is the strongest and most basic of drives. Intense and unconscious conflict is necessary for neurosis. They go on to say that there are four forms of conflict: approach-approach; approach-avoidance; avoidance-avoidance and double approach-avoidance. Following this reasoning, a study of neurotic behavior should involve a study of one of the primary conflict-producing drives, fear or anxiety.

H. J. Eysenck expands on the Dollard and Miller theory by adding to the learned fear concept a second source of anxiety that is "due to the influence of hereditary factors." He developed two general postulates and a general equation to handle his theory. He presents them in the following manner:

Human beings differ with respect to the speed with which excitation and inhibition are produced, the strength of the excitation and inhibition produced, and the speed with which excitation and inhibition are dissipated. These differences are properties of the physical structures involved in making stimulus-response connections (11, p. 114).

He expands the above statement into a type theory as follows:

Individuals in whom excitatory potentials are developed slowly, and in whom excitatory potentials so developed are relatively weak (or in whom strong inhibitory potentials are developed quickly), are thereby predisposed to develop extroverted patterns of behavior . . . individuals in whom excitatory potentials are generated quickly, and in whom excitatory potentials so developed are relatively strong (or in whom weak inhibitory potentials are generated slowly), are thereby predisposed to develop introverted patterns of behavior (11, p. 114).

His equation generally is $P_b = P_c \times E$ in which P_b is personality behavior, P_c is a constitutional aspect of personality and E is environmental influence. The behavior of a personality trait is the result of the environment acting on some constitutional aspect of the personality. Anxiety (neurotic) is then an inherited lability of the autonomic nervous system. This causes the individual to be oversensitive and overresponsive to aversive stimuli.

Fisher interprets Eysenck's view of the relationship between these dimensions in the following manner:

In considering the dynamic properties of these two dimensions, their causes, and their possibilities of interplay, we must carefully approach Eysenck's conception of anxiety and learn how he believes it is learned and/or inherited . . . the major characteristic of the neurotic individual is . . . excessively sensitive and responsive to anxiety-provoking stimuli. This feature of his behavior is,

according to Eysenck, based upon the neurotic's inherited autonomic nervous system tendencies. In other words, such an individual is genetically predisposed to be affectively over-reactive. This is one source of anxiety and, strictly speaking, it results in what may be termed anxiety-proneness.

The second source of anxiety is learning or conditioning. The paradigm for its acquisition involves two stages. Initially, there is a single traumatic event, or a series of subtraumatic events, either of which produces strong, unconditioned, autonomic fear responses. Obviously, these traumatic events function in a manner that is analogous to Dollard and Miller's pain stimuli (17, p. 74).

It is apparent that Eysenck places emphasis on the O of the S-O-R paradigm and upon constitutional factors.

There are other very diverging views of anxiety. An example of this is Rollo May's theory. He identifies anxiety by the following statement:

This brings us to the sixth and last characteristic of the existing person; anxiety. Anxiety is the state of the human being in struggle against that which would destroy his being One wing of the struggle will always be against something outside the self. But even more portentous and significant for psychology is the inner battle (35, p. 81).

May uses an existential model of the human personality and must accept conflict (crisis) as a natural part of growth and anxiety (dread) as an important aspect of awareness. Because he is also a psychologist, he must distinguish between normal and neurotic. He says that real or normal anxiety is proportional to danger and can be handled on a conscious level of awareness. Neurotic anxiety is, however, unrealistic and

out of proportion to danger and cannot be dealt with in conscious awareness (34, pp. 79-81).

We would expect Karen Horney to adopt a dissimilar view of anxiety and one that is more in line with her Freudian background. She quotes Freud's distinction between normal fear and anxiety as dependent on how appropriate the intensity of reaction is to the actual danger; but she goes on to say,

This distinction has one flaw, however, which is that the decision as to whether the reaction is proportionate depends on the average knowledge existing in the particular culture. But even if that knowledge proclaims a certain attitude to be unfounded, a neurotic will find no difficulty in giving his action a rational foundation (22, p. 42).

She also establishes some preconditions to making important decisions.

These preconditions are fourfold, (1) We must be aware of what our wishes are, or even more, of what our feelings are . . . (2) Since conflicts often have to do with convictions, beliefs, or moral values, their recognition would presuppose that we have developed our own set of values. (3) Even if we recognize a conflict as such, we must be willing and able to renounce one of the two contradictory issues . . . Finally, to make a decision presupposes the willingness and capacity to assume responsibility for it (23, pp. 25-26).

In developing a functional definition of anxiety, it will be important to reconsider these preconditions to decision-making because conflict-requiring decisions are often unresolved and therefore contribute to anxiety.

Anxiety has been identified by many as a danger signal.

Central to our conception of this problem is the assumption that anxiety is a danger signal indicating that the situation has increased the strength of certain ideas, wishes, or phantasies

which, if allowed conscious expression and elaboration, might result in behavior toward and from others which would seriously endanger the child's well-being. The danger relates both to the child's tendencies as well as those anticipated from others. What is implied here is that the unconscious material is at variance with the child's conscious set of values and therefore must be kept out of awareness. Viewed in these terms anxiety is also a signal or a stimulus activating those processes which have as their major effect 'keeping the unconscious unconscious' (48, p. 13).

This follows somewhat Freud's later thinking on anxiety as the ego's reaction to danger of any sort and from any source.

Cattell and Scheier (5, p. 182) discuss two forms of anxiety: 1) Trait (a stable feature of an individual's character) and, 2) State (a transitory phase in a person's existence). Of the anxiety trait, Cattell says that is a component of a person's personality that is heavily loaded with factors such as "ergic tension," "ego weakness," "guilt proneness," "suspiciousness," and "tendency to embarrassment", and that anxious neurotics score high in these areas of their tests.

Cattell points out another source of anxiety as anticipated frustration of satisfaction. "The basic postulate is that anxiety arises from a threatened deprivation of an anticipated satisfaction when the threat does not carry complete cognitive certainty " (4, p. 47).

There are several other models that might be considered, but Fisher adequately sums up a number of the basic concepts of anxiety as follows:

Freud grasped anxiety as a process in which the mental apparatus as a whole . . . is overwhelmed by or is threatened with being overwhelmed by quantities of unmastered excitation. Further, he specified the source(s) of this excitation, its ultimate meaning, and the original situation in which it was experienced as threatening. Sullivan and Schachtel also conceived of anxiety as being fundamentally a tensional phenomenon, but for them it emerges primarily in an interpersonal context and is pervaded with social meaning. The learning theorists define anxiety as a subtype of fear, the latter being understood as a learned drive--that is, a disruption in the organism's homeostasis, ultimately related to the occurrence of painful stimulation. Physiologically oriented theorists grasp anxiety as an effect, the cause of which is to be found in environmental stimuli. Further, this cause-effect relation is conceived in terms of the mediation of various patterns and levels of physiological arousal. Finally, Heidegger, in his analysis of the ontological dimensions of human living, understands anxiety as an affective disposition that expresses the individual's relatedness to a world that has lost its meaning (17, p. 118).

It would seem valid at this point to sum up a definition of anxiety gleaned from these pioneers and develop a description for future use in this paper.

A given realistic level of temporary anxiety is "normal" and valuable as a motivating force within a person. It is continuing anxiety that is unconscious or that, for unknown reasons, is out of proportion to the source that is inappropriate and can be classified as "abnormal" or neurotic. Neurotic anxiety arises out of conflicts when a person is unaware of his true desires, when he does not have his own set of values, when he is not able to decide for one course of action in a conflict, or when he fails to accept the consequences of such a decision.

Cattell's work states that not only fear of aversive events, situations etc. underly anxiety, but also it can be caused by fear of deprivation of desirable rewards. Eysenck says that some people are constitutionally more predisposed to anxiety than are others. It can also be concluded that someone with a "trait" of anxiety is more easily embarrassed, has less ego strength or is less sure of his own ability to cope with expected or possible events. He also indicates that higher levels of anxiety as a "trait" would be inversely related to "ego strength," ability to handle tensions, or an outgoing personality.

By combining concepts it is possible to redefine anxiety as an exaggerated afferent reaction with associated physiological results within the individual. This reaction is, in part, caused by the attitude or belief (conscious or unconscious) that one is unable, or may be unable, to cope with a possible conflict or event which is expected. It may also be because one cannot make a choice or live with a choice in such a conflict. In either case, the individual feels that the results of the conflict or event will be detrimental to him. This definition places the emphasis on the main dimensions considered below: introversion, external control, and pessimistic attitudes about rewards.

The literature relating to means of measuring anxiety is extensive. Because this paper is concerned with the basic personality dimension of anxiety and not the temporary state

of anxiety, it will only consider those types of tests that endeavor to measure the trait called anxiety.

There is a wide range of anxiety scales from which to choose. Two were considered: the Taylor Manifest Anxiety Scale (MAS) and the State-Trait Anxiety Inventory (STAI) by Spielberger, et al.

The MAS was first presented by Taylor (53) in 1953. The final revised form consists of forty-nine questions concerning feelings or physical symptoms associated with conditions demonstrated in "anxious" people. This was based on concepts by Cameron (3) that were concerned with physiological symptoms of chronic anxiety reactions.

The MAS has been correlated with the MMPI by Ericksen and Davids (9), Deese (6), and Lazarus (31) and with the neuroticism scale of the Maudsley Personality Inventory by Bendig (1) and by Spence and Spence (49). In all of these studies, correlations ranging from .7 through .9 were reported. Factor analysis of O'Connor, Lorr, and Stanfford (41) and others, identifies two basic factors, autonomic reactions (blushing, etc.) and cognitive or affective components. The automatic reactions are not considered to be as meaningful as the other more permanent cognitive-affective aspects. The Taylor MAS seems to be measuring a trait of anxiety rather than a transitory state. Martin and Stroufe say of the Taylor MAS:

Most commonly used "anxiety" scales such as the Taylor MAS, IPAT Anxiety Scale, and the MMPI

Pt Scale intercorrelate highly and, to a large extent, are measuring the same thing. These scales do not correlate highly with behavioral manifestations of anxiety, and frequently do not correlate at all with physiological measures. These scales should probably be considered as tapping a more general neuroticism or maladjustment dimension, with anxiety contributing a relatively small proportion of the variance. The validity of self-report anxiety measurement has been improved to some extent and can be further improved by taking into account the following factors:

1. The time interval being assessed
2. The specification of the situation
3. The responses sampled
4. Response biases (33, p. 240).

The STAI (50) was constructed in 1964 to provide a dual scale measuring both state and trait anxiety. The manual published in 1970 presents a wide range of correlations with several personality scales, with achievement tests, and the MMPI. It has a reported correlation of .80 and .79 with the Taylor MAS, but is easier to administer because the nature of the questions are less likely to produce a negative reaction in the mind of the student. For this reason the STAI will be used instead of the TMAS.

Introversion-Extroversion

In order to make an evaluation of the relationship of anxiety to introversion, it will be necessary to consider the work of the prominent researchers in the field of introversion-extroversion. The primary authority dealing with introversion-extroversion is H. J. Eysenck. He sees these two modes of interpersonal interaction as linked with anxiety. Eysenck

modified learning theory to include the basic "type theory" of Jung and even before him, Binet, Janet and Kraepelin. Because of Jung's use of the same terms, introversion-extroversion, his will be the first definition considered.

Introversion: means a turning inward of the libido whereby a negative relation of subject to object is expressed. Interest does not move towards the object but recedes toward the subject. Everyone whose attitude is introverted thinks, feels, and acts in a way that clearly demonstrates that the subject is the chief factor of motivation which the object at most receives only a secondary value When introversion is habitual, one speaks of an introverted type (27, p. 567).

Extroversion: means an outward turning of the libido. With this concept I denote a manifest relatedness of subject to object in the sense of a positive movement of subjective interest towards the object. Everyone in a state of extroversion thinks, feels, and acts in relation to the object, and moreover in a direct and clearly observable fashion, so that no doubt can exist about this positive dependence upon the object. In a sense, therefore, extroversion is an outgoing transference of interest from the subject to the object. If it is an intellectual extroversion, the subject thinks himself into the object; if a feeling extroversion, then the subject feels himself into the object. The state of extroversion means a strong, if not exclusive, determination by the object. Should the state of extroversion become habitual, the extroverted type appears (27, p. 543).

Eysenck modifies Jung's definition as follows:

The typical extrovert is sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by himself. He craves excitement, takes chances, often sticks his neck out, acts on the spur of the moment, and is generally an impulsive individual. He is fond of practical jokes, always has a ready answer, and generally likes change; he is carefree, easygoing, optimistic, and likes to laugh and be merry. He prefers to keep moving and doing things,

tends to be aggressive and loses his temper quickly; altogether his feelings are not kept under tight control, and he is not always a reliable person.

The typical introvert is a quiet, retiring sort of person, introspective, fond of books rather than people; he is reserved and distant except to intimate friends. He tends to plan ahead, 'looks before he leaps', and mistrusts the impulse of the moment. He does not like excitement, takes matters of everyday life with proper seriousness, and likes a well-ordered mode of life. He keeps his feelings under close control, seldom behaves in an aggressive manner, and does not lose his temper easily. He is reliable, somewhat pessimistic and places great value on ethical standards.

These descriptions, of course, sound almost like caricatures because they describe, as it were, the 'perfect' extrovert and the 'perfect' introvert; needless to say, few people closely resemble these extremes, and the majority of the people undoubtedly are somewhat in the middle (16, pp. 19-20).

Eysenck expands on this view elsewhere,

Extroverts and introverts also differ with respect to their attitudes, particularly in the social and political fields. As I have pointed out in Sense and Nonsense in Psychology, extroverted people tend to have tough-minded attitudes, introverted people tend more towards tenderminded attitudes. If they are conservative, introverts tend towards religious attitudes and beliefs, whereas the extrovert will tend to show such attitudes as believing in the death penalty and in the flogging of criminals, being against miscegenation--he will consider coloured people inferior, and so on. On the radical side, introverts tend towards pacifistic and Quaker-type ideals, whereas the extrovert tends towards belief in companionate marriage, easier divorce laws, the belief that Sunday observance is old-fashioned, and so on. At the extreme, conservative extroverts tend to hold Fascist beliefs, and radical extroverts, Communist beliefs (12, p. 60).

It is apparent that Eysenck believes that this dimension defines real differences between personality types; he expands this to many areas of life.

He builds this type theory from factor analysis in the following passage:

Let us now attempt to construct a model of personality thus conceived which embodies various requirements. There are four main levels of organization which are recognizable in this structure. At the lowest level we have specific acts of behavior, or specific responses These are items of behavior, such as responses to experiences of everyday life

At the second level, we have what are called habitual responses These are specific responses which tend to recur under similar circumstances

At the third level, we have organizations of habitual acts into traits These traits--suggestibility, persistence, rigidity, irritability, accuracy, honesty, perseveration, fluency, or whatever the name may be--are theoretical constructs, based on observed intercorrelations of a number of different habitual responses; in the language of factor analysis they may be conceived of as group factors.

At the fourth level, we have organization of traits into a general type; in our example, the introvert. This is also based on observed intercorrelations, this time on correlations between the various traits which between them make up the concept of the type under discussion. Thus in our example persistence, rigidity, irritability, accuracy, autonomic imbalance, and various other traits would form a constellation of traits intercorrelating among themselves, thus giving rise to a higher-order construct, the type. This level, in factorial terminology, corresponds to a general factor, or to what Thurstone calls a "second order factor" (15, pp. 103-104).

He discusses the build up of this introverted-extroverted type from the effect of socialization.

Without, therefore, following Mower all the way in his two-factor type of theory, we may agree with him that a good case can be made out for the proposal that the socialization process is mediated to a considerable extent by conditioning reactions

of an autonomic kind (anxiety) . . . we are immediately led to a chain of deductions which runs something like this:

- (a) Socialization is mediated by conditioning.
- (b) Extroverts condition poorly.
- (c) Introverts condition particularly well.

Therefore, under conditions of equal environmental pressure we would expect extroverts to be under-socialized, introverts to be over-socialized, with people in less extreme positions on the extrovert-introvert continuum showing intermediate degrees of socialization (11, pp. 210-212).

Eysenck goes on to present the results of many experiments in order to demonstrate the soundness of this theory.

Without evaluating Eysenck's emphasis on heredity as a cause of one's predisposition toward anxiety, it is important to see that he identifies one type of person, introverted, as constitutionally overreactive to anxiety-producing stimuli. He says that events producing strong fear stimuli cause greater response and greater conditioning in the introverted individual and that the introvert is prone to overreact to, and to be conditioned by, anxiety-producing stimuli. Eysenck also defines one who is prone toward neuroticism as one who is "emotional" and whose afferent reactions are rapid, strong and long-lasting when presented with strong anxiety-producing stimuli. The higher an individual is on Eysenck's neurotic tendency scale, the more probable it is that he would overreact to such stimuli. Therefore, an introverted-neurotic type would tend to be an anxious person.

This anxiety becomes a conditioned response to such stimuli; so can be equated with Cattell's "trait" type of anxiety discussed above.

He says the introvert is oversocialized because he avoids anxiety-producing conflicts with society and conforms too easily to society, and the extrovert has been under socialized because he has failed to acquire the proper social inhibitions that limit anxiety-producing conflicts. Because of this, the extrovert tends to ignore the rules of society and appears immature and impulsive.

The similarity in ease of conditioning and socialization of the anxious person and the introvert cause us to anticipate an introversion-anxiety relationship. In several studies, including Broom (2), Eysenck (13), Tune (54), and Vroegh (56), significant differences were found between male and female with regard to introversion. Females rated higher in introversion, and younger people tended to rate lower in introversion.

A number of rating scales have been developed to measure paper and pencil questionnaires allowing the subject to express attitudes or preferences which can be scored as basically extrovert or introvert responses. The Neymann-Kohlstedt Diagnostic Test (40), the Maudsley Personality Inventory (14), the Eysenck Personality Inventory (29), the Maudsley Junior Inventory (10), the Heron Scale (21), and the Myers-Briggs Type Indicator (39), are all possible scales.

The Maudsley Inventory has three scales measuring extroversion, neuroticism, and lying. This inventory was well standardized on English subjects that demonstrated its reliability and correlation with similar scales. Extroversion was shown to increase and neuroticism to decrease during treatment of patients from a psychiatric ward.

The Eysenck scale has two scales, extroversion and neuroticism. Kramer (29) validated Eysenck's work and demonstrated that the two scales are separate factors and not correlated; but like the Maudsley scale, it has English phrases and was standardized on English subjects.

The Myers-Briggs Type Indicator (MBTI) was initially developed in 1942, and it was revised and published in 1962. It has been used extensively since its introduction and is well-documented. Mendelsohn in the Sixth Mental Measurements Yearbook, says of it:

While the weight of the evidence does not support several basic assertions about the MBTI, the reviewer nevertheless considers the instrument of considerable potential utility. This conclusion is based on the findings which indicate that type scores relate meaningfully to a wide range of variables including personality, ability, interest, value, aptitude and performance measures, academic choice, and behavior ratings. It would seem useful, then, for personality research and, given its relationships to measures of interest, value, aptitude, and achievement, for academic counseling.

In summary, a consideration of the available data suggests that the MBTI does not represent a successful operationalization of Jungian concepts. Nevertheless, it does appear to have potential utility for research and counseling if scores

are interpreted in the light of their empirical relationships rather than their assumed theoretical significance (36, pp. 321-322).

In the same Yearbook, Sundberg discusses the MBTI.

The question of construct validity is always a complex one: Do these indexes really measure the underlying personality types postulated by Jung's theory? Stricker and Ross conclude on the basis of analysis of content of the scales and their correlations with a wide variety of tests that the SN and TF scales may reflect the dimensions they were theorized to represent but that EI and JP are more questionable The manual shows that the two regression lines often show a discontinuity or a difference in slope. Apparently we have a controversy here in which methodology and interpretation of type theory are still to be clarified In any case notions about personality types seem to be enjoying a resurgence in psychology these days, and methodologies are being developed for determining them. Even if one does not accept the structural implications of Jungian theory or even the theory itself, the empirical relations of the inventory's scales can be studied. Purely as a potential research procedure for getting at individual differences in cognitive preferences, it would seem the Indicator would merit a great deal of attention from cognitive theorists (52, pp. 322-323).

From these two reviews, the doubts about the Jungian "type" theory and the difficulties with scores around the zero point become apparent. While these weaknesses are recognized, they would be true of any self-report inventory, and the usefulness and validity of the MBTI is well-established. Richek (45), Stricker (51), Mendelsohn (37), and others have studied the intercorrelation between the several MBTI scales, other indicators, counseling situations, reliability, and other variables. Through these studies and years of

use, the MBTI appears to be the most effective extroversion-introversion rating scale available.

One other factor should be noted: the forced-choice aspect of the MBTI questions can antagonize the subjects. In order to minimize this possibility, the experimenter should spend considerable effort prior to each testing situation explaining the forced-choice system and the need of an open-minded attitude on the part of the subjects.

Locus of Control

J. B. Rotter and his associates formed a "social learning theory" which emphasizes the social aspect of the person's environment. Social learning theory considers social reinforcement as any act strengthening the expectancy that a given behavior or occurrence will be followed by that reinforcement. He says that, ". . . depending upon the individual's history of reinforcement, individuals would differ in the degree to which they attributed reinforcements to their own actions" (46, p. 2). In general, he says that expectancies tend to generalize from a specific situation to a series of related or similar situations. Because of this, the manner in which one regards the causal relationship between his behavior and its outcome could have an effect on the way the person makes decisions and choices in a variety of situations. Similarly, whether he regards the outcome as "skill" or "luck" could effect the amount of generalization associated with any given expectancy.

In Rotter's initial monograph, he presents a twenty-nine item questionnaire which identifies a subject's attitude regarding locus of control. In this monograph, he presents a basic description of belief in internal or external locus of control.

The effect of a reinforcement following some behavior on the part of a human subject, in other words, is not a simple stamping-in process but depends upon whether or not the person perceives a causal relationship between his own behavior and the reward. A perception of causal relationship need not be all or none but can vary in degree. When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his actions, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control (46, p. 2).

From this definition and discussion of development of "external control", it is evident that an individual who is high in his belief that the locus of his control is external would tend to feel helpless to change or cope with circumstances; hence feel overwhelmed by the events. This intuitively would lead to expectations that the external person would have a tendency toward anxiety as discussed above, and probably a tendency toward introversion as Eysenck presents it.

Lefcourt relates the question of internal-external locus of control and introversion in the following way:

In a particular situation, the individual, though desirous of an available goal, may believe that there is no behavior in his repertoire that will allow him to be effective in securing the goal. Within this specific situation the person may be described as anticipating no contingency between any effort on his part and the end results in the situation. This description of an external-control expectancy is not merely applicable to the extreme punishing situations described by Mower and Richter but can be seen as applicable in many events in most persons' lives, for example, after wagering on a horse at a race track, only very odd persons may entertain the belief that they can exert some control over the outcome (legally). In Rotter's theory, the control construct is considered a generalized expectancy, operating across a large number of situations, which relates to whether or not the individual possesses or lacks power over what happens to him. Throughout this article, individual possesses or lacks power over what happens to him. Throughout this article, individuals are labeled external controls when they are said to have a generalized expectancy that reinforcements are not under their control across varying situations. In layman's language, these persons may be described as lacking self-confidence, or in Adler's terminology, suffering from inferiority feelings (32, p. 207).

P. S. Dua compared the results of Krunboltz type of Behavioral Counseling and Rogerian type counseling on introverted, externally controlled subjects. His pretest and post-test data indicate that there is a high correlation between inability to relate in interpersonal situations (introversion) and external locus of control (8).

Rotter and his followers have investigated the correlation between a person's concept of the source of control over his reinforcement schedule (internal versus external)

on his resistance to manipulation, manifest anxiety, ease of conditioning, personality adjustment, and social attitudes.

Houstras and Scharf showed that individuals with higher levels of feeling believed that their locus of control was external, and that they also evidenced higher levels of manifest anxiety. They state this relationship in the following manner:

Significant differences in anxiety were found among low-achieving freshman males identified as E, I-E, or I. Students who were external in locus of control had a significantly higher level of anxiety than did students who were either internal-external or internal in locus of control.

Externals have been characterized as more conforming and less confident than internals. The externals have a lower expectation of success and a lesser degree of self-confidence which leads to avoidance behavior. The internals, on the other hand, are more capable of creating a favorable impression, and are concerned about how others react to them. They tend to be more cooperative, more enterprising, and more diligent. Internals are more reactive to cues and reinforcements in a learning situation, and show more overt striving for achievement.

The attitudes of externals comprise a defense against failure. Externals are more inhibited, wary, resentful, and self-centered, and exhibit little concern for the needs and interests of others. Externals can further be characterized as confused, cautious, and stereotyped in thinking; lacking in self-direction and self-discipline; and, as reported in this study, more anxious. In this connection, it should also be noted that high anxious subjects have been found to be more authoritarian (24, p. 99).

While this work hints at a correlation, there is no clear-cut effort to evaluate these variables as a prime goal in an investigation.

In order to select the best available test instrument a return to the literature is required to see what has been done. There are not many locus of control scales available, since the internal-external control concept is comparatively new. Phares (43) first published material in 1957 on the subject. James (25) presented a revised scale the same year in an unpublished dissertation. The first effective scale was the Rotter 29-item scale published in his original monograph in 1966. This has been used extensively in research with students and nonstudents, and is still the standard to be used. Rotter's original publication presents a number of studies showing highly significant correlations on split half reliabilities, internal consistency (Kruider-Richardson), and test-retest over a lateral period. It was selected as the only well-established measure of the locus of control variable.

Integrated Study

D. L. Read in an unpublished paper (44) presents results on a study involving twenty-six female and sixty-four male undergraduate students. Students were administered the Myers-Briggs Type Indicator, the Rotter I-E Scale, the Taylor Manifest Anxiety Scale and the STAI (State-Trait Anxiety Indicator).

Read's data yielded correlations between variables as reported in Table I below. These correlation coefficients are significant at the .05 and .01 levels of probability for the relationship between introversion and anxiety and between the external control and anxiety. The Myers-Briggs Introversion-Extroversion Scale showed little correlation with the other Myers-Briggs scales. These other Myers-Briggs scales (Sensing-Intuition, Thinking-Feeling and Judgment-Perception) show significant correlations among themselves. These later Myers-Briggs scales yielded very low correlations with anxiety. The Taylor Manifest Anxiety Scale and the State-Trait Anxiety Indicator demonstrated extremely high correlation coefficients and probably can be used interchangeably for this purpose. Interestingly, and not anticipated from other studies, the results from the Myers-Briggs Introversion-Extroversion Scale and the Rotter Internal-External Locus of Control Questionnaire show nearly a zero level of correlation. The fact that these two variables each correlate so well with a third variable, anxiety, but so poorly with each other indicates that either a multi-dimensional model is demanded, or that another variable is required to distinguish special types (i.e. pessimistic internals and optimistic internals). It is possible that both explanations are true.

The table below presents Read's resulting simple correlation coefficients between all the variables.

TABLE I
CORRELATION COEFFICIENTS FOR ALL POSSIBLE VARIABLES
TOTAL POPULATION

Test	SN	TF	JP	I-E	TMAS	STATE	TRAIT
EI	0.146	-0.033	0.087	-0.013	0.257*	0.188	0.377**
SN		0.271**	0.414**	-0.100	0.057	0.008	0.046
TF			0.403**	0.188	0.197	0.006	0.094
JP				0.169	0.098	-0.010	0.070
I-E					0.287**	0.325**	0.256*
TMAS						0.568**	0.746**
STATE							0.722**

* 5% Significance = 0.207 ** 1% Significance = 0.270

EI . . .	MBTI	Extroversion-Introversion Scale
SN . . .	MBTI	Sensing-Intuition Scale
TF . . .	MBTI	Thinking-Feeling Scale
JP . . .	MBTI	Judgment-Perception Scale
I-E . .	Rotter	Internal-External Questionnaire
TMAS . .	Taylor	Manifest Anxiety Scale
STATE .	STAI	Part I of State-Trait Inventory
TRAIT .	STAI	Part II of State-Trait Inventory

The above very high correlation between the TMAS and the TRAIT Anxiety Scales allows the use of the TRAIT as a measure of deep-seated, long lasting anxiety. These results also suggest that another variable is operating. This is more easily observed in a plot of Read's individual data points, which could easily be grouped into data that best correlated introversion-extroversion with anxiety and another group that best correlates internal-external control with anxiety. As was stated earlier, it seemed possible that Read's data could be explained more completely, if another variable were isolated. A reasonable added variable would be the individual's expectancy as to the type of reinforcement he usually receives.

Reinforcement Expectancy

The question of expectancy has been discussed by a number of investigators. Harsh and Schrickel present the following discussion.

CONFIRMATION OF EXPECTANCIES. There is a very important interaction between the learning and the application of knowledge of relationships. The habit of predicting ahead and anticipating events is so useful in avoiding dangers and satisfying desires that one soon learns to value the accuracy of his predictions. When events conflict with expectancies it makes quite an impression, attracting closer attention to discrepancies. If one is sufficiently interested and adventurous to explore other tentative hypotheses, his concepts are clarified more rapidly. . . .

In other cases . . . delusion or timidity leads a child to avoid "tests" situations. . . . The frail or timid child who anticipates danger or discomfort during a mountain hike usually has his fears confirmed, whereas a rugged playmate who finds the exciting adventure he anticipated ignores skinned knees and sore muscles (20, pp. 110-111).

By restating this, using pessimistic or optimistic expectations regarding the type of reinforcement resulting from events, it is apparent that the same self-fulfilling force is in effect. Individuals who expect negative reinforcement tend to find pessimistic results and punishing types of reinforcement, while those individuals expecting positive reinforcement tend to get the expected positive reinforcement from their efforts.

Murray discusses optimistic (positive expectations) versus pessimistic (negative expectations) outlooks as follows:

Man is not a mere creature of the moment, at the beck and call of any stimulus or drive. What

he does is related not only to the settled past but also to shadowy preconceptions of what lies ahead. Years in advance he makes preparations to observe an eclipse of the sun from a distant island in the South Pacific and, lo, when the moment comes he is there to record the event. With the same confidence another man prepares to meet his god. Man lives in an inner world of expected press (pessimistic or optimistic), and the psychologist must take cognizance of them if he wishes to understand his conduct or his moods, his buoyancies, disappointments, resignations (32, p. 49).

Research on pessimism and optimism is very scarce, and those who investigated the subject did not adequately distinguish between reinforcement expectations and locus of control. E. O. Krausz (30), one of the early researchers, first related pessimism to introversion. H. Kelman (28) made a study of neurotic pessimism from a clinical viewpoint and associated it with the type of response from the environment that the individual had come to expect. Several otherpost World War II researchers investigated pessimism. R. N. Sanford, H. S. Conrad, and K. Franck (47) devised a completed optimism scale which included statements regarding fate or internal-external control concepts. J. A. Vaughan, Jr. and R. H. Knapp (55) did extensive research on the subject that followed a more or less "philosophical" breakdown of pessimism. This is similar to the very earliest assessment of optimism and pessimism on a college campus by H. H. Jaster (26), in which he investigated the philosophic "climates" of pessimism.

Vaughan and Knapp compared results of their Pessimism Questionnaire, the Myers-Briggs Type Indicator, the Allport-Vernon Study of Values, the MMPI, the Knapp Metaphor Scale, A Test of Offensive Acts, and the Rosenzweig Picture-Frustration Study. They divided general pessimism into Universe Pessimism, Motive Pessimism and Will Pessimism. They define these categories on a philosophical basis.

The first type of pessimistic outlook (labeled Universe Pessimism) included all those statements which focus on the inscrutability of the universe and its unsympathetic character, (i.e., Statement No. 11). An optimistic statement of this type would hold, in essence, that the universe is understandable and a hospitable place in which to live (i.e., Statement No. 9).

The second type of pessimistic outlook (labeled Moral Pessimism) included all those statements which hold that men's motives are basically evil (i.e., Statement No. 16). An optimistic statement of this type would intimate that man is an altruistic creature, and that his motives are basically good (i.e., Statement No. 3).

The third type of pessimistic outlook (labeled Will Pessimism) included all those statements which focus on man's impotence and hold that man is weak and unable to control his own desires and emotions. In short, man is driven by blind forces, over which he has no control (i.e., Statement No. 14). An optimistic statement of this type would hold that man is a powerful being and that he is capable of controlling his destiny (i.e., Statement No. 6) (55, p. 81).

The basic problem with this philosophical approach is that the first type, Universe Pessimism, and the third type, Will Pessimism, are closely related to Rotter's Locus of Control. Examples of these questions demonstrate the overlap.

7. The universe is dominated by blind will, irrationality, and purposelessness, and therefore is for man an unhappy place.

11. The world is a great cruel and impersonal machine, unresponsive to man's hopes, wishes and fears.
17. There is valid knowledge in science which should guide our conduct, and man should devote his life to discovering it.
10. In this great universe of ours man is a mere insect, an ant, and is puny and ineffectual in his intellect, as compared with the countless world around him.
14. Man's reason is finally ineffectual in guiding his behavior. He is determined basically by unconscious drives and impulses that he cannot know or control (55, p. 82).

In addition to the overlap with locus of control, religious implications are involved in this approach.

9. Inherent in the universe is a tendency to order and goodness. Although evil and chaos may sometimes seem to gain the upper hand, in the long run goodness and order will prevail.
2. Man is torn between two wills, a good and a bad; and the good is seldom able to overcome the bad.
13. Man has no sacredness or pre-eminence over beasts; and like them, he dies, passes into dust, and is forgotten.
18. Man is a sick animal. Unlike all other species he is hopelessly restrained by morality and inhibition from the pursuit of final satisfaction and pleasure.
15. Man alone, apart from all other creatures, is unique in the universe because he has a soul; he will live in some form when all else has perished (55, p. 82).

Vaughan and Knapp observed significant correlations between general pessimism and introversion, between general pessimism and depression (closely related to anxiety), and between general pessimism and Social I. E. as measured by

the Allport-Vernon Study of Values. Because of the contamination by locus of control and religious values, these data and the resulting conclusions cannot be fully accepted.

Since an adequate optimism-pessimism scale was not available, a twenty-question scale was devised. Initially, thirty-five statements were submitted to sixty students for identification as to whether they seemed basically optimistic or basically pessimistic. All sixty students correctly labeled twenty-two questions as either pessimistic or optimistic. Twenty of these (see Appendix A below) were selected and rephrased as questions requiring a true or false answer or a choice of answer (a) or answer (b).

These questions were embedded into forty statements from Murray's intracathexis, extracathexis, exocathexis and endocathexis questionnaire regarding variables of personality (see Appendix B below). Murray identifies Exocathexis and Endocathexis as follows:

Cathexis. The extrovert gives determining value to the outer world (social relations, possessions, power, prestige, public opinion); the introvert cathects the inner world (his feelings, fantasies, personal judgements, reflections, theories). The extrovert is excited by and adapts his behavior to contemporary events, in which he wants to play an active role, whereas the self-absorbed introvert remains relatively indifferent. . . . The extrovert does not brood or introspect . . . and thus he is almost bound to be superficial about psychological matters; in contrast to this is the introvert's tendency to dream, mull over his experiences and analyse his motives. The extrovert will talk to almost anyone about what he has seen and done but he has little to say about his subjective life . . . the introvert, however, may reveal some

of his precious inner life to a sympathetic friend. . . . The differences in this class are covered by the concepts Exocathection and Endocathection (38, pp. 234-235).

He describes Extraception and Intraception in the following terms:

Perceptive and cognitive attitude. The extrovert perceives, understands and values the world as it affects his senses, particularly the sense of touch, hard substance being for him the ultimate fact; the introvert, on the other hand, being chiefly influenced by psychic processes, perceives motility and behind motility the working of energies and directive forces. The extrovert emphasizes observable facts . . . the introvert . . . his own system of fantasies and deductive speculations. The extrovert is insensitive, objective, practical, impersonal and experimental; the introvert is sensitive, subjective, theoretical, personal and philosophical. The extrovert is materialistic and tough-minded . . . the introvert is idealistic and tender-minded . . . the extrovert is at his best when dealing with inorganic matter; the introvert when dealing with human emotions. The distinctions in this class were first separated from the other manifestations of extroversion and introversion by Hinkle who called her pair of opposites objective and subjective. We have followed her example, but for several reasons have termed our variables Extraception and Intraception (vide p. 211) (38, pp. 237-238).

Murray scores these as a ratio. He uses the extraception to intraception ratio as a term to describe . . . "the tendency to be determined by concrete, clearly observable, physical conditions (tangible, objective facts)" (38. p. 211).

He also scores exocathection to endocathection as a ratio and describes that ratio as . . . "the relative importance to the subject of: (1) practical, concrete,

physical or social action, and (2) fantasy, reflection, imagination or abstract thought" (38, p. 222).

The Murray variables are not part of the objective of this paper; but since they are very similar to the introversion-extroversion variable, they will be considered as an interesting serendipitous observation resulting from the reinforcement expectancy questionnaire.

Summary of Literature Review

In summary, little research on the interrelationship between anxiety, introversion-extroversion, locus of control, and reinforcement expectancy has been published. The correlatable relationships have occasionally and briefly been mentioned regarding some of the variables. However, nothing has been presented on reinforcement expectancy, and no direct effort has been made to correlate all four variables.

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CHAPTER III

METHOD

Research Design

The most effective strategy available seems to be the correlational study that developed out of Mills (1) Canon of Concomitant Variation. In this law he points out the limitation of such studies. He states that a phenomenon that varies in any manner when another phenomenon varies in a particular way is related in either a 1) causal manner, 2) as an effect, or 3) through some other factor or factors. While keeping in mind that a relationship study precludes inference of causation, it seems desirable to identify and describe the relationships that may exist between these variables. In order to avoid even causal thinking, it is again noted that as complex as is human personality and emotion, there are obviously many variables involved. With the possibility of many variables present and lacking any concrete evidence of causal relationships between any of the variables being studied, it is probable that the third condition of Mills' Canon is the most likely explanation of any correlations that may be discovered.

Subjects

Because of the particular interest of the author and the limited nature of this study, it was decided to utilize college

undergraduate students as the subjects. The Psychology Department of North Texas State University maintains a pool of students taking freshman psychology courses. All members of the pool must act as subjects in three hours of research in order to receive credit for their courses. From this pool 158 volunteer subjects, 75 male and 83 female, were utilized. They were told only that they would participate in paper and pencil type attitude and opinion tests. They reported in groups of approximately forty students each time and received the full battery at one sitting. Testing time varied from one and one-half hours to two and a quarter hours, depending on the speed of the individual subject.

Measurement Tools and Techniques

The Myers-Briggs Type Indicator (2), the Rotter Locus of Control Questionnaire (3), the State-Trait Anxiety Index (STAI) (4), and the Read Reinforcement Expectancy Scale as embedded in the Murray questions (see Appendix B) were all used as the research tools.

The tests were identified physically, i.e. Test #1 and its answer sheet, and the standard instructions for each test were read to the assembled group. The following statement was then read:

"A final word regarding these questionnaires. In some cases you are asked to select between two answers, neither of which are exactly as you feel. You might wish to add a third

choice. Please just respond to the question using those choices given and select the one closest to how you generally feel.

These tests are not timed; please feel relaxed as you take them. You can see that your name does not appear on the answer sheet. Just the number that is on your attendance slip is to be entered on the answer sheet along with your age and sex.

Are there any questions? (pause!) Once you begin, I can answer no questions regarding the questionnaires that you will be filling out. Thank you for your help. This is, of course, important to me, but I also think it will shed some small amount of light on the needs of other college students.

You may begin now!"

All answer sheets were hand-scored by template with all identifying information covered. Scores were double checked by a second individual. All of one type questionnaire was scored first and then the next, etc. to prevent any possible contamination of result.

Upon completion of scoring, sets were assembled by identifying number and tabulated for computer input. Tabulated scores were double-checked by a second party to prevent data recording errors.

Data from computer tabulation were hand-plotted on several scattergrams to visually identify results in comparing the several pairs of variables.

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CHAPTER IV

RESULTS

The following chapter is designed to present a statistical analysis of the pertinent results. Additional statistical data is presented in Appendix C.

Table II presents the means and standard deviations for all the variables as related to the total population.

TABLE II
MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
TOTAL POPULATION N=158

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	101.25	26.07
Rotter	Internal-External (I-E)	11.13	4.06
STAI	Trait	38.59	8.53
Read	Reinforcement Expectancy Scale (RES)	6.87	3.47
Murray	Extracath.-Intracath. (Ext/Int)	190.46	150.55
Murray	Exocath.-Endocath. (Exo/End)	146.18	145.28

Table III and IV present the means and standard deviations for all variables as related to the female and male populations.

TABLE III
 MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
 FEMALE POPULATION N=83

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	101.17	25.32
Rotter	Internal-External (I-E)	11.29	3.96
STAI	Trait	40.33	8.66
Read	Reinforcement Expectancy Scale (RES)	6.39	3.35
Murray	Extracept.-Intracept. (Ext/Int)	195.58	132.97
Murray	Exocath.-Endocath. (Exo/End)	140.75	124.84

TABLE IV
 MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
 MALE POPULATION N=75

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	101.32	27.06
Rotter	Internal-External (I-E)	10.95	4.20
STAI	Trait	36.67	8.01
Read	Reinforcement Expectancy Scale (RES)	7.41	3.54
Murray	Extracept.-Intracept. (Ext/Int)	184.80	168.63
Murray	Exocath.-Endocath. (Exo/End)	152.20	165.66

These data are comparable with those obtained in Read's earlier, unpublished paper. In the above data the means and standard deviations of the Myers-Briggs and the Rotter locus of control are closer to the published means and deviations.

Hypothesis Number I

The Pearson product-moment correlation coefficients for relationship between the MBTI Extroversion-Introversion Scale and the STAI Trait Anxiety Scale are reported in Appendix C. These data show a higher correlation coefficient for females ($r = 0.386$) than males ($r = 0.238$). The correlation coefficient for the total population of course lies between these two groups ($r = 0.308$). The degree of probability that correlation coefficients of these magnitudes could occur by chance is $P =$ less than .01 for the female and the total groups and $P =$ less than .05 for the male.

These data are comparable with Read's earlier results. The MBTI versus the STAI Trait correlation is slightly higher in present results because the female correlation coefficient is higher in this work. The male results are approximately the same. Other data discussed below are also very similar to Read's earlier work.

On the basis of these results, the first working hypothesis presented in Chapter I is accepted with restrictions. The first hypothesis states: "A positive relationship exists between the tendency toward introversion and the tendency toward anxiety as measured by the MBTI and the Trait Scale of the STAI." This must be qualified by observing that while the relationship holds true for the female college subjects, it is in question when dealing with male college subjects. This restriction is necessary because the male

results fall between the .05 and the .01 level of probability, and therefore do not meet our criteria.

Hypothesis Number II

The Pearson product-moment correlation coefficient for the relationship between results on the Rotter Locus of Control Scale and the STAI Trait Anxiety Scale is higher ($r = 0.309$) for males than females ($r = 0.224$). The correlation coefficient for the total group again lies between these two groups ($r = 0.266$). The degree of probability that correlation coefficients of these magnitudes could occur by chance is $P =$ less than .01 for the male and the total groups and $P =$ less than .05 for the female group.

This leads to the acceptance, with a similar qualification, of the second hypothesis presented in Chapter I. "A positive relationship exists between the tendency to feel that one's locus of control is external and the tendency toward anxiety as measured by the Rotter Locus of Control Scale and the Trait Scale of the STAI." This restriction must be included this time, because while the relationship holds true for the male college population it is in doubt for the female college population. Female results fall between the .05 and the .01 levels of probability which does not meet our criteria.

Hypothesis Number IV

The Pearson correlation coefficients for the relationships between: the type of reinforcement expected, anxiety,

locus of control, and extroversion-introversion was unexpectedly high. The coefficient for the relationship between reward expectancy and anxiety for females was high ($r = 0.451$), but that for the males was even higher ($r = 0.505$). These exceptionally high coefficients carry an associated probability of $P =$ less than .001 that chance could produce these results. The correlation coefficient for the relationship between reward expectancy and locus of control (females $r = 0.378$ and males $r = 0.311$) is higher than those for anxiety-locus of control mentioned above. This is particularly true for females. In this case, the degree of probability associated with these results is less than $P = .01$. The coefficient for the relationship between reward expectancy and extroversion-introversion (females $r = 0.340$ and males $r = 0.227$) is high but in this case, not quite as high as for the trait anxiety versus extroversion-introversion. The degree of probability associated with the relationship for males is $P =$ less than .05 and females $P =$ less than .01.

On the basis of these results the fourth hypothesis presented in Chapter I is accepted. "A relationship exists between expectancy of negative reinforcement and anxiety as measured by the Read Reinforcement Expectancy Scale and the Trait Scale of the STAI." Any future work should enlarge upon this hypothesis. Such work should include the demonstrated relationships between the Read RES and introversion and locus of control.

Hypothesis Number III

The Pearson correlation coefficient for the relationship between results on the MBTI Extroversion-Introversion Scale and the Rotter Locus of Control Scale was expectedly low. Males ($r = 0.098$) were lower than females ($r = 0.169$), which confirmed the expected lack of acceptable correlation as presented in the third hypothesis in Chapter I. "No significant correlation exists between the extroversion-introversion and internal-external locus of control variable as measured by the above instruments."

Serendipitous Results

An interesting relationship was seen in the scoring of the Murray Extracception/Intracception and Endocathection/Exocathection Questions used in conjunction with the Read Reinforcement Expectancy Scale. An unexpectedly high correlation coefficient was found between Endocathection and Introversion for females ($r = 0.403$), but a lower correlation was found for males ($r = 0.217$). Very low correlation coefficients were obtained between Extracception and Introversion for females ($r = 0.112$) and males ($r = -0.040$). Low correlations were obtained between Endocathection and Locus of Control (females $r = 0.097$ and males $r = 0.151$) and for Extracception and Locus of Control (females $r = -0.093$ and males $r = 0.109$). Low correlations were obtained between the Murray Scales and the STAI Trait Anxiety Scale; however, that for female

Extracception versus Anxiety demonstrated almost no correlation ($r = 0.007$). The correlation between the Murray Endocathection Scale and the Read RES was reasonably high (females $r = 0.252$, males $r = 0.288$) but almost nonexistent for Extracception versus Read RES (females $r = 0.009$ and males $r = 0.007$).

Hypothesis Number V

By dividing the male and female populations regarding reinforcement expectancy into negative expecting and positive expecting populations, it is possible to do an analysis of variance and a Fisher χ^2 Test on the resulting groups. It is also possible to calculate correlational relationships for the variables within these subgroups. These statistical methods produce the following data:

TABLE V
POSITIVE VERSUS NEGATIVE EXPECTING FEMALE
F RATIOS AND FISHER'S χ^2 TEST RESULTS
N=83

Test	Scale	F Ratio	Significant P	t Value	Significant P
MBTI	EI	5.4368	0.0222	2.3317	.05(-)
Rotter	I-E	6.6055	0.0121	2.5701	.01
STAI	Trait	16.9636	0.0001	4.1187	.01(-)
Murray	Ext/Int	1.6020	0.2092	1.2657	.05(+)
Murray	Exo/End	4.8449	0.0306	-2.2011	.05(-)

The F ratios and Fisher's χ^2 Test results for the male positive versus negative expecting populations are similar.

TABLE VI
 POSITIVE VERSUS NEGATIVE EXPECTING MALE
 F RATIOS AND FISHER'S χ^2 TEST RESULTS
 N=75

Test	Scale	F Ratio	Significant P	t Value	Significant P
MBTI	EI	2.8803	0.0939	1.6971	.05(+)
Rotter	I-E	5.3068	0.0241	2.3037	.05(-)
STAI	TRAIT	13.7005	0.004	3.7014	.01(-)
Murray	Ext/Int	0.0570	0.8119	0.2388	.05(+)
Murray	Exo/End	4.8642	0.0306	-2.2055	.05(-)

It can be seen that the MBTI results are from significantly different populations ($p = 0.02$ for females and $P = 0.09$ for males). The Rotter I-E results are from significantly different populations ($P = 0.01$ for females and $P = 0.02$ for males). The STAI Trait anxiety results are from significantly different populations ($P = 0.0001$ for female population and at the $P = 0.0004$ for the male population). The Murray Ext/Int results are not significantly different, but the End/Exo results are different at the $P =$ less than 0.05 level for both male and female populations.

The fifth hypothesis can be accepted, with again a limitation. "There is a significant difference at the .05 level of probability between negative and positive expectancy populations regarding extroversion-introversion, internal-external locus of control, and anxiety as measured by the

above instruments." That limitation is that the MBTI male population is in question because it does not meet our criteria of P is equal to or less than .05 level for significance.

By dividing the groups as discussed above, the correlation for positive expecting females was significantly increased for the Rotter I-E versus Trait results (from $r = 0.224$ for the combined female to $r=0.375$ for the positive expecting female). In the case of the negatively expecting female the correlation was significantly decreased (combined female $r = 0.224$, negatively expecting female $r = -0.139$). The Rotter versus Read RES correlation was similarly affected.

The correlation coefficients of the male population also changed. The Trait anxiety versus MBTI EI correlation coefficient was increased for the positive expecting males but greatly reduced for the negatively expecting male (combined males $r = 0.238$, positive expecting males $r = 0.314$, negatively expecting males $r = 0.105$). The Trait anxiety versus Rotter I-E correlation coefficient was similarly affected (combined male $r = 0.309$, positive expecting male $r = 0.509$, negatively expecting male $r = 0.065$). When divided in this manner, the correlation coefficients for the Read RES versus the remaining variables were reduced for both positive and negative expecting males.

Additional Statistical Analysis

By dividing the male and female populations into anxious and less-anxious populations, it is again possible to perform an analysis of variance and a Fisher χ^2 Test on these groups and obtain correlation coefficients for the variables within these groups. These statistical methods produce this data:

TABLE VII

F RATIOS AND FISHER'S χ^2 TEST RESULTS
ANXIOUS VERSUS LESS-ANXIOUS FEMALES
N=83

Test	Scale	F Ratio	Significant P	t Value	Significant P
MBTI	EI	9.6751	0.0026	3.1105	.01(-)
Rotter	I-E	1.3837	0.2429	1.1763	.05(+)
Read	RES	7.0919	0.0093	2.6631	.01(-)
Murray	Ext/Int	0.0403	0.8414	0.2007	.05(+)
Murray	Exo/End	0.5083	0.4779	-0.7130	.05(+)

TABLE VIII

F RATIOS AND FISHER'S χ^2 TEST RESULTS
ANXIOUS VERSUS LESS-ANXIOUS MALES
N=75

Test	Scale	F Ratio	Significant P	t Value	Significant P
MBTI	EI	1.4332	0.2351	1.1971	.05(+)
Rotter	I-E	4.0873	0.0469	2.0217	.05(-)
Read	RES	7.9307	0.0062	2.8162	.01(+)
Murray	Ext/Int	0.0029	0.9572	0.0539	.05(-)
Murray	Exo/End	3.6568	0.0598	-1.9123	.05(-)

It can be seen that in terms of anxious versus less anxious groups, the MBTI EI results are from different populations for the females ($P = 0.003$) but not for the males ($P = 0.24$). The Rotter IE results are from significantly different populations for males ($P = 0.05$) but not for the female ($P = 0.24$). It can also be seen that the Read RES results are from different populations for both male and females ($P = 0.006$ males, $P = 0.009$ females). The Murray populations are not from statistically significantly different populations. These results bear out previous correlations noted above.

CHAPTER V

DISCUSSION

The results of this study indicate that introversion relates to anxiety in college students. This relationship is highest within female students. This agrees with Eysenck's theory of oversocialization, or easy conditioning to society's demands, in order to avoid anxiety-producing conflict within introverts. Following this theory a logical conclusion could be that females must be more easily conditioned to society's demands. This agrees with other research discussed above which concluded that females are, in fact, more easily conditioned in laboratory experiments.

This presents a strong case for Eysenck's idea of continuing and enduring introversion as a congenital trait. If introversion and conditioning are related, and if introversion and anxiety are related as this study shows, it can be concluded that females, being more easily conditioned, would tend to exhibit those traits that Eysenck presents as introverted. They would also show the higher correlation between introversion and anxiety.

This presents implications for an expanded study with other than college subjects, both male and female, and of several age groups. It also holds counseling and teaching implications for secondary and college instructors dealing

with the anxieties in students. They may well expect a greater incidence of anxious and introverted females.

In a plot of the raw data, one would expect to find few females who are introverted and less-anxious or who are extroverted but anxious. This proves to be the case with a scattergram of the raw data in this study. Conversely there are more males than females in the introverted and less-anxious group. There are about the same number of extroverted-anxious males as females.

It should be noted that the division between anxious and less-anxious males and females was approximately equal, so statistical imbalance does not play a part in these results.

The locus of control versus anxiety results generally support the working hypothesis, but they do not carry the same predictive value as do the introversion versus anxiety results. This is because the absolute value of the correlation coefficient between locus of control and anxiety is considerably lower than that for introversion-extroversion versus anxiety.

Even though the same level of confidence cannot be placed on the prediction aspect of this relationship, these results are important and do tend to lend emphasis to the Rotter social learning theory. Rotter's theory would allow for the somewhat lower correlation for the female results because women have generally tended to accept a subordinate role in life. The result of this social learning is that

females tend to adopt more of a follower role than a leader role. This follower role would be more consistent with an external locus of control attitude; and because of their acceptance of this role, they could feel externally controlled with less feelings of anxiety. The man's role of dominance would cause him to be less comfortable with an external locus of control; therefore, there would be more anxiety associated with external locus of control feelings for the male role.

The generally lower correlation factors can be explained by the fact that all subjects are college students and are accustomed, after 12 or so years of school, to being followers in school and hence externally controlled. That this is a strong possibility can be seen in the average student's feeling of threat, hence anxiety, when placed in unstructured learning situations. Having learned to feel that the locus of their control is external (in educational settings), students become more comfortable in controlled educational situations. For this reason student subjects may feel less anxious with their external control feelings in these settings than would non-student subjects.

While these results support the hypothesis as mentioned, they also open the door to expanded research with students using differing types of locus of control tests under varying situations of structured and non-structured classroom and non-classroom situations. These results also point to other

research using an enlarged group of subjects including non-students of varying ages and vocational settings.

The high correlation between the Read RES and the STAI demonstrates the need for more research on reinforcement expectancy as an aspect of personality. Even though the RES was designed to avoid overlap with locus of control and to avoid religious overtones of evil, it still correlated well with the Rotter results and surprisingly well with introversion and extroversion results. This points out the need for a factor analysis of all these test instruments and the probability that such an analysis would demonstrate interesting relationships and would shed new light on these variables as part of personality.

The difference between the means of the positive and negative expecting groups was approximately 5.5 items out of 20. This large spread lends significance to the fact that these are different groups, and that the RES variable must be considered when personality factors are evaluated.

The changes in the correlation coefficients between variables, when subjects are divided into groups according to positive or negative reinforcement expectancy, also indicates that this is an important aspect of human nature and needs further exhaustive study.

CHAPTER VI

SUMMARY

The working hypotheses presented in this study were established (with noted reservations) and certain serendipitous results presented.

The relationships between introversion, locus of control, and anxiety tend to support Eysenck's and Rotter's theories.

The importance of reinforcement expectancy in the above relationships requires that it must be identified before conclusions are properly drawn about the relationships of the other variables.

The need for continuing and expanded investigation into the several variables, in particular reinforcement expectancy, is noted.

APPENDIX A

READ REINFORCEMENT EXPECTANCY SCALE

1. There is more happiness than unhappiness in the world. T or F
2. If you expect happiness and pleasure from life, you are being unrealistic. T or F
3. If a lot of door prizes were given out at a party you attend, would you expect to get one? Yes or No
4. You should be very careful in lending out books and equipment; they won't be well cared for. T or F
5. You can't trust your car to a garage because they usually do second-rate work. T or F
6. Teachers generally try to be objective and honest. T or F
7. In buying a car, no matter how well you check, you can expect to have to take it back to have work done on it. T or F
8. Most people are honest. T or F
9. The old adage, 'Let the buyer beware,' is good to keep in mind when buying anything, or you will probably get stung. T or F
10. If you could relive your life, would you want to, (a) change it greatly, or (b) have it about the same.
11. If a large group placed an order in a restaurant, you would (a) expect a grand mix-up, or (b) expect the order to be nearly right.

12. 'Never give a sucker an even break,' is basically the way the world thinks. T or F

13. When you go out of your way to help people, they usually seem to really appreciate it and will help you in return. T or F

14. Most gaily wrapped packages are a disappointment when you open them. T or F

15. It's best not to let people know too much about you because then there is less that they can say against you. T or F

16. The Golden Rule should read, "Get others before they get you." T or F

17. Friendships are a warm, rewarding, and usually lasting relationship. T or F

18. It seems to me that people try to take advantage of my good nature. T or F

19. No matter how hard you try, it doesn't seem that people fully appreciate your efforts. T or F

20. It's best to really watch people working for you, or they will goof up. T or F

APPENDIX B

READ REINFORCEMENT EXPECTANCY SCALE AS EMBEDDED IN THE MURRAY QUESTIONS

Attitude Preference Scale

The following statements are attitudes or actions often expressed by individuals. Choose the answer which comes closest to expressing how you generally feel. On the answer sheet, circle and blacken in the appropriate letter: (a) for generally agree or true, or (b) for generally disagree or false.

1. I rely as much on intuition or faith as I do on the results of past experience.
2. It's best to really watch people working for you, or they will goof up.
3. Money and social prestige are matters of importance to me.
4. I keep my feet on the ground, i.e., I adopt a common-sense and matter-of-fact attitude towards life.
5. I am apt to brood for a long time over a single idea.
6. There is more happiness than unhappiness in the world.
7. I usually see things as a whole; am apt to disregard minor details.
8. I would rather take an active part in contemporary events than read and think about them.
9. No matter how hard you try, it doesn't seem that people fully appreciate your efforts.

10. I always attempt to substantiate the facts of a case before giving a judgment.

11. I am more interested in aesthetic or moral values than I am in contemporary events.

12. If you expect happiness and pleasure from life you are being unrealistic.

13. My head is full of ideas clamoring for expression.

14. I like to have people about me most of the time.

15. It seems to me that people try to take advantage of my good nature.

16. I accept the world as it is and do not try to imagine how it might be.

17. I would rather grow inwardly and achieve balance and fullness of experience than win success in practical affairs.

18. If a lot of door prizes were given out at a party you attend, would you expect to get one? Yes or No

19. Without zest and excitement, life seems pale and shallow.

20. I am a practical person, interested in tangible achievement.

21. Friendships are a warm, rewarding, and usually lasting relationship

22. I spend very little time thinking about distant goals and ultimate ideals.

23. I like above all to discuss general questions--scientific or philosophical--with my friends.

24. You should be very careful in lending out books and equipment; they won't be well cared for.

25. My hopes and expectations are very exuberant when I embark upon a new enterprise.

26. I like to do things with my hands: manual labor, manipulation or construction.

27. The Golden Rule should read, "Get others before they get you."

28. I am practical and efficient when there is something to be done.

29. I would rather write a fine book than be an important public figure.

30. You can't trust your car to a garage because they usually do second-rate work.

31. I have moods of expansive elation when I feel like embracing the whole world.

32. I am extremely interested in the activities of other people.

33. It's best not to let people know too much about you because then there is less that they can say against you.

34. I am rather detached and impersonal in my dealings with other people.

35. I dislike everything that has to do with money-buying, selling and bargaining.

36. Teachers generally try to be objective and honest.

37. I often do things merely for my private emotional satisfaction, no matter whether anything is accomplished or not.

38. I am interested in everything that is going on in the world: business, politics, social affairs, etc.

39. Most gaily wrapped packages are a disappointment when you open them.

40. Mathematics has been one of my best subjects.

41. I think more about my private feelings or theories than I do about the practical demands of everyday existence.

42. In buying a car, no matter how well you check, you can expect to have to take it back to have work done on it.

43. I feel that ideals are powerful motivating forces in myself and in others.

44. I like being in the thick of action.

45. When you go out of your way to help people, they usually seem to really appreciate it and will help you in return.

46. I enjoy scientific articles more than fiction or poetry.

47. I spend a lot of time philosophizing with myself.

48. Most people are honest.

49. In the conduct of my life I bother very little about practical details.

50. I have a rather good head for business.

51. 'Never give a sucker an even break' is basically the way the world thinks.

52. I like to work with mechanical appliances: machinery, electrical apparatus and so forth.

53. I would rather know than do.

54. The old adage, 'Let the buyer beware' is good to keep in mind when buying anything or you will probably get stung.

55. I feel things deeply and personally, and am sensitive to the deeper feelings of others.

56. I can deal with an actual situation better than I can cope with general ideas and theories.

57. If a large group placed an order in a restaurant you would: (a) expect a grand mix-up, or (b) expect the order to be nearly right.

58. In the molding of character I think that external conditions are more important than inner tendencies.

59. I am inclined to withdraw from the world of restless action.

60. If you could relive your life, would you want to (a) change it greatly, or (b) have it about the same?

APPENDIX C

STATISTICAL ANALYSIS OF ALL RESULTS

Table IX presents the resulting data for the several variables in the study as related to the total population.

TABLE IX
CORRELATION COEFFICIENTS FOR ALL VARIABLES
TOTAL POPULATION N=158

Test	Scale	I-E	Trait	RES	Ext/Int	Exo/End
MBTI	EI	0.133	0.308**	0.280**	0.028	-0.296**
Rotter	I-E		0.266**	0.334**	0.019	-0.128
STAI	TRAIT			0.427**	0.151	-0.261**
Read	RES				0.001	-0.261**
Murray	Ext/Int					-0.082

* 5% Significance

** 1% Significance

Tables X and XI present the resulting data for the variables as related to the female and male populations. Together with Table IX these tables present the correlation coefficients of the comparison of each variable against all other variables being considered. This format will be used throughout this appendix to display correlation coefficients resulting from data analysis.

TABLE X
CORRELATION COEFFICIENTS FOR ALL VARIABLES
FEMALE POPULATION N=83

Test	Scale	I-E	Trait	RES	Ext/Int	Exo/End
MBTI	EI	0.169	0.386**	0.340**	0.112	-0.403**
Rotter	I-E		0.224*	0.378**	-0.093	-0.097
STAI	TRAIT			0.451**	-0.007	-0.213*
Read	RES				0.006	-0.252*
Murray	Ext/Int					-0.080

* 5% Significance

** 1% Significance

TABLE XI
CORRELATION COEFFICIENTS FOR ALL VARIABLES
MALE POPULATION N = 75

Test	Scale	I-E	Trait	RES	Ext/Int	Exo/End
MBTI	EI	0.098	0.238*	0.227*	-0.040	-0.217
Rotter	I-E		0.309**	0.311**	0.109	-0.151
STAI	TRAIT			0.505**	0.294**	-0.308**
Read	RES				0.007	-0.288*
Murray	Ext/Int					-0.081

* 5% Significance

** 1% Significance

In order to better define the optimism-pessimism variable, the population was divided at the mean into negative expecting and positive expecting subjects. This operation was performed on the male and female populations separately.

Tables XII and XIII present the resulting data for the variables as related to the positive expecting female population.

TABLE XII

MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
POSITIVE EXPECTING FEMALES N = 44

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	95.23	23.51
Rotter	Internal-External (I-E)	10.27	3.76
STAI	TRAIT	36.95	7.82
Read	Reinforcement Expectancy Scale (RES)	3.75	1.66
Murray	Extracapt.-Intracapt. (Ext/Int)	178.25	89.16
Murray	Exocath.-Endocath. (Exo/End)	168.50	116.20

TABLE XIII

CORRELATION COEFFICIENTS FOR ALL VARIABLES
POSITIVE EXPECTING FEMALES N=44

Test	Scale	I-E	Trait	RES	Ext /Int	Exo/End
MBTI	EI	0.080	0.335*	0.287	-0.012	-0.268
Rotter	I-E		0.375**	0.482**	-0.158	0.001
STAI	TRAIT			0.401**	0.006	-0.133
Read	RES				-0.055	-0.076
Murray	Ext/Int					-0.243

* 5% Significance

** 1% Significance

Tables XIV and XV present the resulting data for the variables as related to the negative expecting female population.

TABLE XIV

MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
NEGATIVE EXPECTING FEMALES N=39

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	107.87	25.89
Rotter	Internal-External (I-E)	12.44	3.91
STAI	TRAIT	44.13	8.03
Read	Reinforcement Expectancy Scale (RES)	9.36	1.99
Murray	Extracpt.-Intracpt. (Ext/Int)	215.13	168.57
Murray	Exocath.-Endocath. (Exo/End)	109.44	128.27

TABLE XV

CORRELATION COEFFICIENTS FOR ALL VARIABLES
NEGATIVE EXPECTING FEMALES N=39

Test	Scale	I-E	Trait	RES	Ext /Int	Exo /End
MBTI	EI	0.134	0.306	0.209	0.135	-0.456**
Rotter	I-E		-0.139	0.105	-0.136	-0.067
STAI	TRAIT			0.028	-0.121	-0.125
Read	RES				-0.289	-0.118
Murray	Ext/Int					0.053

Table XVI and XVII present the resulting data for the variables as related to the positive expecting male population.

TABLE XVI
MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
POSITIVE EXPECTING MALES N = 32

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	95.25	28.99
Rotter	Internal-External (I-E)	9.69	4.60
STAI	TRAIT	33.00	5.90
Read	Reinforcement Expectancy Scale	4.03	1.75
Murray	Extracath.-Intracath. (Ext/Int)	179.38	166.75
Murray	Exocath,-Endocath. (Exo/End)	199.88	214.28

TABLE XVII
CORRELATION COEFFICIENTS FOR ALL VARIABLES
POSITIVE EXPECTING MALES N = 32

Test	Scale	I-E	Trait	RES	Ext/Int	Exo/End
MBTI	EI	0.102	0.314	0.058	0.115	-0.136
Rotter	I-E		0.509**	0.230	0.041	-0.087
STAI	TRAIT			0.247	0.248	-0.340
Read	RES				-0.241	-0.358*
Murray	Ext/Int					-0.144

* 5% Significance

** 1% Significance

Table XVIII and XIX present the resulting data for the variables as related to the negative expecting male population.

TABLE XVIII

MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
NEGATIVE EXPECTING MALES N = 43

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	105.84	24.92
Rotter	Internal-External (I-E)	11.88	3.66
STAI	TRAIT	39.40	8.34
Read	Reinforcement Expectancy Scale (RES)	9.93	2.15
Murray	Extracath.-Intracath. (Ext/Int)	188.84	171.88
Murray	Exocath.-Endocath. (Exo/End)	116.72	106.96

TABLE XIX

CORRELATION COEFFICIENTS FOR ALL VARIABLES
NEGATIVE EXPECTING MALES N = 43

Test	Scale	I-E	Trait	RES	Ext/Int	Exo/End
MBTI	EI	-0.007	0.105	0.166	-0.181	-0.264
Rotter	I-E		0.065	0.144	0.165	-0.106
STAI	TRAIT			0.384**	0.345*	-0.190
Read	RES				0.093	0.069
Murray	Ext/Int					0.008

* 5% Significance

** 1% Significance

In order to better define the anxiety variable, the test results were divided at the mean into anxious and less-anxious subjects and then analyzed. This operation was performed on the male and female populations separately. The following data presents results of this analysis.

TABLE XX

MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
ANXIOUS MALES N=38

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	105.00	24.38
Rotter	Internal-External (I-E)	11.89	3.80
STAI	TRAIT	42.29	6.96
Read	Reinforcement Expectancy Scale (RES)	8.50	3.39
Murray	Extracath.-Intracath. (Ext/Int)	185.84	196.26
Murray	Exocath.-Endocath. (Exo/End)	116.74	89.64

TABLE XXI

MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
LESS-ANXIOUS MALES N=37

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	97.54	29.41
Rotter	Internal-External (I-E)	9.97	4.42
STAI	TRAIT	30.89	3.80
Read	Reinforcement Expectancy Scale (RES)	6.30	3.38
Murray	Extracath.-Intracath. (Ext/Int)	183.73	137.34
Murray	Exocath.-Endocath. (Exo/End)	188.62	213.21

TABLE XXII

MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
ANXIOUS FEMALES N=41

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	109.49	26.68
Rotter	Internal-External (I-E)	11.80	3.74
STAI	TRAIT	47.07	6.06
Read	Reinforcement Expectancy Scale	7.34	3.28
Murray	Extracath.-Intracath. (Ext/Int)	198.56	111.79
Murray	Exocath.-Endocath. (Exo/End)	130.83	147.80

TABLE XXIII

MEANS AND STANDARD DEVIATIONS OF ALL VARIABLES
LESS-ANXIOUS FEMALES N=42

Test	Scale	Mean	SD
MBTI	Extroversion-Introversion (EI)	93.05	21.23
Rotter	Internal-External (I-E)	10.79	4.14
STAI	TRAIT	33.74	4.90
Read	Reinforcement Expectancy Scale	5.45	3.19
Murray	Extracath.-Intracath. (Ext/Int)	192.67	152.16
Murray	Exocath.-Endocath. (Exo/End)	150.43	98.30

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