

THE RELATIONSHIPS OF ANGER AND ANXIETY
TO DEPRESSION: A MULTIDIMENSIONAL
PERSPECTIVE

By

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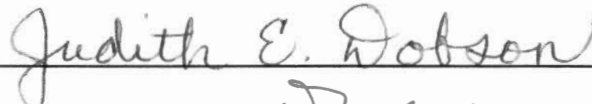
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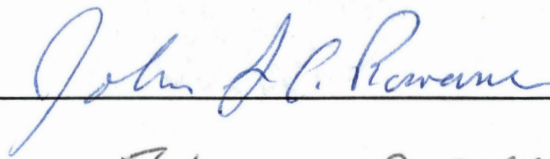
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CHAPTER I

INTRODUCTION

Depression is the most frequently diagnosed mental health disorder and it is generally considered the most treatable (Ponterotto, Pace & Kavan, 1989). Advances in the last 20 years have led to the development of a wide variety of treatment procedures that have demonstrated effectiveness including psychobiological remediation and cognitive restructuring. These advances in the treatment of depression are a direct outgrowth of theoretical treatments many of which posit causal relationships to other emotions including anger and depression.

A number of theories have been proposed to account for the experience of depression. For example, it has been conceptualized as a biochemical disturbance (Carlson, 1986), a disorder in the reinforcement contingency system (Lewinsohn, 1974), inappropriate responding to environmental cues (Beck, 1967; Wolpe, 1971), and a disruption of the social informational processing system (Abramson, Seligman, & Teasdale, 1978).

Freud (1905) stated that depression is the result of anger turned inward against the self, resulting in self loathing. This has been a widely accepted proposition despite the sparse evidence in support of these propositions. An association between anger and depression has been noted by other theorists as well. Berkowitz (1983) notes that "although they (theorists) account for depressive's hostility in different ways, several

writers have reported that depressives are apt to exhibit a surprising degree of aggressiveness" (p. 1142).

One of the difficulties in establishing a relationship between depression and other constructs such as anger has been the different theoretical treatments of these emotional constructs. The differential treatment of depression leads theorist's to emphasize different aspects of the construct. This results in difficulties when measuring the constructs and subsequently establishing stable relationships between anger and other constructs.

Despite the theoretical relationship between depression and anger the establishment of a causal relationship also has been hampered by the explication of the construct of anger. Anger has been confused with aggression and hostility (Speilberger, Jacobs, Russell, & Crane, 1983). Additionally, like depression, the definition of anger has been dependant in part on the orientation of the observer. This again has resulted in difficulty in assessment of the construct and in establishing its relationship with other constructs such as depression.

The following study examines the relationship between depression and anger. A review of the literature provides an overview of the theoretical conceptualizations for both anger and depression. Issues relating to the measurement of these constructs are discussed. Finally the various theoretical explanations of the relationship between anger and depression are examined and researched.

CHAPTER II

REVIEW OF RELATED LITERATURE

Depression

Depression is a mood disorder described by the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1987) as, "a prolonged emotion that colors the whole psychic life." (p. 213). The DSM-III-R (1987) suggest depression is a multifaceted disorder in which different clinical features predominate depending on the type of "mood" disorder. Mood disorders can be differentiated into Bi-Polar and Depressive disorders. Bi-Polar disorders are distinguished from depressive disorders by the presence of episodes of mania (elevated mood, expansive ideation, and irritability) interspersed with depressive mood (American Psychiatric Association, 1987). Depressive disorders are distinguished by the presence of five of the following nine symptoms:

1. Depressed mood most of the day, nearly every day as indicated by either subjective account or observation by others.
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day.
3. Significant weight loss or weight gain when not dieting (e.g. more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.

4. Insomnia or hypersomnia nearly every day.
5. Psychomotor agitation or retardation nearly every day.
6. Fatigue or loss of energy nearly every day.
7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day.
8. Diminished ability to think or concentrate, or indecisiveness nearly every day.
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide." (American Psychiatric Association, 1987 p. 222).

Despite the relatively discrete criteria presented for the diagnosis of depression, it has been conceptualized in two major ways. Depression has been considered a unitary trait that is either present or absent for a given individual, or as a set of symptoms having numerous different subtypes.

Depression has been conceptualized as a continuum along which people vary or as number of discrete disorders having similar symptomology. One of the first distinctions proposed was between endogenous (caused by internal, presumably physiological factors) and exogenous (cause by external factors) depression (Beck, 1967). The American Psychiatric Association (1987) distinguishes between Major Depression, Dysthymia, and Adjustment disorders with depressed mood. Presumably, all three types of depression have different etiologies yet they present similar symptoms. Miller (1975) notes, "In spite of the presumed differences in etiology between the various subtypes of

depression, there is a great deal of similarity in psychological deficits associated with the different depressive subtypes" (p. 255).

Theorists have proposed a unitary deficit to account for the similarity in depressive symptoms. For example, Freud (1957) and Abraham (1911) state that depression is the result of anger turned in on the self resulting from a loss of an ambivalently loved object. In contrast, Beck (1967) suggests that depression results from a cognitive style characterized by negative expectations. Approaching depression from a behavioral orientation, Abramson, Seligman and Teasdale (1978) proposed a reformulation of Seligman's learned helplessness model. They propose that depressed affect is the result of an attributional style in which the depressed individual develops causal explanations which are characterized by their internality, stability and globality. Other behavioral theorists suggest operant or classical conditioning paradigms to account for depression. Lewinsohn (1974) suggests that depression is due to an individual's low rate of response-contingent positive reinforcement. Regardless of the causes of depression, these theorists view depression as a phenomenon which is present to a lesser or greater degree with all people depending on the individual's experience.

Psychobiologic Explanations

A number of psychobiological mechanisms have been proposed that account for the similarities in affective symptomology yet suggest differences in etiology. Biological bridges between these explanations suggest that a neurochemical disruption of the reinforcement system in the diencephalon impair the organism's ability to respond to environmental reinforcers (Akiskal, & McKinney, 1975). Heredity has been implicated

both in manic-depressive disorders and chronic unipolar depression (Akiskal & McKinney, 1975). Disruption in the synthesis of neurotransmitters, specifically, insufficient activity of the monoaminergic neurons (Carlson, 1986) has also been implicated in the expression of depression. Depression is seen as a culmination of various processes that converge in some area of the central nervous system (presumably the diencephalon), where mood, arousal, motivation and psychomotor functioning is moderated (Akiskal & McKinney, 1975). The form of the depressive condition depends on a variety of factors including; genetic vulnerability, developmental events, psychosocial events, physiologic stressors, and personality traits. It is the interaction of these factors that result in biochemical alterations in the central nervous system.

Psychoanalytic Theories

Early explanation for depression proposed by Freud (1957) suggests that depression is a result of an instinctual forces. Operating from a hydraulic motivation system (i.e. energy blocked from primary expression will be expressed through another avenue), Freud (1917) proposed that when the aggressive instinct was for some reason not directed at the appropriate object it is turned inward thus resulting in self-loathing. Despite the wide acceptance of this conceptualization the evidence to support it has been limited and contradictory (Akiskal & McKinney, 1975).

Kendell (1970) states that Freud's hypothesis implies "that the incidence of depression should be high in situations where aggression is aroused but its overt expression prevented and that conversely that its incidence should be low in situations where relatively unrestricted outlets for aggression are available or where little

frustration is engendered."(p. 308). Further, Kendell (1970) marshals epidemiologic evidence to support this hypothesis including an inverse relationship between homicide and suicide. In contrast, Akiskal and McKinney (1975) state that redirection of hostility at outside objects has not been correlated with clinical improvement. Indeed, Akiskal and McKinney (1975) suggest it may exacerbate affective discomfort and lead to inappropriate acting out. Additionally, Paykel (1971) identified a subgroup of "hostile depressives" characterized by the concomitant presence of depression and outwardly expressing anger.

More recent psychoanalytic positions suggest that depression is the result of object loss and its consequence for the ego. For example, Bibring (1965) states that depression is the result of narcissistic injury resulting from the object loss and that the realization the desired object will not be obtained. Depression occurs when one cannot live up to one's ego ideal (the wish to be worthy and to be loved). In Bibring's (1965) model anger is an inconsistent result unleashed by the object loss. Despite inconsistent evidence, the conceptualization of depression resulting from retroflexed anger has become ingrained in clinical belief systems (Akiskal & McKinney, 1975; Kendell, 1970).

Phenomenological Theories

Phenomenological conceptualizations of depression are not as well articulated due to the antipathy these theorists hold toward traditional diagnosis. Rogers (1959) states that anxiety is the result of incongruence between the self-concept and the emotional experiences of the individual and their psychological outlook. Thus depression can be

viewed as a result of defensiveness in response to the anxiety caused by the conflict between self-actualizing tendencies, the self-concept and self.

Maslow (1962) suggests that depression is the result of the environment not providing for basic survival needs so that the process of self-actualization is blocked. The relationship of survival needs to self-actualization needs is reflected in his consideration of the need for cognitive understanding. Maddi (1989) suggests that Maslow's theory reveals that information processing is a survival need which is ongoing and presumably at the root of depression. That is, either the environment is not sustaining or there is no information in the environment from which sustenance can be obtained. Hence the development of depression results when self-actualization needs are consistently blocked by the survival needs of the individual.

Existential perspectives of psychology generally view depression as a consequence of inauthentic living (Rychlak, 1981). Depression, as well as other affective discomfort, is viewed as the transformation of ontological guilt into neurotic guilt. It takes the form of shame and a condemnation of one's being rather than of particular acts (Maddi, 1989). In effect, inauthentic living is the result of denial of responsibility, this results in guilt for being rather than acceptance of life.

Behavioral Theories of Depression

Behaviorist view depression, like all human behavior, to be a consequence of environmental influences. These influences are believed to be either the association individuals make when experiencing events, or the consequences that accompany behavior. Behavioral views of depression use a full gamut of learning paradigms. For

example, Wolpe (1960) states that once established, anxiety, which is the foundation of neuroticism, can be associated with almost anything. Through a process of classical conditioning this anxiety becomes added with other fears. Thus anxiety feeds on itself and over the short term keeps people from making satisfactory resolutions of their serious long term problems. For example, if John has a social discomfort that develops into a phobia, he will tend to seek less social support which in turn will diminish his resources for addressing stress which in turn results in increased isolation leading to depressed affect. Using counter-conditioning techniques such as assertiveness training and systematic desensitization Wolpe (1960) state that the anxiety can be treated leading to improvement in depression.

The concept of loss is also central to many formulations of depression. Behavioral views of depression, to which the concept of loss of reinforcement is central have provided additional understanding of this phenomenon. Using an operant conditioning model, Rychlak (1981) suggests that maladaptive behavior is the result of two simultaneous processes: a) adaptive behaviors have never been learned; and b) maladaptive behaviors have been learned. Given this conceptualization, depressed affect results in some type of secondary gain (or response contingency system) since most clients have non-depressed affect within their behavioral repertoire. Lewinsohn (1974) departs from this behavioral position only modestly when he states that depression is the result of the individual's low rate of response-contingent reinforcement. This low rate of reinforcement is believed to be the result of: a) few events are reinforcing to the individual; b) few reinforcing events are available in the environment, and/or; c) the individual lacks the skill or infrequently makes the responses that would be reinforced.

Cognitive Theories

Cognitive explanations for learning posit the individual as an active participant attempting to make sense of out of his or her experiences. As a consequence depression is considered to be the result of some error in information processing. Behavioral explanations for depression have in many cases evolved to more cognitive explanations. A good example of this is the Learned Helplessness model of Seligman (1974). He noted that when dogs are placed in situations in which aversive stimuli cannot be escaped they learn that response and outcome are independent. Thus when placed in a new environment that permits escape from noxious stimuli, they will not engage in escape behaviors because they believe that response-relief contingencies do not exist. Abramson, Seligman and Teasdale (1978) proposed a similar mechanism for the development of reactive depression in humans. They state learning that outcomes can result in three types of deficits; motivational, cognitive and emotional. These deficits can result in depression as the individual will fail to operate on their environment. The theory invokes expectations, thereby expanding behavioral views of depression to cognitive causality.

A number of criticisms have emerged from the application of the learned helplessness paradigm to human depression. Wortman and Brehm (1975) question when and how helplessness in one situation translates to all others. They suggested that humans encounter a number of situations in which response-relief contingencies do not exist and in which helplessness is not expressed. Additional criticism is expressed by Bandura (1977b) who states:

People can give up trying because they lack a sense of efficacy in achieving the acquired behavior, or they may be assured of their capabilities but give up trying because they expect their behavior to have no effect on the unresponsive environment (p. 204-205).

These criticisms lead Abramson et al. (1978) to reformulate the learned helplessness model within an expressly cognitive framework. Based on a revision of attribution theory, Abramson et al. (1978) state that the attributions for helplessness are the determining factor in the etiology of depression. Causal attributions for helplessness are characterized as internal (caused by self), stable (causes will continue for foreseeable future) and global (occurring over a broad range of situations).

The trend to more cognitive explanations for depression can be seen with the emergence of Bandura's (1977b) theory of self-efficacy. He writes:

Efficacy expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences. The stronger the perceived self-efficacy, the more active the efforts. Those who persist in subjectively threatening activities will gain corrective experiences that reinforce their sense of efficacy, thereby eliminating their defensive behavior.

Those who cease their coping efforts prematurely will retain their self-debilitating expectations and fears for a long time (p. 194). Thus it can be extrapolated that depression not only results in a reduced sense of self-efficacy but also that the reduced sense of self-efficacy will result in increased affective discomfort. The effect of decreased self-efficacy in turn influences an individual's behavior and future expectations. Bandura (1978) states that:

People's efficacy and outcome expectations influence how they behave, and the environmental efforts created by their actions in turn alter their expectations (p. 346).

Finally depression is maintained by the continuing interaction between individuals reduced sense of self-efficacy, and their social interactions. This leads to reduction in involvement in rewarding environments, resulting in reciprocal influence of the environment and the individual in maintaining affective discomfort. This reciprocal system may be expressed in a number of ways. For example, an individual with a reduced sense of self-efficacy may select environments in which challenges are easily addressed. However the rewards from this environments are discounted. If more challenging environments are sought the individual will tend to not adequately assess their performance or will find environments in which few rewards are available. Again Bandura (1977a) states that:

Sequential analyses of the interactions of people who repeatedly become involved in interpersonal difficulties show that anticipations shape reality in a self-confirming fashion (p. 187).

Since the selection of environments results in an inevitable social comparison this in turn leads to a dysfunctional self-evaluation system that activates excessive self-punishment and creating self-produced distress. This in turn motivates various depressive reactions.

The increasing trend toward cognitive explanations for depression can be seen in Meichenbaum's (1976) and in Ellis and Harper's (1975) conceptualization of depression. Meichenbaum (1976) indicates that people can cope better with stress if they understand the situation and know what to do to alleviate the anxiety. Individuals are therefore

taught how cognitions contribute to their problems and how to observe and monitor their specific self-statements. They are then trained to modify their self-statements through various behavioral techniques. This achieves the "goal of changing the clients attributional style from one of learned helplessness to one of learned resourcefulness" (Ritter, 1985 p. 44). Ellis and Harper (1975), in contrast, suggests that depression and other discomforting affective experiences are the result of "irrational beliefs." (Haaga & Davison, 1986). These are described as widely held cognitions that should help us interpret reality but in fact lead to distortion of our experience and affective discomfort (Ellis & Harper, 1975).

Cognitive explanations for depression are the basis of Beck's Cognitive Therapy (1967). Beck holds that depression is the result of negative misinterpretations of experience (Hollon & Beck, 1979). These negative misinterpretations give rise to a negative cognitive triad comprised of a negative view of oneself, one's world, and one's future. This negative cognitive triad persists despite evidence to the contrary because of the way that depressed individuals continue to process their experiences negatively through a number of cognitive mechanisms (Haaga & Davison, 1985). The following distortions are the result of:

1. Selective abstraction: the tendency to ignore disconfirming evidence and basing conclusions on isolated information.
2. Arbitrary inference: making conclusion without evidence.
3. Overgeneralization: holding extreme beliefs about one event and inappropriately applying them to all areas.

4. Personalization: the tendency to relate events to the individual despite the fact there is no connection.
5. Polarized thinking: the tendency to think in all-or-nothing terms.
6. Magnification/exaggeration: the tendency to overestimate the significance of negative experiences.

These distortions lead to reduction in behavioral activity thereby reducing the probability of engaging in coping behaviors. The result is increased affective discomfort. Beck, Rush, Shaw and Emery (1979) state these distortion persist because of the development of dysfunctional schemata unifying the thinking pattern of the depressed individual. Beck et al. (1979) distinguish three levels of cognitive processing: automatic thoughts, distorted information processing, and dysfunctional schemata. Automatic thoughts are described as verbal or pictorial images that occur without need of conscious awareness. In contrast, distorted information processing includes such actions as attention, encoding and abstraction of environmental stimuli. These processing errors relate to the previously described errors of selective abstraction. Finally, dysfunctional schemata are long-term cognitive characteristics such as beliefs and attitudes that govern the interpretation of events, for example, attributional style.

In conclusion, depression is a complex phenomena that results in a wide variety of cognitive, affective and psychomotor impairments. The conceptualization and observation of depression is in part dependant on the theoretical viewpoint of the observer. It has been conceived of as an event that results from a wide variety of mechanisms dependant on that theoretical stance of the theorist.

Anger

The constructs of anger, hostility, and aggression have long been related to the etiology of both physical and emotional illness. John Hunter, an eighteenth century cardiac physician cited the association between his heart disease and these emotions by stating, "my life is at the mercy of any rascal who chooses to put me into a passion" (Wolf, 1984). More recently, anger has been implicated as a risk factor in the development of hypertension (Crane, 1981; Harburg, Erfurt, Chape, Schull & Schork, 1973), coronary heart disease (Diamond, 1982; Friedman & Rosenman, 1974) and cancer (Greer & Morris, 1975). Consequently, additional exploration of the state of anger has been initiated in an effort to explain and predict a wide range of behaviors.

The terms anger, hostility and aggression have been used interchangeably in the literature. Attempts to define these constructs often result in terms that are ambiguous, and often contradictory. To conceptualize and measure these constructs Spielberger, et al. (1983) provide the following distinctions. Anger is described as an elementary affective dimension associated with feeling states varying in intensity from annoyance to rage. In contrast, hostility is described as the attitudinal set that motivates aggressive behavior. Finally, aggression is explained as the destructive or punitive behavior directed at other persons or objects. Spielberger (1988) states that "given these definitional conventions, it follows that the emotion of anger is a necessary but not sufficient condition for the development of hostile attitudes and the manifestation of aggressive behavior" (p. 6).

Physiologic Explanations of Anger

The conceptual differences between anger and aggression permeate the behavioral sciences. Carlson (1986) distinguishes between five types of physiological based aggressions:

- a) social aggression; b) self-defense; c) maternal aggression; d) infanticide and e) predatory aggression (p.480).

It is important to note that Carlson (1986) fails to discuss anger specifically and uses hostility and aggression interchangeably. Of most relevance to this investigation is the conceptualization of social aggression. This is defined as the attack of an individual member of a species on another member of the species. Carlson (1986) suggests this behavior relates to biologic necessity in the establishment of territory, status, sexual inadequacy. For example, when an immature male attempts to copulate with a nonestrous female, is rebuffed and then he attacks her. Finally, Carlson (1986) categorizes another of his five types of aggression as social aggression. This is described as irritable aggression resulting from frustrating an animal's goal-directed behavior by pain. Presumably, all of the various types of aggression are mediated through the central nervous system by the action of hormonal release in the face of specific environmental releasers.

Berkowitz (1983) proposes that anger (and other negative affect) is the result of aversive stimuli which activate both the fight and flight mechanisms and the associated motoric expressions, thoughts and feelings. The flight tendencies are sensations, ideas and memories linked to the experience of fear and the propensity to escape or avoid the

aversive stimuli. The fight tendencies are sensations, ideas and memories linked to anger.

Finman and Berkowitz (1989) propose that anger, hostility and instigation to aggression are three correlated yet different processes. Anger is an event that occurs largely outside of the conscious awareness of the individual. Hostility is the expressive motor reactions as well as ideas and memories activated with them to an aversive event. Finally the instigation to aggression is the intent to do harm which may or may not be accompanied by a conscious anger experience.

Humans, however, face a wide variety of aversive stimuli which do not result in the expression of anger despite an activation of the fight or flight mechanism. Berkowitz (1983) proposes a cognitive mediation process to intensify, surprise, or regulate the expression of feelings in conscious awareness.

Psychoanalytic Explanations

Central to the notion of anger and aggression from a psychoanalytic perspective is a hydraulic system in which aggressive energy strives for some form of discharge (Hokanson, 1970). It is presumed that the individual experiences a state of tension to which they acclimate. Increases in this level of tension are experienced as psychological discomfort and motivate the individual to discharge this energy (Hall and Lindzey, 1970). A way of discharging this energy is through catharsis which is described as the expression of the desired experience either directly or indirectly either verbally or in fantasy (Hokanson, 1970). Catharsis is a central mechanism for reduction in the tension; anger and aggression are merely social labels for this internal phenomena.

Hall and Lindzey (1970) state the basic affective mechanism is anxiety and all other affective manifestations are the result of defense mechanisms. These defense mechanisms in turn reflect specific developmental difficulties. For example, a need for competence frustrated at the anal stage of development may be expressed throughout an individual lifetime. This might be expressed as anxiety around issues of competence which is expressed by an overly rigid, or compulsive relationship to the world to manage or defend against the anxiety. Rychlak (1981) states that anger may result from fixation at the phallic stage of development. That is, anxiety surrounds fixation at this stage of development and to defend against this experience individuals tend to become aggressive.

A second explanation for anger is the process of transference (Belkin, 1987). Transference is the process of re-experiencing emotionally the conflicts that occurred throughout an individual's early development. For example, if an individual sees his or her therapist as cold and rejecting it is likely he or she is replaying the conflict experienced in childhood interactions with parents who were cold and rejecting. Hence anger stems from unresolved conflict experienced in early development. Freud considered this phenomenon to be the basis for difficulties in interpersonal relations (Maddi, 1989). Belkin (1987) states, "we are enslaved to our past to the degree that our past life repeats itself in our present situation" (p. 67).

A third explanation for the expression of anger relates to ego states. When id impulses are continually blocked without opportunity for gratification, aggression is predicted (Rychlak, 1981). Frustration, and hence anger, consists of blocking libidinal forces. It is the retroflexion of this anger that is the psychoanalytic explanation for

depression (Freud, 1911). Regardless of the cause for the tension experienced as anger, it seeks expression; once expressed the organism feels relief from tension. This is experienced as pleasurable and thereby perpetuates the display of aggressive impulses.

Support for this position is provided by Mook, Van Der Pleg and Kline (1990) who propose that anxiety plays a mediating role in the experience of depression. That is, anxiety leads to depression because it tends to inhibit, or "turn inward", the outward expression of anger which leads to the development of dispositional anger.

Phenomenological Theories

The difficulty with discriminating between anger, hostility and aggression is addressed by Kelly (1955). He distinguishes between aggression and hostility; aggression is to an active elaboration of a perceptual field. That is, aggression refers to the individual actively pursuing a definition of themselves consistent with how they see themselves and are seen by others. For example, if Joe is an aggressive person he is constantly trying to broaden his horizons to extend the scope of his construction system. Thus aggression is a positive feature in the full development of the person. Aggression and passivity are constructs related to how we elaborate our construction system from day to day. In contrast, hostility is described as the immutability of the construct system despite evidence these systems no longer work.

Rogers (1961) does not directly address anger but rather describes negative affect in general. He states that these peripheral personality characteristics (negative affects) are the result of a life style that maintains, rather than enhances living. This leads to defensiveness rather than openness to experience. The individual lives according to a

preconceived plan rather than existentially; that is, he or she disregards his or her natural tendencies rather than trusting them. He or she feels manipulated rather than free and is common and conforming rather than creative. These characteristics follow from conditions of worth which are evaluations of a child's behaviors by parents and others (Rogers, 1959). As conditions of worth are the basis for excluding unworthy experiences from the self concept they are the basis for defensiveness and negative affect (Rogers, 1961).

Existential theorists suggest that anger is the result of inauthentic living. For example if the individual over identifies with the mitwelt (i.e. the construed social world), he or she will be more conforming and will more readily see threats to that world view. As a consequence he or she will experience anger, not only as a result of this overidentification but also as a result of ignoring the eigenwelt (i.e. an individual's relationship with him or herself). Hence, inauthentic living can develop into a vicious circle with anger and other negative emotions (Maddi, 1989).

Behavioral Theories

An attempt to integrate psychoanalytic theory and behaviorism was initiated by Dollard, Doob, Miller, Mowrer and Sears (1939). It should be noted that those ascribing to a behavioral orientation traditionally view internal events, such as anger, as inappropriate elements of scientific study. As a consequence, aggression as a behavior can be measured and studied while anger presents difficulty for the behaviorist. Dollard et. al. (1939) used an empirical model in testing the frustration-aggression syndrome. They hypothesized that when a high state of drive exists and the response called forth by

the drive is blocked, the organism feels frustrated. Frustration can mount thus stimulating innate anger responses in living organisms.

The classical and operant conditioning paradigms offer mechanisms for Dollard and Miller's frustration aggression hypothesis. Using Watson's (1920) paradigm for conditioned emotional responses, anger can be viewed as a generalized learned response to frustration. Similarly, an operant view of anger and aggression suggests that anger and aggression are contingency reinforced experiences. That is the release of anger serves to reduce anxiety resulting in reinforcing tension reduction.

Cognitive Explanations

While introducing a number of new ideas regarding aggression, Bandura (1977a) is relatively silent regarding the experience of anger. He does offer a suggestion however, stating that, "false beliefs activate avoidance responses that keep individuals out of touch with prevailing environmental conditions, thus creating a strong reciprocal interaction between beliefs and action that is protected from corrective environmental influences" (Bandura, 1977a p. 346). Hence anger can be viewed as a dysfunctional self-evaluation system not unlike that which results in depression. The difference is that "individuals protect themselves from self-condemnation for their alleged faults by imputing persecutory schemes" (Bandura, 1977a, p. 142).

Anger and aggression are not, however, seen as distinct unrelated experiences by Bandura (1977b). Rather, they are seen as part of a system of reciprocal determinism. Hence when the individual complains of anger or frustration, it makes sense to discuss

the experience from the context of behavior while also considering the number of behavior choices available to the individual. Bandura (1973) states:

From a social-learning perspective, frustration is regarded as a facilitative rather than a necessary condition for aggression. That is, frustration produces a general state of emotional arousal that may lead to a variety of responses depending upon the type of frustration reactions that have previously been learned, and the reinforcing consequences typically associated with different courses of action (p. 27).

Bandura and Walters (1970) demonstrated that children readily imitate aggressive behavior of adults seen on film. Bandura (1970) points out that the aggressive behavior of a soldier is learned in non-frustrating circumstances but may be recalled during times of frustration. Bandura, (1970) states that aggressive behavior is under the control of the real and believed contingency system of the observer. For example, if the model is reinforced positively for beating the "Bobo doll", the observer is more likely to repeat the action. Therefore, for Bandura (1977b) the anticipatory capacities of the human enable people to be motivated by expectations of the result of the individuals behavior.

Aggressive behavior is a strategy to address an environmental challenge the individual feels will be successful.

In conclusion, anger as a construct suffers from confusion with hostility and aggression. Theorists from disparate points of view disagree with the fundamental nature of the constructs which has inhibited an understanding of anger, hostility and aggression. Thus, it is premature to assume relationships with other emotional states until the nature of anger is better established as a construct.

Measurement of Depression and Anger

A central issue in the development of the constructs of anger and depression is their measurement. Nunnally (1978) states, "science is primarily concerned with developing measures of constructs and finding functional relationships between measures of different constructs. Construct validation is an obvious issue in scientific generalization"(p.97). Measurement of anger and depression have involved these issues substantially.

Measurement of Depression

The assessment of depression is usually established via one of three procedures: a) specific operational criteria and structured diagnostic interviews; b) semi-structured interviews and clinical rating scales; and c) client self-report instruments (Ponterotto, Pace, & Kavan, 1989). No widely accepted single measure of depression exists (Ponterotto et al, 1989). Neither is there an ultimate criterion to determine which depression ratings are most accurate (Lambert, Hatch, Kingston & Edwards, 1986).

The complexity and inconsistency of the theoretical treatment of depression has resulted in a number of measurement difficulties. Concentration on different aspects of depression leads to different definitions of the construct. Further, depression has been defined at least to some extent by the theoretical orientation of the observer. For example, a psychoanalytically trained observer tends to focus on ambivalence or anger as behavioral correlates of depression. In contrast, an observer with a cognitive orientation may describe cognitive distortions of the depressed individual. While the phenomenologically trained individual will focus on conditions of worth, the behaviorally trained person will focus on the environmental contingency system, and the

biologically trained person on the physical symptoms. Each orientation contributes to a description of various aspects of depression yet no unifying understanding of depression has been explicated.

The confusion over construct definition creates fundamental difficulties for construct validation. For example, Ponterotto et al. (1989) in comparisons of two frequently used measures of depression, report correlations of .72 and .73 with the Beck Depression Inventory (Beck, 1967) and the Zung Self-Rating Scale (Zung, 1986). This evidence for convergent validity is compromised as Beck, Steer, and Garbin, (1988) note significant correlations between the Beck Depression Inventory (BDI) and the State-Trait Anxiety Inventory. Beck et al. (1988) explain, "one reason for the positive relationship between the BDI and measures of anxiety was that both syndromes shared common somatic symptoms" (p. 91). However, the question may be logically asked: At the construct level, what is it that makes depression unique from other constructs such as anxiety?

The difficulty in clearly explicating the construct of depression has resulted in assessment instruments whose structure reflects this ambiguity. For example, the factor structure of the BDI has not been well established. Factor analytic studies report both differing number of factors and inconsistent nature of the specific factors reported. Beck et al. (1988) note that the number of factors reported in 13 different studies range from three to seven. Clark, Gibbons, Fawcett, Aagesen and Sellers (1985) state the BDI represents one underlying factor of depression which can be decomposed into three highly intercorrelated factors: negative attitude toward self, performance impairment, and somatic disturbance. Similar results are seen with the Zung Self-Rating Depression Scale (Helund & Viweg, 1979). In a review of the literature regarding this instrument Hedlund

and Vieweg (1979) cite ten factor analytic studies with the number of reported factors ranging from two to seven. Helund and Vieweg (1979) state that, "There is a considerable degree of communality with regard to the emergence of Factor A, variously labeled 'emptiness,' 'retarded depression,' 'self satisfaction,' 'loss of self-esteem,' 'depressive feeling; outlook for future' 'well being index'." It is likely that, with these different factor descriptions, the items included in Factor A are not entirely stable.

Logically, two solutions to the factor structure problem as it is related to the explication of the construct of depression are suggested. The first solution is to simplify the construct so that it can be measured with unidimensional scales. As the construct has been developed, depression is multidimensional and not readily distinguished from other constructs such as anxiety. Yet attempts to measure it have used unidimensional scales. While providing elegance in descriptive power this approach results in the loss of practical utility. The second solution is to develop multidimensional scales. This addresses the complex nature of the construct while sacrificing the parsimony of unidimensional construct explication.

The appropriate choice is not easy to determine. While a number of problems exist with the construct of depression as it is variously defined, the instruments used to measure it have demonstrated considerable utility. For example, the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) generally correlates significantly well with other measures of depression obtained at the same time (Beck, et al., 1988). Additionally, it has been found useful in distinguishing psychiatric from nonpsychiatric clients, and in comparing groups known to be more disposed to the development of depressive disorders (Beck et al., 1988). It has been less successful in

distinguishing between different types of depression (Beck et al, 1988). For example, Ponterotto et al. (1989) note the instrument's inability to distinguish between normal grieving and depression.

The Zung Self-Rating Depression Scale (Zung, 1967) has not only been found to correlate with the BDI but also with the Depression scale of the MMPI (Helund & Vieweg 1979; Zung, 1967). Additionally, Ponterotto et al (1989) state that, "The SDS is also reported to show sensitivity to changes in depression levels as a result of treatment for depression and has discriminate diagnostic value among psychiatric patients, supporting the construct validity of the instrument" (p. 307).

While there are other self-report measures of depression available the BDI and the SDS have several advantages. They are unidimensional scales which are easily administered and completed within a few minutes and their psychometric properties have been studied extensively. In contrast, the MMPI-Depression scale requires the individual to complete the entire instrument of over 500 items. Thus, this instrument is impractical for monitoring the improvement of the individual throughout treatment. Other instruments have been harshly criticized for their weak psychometric properties. (Ponterotto et al 1989).

In conclusion, the measurement and description of depression has been recognized as a valued step in the explication of the construct. The past twenty-five years during which this endeavor has proceeded have failed to produce an instrument that adequately addresses the multidimensional aspects of depression. While instruments currently in use have demonstrated some effectiveness in assessing depression, continuing work remains

to determine the exact nature of its relationship with other constructs and the defining attributes of depression as distinct from other constructs.

Measurement of Anger

Beginning in the 1970's with the developing interest in the Type A Behavior Pattern (Friedman & Rosenman, 1974) the measurement of anger has gained some importance. The following three scales were developed to measure anger: The Reaction Inventory (Evans & Strangeland, 1971), The Anger Inventory (Novaco, 1975), and The Anger Self-Report (Zelin, Adler, & Myerson, 1972). Review of the research on these instruments lead Spielberger, Krasner, and Solomon (1988) to conclude "there is a great deal of conceptual ambiguity in current theoretical interpretations of anger, hostility, and aggression and in the methods by which they are measured" (p. 78).

In order to clear up these conceptual ambiguities and Spielberger (1988) developed the State-Trait Anger Expression Inventory (STAXI) based on the construct distinctions of anger, hostility and aggression. Given that the STAXI is a relatively new instrument little evidence is available to support the factor structure. Fuqua, Leonard, Masters, Smith, Campbell, and Fischer (in press) conclude, that there is substantial credibility to the multidimensional theoretical treatment of the anger construct represented by the STAXI.

Several studies supporting the validity of the STAXI have been conducted. Spielberger (1988) reports significant correlations with systolic and diastolic blood pressure and several personality measures. The STAXI is a relatively new scale that is

still being developed. The author has invited critical feedback regarding the construct definition and its explication.

In conclusion, the STAXI represents a multidimensional conceptualization of anger and it holds promise for future research. There remains the need to present more validity evidence for both the instrument and Spielberger's (1988) theoretical treatment of anger.

The Relationship of Anger and Depression

Despite the long association of anger and depression in theory and in clinical lore (Ponterotto et al., 1989) there is limited empirical evidence to support the contention of a causal relationship. Spielberger, et. al. (1983) suggest that the conceptual confusion between the constructs of anger, aggression, and hostility have led to inadequate theorizing and data collection regarding these constructs. Additionally, the multidimensional nature of depression, when seen from disparate theoretical vantage points, has resulted in an incomplete understanding of the nature of the relationship between anger and depression.

While traditional psychoanalysis states that depression is caused by anger, more recent conceptualizations suggest a more complex relationship. Bowlby (1973, 1984) suggests that depression and anger are co-determined and as a consequence it is difficult to distinguish between the relative combination of either. Bandura (1977a) states that the experience of anger and depression are caused by the same internal experience, but rather are defined differently by the individual based on social cues. Mook, et al (1990) state that a third cause, anxiety, mediates the expression of both anger and depression.

The interest in this relationship began with the psychoanalytic conceptualization of depression resulting from anger turned inward. A majority of the evidence for this relationship has been epidemiological. For example, a number of authors have noted an inverse relationship between the number of homicides and suicides (Kendell, 1970). However, some suggest the evidence for retroflected anger causing depression is weakened by the presence of both anger and depression concurrently in acting out individuals (Rosenbaum & Bennett, 1986). Weissman, Fox, and Klerman, (1973) argue that there is considerable overlap in the social and personal characteristics of depressed individuals however the critical dimension in suicide is the presence of anger and hostility. Blackburn, Lyketsos, and Tsiantis (1979) propose that Freud's conceptualization does not propose all psychic energy be turned inward, rather the excess of anger allows for it to be turned both inward and outside of the self.

More recent psychoanalytic understandings suggest more complex relationships. Bowlby (1973,1984) states that anger is aroused in individuals threatened with loss. He writes, "anger is expressed as reproachful and punishing behavior to discourage further separation" (p. 175). If the anger is persistent it becomes psychologically dysfunctional and paradoxically alienates sources of support. Maiuro, Cahn, Vitaliano, Wagner, and Zegree (1988) state that anger and aggression are related to low-self-esteem and to the "psychological themes of attachment, abandonment, loss, and helplessness." (p.21).

A number of other theorists note an association between anger and depression and offer differing explanations for this correlation. Mook, et al. (1990) propose that anxiety plays the mediating role in the experience of depression. That is, anxiety leads to

depression because it tends to inhibit or "turn inward" the outward expression of anger experiences which leads to the development of dispositional anger.

Berkowitz (1983) suggests that anger and depression are caused by aversive stimuli which activate both the fight and flight mechanisms. He states:

Whatever else might also be at work, the depressives psychological pain creates their aggressive disposition. I cannot say why these people are depressed, and I leave these questions to others. I only propose that the torments they experience, however they might arise, have a major part in making them hostile to others (p. 1142).

Many phenomenologic theories propose that anger and depression are intimately related. Rogers (1961) states that when persons feel hopeless and unworthy, they will disregard others and in many ways treat them poorly. This encourages the development of anger not only in the self but in others as well.

The relationship of anger to depression as viewed from a social learning perspective is more complex. Bandura (1986) notes that a general state of emotional arousal is produced that may lead to a variety of responses depending on previous experiences. Therefore the expression of anger or depression is dependent on previously established contingency systems or modeled behaviors previously observed.

While a number of relationships between anxiety and depression have been proposed, the evidence for these relationships is, at best lacking. Much of the evidence regarding a causal relationship between these states has been epidemiological. These studies have been presented to both support and refute the notion of depression as a result of retroflected anger. It is likely that difficulties in theorizing are due to poorly

developed constructs. For example, the nature of anger as an internal emotional state which motivates behavior appears contrary to the emotional state of depression which is characterized at least in part by the lack of energy. How these two emotional constructs interact may provide insights into the broader system of interaction among all emotions.

In conclusion, there is well established clinical lore and many theoretical proposals suggesting a relationship between anger and depression. There is a paucity of evidence to support causal associations. This is likely due to the inconsistent treatment and construct explication of both anger and depression. With new instruments and theoretical understandings of anger and a well established measurement of depression, an accumulation of evidence can begin to more fully develop these important relationships.

Purpose of the Study

The present study will be undertaken to identify groups of individuals displaying a wide array of affective experiences. There are several current theories which predict a direct relationship between anger and depression. However, there is little evidence to directly support or challenge these theories. Two reasons for this lack of evidence are suggested by the previous review of the literature. First, the three major proposals for the relationship of anger to depression suggest a unidimensional explication of the constructs. There is ample evidence that both anger and depression are multidimensional constructs whose definitions rely in part on the theoretical orientation of the individual. Second direct, measures of both anger and depression have been plagued with difficulty in terms of construct definition resulting in ambiguous measurement at best. There is some promise that the State-Trait Anger Expression Inventory (STAXI)(Spielberger,

1988) will provide a more realistic and comprehensive measure of anger. While difficulties remain with the measurement of depression, the Beck Depression Inventory (BDI)(Beck,, Ward, Mendelson, Mook, & Erbaugh, 1961) used for this study has a fund of information to support its validity to assess depression.

The present study will look at the relationship of anger to depression by examining how individuals group together on the following measures; The State-Trait Anger Expression Inventory, The Beck Depression Inventory, and the State-Trait Anxiety Inventory. It is hypothesized that if a group of individuals can be identified as expressing depression without anxiety and anger, then the Mook et al (1990) argument that anxiety is a mediating variable for the relationship of anger to depression is weakened. Similarly, Berkowitz's (1983) argument that aversive stimulation activates anger can be weakened or supported by the presence or absence of a group of individuals expressing depression without anger.

Research Questions

1. Can rational subgroups be identified on the basis of the affective dimensions of anger, anxiety, and depression? Can the State-Trait Anger Expression Inventory, The Beck Depression Inventory, and the State-Trait Anxiety Inventory instruments be used to identify and extract groups on the basis of anger, depression and anxiety?
2. If meaningful groups can be identified how do they compare to each other? That is a) Can a group of individuals be identified who express high depression and low anger? b) Can a group of individual be identified who express high depression and anger, yet are low in anxiety? and c) are these groups substantively different?

CHAPTER III

METHODS

Participants

Participants were 281 undergraduate students at a large Midwestern university enrolled in various courses. Students varied along age group however 84% of the sample was between age 18 and 23. The remaining 15% of the participants were between age 24 and 59. 57% of the participants were female. The ethnic composition of the sample was primarily Caucasian accounting for 77% of the sample. The next largest ethnic group was Asian accounting for 9% of the sample, followed by African-American accounting for 6% of the sample, Native American, 4.5% of the sample, Hispanic, 3% and other accounting for less than 1% of the sample.

Instruments

The State-Trait Anger Expression Inventory

The State-Trait Anger Expression Inventory (STAXI - Form HS)(Spielberger, 1988) is a relatively new instrument for which the theoretical basis and development are described in a series of papers (Spielberger, Jacobs, Russell, & Crane, 1983; Spielberger, Johnson, Russell, Crane, Jacobs, & Warden, 1985; Spielberger, Krasner & Solomon, 1988). The STAXI is a 44 item self-report measure. The commercial form of the instrument provides scoring instructions for eight scale scores including: State-Anger,

Trait-Anger, Trait-Anger/Temperament, Trait-Anger/Reaction, Anger-In, Anger-Out, Anger-Control, and Anger-Expression. The Anger-Expression scale is a linear combination of the following scales: Anger-IN plus Anger-Out minus Anger control plus a constant. The Trait-anger/Temperament and Trait-Anger/Reaction Scales consist of two distinct subsets of four items each from the Trait-Anger Scale. The Anger-In, Anger-Out and Anger-Control Scales consist of three distinct subsets of eight items each from the Anger-Expression Scale.

The manual for the STAXI (Spielberger, 1988) reports coefficient alphas for the State-Anger and Trait-Anger scales ranging from .84 to .93. Coefficient alphas reported for the Trait-Anger/Temperament scale range from .84 to .89, impressively high for a four item scale. Coefficient alphas ranging from .73 to .85 are reported for the three anger expression scales, Anger-In, Anger-Out, and Anger-Control. The eight STAXI scale, Anger-Expression, is calculated as a combination of the Anger-In, Anger-Out, and Anger-Control scales. The Anger-Expression Scale is presented in the manual as a "research scale," and its psychometric properties are not known. The manual (Speilberger, 1988) indicates that the test-retest reliability of the STAXI scales has been investigated but these results are not yet published.

Several studies have been conducted regarding the validity of the STAXI scales. The manual (Speilberger, 1988) reports correlation of the scales with several personality measures as well as measures of blood pressure, both systolic and diastolic. Several other studies reflecting the validity of the STAXI scales are cited in the manual, but are not thoroughly reviewed. Fuqua et al. (in press) conclude there is, "substantial

credibility to the multidimensional theoretical treatment of the anger construct as represented by the STAXI".

The Beck Depression Inventory

The Beck Depression Inventory (BDI) is a frequently used instrument designed to measure the intensity of depression (Ponterotto, Pace, & Kavan, 1989). Originally developed by Beck, Ward, Mendelson, Mock, and Erbaugh (1961). The BDI consists of 21 items, rated on a 4 - point Likert scale denoting the of intensity of the item. It is scored by simply totaling the rating across items.

The BDI has been used in more that 500 reported studies (Ponterotto et al., 1989) and its psychometric properties have been well established. Beck, Steer, and Garbin (1988) report coefficient alpha ranging from .76 to .95 with an mean alpha of .86 in 25 studies based on psychiatric and nonpsychiatric populations.

Sacco (1981) has questioned whether the BDI measures state or trait depression. Beck et al. (1988) suggest that the problem has been adequately addressed with the change in instructions for administration instituted at the time of the BDI's revision. As evidence he reports 10 studies assessing the stability of the BDI over varying lengths of time. The pearson product-moment correlation coefficients for the test-retest reliability when used on psychiatric populations ranged from .48 to .86, when used on non-psychiatric populations they ranged form .60 to.83.

Beck et al. (1988) cites studies supporting the content, concurrent, discriminate, construct and factorial validity of the BDI. Evidence for content validity is provided by Ponterotto et al. (1989) who state:

The BDI covers a wide range of symptoms associated with depression, including affective, cognitive, physiological, and social or behavioral symptoms. These symptoms fully represent six and partially represent two of the nine symptom groups from the DSM-III-R inclusion criteria for the diagnosis of a major depressive disorder (p. 304).

Beck et al (1988) cites evidence for concurrent validity in numerous studies correlating the BDI with clinical ratings of depression ($r = .55$ to $r = .96$), The Hamilton Rating Scale ($r = .73$ to $r = .8080$), The Zung Self-Rating Scale (mean $r = .71$), The MMPI-D scale (mean $r = .76$) and various other measures of depression. His conclusion is the BDI demonstrates acceptable levels of concurrent validity.

Discriminate validity of the BDI has been established by its ability to distinguish between psychiatric and nonpsychiatric groups (Beck et al., 1988). The BDI has been less successful in distinguishing between different depressive disorders.

The construct validity of the BDI has been demonstrated by its ability to detect a variety of relationships between depression and other selected attitudes. For example, Beck et al (1988) cites studies finding BDI scores have to be inversely related to REM latency (an indicator of sleep difficulty). Since sleep difficulty is well established as an indicator of depression shorter latency indicates improved sleep hence improved affective adjustment. While the BDI correlates significantly with self-report measures of anxiety it has been able to distinguish between groups diagnosed from the DSM-III-R as primary generalized anxiety disorder and primary major depression and dysthymic disorder (Beck et al., 1988).

Beck et al. (1988) document 13 studies examining the internal structure of the BDI using various factor extraction methods. The number of factors extracted in these studies ranged from 3 to seven. Beck et al. (1988) cite a latent structure analysis suggesting that the BDI represents one underlying general syndrome of depression. This general syndrome can be decomposed into three highly intercorrelated factors. The three factors are believed to reflect Negative Attitudes Toward self, Performance Impairment, and Somatic Disturbance (Beck et al, 1988).

The State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory (STAI) Form Y is a self-report measure of the subjective experience of anxiety. It consists of 20 items designed to measure situationally induced anxiety and twenty items designed to measure a dispositional response set to be anxious across situations. This is a widely used measure of anxiety and as a result its psychometric properties have been extensively studied. Spielberger et al. (1983) reports a median coefficient alpha of .93 for State Anxiety and .90 for Trait Anxiety. The manual for the STAI reports a number of studies supporting the use of this instrument to measure anxiety and as a consequence this instrument has gained wide usage in experimental research.

Procedure

Voluntary participation was solicited in classroom groups of varying sizes by the primary researcher. Students agreeing to participate completed an informed consent form (see appendix A). A brief demographic questionnaire was administered assessing age, gender, marital status, grade level and ethnic status (see appendix B). The STAI,

STAXI, and BDI were then administered in a random order. Response anonymity was maintained throughout the procedure.

CHAPTER IV

RESULTS

Statistical Grouping

A cluster analysis was performed using the Beck Depression Scale, State-Anxiety, Trait-Anxiety, State-Anger, Trait-Anger/Temperament, Trait-Anger/Reaction, Anger-In, Anger-Out, and Anger-Control as clustering variables using SPSS programs (SPSS-X, 1988). The Anger Expression scale was excluded from the analysis as it is a linear combination of four of the other scales from the STAXI. Although data were collected on 310 subjects, 29 had missing data and were excluded from the analysis.

The cluster analysis consisted of Ward's method with squared euclidian distance employed as the proximity measure. This method has been recommended by numerous authors (Blashfield, 1976; Borgen & Weiss, 1971; Borgen & Barnett, 1987). Borgen and Weiss (1971) summarize the advantages of Ward's method by its intuitive appeal, its objectivity and the availability for computer processing. However, Borgen and Barnett (1987) reply, "It (Ward's method) tends to produce clusters that are heavily influenced by level differences" (p. 465). That is, the use of raw scores in the analysis overemphasizes the range of the scores in comprising groups. Borgen and Barnett (1987) recommend the data be standardized to correct for this bias. A Z-score standardization of the data was implemented in order to follow this recommendation in the analysis.

Inspection of initial agglomeration schedule (Appendix C) and the icicle plots suggest an ideal cluster solution between 3 and 10 clusters. Inspection of the reduction in the Mean Square errors lead to the conclusion that the likely ideal solution would include seven groups (Williams & Lathrop, 1987). The Mean Square error reductions with successive groupings were plotted for each variable and are presented in appendix D.

In examining the reduction of Mean Square errors for each clustering variable, seven groups appeared to be ideal. However, the seventh group was comprised of a very small number of subjects ($n=6$). Consequently, it was noted that a group was formed with fewer members than the number of dependant variables. Such a group would likely be unstable and the decision was then made to reduce the number of derived groups to six. Additionally, a seven group solution did not substantially alter the nature of the groups extracted. Therefore, the six group solution was deemed the most useful and meaningful cluster solution.

Means and Standard Deviations for the six groups are presented in Table I. Utilizing the six groups as the independent variable and the nine clustering variables as dependent variables, a one-way Manova was performed. The overall test demonstrated significant differences between the groups (Wilkes = .0227, Approximate $F = 35.419$, $p < .01$).

Additionally, univariate F tests were performed on the nine variables individually and are summarized in Table II. As is normally recommended, the overall alpha ($p = .05$) was distributed evenly across the nine dependent variables to control the overall type I error rate (Stevens, 1986). It will be noted that for all nine dependent variables statistically significant overall F tests are obtained ($p < .0056$).

TABLE I
MEANS AND STANDARDS FOR SIX GROUP SOLUTION

	Group 1 n=132		Group 2 n=80	
	Mean n=57	SD	Mean n=80	SD
Beck Depression Scale	11.614	6.439	7.937	4.582
State Anxiety	40.377	9.200	38.431	9.596
Trait Anxiety	42.982	7.786	39.212	7.938
Trait Anger/Temperment	5.281	1.578	7.269	2.100
Trait Anger/Reaction	8.789	3.046	9.800	2.707
Anger In	19.930	4.499	15.287	3.519
Anger Out	13.649	3.373	17.844	3.127
Anger Control	27.526	3.969	18.706	3.603
State Anger	11.482	2.291	11.400	2.405

	Group 3 n=69		Group 4 n=75	
	Mean n=18	SD	Mean n=75	SD
Beck Depression Scale	26.972	6.427	5.080	3.101
State Anxiety	48.333	12.589	27.987	5.542
Trait Anxiety	49.444	11.506	31.293	5.999
Trait Anger/Temperment	8.194	2.244	5.520	1.474
Trait Anger/Reaction	10.917	2.809	8.320	2.054
Anger In	20.444	4.617	14.980	2.998
Anger Out	20.278	3.177	13.887	2.679
Anger Control	21.306	2.845	26.507	3.282
State Anger	12.778	2.734	10.467	1.359

	Group 5 n=21		Group 6 n=30	
	Mean n=21	SD	Mean n=30	SD
Beck Depression Scale	13.214	8.750	14.100	9.956
State Anxiety	43.405	10.232	54.833	13.496
Trait Anxiety	50.952	9.362	49.600	13.738
Trait Anger/Temperment	12.714	2.217	9.867	3.721
Trait Anger/Reaction	12.619	2.376	11.233	2.208
Anger In	17.500	3.154	20.700	3.671
Anger Out	22.905	3.907	19.017	3.559
Anger Control	16.571	3.187	20.833	4.168
State Anger	11.619	2.589	25.700	5.375

TABLE II
UNIVARIATE F-RATIOS

Variable	Hypoth	Error MS	F-ratio	Sig of F
Beck Depression Scale	1640.0369	35.6361	46.0217	0.000
State Anxiety	3743.1018	88.5708	42.2611	0.000
Trait Anxiety	2611.9457	74.5910	35.0169	0.000
Trait Anger/Temperment	258.1567	4.4873	57.5298	0.000
Trait Anger/Reaction	93.1647	6.5420	14.2411	0.000
Anger In	329.1498	13.5621	24.2699	0.000
Anger Out	485.1355	9.7136	49.9442	0.000
Anger Control	921.8907	12.9068	71.4270	0.000
State Anger	1137.1354	7.3662	154.3715	0.000

Nature of the Group Differences

In order to determine the number and nature of significant dimensions, a discriminant analysis was performed using the Beck Depression Scale, State-Anxiety, Trait-Anxiety, State-Anger, Trait-Anger/Temperament, Trait-Anger/Reaction, Anger-In, Anger-Out, and Anger- Control as discriminating variables. The six group cluster solution served as the grouping variable. The direct method was employed with the discriminant analysis and a Verimax rotation of the structure matrix was performed to aid in the interpretation of the discriminate functions (SPSS-X, 1988).

Five functions were extracted and found to be statistically significant. Table III presents the tests of significance for the five discriminate functions. As can be seen in the table, all five of the functions were found to be statistically significant.

TABLE III
SIGNIFICANCE OF DISCRIMINANT FUNCTION

Function	1	2	3	4	5
Cannical Correlation	0.8807	0.8377	0.7103	0.4590	0.3642
Eigenvalue	3.4577	2.3530	1.0185	0.2670	0.1529
Percent Variance	47.70	32.46	14.05	3.68	2.11
Wilkes Lambda	0.0227	0.1012	0.3392	0.6846	0.8674
Chi-Square	1031.600	624.340	294.650	103.250	38.769
Degrees of Freedom	45.00	32.00	21.00	12.00	5.00
Significance of F-ratio	0.000	0.000	0.000	0.00	0.000

Table IV was constructed to summarize the structure coefficients for the five discriminate functions. As will be noted, the first function is most closely associated with the measurement of State-Anxiety. The second function is most clearly associated with Anger-Control. The third function associated with Trait-Anger/Temperament, Anger-Out and Trait-Anger/Reaction. Function four is more clearly associated with the measurement of depression as assessed by the Beck Depression Inventory. Finally, the last function is associated with Trait-Anger, State-Anger, and Anger-In.

TABLE IV
STRUCTURE MATRIX

	Function 1	Function 2	Function3	Function 4	Function5
State Anger	0.969	-0.023	0.128	0.060	0.165
Anger Control	-0.016	0.836	-0.069	0.060	-0.045
Trait Anger/Temperment	0.072	0.106	0.868	-0.050	0.013
Anger Out	0.036	-0.244	0.478	0.222	-0.061
Trait Anger/Reaction	0.027	-0.032	0.319	0.037	0.118
Beck Depression Scale	0.055	0.062	0.112	0.831	0.203
Trait Anxiety	0.002	-0.051	0.214	0.043	0.765
State Anxiety	0.200	-0.265	-0.055	0.109	0.726
Anger In	0.068	0.175	0.029	0.129	0.654

Table V was constructed to summarize group centroids for all six groups on the five discriminant functions. An examination of the group centroids aids in evaluating the extent of separation of groups on the discriminant functions. For the first function, group 6 is separated from all other groups. In the second function, groups 1 and 4 are similar and distinct from groups 2 and 5. The third function reveals similarities between groups 5 and 6 and dissimilarities between groups 1 and 4. For the fourth function, group 3 is most distinct from group 2. Finally, in the fifth function, separation of group membership is most pronounced between groups 6 and groups 2 and 4.

TABLE V
GROUP CENTROIDS

Group	Function 1	Function 2	Function 3	Function 4	Function 5
1	-0.458	1.493	-1.160	0.168	0.790
2	-0.524	-1.355	0.268	-0.271	-0.344
3	-0.482	-0.617	0.854	3.125	0.899
4	-0.514	1.131	-1.003	0.701	-0.997
5	-1.034	-1.810	3.345	0.237	0.514
6	4.565	-0.141	1.145	0.115	1.010

To aid in the clinical interpretation of group differences, Table VI was constructed. This table presents group mean z-scores on each of the nine dependent variables for the six groups so as to determine the degree of difference from the overall mean. Cohen (1977) states that effect size can be defined as "the degree to which the null hypothesis is false", and is expressed as the "difference between mean 'z' standard scores". (p. 32) Table 6 provides information with regard to this degree of departure from the null hypothesis. It is an arbitrary decision how large an effect size will be considered important. Cohen (1977) suggests .50 represents a large effect. This was the degree of difference determine to be important in helping to define group differences.

As noted in Table VI, group 1 is characterized by relatively low degrees of temperamental anger and anger directed outward, with high degrees of anger directed inward and then high anger control. In contrast group 2 is characterized by relatively average scores overall with low anger control. Group 3 is defined by high scores on measures of depression, state anxiety, trait anxiety, anger directed inward and anger directed outward. Group 4 is characterized by high scores on depression, state anxiety, trait anxiety, anger directed inward and anger directed outward and anger control. Group 5 is characterized by high trait anxiety, high trait anger temperament, high trait anger reaction, high anger directed outward, and low anger control. Finally, group 6 is characterized by high state anxiety, high trait anxiety, high trait anger reaction, high trait anger temperament, high anger in and high state anger.

TABLE VI
Z-SCORE MEANS

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Beck Depression Scale	0.174	-0.277	2.059	-0.628	0.370	0.479
State Anxiety	0.125	-0.034	0.778	-0.890	0.374	1.311
Trait Anxiety	0.226	-0.118	0.816	-0.841	0.954	0.831
Trait Anger/Reaction	-0.251	0.105	0.499	-0.417	1.101	0.611
Trait Anger/Temperment	-0.610	0.069	0.385	-0.528	1.927	0.955
Anger In	0.641	-0.412	0.758	-0.482	0.090	0.816
Anger Out	-0.667	0.316	0.887	-0.611	1.503	0.591
Anger Control	0.874	-0.749	-0.270	0.686	-1.141	-0.348
State Anger	-0.257	-0.273	-0.016	-0.446	-0.232	2.395

CHAPTER V

DISCUSSION

Summary of the Results

The cluster analysis procedure extracted from the original sample six homogeneous groups based on the affective dimensions of anger, anxiety and depression. In order to determine the significance of the distinctiveness of the groups formed, a MANOVA was performed. The groups are significantly different from each other on the measures of anger, anxiety and depression. Univariate analysis reveals that differences exist on all measures. In order to differentiate the nature of the group differences a discriminate analysis was performed and it is found that the first three functions accounting for 94% of the variance associated with group separation. State anxiety, the measure predominantly associated with the first function; plus anger control, the variable associated with the second function; and Trait Anger/Temperament, Anger Out and Trait Anger/Reaction the variables associated with the third function account for this variance. All five discriminate functions were found to be significant with the last two functions accounting for smaller amounts of variance. Function four is more clearly associated with the measurement of depression as assessed by the Beck Depression Inventory and the last function is associated with Trait Anger, State Anger, and Anger-In.

The Nature of the Groups

The 6 groups differed along the measured affective dimensions in the following manner.

Group 1 is characterized by relatively low temperamental trait anger. Speilberger (1988) states that "persons with high scores on the T-Anger/t subscale are quick tempered and readily express their angry feelings with little provocation" (p. 5). Presumably then this group would be characterized by the opposite. That is, they tend to be reticent to express their anger. When anger is experienced, it tends to be turned inward or controlled it is not experienced as depression.

Group 2 tends to be a relatively average group who tend to experience anger, anxiety or depression at an average rate and are characterized by their relative lack of anger control. Since "persons with high scores on the anger control scale tend to invest a great deal of energy in monitoring and preventing the experience of anger" (Speilberger, 1988, p. 5) it can be assumed that this group will be more spontaneous and free with their emotional experiences.

Individuals who comprise group 3 are described as experiencing the most psychological discomfort. On average, they report more feelings of depression and anxiety and, when they experience anger, it tends to be turned both inward and outward onto external targets. These individuals do not report a great deal of state anger, presumably being preoccupied with feelings of anxiety and depression.

Group 4 is distinguished by relatively low expression of depression, low anxiety and low trait-anger/temperament. However, paradoxically, they report a relatively high level

of anger control. Two explanations for this pattern of results are suggested. This group may be sensitive to the demand characteristics of the instruments and, if so these results may reflect a social desirability response set. A second explanation is that this group is denying the experience of depression, anger and anxiety and, as a consequence, the individuals in this group are only aware of a need to control their emotional experiences.

Individuals in group 5 ascribe to temperamental difficulties with anger and anxiety. Yet, at the time of administration they were within the average range for this sample (i.e., state anger and state anxiety). Anger tends to be expressed toward outside objects in the environment and these individuals tend to have poor control of anger. It can be assumed that members of this group might find themselves in conflict with others more often than would members of other groups within this sample.

Finally, members of group 6 ascribe to feelings of state anxiety, and trait anxiety and anger; yet, depression is not a significant difficulty for them. They are highly reactive to the environment at the time of assessment and further, they ascribe to trait difficulties with anger and anxiety. This anger is directed both to external, environmental objects and inwardly.

Theoretical Implications

The extraction of the six groups from the sample suggests that the relationships between anger, anxiety and depression needs to be more closely examined. For example, group 1 experienced internalized anger but this did not result in subjective experiences of depression. This casts some doubt on the psychoanalytic theories of the relationship between anger and depression. Similarly, the mediating role of anxiety in blocking the

outward expression of anger and thus, precipitating depression (Mook, et al., (1990), was not supported. For example, group 3 members, while expressing high levels of depression and state plus trait anxiety, reportedly express that anger both internally and externally.

Berkowitz's (1983) theory that anger is stimulated by any aversive stimuli was not supported. For example, group 3 members endorsed items reflecting significant depression, state anxiety, and trait anxiety but average range of state anger. Presumably these individuals were, at the time of assessment, experiencing the aversive stimuli of anxiety and depression but were not endorsing the predicted anger.

Bandura (1977a) states that the experience of anger and depression are caused by the same internal experience and are defined differently by the same individuals based on social cues. However, it is clear that some individuals differentiate between these internal cues, noting the experience of anger and depression as distinct characteristics. That is, some individuals endorsed items reflecting depression without anger (group 3) and others anger without depression (group 6).

If current theoretical links between anger and depression are considered inadequate, what type of model is sufficient to explain the obtained results? Despite the disagreement in the way depression is defined, its measurement is that of a unidimensional construct. There is some evidence that a multidimensional perspective for depression may be more realistic. For example, depression is measured as a state while anger and anxiety have been successfully treated as both as states and traits. There are a number of other conceptualizations proposed for depression, yet their measurement has not been explicated.

In order to have a clearer idea of the various relationships between anger and depression, comprehensible conceptualizations of the nature of emotionality need to be developed. Further, multiple scaling methods need to be employed in their measurement. Recently, this need has been recognized by a number of authors (Watson & Tellegen, 1985; Lazarus, 1991). Lazarus (1991) proposes that a theory of emotions is better defined as a systems theory "encompassing a number of interdependent cause-and-effect variables and processes, which follow the fluid principles of reciprocal determinism" (p. 819). Secondly, a theory of emotions theory should state how different emotions are stimulated and how each influences further actions and reactions.

A different conceptualization of affect is offered by Watson and Tellegen (1985). They propose that emotionality can be conceptualized as falling along two bi-polar dimension of negative and positive affect. An individual's affective experience then is defined by the presence or absence of these dimensions. For example, anger can be thought of as the presence of high negative affect and the absence of positive affect. In this dimensional analysis, the issue of state and trait emotionality is not addressed.

Regardless of the efficacy of these and other theories of emotion it is clear this domain will continue to be of interest (Lazarus, 1991). The current study calls into question many of the unidimensional relationships between anger and depression and suggests the need for more complex multidimensional analysis of the constructs under consideration. Though there is some support for the various theories predicting relationships between the constructs of interest, however contradictory evidence is also present in the composition of these groups. Consequently, a multidimensional perspective of the constructs under question offers a complex, but more realistic,

understanding of the relationships between anger, anxiety and depression. Specifically, the state-trait dimension of depression is an area of exploration that is implicit in the distinction between endogenous and exogenous depression. Additionally, conceptualizations of the management of negative affect allows for the explanation why some people appear resilient in the face of events which cause depression (this is analogous to the control dimension of anger).

Clinical Implications

The differing conceptualizations of the constructs in question leads to differing clinical management of depression, anxiety, and anger. For example, given a unidirectional causal relationship between anger and depression, as proposed by psychoanalytic theories, treatment of depression would attempt to explore and manage the underlying process of anger and not attend directly to the individual's subjective experience of depression. Similarly, if depression is caused by low reinforcement it should be treated by increasing reinforcing contingencies.

In contrast, if anger, anxiety and depression are considered in the context of the conceptualizations proposed by Lazarus (1991) or Watson and Tellegen (1985) then management of these emotional states would be different. The case can be made that, in fact, current treatments imply a theoretical acceptance of the principles of reciprocal determinism (Bandura, 1974). For example, the multi-modal management of depression to include medication, cognitive interventions and increased physical and social activity has been proposed by a number of clinicians (McCall, 1975). Hence, the presumed indirect causes of depression (i.e., faulty cognitions, and biochemical disturbances) are

addressed, as well as the symptoms that perpetuate depression (i.e. social isolation, and reduction in energy level).

The multidimensional consideration of anger, anxiety and depression and their interrelationships suggest the importance of adequate evaluation of these affective states. For some individuals who experience depression as anger turned inward, addressing the affective state of anger is a necessary part of the clinical management of depression. However, the recognition that depression can occur in the absence of anger limits the universality of this treatment. Additional studies need to be made in order to more clearly delineate the relationships between anger, anxiety and depression.

Future studies should focus on explicating the multidimensional nature of anger and anxiety based on new theoretical understanding of these concepts. For example, Seligman (1990) presents a scale based on his attribution theory to predict optimism, which he concludes inoculates individuals from helplessness and hence depression. Similar attempts could be developed for anxiety and other dimensions of depression. In the development of these multidimensional perspectives, it is important not only to use "normal" populations but also to examine populations defined as depressed and/or anxious. The development of a nosology of depression based on theoretical understandings and empirical evidence is itself a formidable task. However, this endeavor will provide a great deal of understanding of the nature of emotionality.

Limitations

This study has a number of limitations which limit its generalizability. For example, the nature of the sample raises questions about the conclusions. It is likely that the

homogeneity of the sample does not reflect the greater variance in the population with regard to ethnicity, age range, or marital status. These are all factors that presumably affect affective adjustment. Additionally, since the sample was comprised of college students, it is likely that it does not reflect the population variance with respect to socio-economic status. Finally, since the sample was a normal population sample, it may not reflect differences that might exist in clinical populations.

As has been noted throughout the discussion of the difficulty of construct explication, the limitation of the measures used is another significant weakness of this study. The explication of the constructs of anger, anxiety and depression have been inadequate. As a consequence, the development of appropriate measures of these constructs is questionable. Additionally, all of the data was gathered via pencil and paper test, which are essentially self-report questionnaires. This method of data collection is subject to a number of response sets and could lead to spurious results (Isaac & Michael, 1981). Isaac and Michael (1981) recommend the use of multiple methods of data collection, for example physiologic data, professional rating scales, peer ratings, and questionnaire data.

While a number of questions have developed from this study, it is an exploratory study. The limitations of correlational research cannot be overstated. These results need to be cross-validated. Due to shrinkage and the subjective nature of the statistical decisions, quite different results might be obtained. Therefore, firmer answers regarding these relationships await confirmatory experimental results.

Direction for Future Research

Future studies should address many of the limitations of the current study. That is, future researchers should use different samples and methods for measuring affect. Further, experimental studies are warranted. For example, studies need to be undertaken using clinical populations, measured with not only pencil and paper questionnaires but also physiologic data, clinical ratings, and peer ratings. It may also be fruitful to look at gender and ethnic differences with regard to these affective dimensions. Experimental studies with clinical populations offer numerous ethical concerns. However, in more heterogeneous populations, the relationships between these multi-dimensional constructs can be more closely observed.

The constructs, however, need to be more fully developed before any of these additional studies can be undertaken. While Spielberger (1988) has developed an instrument which offers a promising multidimensional approach to measurement of anger, similar developments are lacking for anxiety and depression. Clearly, treating depression as a unidimensional construct does little to develop an understanding of its subtle and more complex relationships to anxiety and anger.

Summary and Conclusions

In conclusion, this study successfully extracted from the sample six distinct groups along the affective dimensions of anger, depression and anxiety. Most of the separation of the groups occurred as a consequence of anxiety and anger. The groups, as constituted, did not support any single conceptualization of the relationship of anger to anxiety. It is concluded that the current unidimensional conceptualizations of depression

and its relationship to anger are too simplistic and a multidimensional conceptualization of the constructs is needed.

As a consequence, this study suggests that before the nature of more complex relationships can be established, the constructs of depression and anxiety must be more fully developed. Additionally, more adequate measures of anxiety and depression need to be developed in order to reflect the more complex multidimensional nature of the constructs. This suggests that more refined methods of exploring the various relationships between these affective dimensions will lead to direct clinical applications.

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APPENDIXES

APPENDIX A

INFORMED CONSENT FORM

INFORMED CONSENT FORM

I, _____, hereby authorize Dale R. Fuqua, or his associates to administer and collect from me the Spielberger State/Trait Anxiety Questionnaire, the Spielberger State/Trait Anger Questionnaire, Beck's Depression Scale and Petersen's Attribution Questionnaire. This is done as part of an investigation entitled, "The Validity of State and Trait Personality Variables." The purpose of this investigation is to determine if these personality variables are structured as hypothesized. I understand that 20-30 minutes of my time will be required, and that my responses will be provided anonymously to protect my identity. I understand that only persons 18 years of age or older are being asked to participate.

I understand that I may contact either Randy Smith or Elizabeth Leonard at 744-7280 for information concerning the results of the study.

I understand that participation is voluntary, that there is no penalty for refusal to participate and that I am free to withdraw my consent and participation in this project at any time without penalty after notifying the project director.

I may contact Dale R. Fuqua at telephone number (405) 744-6040 should I wish further information about the research. I may also contact Terry Maciula, University Research Services, 001 Life Science East, Oklahoma State University, Stillwater, Oklahoma 74078; Telephone: (405) 744-5700.

I have read and fully understand the consent form. I sign it freely and voluntarily. I have been provided with a copy of this consent form.

Date: _____

Time: _____ (am/pm)

Signed: _____
(Signature of Subject)

APPENDIX B

DEMOGRAPHICS FORM

DEMOGRAPHICS FORM

Please list your age in the blank provided and circle the appropriate response to the remainder of the items. DO NOT write your name anywhere in this packet of information. This project is designed to be anonymous.

Age: _____

Gender: Female _____ Male _____

Marital Status: Single _____ Married _____ Divorced _____ Widowed _____

Grade Level: Freshman _____ Sophomore _____ Junior _____ Senior _____ Other _____

Ethnicity: Asian _____ Black _____ Caucasian _____ Hispanic _____

Native American _____ Other _____

APPENDIX C

AGGLOMERATION SCHEDULE

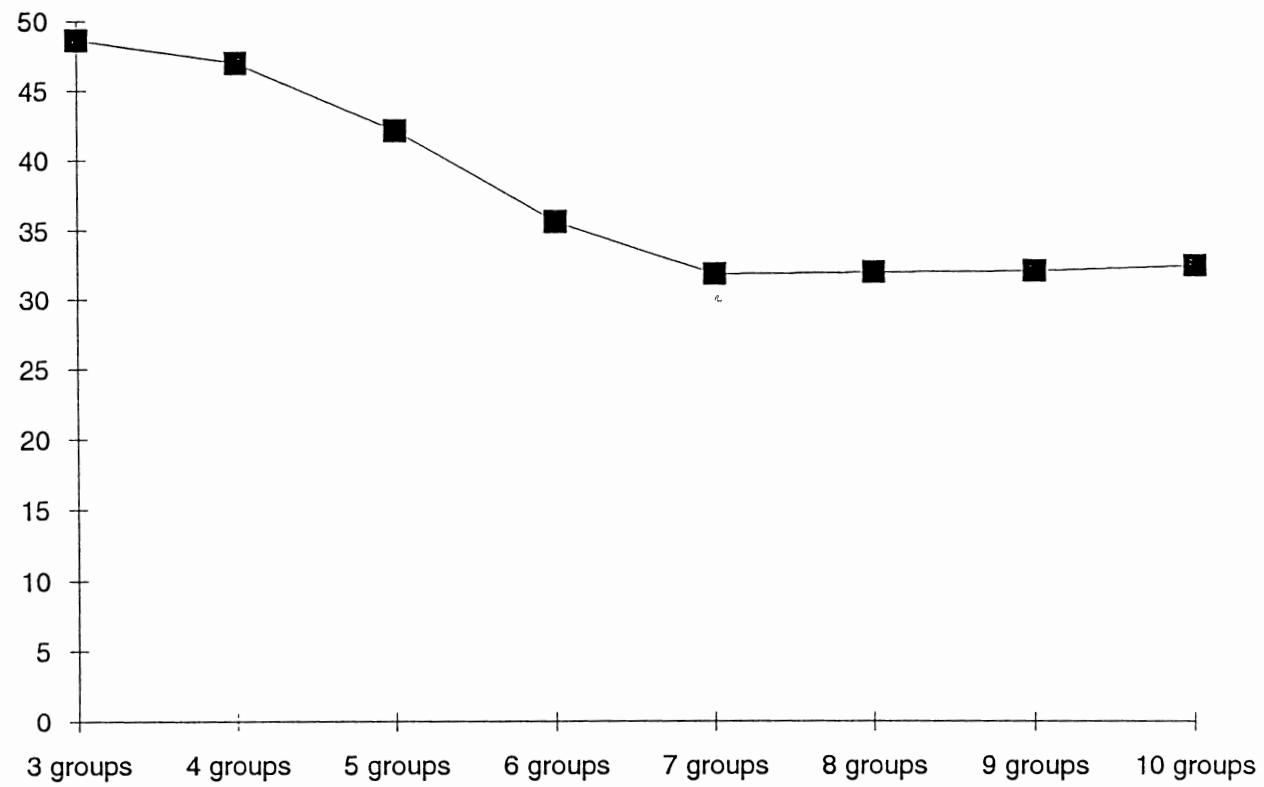
AGGLOMERATION SCHEDULE

Stage	Coefficient	Stage	Coefficient	Stage	Coefficient
1	0.1278	48	22.8328	95	68.5420
2	0.3099	49	23.5835	96	69.7499
3	0.5411	50	24.3344	97	70.9729
4	0.7819	51	25.0950	98	72.1983
5	1.0353	52	25.8589	99	73.4308
6	1.3203	53	26.6278	100	74.6754
7	1.6221	54	27.3993	101	75.9217
8	1.9276	55	28.1811	102	77.1855
9	2.2393	56	28.9658	103	78.4621
10	2.5707	57	29.7686	104	79.7454
11	2.9248	58	30.6037	105	81.0340
12	3.2826	59	31.4408	106	82.3271
13	3.6645	60	32.2798	107	83.6442
14	4.0530	61	33.1413	108	84.9682
15	4.4480	62	34.0354	109	86.3278
16	4.8504	63	34.9318	110	87.7184
17	5.2581	64	35.8367	111	89.1145
18	5.6914	65	36.7505	112	90.5148
19	6.1273	66	37.6681	113	91.9169
20	6.5638	67	38.5867	114	93.3222
21	7.0316	68	39.5198	115	94.7320
22	7.5037	69	40.4760	116	96.1489
23	7.9839	70	41.4405	117	97.5830
24	8.4682	71	42.4183	118	99.0174
25	8.9587	72	43.4139	119	100.4780
26	9.4511	73	44.4333	120	101.9422
27	9.9535	74	45.4542	121	103.4425
28	10.4628	75	46.4865	122	104.9623
29	11.0000	76	47.5207	123	106.5682
30	11.5380	77	48.5594	124	108.1903
31	12.0810	78	49.5999	125	109.8220
32	12.6295	79	50.6432	126	111.4713
33	13.1840	80	51.6953	127	113.1233
34	13.7476	81	52.7558	128	114.8375
35	14.3137	82	53.8289	129	116.5547
36	14.8893	83	54.9096	130	118.2961
37	15.4820	84	55.9908	131	120.0410
38	16.0760	85	57.0754	132	121.8040
39	16.6746	86	58.1664	133	123.5778
40	17.2947	87	59.2592	134	125.4500
41	17.9338	88	60.3684	135	127.3225
42	18.5938	89	61.5062	136	129.2410
43	19.2658	90	62.6609	137	131.1618
44	19.9483	91	63.8157	138	133.1130
45	20.6405	92	64.9935	139	135.0738
46	21.3639	93	66.1719	140	137.0646
47	22.0963	94	67.3566	141	139.0643

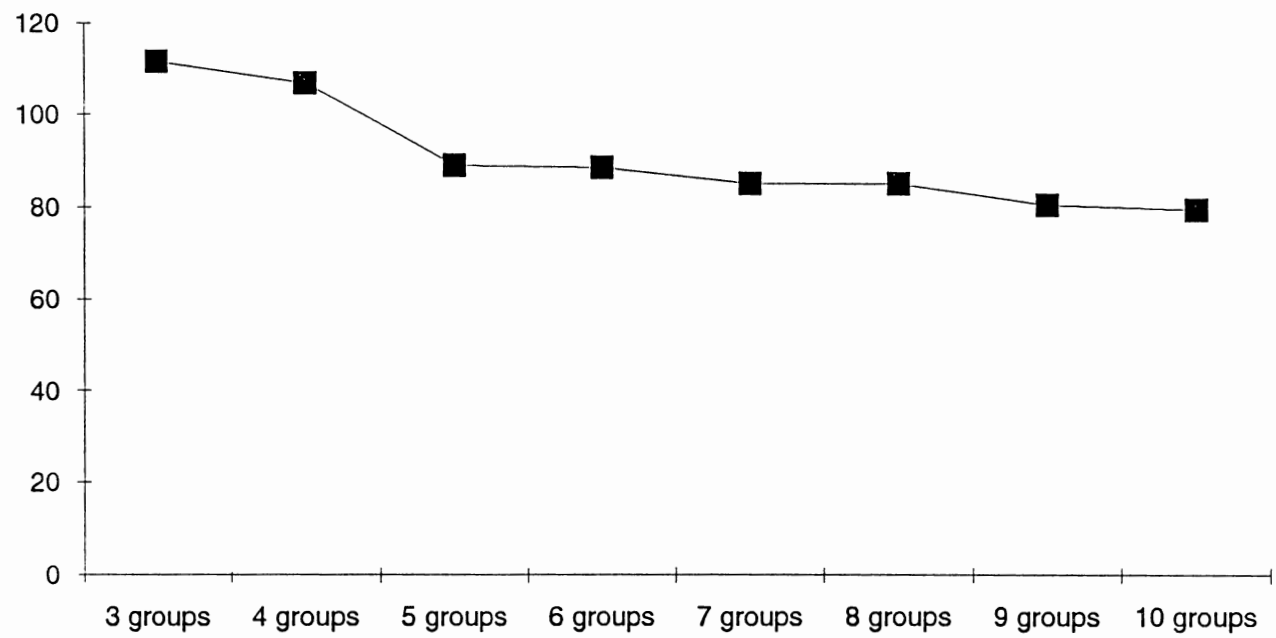
Stage	Coefficient	Stage	Coefficient	Stage	Coefficient
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143	143.1267	193	279.9568	243	585.0776
144	145.1744	194	283.8303	244	595.6003
145	147.2452	195	287.876	245	606.2368
146	149.3311	196	291.97	246	617.1282
147	151.4684	197	296.0649	247	628.4827
148	153.6070	198	300.1873	248	640.0425
149	155.7682	199	304.3125	249	652.0745
150	157.9488	200	308.582	250	664.4475
151	160.1319	201	312.8877	251	677.1047
152	162.3222	202	317.2585	252	690.5471
153	164.527	203	321.7634	253	704.2878
154	166.7477	204	326.4009	254	718.2317
155	168.9822	205	331.0647	255	733.0408
156	171.2264	206	335.8264	256	748.6226
157	173.4781	207	340.6401	257	764.7336
158	175.7786	208	345.4695	258	781.0430
159	178.0941	209	350.4260	259	800.8403
160	180.4371	210	355.3828	260	821.4265
161	182.7832	211	360.6228	261	842.2483
162	185.1392	212	365.9338	262	864.0923
163	187.5643	213	371.3010	263	886.9026
164	190.1781	214	376.7122	264	912.8381
165	192.815	215	382.1914	265	938.7842
166	195.4769	216	387.6958	266	966.1619
167	198.1553	217	393.2158	267	994.5908
168	200.8774	218	398.7461	268	1024.8584
169	203.6835	219	404.3337	269	1057.0134
170	206.5221	220	409.9241	270	1089.1946
171	209.3647	221	415.6001	271	1136.8569
172	212.2645	222	421.3083	272	1185.0623
173	215.1861	223	427.0188	273	1247.1345
174	218.1211	224	432.8118	274	1313.1162
175	221.1068	225	438.7627	275	1379.2930
176	224.1648	226	444.7471	276	1451.0657
177	227.2342	227	451.1191	277	1586.5637
178	230.3119	228	457.5115	278	1725.4248
179	233.39	229	464.1823	279	1936.1965
180	236.4723	230	471.3002	280	2516.4233
181	239.5747	231	478.8896		
182	242.6889	232	486.7266		
183	245.8143	233	494.6765		
184	248.9756	234	502.7344		
185	252.1552	235	510.9600		
186	255.4258	236	519.2878		
187	258.7024	237	527.8042		
188	262.0444	238	536.6348		
189	265.4924	239	545.6213		
190	268.9617	240	555.2834		
191	272.5798	241	564.9553		

APPENDIX D

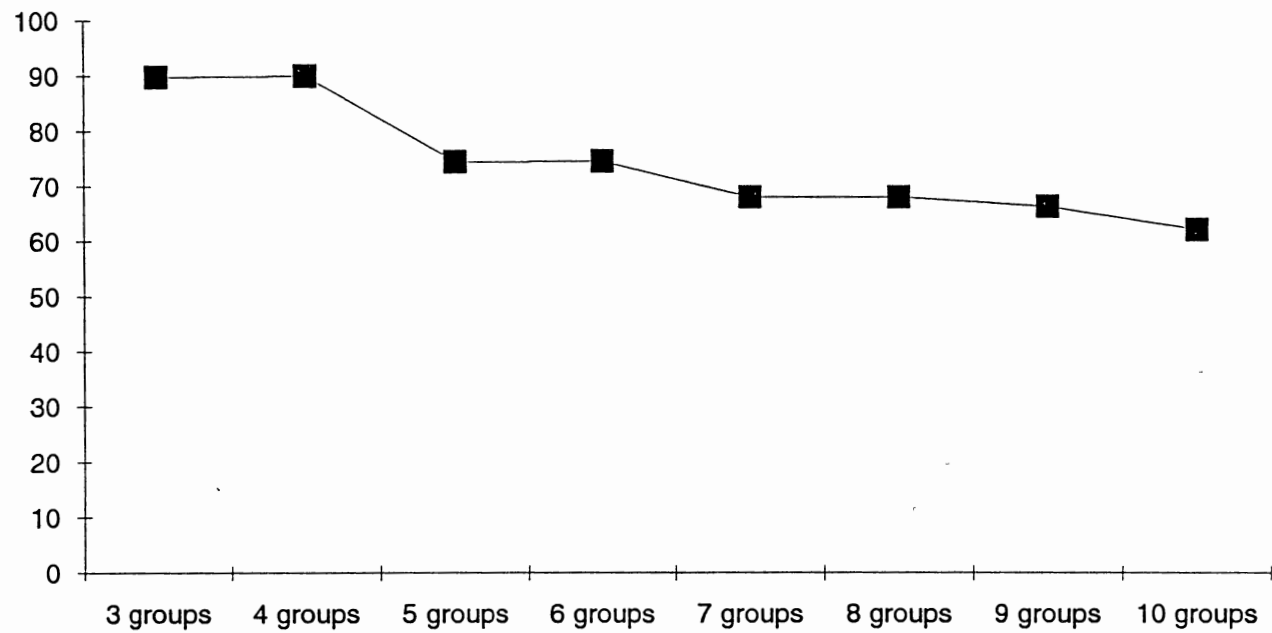
MEAN SQUARE ERROR REDUCTION



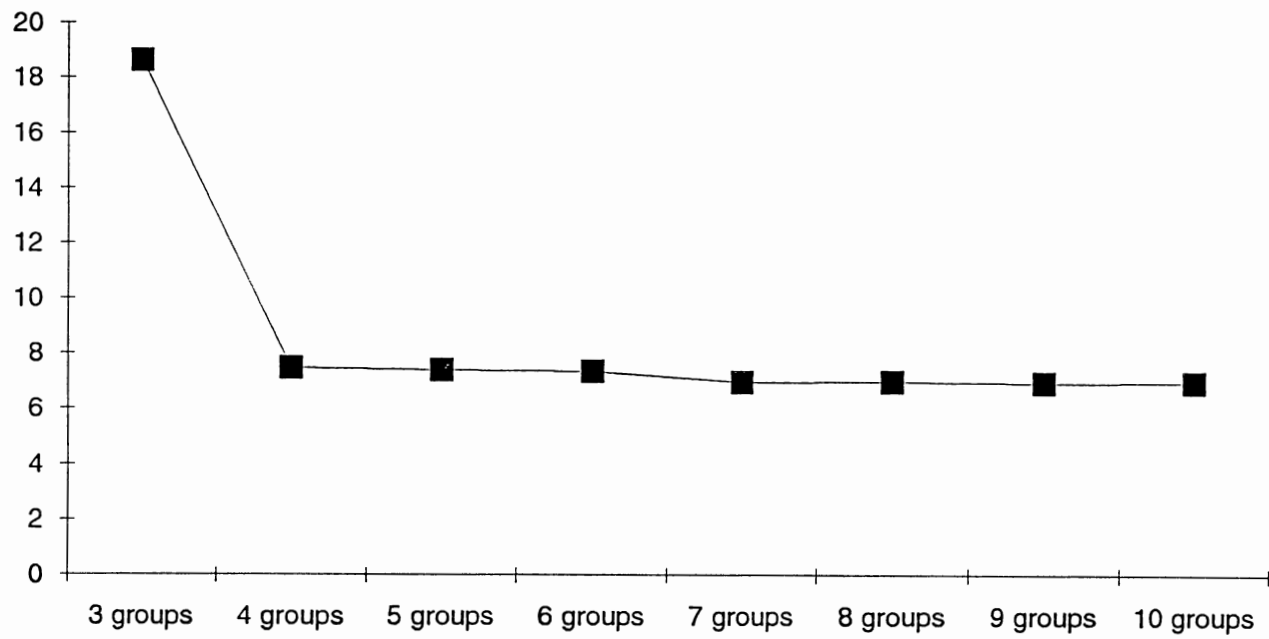
Beck Total Score



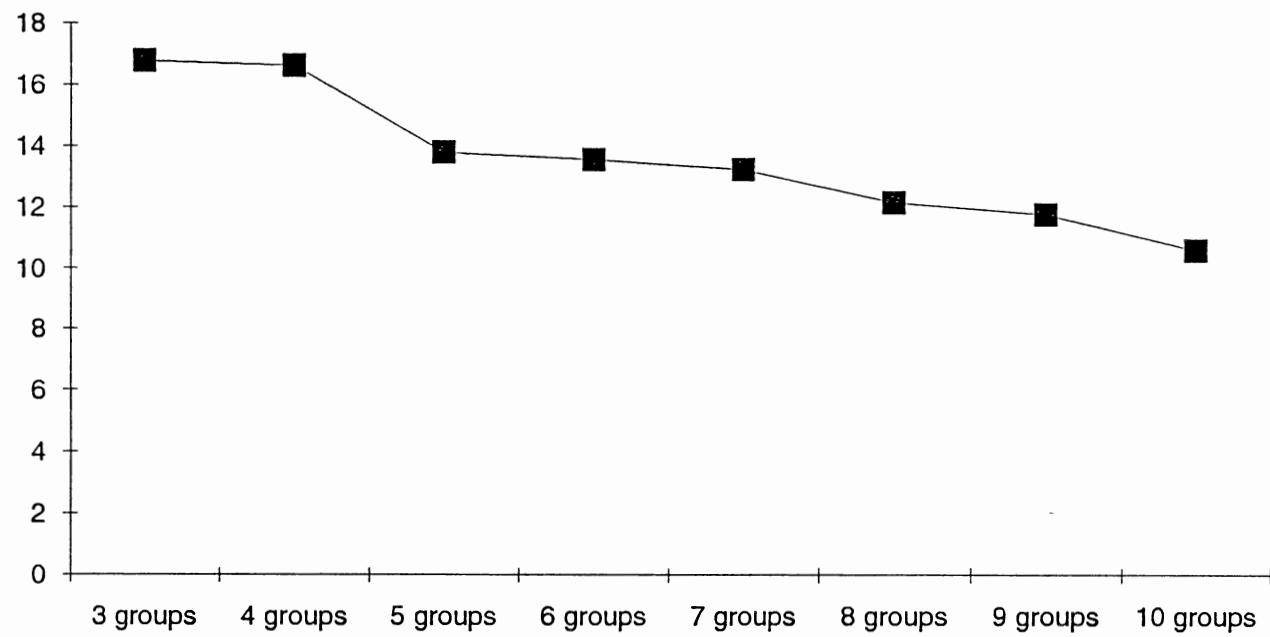
State Anxiety



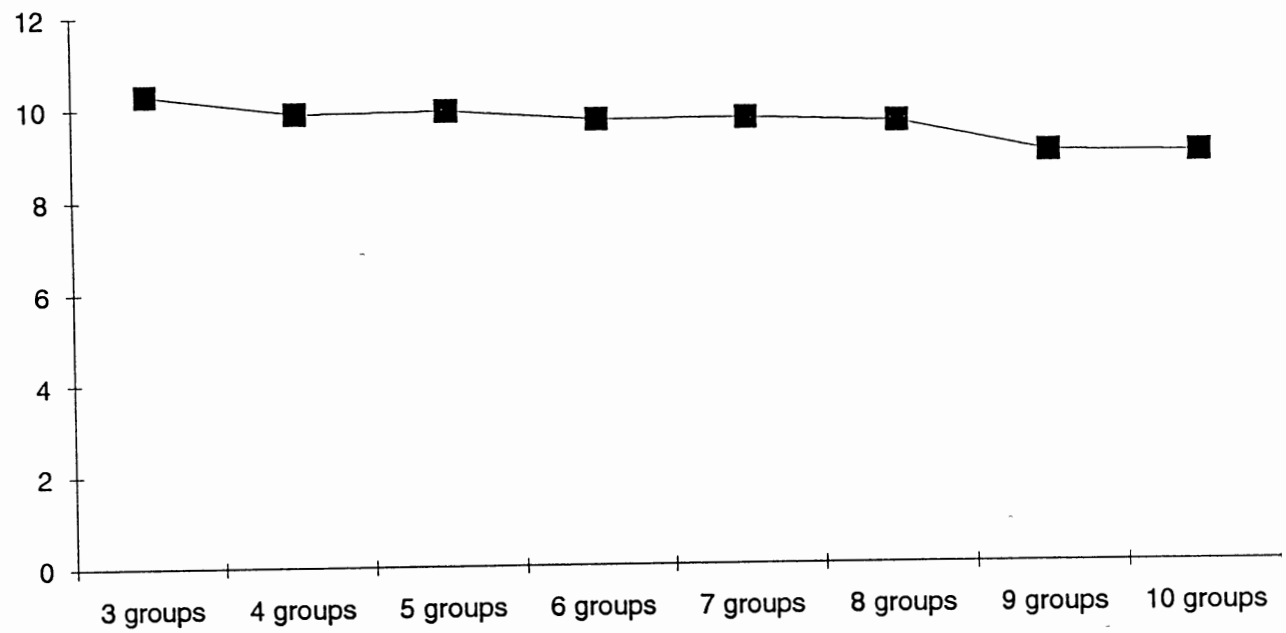
Trait Anxiety



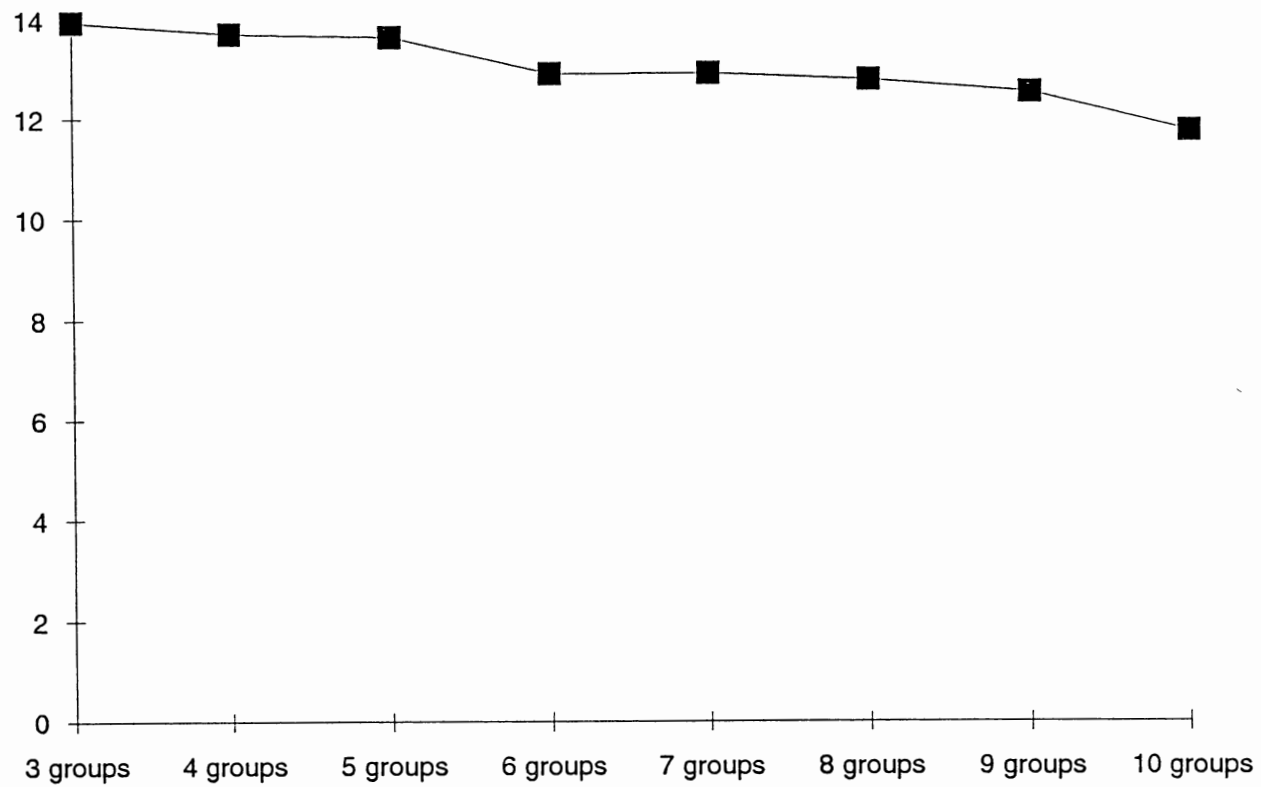
State Anger Total



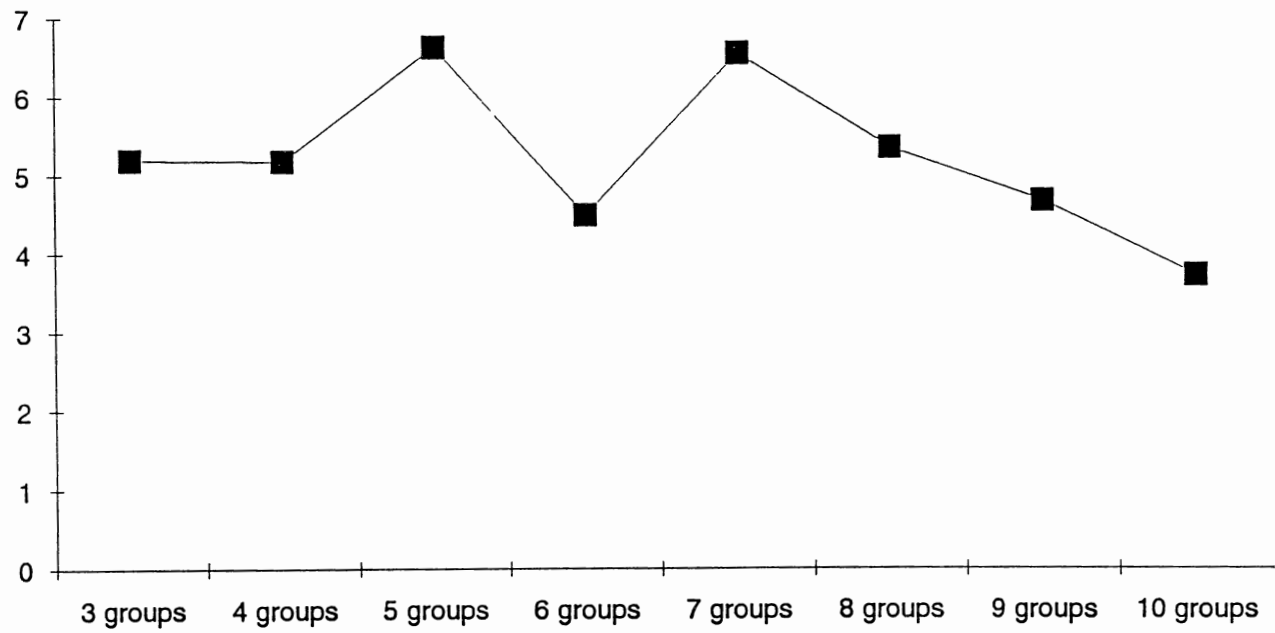
Anger In



Anger Out



Anger Control



Trait Anger-Temperament

2

VITA

Randy J. Smith

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE RELATIONSHIPS OF ANGER AND ANXIETY TO DEPRESSION:
A MULTIDIMENSIONAL PERSPECTIVE

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