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Normative Study of the Mahan and DiTomasso Anger Scale

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A NORMATIVE STUDY OF THE MAHAN AND DITOMASSO ANGER SCALE IN AN OUTPATIENT CLINICAL SAMPLE

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Dissertation Approval

This is to certify that the dissertation presented to us by Roger Oliver Beardmore on the 17th day of June, 2003, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is accepted in both scholarship and literary quality.

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Abstract

The present study proposed to advance the treatment of anger disorders by exploring the psychometric properties of the MAD-AS scale, an anger assessment tool. Research sought to build on prior investigation of the reliability, validity, and factor structure of the MAD-AS in an inpatient setting by examining this measure using outpatient subjects. Several important findings were obtained in this study. Research results suggest that the MAD-AS represents a significant improvement over some existing anger measures in terms of its brevity, its ease of administration, and its standardization of scoring. The MAD-AS appears to possess sound psychometric properties in terms of its reliability and validity. Findings indicate that the MAD-AS scales reflect the multidimensional quality of anger, measuring anger's cognitive, physiological, and behavioral components. These characteristics suggest its potential usefulness in diverse settings. The MAD-AS may function in research contexts as a valuable aid in the screening of participants. In clinical work, the MAD-AS can assist in identifying symptoms, choosing interventions, monitoring treatment, and evaluating outcomes.

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CHAPTER 1

Introduction

The Context of Anger

Anger is a phenomenon central to everyday life and experience. Capturing the attention of ancient philosophers, medieval artists and writers, modern journalists, and laypeople of every era, anger inspires strong reactions. More than three generations ago, Meltzer (1933) reported that, "Anger has been called the worst propensity of human nature, the father and mother of craft, cruelty, and intrigue, and the chief enemy of public happiness and private peace" (p. 285). Others (Darwin (1872/1965); Freud, 1924, 1927; McDougall, 1908; Lorenz, 1966) have insisted that anger is an inherent characteristic of human behavior. Using a reference list that spans 75 years, Averill (1983) stated that "Depending upon how records are kept, most people report becoming mild to moderately angry anywhere from several times a day to several times a week " (p. 1146). Yet despite its prominence in human experience, scientists and clinical practitioners do not agree on exactly how to conceptualize it (Anastasi, Cohen, & Spatz, 1948; Averill, 1979, 1982; Gates, 1926; Meltzer, 1933; Richardson, 1918). Clearly, anger is a universal, frequent, and elusive emotion.

Anger can be functional and purposeful. Several writers have observed that anger, even intense anger, can be quite useful (Novaco, 1994; Rothenberg, 1971; Baron & Richardson, 1994). Anger arousal may serve to energize behavior, express negative feelings, defend against threat, or elicit coping strategies to deal with stress (Novaco, 1994). Its mobilizing, alerting, and communicating qualities are distinctively adaptive.

Anger, an adaptive mechanism for addressing problems, has, however, maladaptive aspects which often create serious problems for individuals and families. It can disrupt task performance and problem-solving activities, activate injurious behaviors, impair psychological adjustment, and play a role in a variety of health disturbances (Miller et al., 1996; Siegman, 1994; Gerzina & Drummond, 2000; Forgays et al., 1999). Overt anger expression can lead to interpersonal and family conflict, verbal and physical assault, and occupational difficulties (Deffenbacher, 1992; Kassinove & Sukhodolsky, 1995). When suppressed, anger is associated with numerous medical conditions including essential hypertension, cardiovascular disease, hormonal disorders, and cancer (Kassinove & Sukhodolsky, 1995; Rosenman, 1985; Megargee, 1985; Chesney, 1985). Given these observations, it is not surprising to learn that dysfunctional anger is a salient feature of many psychiatric disorders (DSM-IV, 1994)

Anger proneness can have many negative effects on the broader human community as well. Aversive emotional states, broken relationships, impaired ability to deal with life's demands, and aggressive acts increase human suffering and tear at the fabric of society (Salzinger, 1995; Tsytsarev & Grodnitzky, 1995; Deffenbacher, 1995). The costs of poor anger management prevail across all societal groups and may be short-term (e.g., separation or loss of employment) or long-term (divorce or incarceration). There is a pressing need to address the epidemic levels of aggression and violence observed in communities around the world, and to understand the observable acts of aggression as well as the antecedents existing both in the person and the situation (Kassinove & Eckhardt, 1995).

Research and Assessment of Anger

Despite the prominent role played by anger in many clinical and societal problems, research on anger has lagged far behind its actual importance in terms of physical and psychological functioning. Berkowitz (1994), a psychologist and researcher in this field, wrote, "Any really close and thorough examination of the psychological research into the origins of anger and emotional aggression must leave the thoughtful reader somewhat dissatisfied" (p.35). Basic research on anger and aggression has largely been addressed from the perspective of personality and social psychology to the relative exclusion of matters of clinical relevance (Kassinove & Sukhodolsky, 1995). Further, while there are multiple clinical categories for depression and anxiety, anger is not formally identified by a diagnostic category in the DSM-IV. As such, anger does not enjoy the attention accorded these emotional disorders in research and treatment enhancements that flow from it.

One reason for the relative lack of research is practical; another, philosophical. Anger is not as easily measured as is depression or anxiety, and the dominance of logical positivism among social scientists until the latter part of the twentieth century reduced interest in a comprehensive investigation of anger and anger-related variables (Kassinove & Sukhodolsky, 1995; Averill, 1982; Gonzalez, Biever, & Gardner, 1994). Clinicians remain frustrated by the absence of formal diagnostic categories to aid in the formulation of clinically relevant anger disorders (DSM-IV, 1994; Eckhardt & Deffenbacher, 1995). Without such schematic assistance, identifying and treating clinically angry populations has proven difficult (Tafrate, 1995; Deffenbacher, 1995; Feindler, 1995). For scientists

and practitioners, anger has been aptly termed the "forgotten emotion" (DiGiuseppe, Tafrate, & Eckhardt, 1994).

A related issue is the dearth of anger assessment instruments available for researchers and clinicians. Trustworthy evaluative tools are crucial to several aspects of the treatment of anger-related disorders, most notably screening for anger experience, monitoring treatment progress, and measuring treatment outcomes. Effective research on the nature and treatment of clinically significant, anger-related problems is a function of sound measures of anger assessment. Trustworthy assessment instruments allow for reliable analysis of anger experiences and modes of expression, which can be used in psychotherapy outcome studies with angry clients. The scarcity of such tools presents a significant obstacle to thorough research and effective treatment of anger (Deffenbacher, Thwaites, Wallace, & Oetting, 1994; DiGiuseppe, Eckhardt, Tafrate, & Robin, 1994; Novaco, 1993; Spielberger et al., 1995).

Existing anger self-report inventories suffer from two main difficulties: (1) instruments are lengthy and often insufficiently validated; and (2) measures tend to confuse anger with its concomitants, anger experience with anger expression, and different forms of anger expression (Spielberger & Sydeman, 1994; Spielberger, Reheiser, & Sydeman, 1995). An attempt to address these shortcomings included a previous investigation (Mahan, 2000) of the newly developed MAD-AS which demonstrated adequate psychometric qualities with reference to small samples of inpatient and outpatient psychiatric populations. Further assessment of the psychometric properties of the MAD-AS is needed on larger samples of outpatient psychiatric populations to provide normative data. Specifically, the MAD-AS needs to be normed on

distinct outpatient groups, in which patients with differing clinical presentations of anger are identified and compared on the dimensions of anger experience and expression.

Theoretical Perspectives on Anger

Anger has long been recognized as a significant, internal experience or response emerging from complex interactions among prompting conditions, personal pre-prompt traits, and individualized appraisal processes (Eckhardt & Deffenbacher, 1995). It consists of physiological, phenomenological, cognitive, and behavioral components that mutually interact and that usually appear together so that the individual experiences them as a unitary anger episode. The tendency to conceive of the experience of anger as synonymous with one anger constituent, and to use related concepts such as hostility and aggression interchangeably, has confounded attempts to establish an accepted definition of anger. By considering evolving conceptions of the nature of anger as a psychobiological emotional state in historical perspective, it is possible to define anger and examine its relation to the constructs of hostility and aggression. Providing clear definitions will facilitate a review of the advances in the measurement of anger, and permit a discussion of the construction of a new scale to assess the experience and expression of anger in clinical disorders (Eckhardt & Deffenbacher, 1995; Spielberger, Reheiser, & Sydeman, 1995).

That human beings frequently become angry and engage in anger-related behaviors is not open to debate. The question of why they become angry has long been the subject of serious dispute. Psychologists have proposed sharply contrasting views concerning the nature of anger, the factors influencing its occurrence and the forces from which it stems. While these opposing theoretical perspectives have taken many different

forms, most seem to fall into one of five categories (Baron & Richardson, 1994; Kassinove & Sukhodolsky, 1995).

Anger as a subjective phenomenon

Early psychological studies of emotions focused on the qualitative feelings associated with these internal states. From an analysis of the introspective reports of trained observers, researchers endeavored to discover the "mental elements" comprising different emotions (Titchener, 1896; Wundt, 1890). Though disagreeing about the number of dimensions associated with feelings, Wundt and Titchener agreed that psychology should study immediate, subjective experience, and that the elements of emotions could be discerned only through introspection (Hergenhahn, 1997). Unfortunately, this phenomenological approach generated findings that were unrelated to other behaviors, and resulted in a discouraging degree of conceptual ambiguity and empirical inconsistency (Spielberger, Reheiser, & Sydeman, 1995; Plutchik, 1962; Young, 1943).

Anger as innate disposition

Central to disposition theories of aggression (anger) is the suggestion that experience and behavior arise largely from instinctive, innate factors. According to such theories, anger is an integral part of our basic nature and its experience and expression will always be with us (McDougall, 1908). The biological bases of fear (anxiety) and rage (anger) were recognized by Darwin (1872/1965) more than a century ago. Evolving over countless generations through the process of natural selection, these emotions were regarded as adaptive for both humans and animals. Noting that anger varies in intensity and emphasizing the profound psychobiological changes that occur as the intensity of

anger increases, Darwin observed that: "Under moderate anger the action of the heart is a little increased, the colour heightened . . . respiration is likewise a little hurried . . ." (p.244). Darwin examined similar physiological and behavioral changes as anger escalated to rage, most importantly the acceleration of the pulse rate, alteration of facial features, quickening of respiration, and stimulation of the muscular system.

Like Darwin, Freud (1924, 1927) considered fear (anxiety) and aggression (anger) inherent qualities of human beings. In his early writings, Freud regarded aggression as an innate reaction to the thwarting of pleasure-seeking or pain-avoiding responses. Observing the carnage of World War I, Freud (1933/1959) conceptualized aggressive impulses as resulting from a biological instinct that motivates people to destroy themselves (i.e., the "Death Instinct"). This self-destructive behavior was inhibited, however, by a life instinct (libido), which turned the aggressive energy toward the outer world and away from the self. Aggression that could not be vented against external objects was turned back into the self, resulting in pathological symptoms such as depression, headaches, or other psychosomatic manifestations (Alexander & French, 1948; Freud, 1936).

The Nobel Prize-winning ethologist Konrad Lorenz (1966) proposed that humans, like animals, have an innate urge to attack. Like hunger or sexual desire, these aggressive urges build up over time until they are discharged. This discharge of energy will occur indirectly through displacement, or released aggressively through catharsis (Feshback, 1984). Though differing from Freud and Darwin in the role played by the environment in interacting with the organism, Lorenz's evolutionary model of aggressive drives shares

the assumption of an inherent tendency to experience an internal aversive state (anger) and to express it through aggressive acts (Kenrick, Neuberg, & Cialdini, 1999)

However, researchers unsympathetic with innatist emphases have incorporated biological qualities attributable to anger and aggression in psychological theories. Several have noted that the anger experience has a physiological element evidenced by changes in skeletofacial muscle tone, autonomic arousal, and adrenal and other endocrine changes (Eckhardt & Deffenbacher, 1995; Kassinove & Eckhardt, 1995; Megargee, 1985). Proponents of the Cannon-Bard theory of emotions (Cannon, 1929) have urged that feelings are always accompanied by physiological reactions generic to all emotions, and that arousal and emotion occur together. One theorist, Moyer (1976) has defined anger exclusively in terms of physiological variables.

A realization of the impact of anger on the cardiovascular and autonomic nervous systems in particular has fueled extensive efforts to explore the association of anger, hostility, and aggression with health concerns. Recent evidence supports the supposition that these anger- related constructs are important factors in essential hypertension and coronary heart disease (Spielberger, Reheiser, & Sydeman 1995; Diamond, 1982). Williams, Barefoot, and Shekelle (1985) found that hostility and cynicism were related to the presence and severity of coronary atherosclerosis. In addition, Dembroski, MacDougall, Williams, and Haney (1984) reported that potential for hostility was associated with coronary artery disease for patients who suppressed their anger. Thus, qualities attributed to anger constructs by instinctual theorists have been acknowledged by contemporary anger research.

Anger as elicited drive

The great majority of researchers in the field (Baron & Richardson, 1994; Geen, 1990) have largely dismissed the notion of anger as spontaneously generated aggressive energy. A more general suggestion is that anger and its expression (aggression) stems from a noninstinctive motivational force (drive) that is induced by depriving the organism of life-sustaining entities or conditions (Zillman, 1983). An organism will then engage in behaviors to terminate or reduce the state of tension produced by perceived deprivation. Drive theories, then, propose that anger equates to an externally elicited drive or motive to harm others, a drive that grows in strength with the severity of the deprivation (Baron & Richardson, 1994; Kenrick, Neuberg, & Cialdini, 1999).

By far the most influential statement of this general approach is the frustration-aggression theory proposed by Dollard and his colleagues (1939). According to this theory, aggression is always preceded by frustration, and frustration elicits a persistent instigation toward aggression. Such behavior can then be blocked or inhibited by fear of punishment. In such cases, the Dollard group posited the general notion of displaced aggression, in which the instigation remains and may be diverted to other safer targets (Tedeschi & Felson, 1994; Baron & Richardson, 1994; Kenrick, Neuberg, & Cialdini, 1999).

Anger as intervening process

Innatist and drive theories reflected a shift in psychological research at the beginning of the twentieth century from investigating internal feelings to the environmental antecedents, physiological manifestations, and objective behavioral consequences of emotion (Spielberger, Reheiser, & Sydeman, 1995; Kassinove &

Sukodolsky, 1995). Until the middle of the century, psychological research focused on aggression. Internal states such as anger, which might intervene between frustrating circumstances and aggressive acts, were largely ignored. Cognitive-affective models of anger and aggression, however, focus on the interaction of emotional and cognitive processes that account for behavior. This perspective suggests that the way people interpret threats or provocations will influence how they feel and how they behave. Similarly, the extent to which a person experiences emotional arousal or negative affect will influence the cognitive processes involved in interpreting the extent of danger to self.

William James and Carl Lange (Lange & James, 1922) insisted that feelings such as anger follow bodily reactions and mediate aggressive responses. The James-Lange theory proposed that the body has specific physiological responses to aversive stimuli, and that feelings are actually perceptions of the body's reaction. Though widely dismissed by scholars historically, current evidence has given renewed support to their proposal (Kassinove & Sukodolsky, 1995; Hergenhahn, 1997). When induced to imagine provocative situations or to change facial expressions, research subjects produced emotion-specific blood pressure responses and reported changes in emotional experiences (Rajita, Lovalo, & Parsons, 1992; Laird et al., 1989). The key point here is that, congruent with the James-Lange hypothesis, research indicates that people interpret their musculature, label their feelings, and behave in accordance with their interpretation.

Berkowitz (1962, 1964) and Zillman (1983, 1994), who argued that affective states such as anger mediated the effects of frustration on behavior criticized the behaviorist neglect of emotion. Berkowitz (1989, 1993a) proposed a reformulated frustration-aggression hypothesis. According to Berkowitz's revision, frustration is

linked only to emotion (or anger-driven) aggression, not to instrumental (without anger) aggression. Further, he suggested that frustration only leads to aggression to the extent that it generates negative feelings. He theorized that ". . . frustrations generate aggressive inclinations to the degree that they arouse negative affect" (1989, p.69). Diverse events can lead to unpleasant feelings, and those aversive feelings can create a readiness for aggressive action but need not necessarily eventuate in it (Berkowitz, 1989; 1993a; Baron & Richardson, 1994; Kenrick, Neuberg, & Cialdini, 1999).

Zillman went one step further than Berkowitz, suggesting that any internal arousal state could enhance aggressive activity, including the arousal generated by exercising or even by watching an erotic film (1983, 1994). According to Zillman's excitation-transfer theory, the emotional reaction of anger has the same symptoms that one feels during any arousing emotional state, such as increased heart rate. If a person is emotionally aroused for any reason and is later annoyed, the residual arousal may be mistaken for anger (Baron & Richardson, 1994; Kenrick, Neuberg, & Cialdini, 1999).

Cognitive theories of anger, however, point out that anger does not occur apart from cognitive activity. Appraisals, memories, perceptions, and interpretations of events impact people's level of anger (Beck, 1999; Novaco, 1975). In Schacter and Singer's (1962) two-factor theory, as well as in various scientific and clinical appraisal theories, (e.g., Ellis, 1973; Lazarus, 1991), anger has been hypothesized as coming from people's interpretations of events. Kaufmann (1970) included physiological arousal, anger-related cognitions, and intentionality in defining anger as: " . . . an emotion that involves a physiological arousal state coexisting with fantasized or intended acts culminating in harmful effects on another person" (p.12). Most current conceptualizations of anger

regard cognitions as closely associated with affective, physiological, and behavioral aspects of anger (Kassinove & Sukhodolsky, 1995; Spielberger, Reheiser, & Sydeman, 1995).

In summary, anger for intervening-variable theorists is not an automatic reaction. The probability and intensity of anger is influenced by the immediate physical-emotional-mental state of the individual. Pre-anger arousal levels and transitory affective states may increase the likelihood of an anger response. Potential provocations are appraised through these temporary physical-affective conditions through biased cognitive processes including selective attention, inflammatory labeling and external attribution of blame. Though the cognitive, physiological, and phenomenological (affective) components of anger are sometimes separated in pertinent literature for purposes of analysis, for most individuals they occur together, are at least moderately correlated, tend to cycle rapidly, and complement each other (Eckhardt & Deffenbacher, 1995).

Anger as social construct

A final theoretical perspective regarding the nature of anger and its expression views it as a learned form of social behavior (Baron & Richardson, 1994). According to social learning and social constructivist perspectives, the anger experience and aggressive responses are acquired and maintained through direct experience and observational learning. In contrast to instinct and drive views, which perceive individuals as continually impelled toward aggression either by internal forces or external stimuli (e.g., frustration), the social learning view suggests that aggression will occur only under appropriate social conditions. In conjunction with cognitive-emotive models, which see intervening variables as crucial in eliciting anger, the social constructivist view

incorporates socialization and cultural processes as vital elements in understanding how anger is experienced and expressed (Kassinove & Sukhodolsky, 1995; Tavris, 1982).

Social learning theory as proposed by Bandura (1973, 1983), treats aggression as one specific social behavior that is acquired and maintained in much the same manner as many other forms of social behavior. For Bandura, understanding aggressive behavior requires attention to three issues: (1) how such actions are acquired; (2) how such actions are instigated; and (3) how such actions are maintained. Aggression "entails intricate skills that require extensive learning" (1983, p.4). Humans are not born with such knowledge; they have to learn how to behave aggressively. Consideration of the biological, learning, and reinforcement factors at play in the performance of aggressive acts is necessary in any comprehensive analysis and thorough treatment of anger-related disorders (DiGiuseppe et al., 1994; Tanaka-Matsumi, 1995).

Averill (1982) described anger as an interpersonal, socially constructed emotion with three levels: biological, psychological, and sociocultural. He suggested that "the child is socialized into the emotional life of his or her culture through paradigm scenarios" (p.335). Paradigm scenarios represent all kinds of significant events or learning experiences that result in new emotional knowledge and behavior. For Averill and social constructivists, children learn scripts about how and when to become angry, as well as what alternatives to anger are possible (Kassinove & Sukhodolsky, 1995; Feindler, 1995). Display rules for anger are part of the socialization process, the acquisition of which can be observed in the first few years of life (Malatesta & Haviland, 1982; Radke-Yarrow & Kochanska, 1990). The social constructivist approach to emotions suggests that these rules are culture-specific, and are formed and accumulated

by a group of people sharing a particular lifestyle (Nisbett, 1993). Different cultures ascribe different social roles to the emotion of anger, and thus determine how anger is expressed and, possibly, how individuals experience it (Tanaka-Matsumi, 1995; Tavris, 1982).

Averill (1982), Kassinove (1995), and other social constructivists present a model based on the centrality of social evolution and social function in the formation of anger. In any culture, anger serves a purpose. Although acknowledging the role of genetics and biology in anger acquisition, they see, as misguided, the attempts to locate the origins of emotions in biological evolution, and to define emotions solely in physiological, cognitive, or behavioral terms. Given the importance of social forces, appraisals and misappraisals of objective reality are central to the creation of a personal reality and feelings. Averill's extensive use of self-report data from college students and adults appears to support the notion that anger is a socially constructed experience (Averill, 1982). As such, anger can be understood not only by measuring acts of aggression but also from an analysis of the verbal behavior of individuals as well as their interpretation of the world around them (Kassinove & Sukhodolsky, 1995; Kassinove & Eckhardt, 1995).

Models of Anger

It seems self-evident that a working definition of the concept of anger is central to the identification of the construct's existence, the development of measurement instruments, the formulation of treatment methods for anger disorders, and the integration of research findings into viable theories. Considerable confusion has existed regarding how to define anger, notably in terms of how it differs from similar constructs such as

hostility, annoyance, and aggression. There is a long-standing tendency to use these related concepts interchangeably, confounding attempts to specify meaningful clinical disorders and assess them adequately (Eckhardt & Deffenbacher, 1995; Chesney, 1985). It is clear from the previous discussion that anger is a complex, multifaceted phenomenon that can be studied from a variety of perspectives. In this presentation, the contributions made by these perspectives were related to an overall conceptualization of anger and the contributions of its constituent aspects.

Anger definition

Anger may be defined as " . . . a negative, phenomenological (or internal) feeling state associated with specific cognitive and perceptual distortions and deficiencies . . . subjective labeling, physiological changes, and action tendencies to engage in socially constructed and reinforced organized behavioral scripts" (Kassinove & Sukhodolsky, 1995, p.7). The strength of this definition lies in two factors: (1) the wide acceptance of its essential features among contemporary anger researchers (Eckhardt & Deffenbacher, 1995; Spielberger, Reheiser, & Sydeman, 1995); and (2) the comprehensive nature of the formulation, which includes various facets of the anger experience and anger expression. The definition focuses on the phenomenology of the experience, but also recognizes the social, behavioral, physiological, and cognitive aspects of anger. It is congruent with the social constructivist (Averill, 1983; Patterson, 1985) position that the expression of anger is a socially defined transitory behavioral role that is based on behavior patterns developed and reinforced in a person's culture. Anger is a reaction of the whole person, who learns how to experience and display anger through modeling and reinforcement as the person develops (Bandura, 1983; Lewis, 1993). The definition acknowledges the

important role played by biophysical factors such as illnesses and autonomic reactions in the causes and consequences of anger events (Rosenman, 1985; Miller et al., 1996; Siegman, 1994; Gerzina & Drummond, 2000; Forgays et al., 1999). It incorporates cognitive distortions, subjective labeling, and appraisal processes that have been given increased attention in anger studies (Beck, 1999; Ellis, 1973; Lazarus, 1991; Novaco, 1975) and assume a central role in most treatment packages (Novaco, 1985; Tafrate, 1995; DiGiuseppe, 1995; Deffenbacher, 1995; Feindler, 1995).

Three aspects of this definition deserve further elaboration. The affective phenomenological component of anger has been the subject of much theoretical and empirical debate. The original Yerkes-Dodson Law (1908) suggests that anger is experienced along a continuum from mild frustration, annoyance, and irritation through more moderate levels such as feelings of anger, to more extreme states of fury and rage. Spielberger's research team (Spielberger, 1988; Spielberger et al., 1983) espoused this single-continuum theory of anger arousal as well. Ellis (1977; Ellis & Dryden, 1987), however, has long maintained that all emotions, including anger, are best understood along dual continua. "Appropriate" emotions exist on the first continuum, which, in regard to anger, corresponds to feelings of annoyance and irritation. Any intensification of either feeling state is deemed appropriate. However, the second or "inappropriate" continuum consists of the qualitatively different emotions of anger and rage. Any amplification of these emotions is seen by Ellis as evidence of an irrational thinking style and obstructs goal achievement. Qualitative research (Averill, 1982) tends to confirm the dual continua theory; quantitative research tends to confirm the single continuum theory (Cramer, 1985; Cramer & Fong, 1991; Kassinove, Eckhardt, & Endes, 1993). Though

the question remains open regarding what people actually mean when they describe their emotional states, the empirical results have proven most effective in the establishment of psychometrically sound tools to assess clinically significant anger (Spielberger, Reheiser, & Sydeman, 1995; Deffenbacher, 1992; Dalton, Blain, & Bezier, 1998).

The immediate physiological arousal state of the individual also influences the probability and intensity of anger (Kenrick, Neuberg, & Cialdini, 1999). Generally, a negative internal state increases the probability of anger (Berkowitz, 1993). The level of anger at the time of provocation, even if it is unrelated to the current provocation, seems to transfer and increase the probability, intensity, and sometimes the duration of anger arousal (Zillman, 1971; Zillman & Bryant, 1974). A series of studies by Berkowitz and his colleagues (Berkowitz, 1989, 1990) have shown that a wide variety of aversive states, including fatigue, illness, hunger, temperature extremes, and stress, increase the likelihood of an anger response. Such aversive conditions seem to increase the presence of aversive images, memories, and feelings that lower the threshold for anger (Eckhardt & Deffenbacher, 1995).

Despite uncomfortable arousal states and other predisposing factors, anger responses to aversive external stimuli are not inevitable. Potential provocations are appraised through cognitive processes including labeling of subjective states as angry ones, elaboration of attitudinal biases, selective attention to negative elements, and external attributions of blame (Beck, 1999; Novaco, 1985). Primary appraisal (Lazarus, 1991) involves an evaluation of an event and its context in terms of its relevance to the evaluator, as well as the event's potential threat or harm value. Anger is unlikely if the event is appraised as irrelevant, benign, or positive. However, anger becomes more

likely to the extent that the event is appraised as relevant and as a trespass on the personal domain, a violation of expectations or freedoms, and/or an interference with goal-directed behavior. Moreover, certain collateral appraisals tend to escalate anger. Anger will increase with attributions of injustice, preventability, intentionality, or blameworthiness (Beck, 1999; Novaco, 1985).

Secondary appraisals involve a judgment about the person's coping abilities, rather than the precipitating condition (Dryden, 1990; Ellis, 1977). If the responder perceives him- or herself as having sufficient coping skills, anger is not likely to occur. Anger is likely to eventuate, however, if the individual judges that the aversive event should not have occurred or that tolerating the event is more than he or she can bear. Anger is also likely to increase when aggression is the preferred mode of coping, and when the individual has positive outcome expectancies for attack (Lazarus, 1991). The cognitive component of transient anger is founded upon and extends primary and secondary appraisal processes, as the responder continues to recycle inflammatory thoughts about the provocative event as unfair, avoidable, purposeful, and blameworthy.

Thus, anger may be viewed as a recurrent, negative, often disruptive psychobiological experience that varies in intensity, frequency, and duration. It is phenomenologically felt and subjectively labeled, and is associated with specific cognitive distortions, physiological changes, and socially constructed and reinforced behaviors, which become manifested in organized scripts. It is the totality of specific cognitive and phenomenological experiences that differentiates anger from other feelings such as anxiety, sadness, and guilt.

Anger, hostility, and aggression

In psychological and psychiatric literature, anger, hostility, and aggression generally refer to different, though related, phenomena. However, these terms often are used interchangeably (Berkowitz, 1962; Buss, 1961) and represent experiences that occur together. Anger is most often conceptualized as an emotional state, and different aspects of this emotion are emphasized in various definitions (Spielberger, Reheiser, & Sydeman, 1995; Moyer, 1976). Research interest in anger as the qualitative feelings associated with the overall aggression response centered in the early efforts of Titchener (1896) and Wundt (1890) to analyze the introspective reports of trained observers in order to discover the "mental elements" of different emotions. Unfortunately, this subjective, phenomenological approach generated findings that lacked theoretical and empirical value (Plutchik, 1962; Young, 1943).

With the advent of behaviorism, research interest shifted to the investigation of the objective antecedents and consequences of emotion (Hergenhahn, 1997; Spielberger et al., 1995). Until the 1960s, psychological research focused primarily on aggression and avoided internal states that might intervene between circumstances and acts. The frustration-aggression hypothesis (Dollard et al., 1939) became the dominant psychological theory pertaining to aggressive behavior in the 1940s and 1950s. Though stated in behavioral terms, this theory is compatible with the views of later psychodynamic theorists who regard aggression as a behavioral reaction to provocation (Hartmann, Kris, & Loewenstein, 1949; Storr, 1968).

In response to the neglect of emotion, Berkowitz (1962, 1964) attempted to relate anger and aggression by arguing that the negative affective states such as anger and

anxiety mediated the effects of frustration on fight-or-flight behavior. Berkowitz (1964) suggested that " . . . it might be helpful to think of the thwarting-generated instigation to aggression as 'anger' " (p. 68). In his recent reformulation of the frustration-aggression hypothesis, Berkowitz (1989) theorized that " . . . frustrations generate aggressive inclinations to the degree that they arouse negative affect " (p.59), and that this negative affect " . . . gives rise automatically to a variety of expressive-motor reactions, feelings, thoughts, and memories that are associated with both flight and fight tendencies, that is, with inclinations to escape/avoid and to attack" (p. 69). Positing the existence of intervening variables between aversive cues and aggressive behavior, some theorists began to consider the role of frustration in arousing anger and in provoking aggression (Averill, 1977; Berkowitz, 1962, 1989; Zillman, 1971).

The importance of cognitive and emotional variables in the anger-aggression relationship is underscored by the theorists' distinction between two types of aggression (Tedeschi & Felson, 1994). Variously termed "hostile" (Baron & Richardson, 1994), "emotional" (Kenrick, Neuberg, & Cialdini, 1999), "annoyance-motivated" (Zillman, 1979), or "reactive" (Dodge & Coie, 1987), one type of aggression refers to reactive behavior in which the primary goal is that of causing the victim to suffer. This kind of aggression stems from angry feelings, eventuates in hurtful behavior, and is employed in retaliation against a perceived threat. In contrast, the term "instrumental aggression" is commonly applied to instances in which aggressors assault other persons as a means of attaining other noninjurious ends. People engaging in instrumental aggression may harm others, but such injury occurs in the absence of angry feelings toward the victims and functions as a technique for obtaining various rewards (Baron & Richardson, 1994). The

research of Dodge and Coie (1987) provides empirical support for the distinction between the two types of aggression. The important points here, however, are that (a) aggression and anger appear to be distinct constructs, (b) angry feelings may be an important emotional mediator of aggression (Dengerink, 1976), and (c) (cognitive) intent seems to be closely associated with concepts of aggression (Feshbach, 1964; Kaufmann, 1970; Moyer, 1976).

Berkowitz (1962) and Moyer (1976) equated hostility with aggressive behavior. Buss (1961) defined hostility as an attitude that involves disliking others and evaluating them negatively, and aggression as a "response that delivers noxious stimuli to another organism" (p.1). Working with Durkee (Buss & Durkee, 1957), Buss conceptualized hostility as multidimensional and hypothesized seven hostility components: Assault, Indirect, Irritable, Negativism, Resentment, Suspicion, and Verbal. These components were operationalized in the subscales of the Buss-Durkee Hostility Inventory (BDHI), generally regarded as the most carefully designed psychometric measure of hostility (Spielberger, Krasner, & Solomon, 1988; Edmunds & Kendrick, 1980). In contrast to the seven dimensions of hostility hypothesized by Buss, Bendig (1962) found only two major underlying factors (Overt and Covert Hostility) and Russell (1981) identified three factors (Neuroticism, General Hostility, and Expression of Anger) in the BDHI. Subsequent efforts by investigators to establish construct validity in several studies of hostility assessment tools have not yielded great success, with the exception of Spielberger's work with the State-Trait Anger Expression Inventory (STAXI) (Biaggio Supplee, & Curtis, 1981; Edmunds & Kendrick, 1980).

The AHA! Syndrome

In 1985, Spielberger and his colleagues (Spielberger et al., 1985) made a significant improvement in the conceptualization of anger, hostility, and aggression, and in the operational procedures used to assess these constructs. Choosing to refer to anger, to hostility, and to aggression, collectively, as the "AHA! Syndrome", they proposed the following working definitions of the constructs:

> Anger usually refers to an emotional state that consists of feelings that vary in intensity, from mild irritation or annoyance to intense fury and rage. Although hostility usually involves angry feelings, this concept has the connotation of a complex set of attitudes that motivate aggressive behaviors directed toward destroying objects or injuring other people. . . . While anger and hostility refer to feelings and attitudes, the concept of aggression generally implies destructive or punitive behavior directed towards other persons or objects. (Spielberger, Jacobs, Russell, & Crane, 1983, p. 16)

In this statement of the AHA! Syndrome, "anger" assumes a central position and seems to refer to the affective, phenomenological aspect of the overall anger event. "Hostility" appears to encompass the more cognitive, belief-oriented component of anger, while "aggression" applies to the behavioral expression of the anger experience. The AHA! Syndrome is consistent with anger models that recognize the role of cognitive-emotional mediators of aggression and differentiate between types of aggression (Miller et al., 1996; Siegman, 1994). It also coheres with the definition presented earlier, in that it recognizes anger as a multidimensional phenomenon involving bodily reactions, feelings, thoughts, and behaviors that may be distinguished for conceptual and measurement purposes but that are experienced simultaneously as a total anger event.

The Measurement of Anger

Psychologists have used diverse qualitative and quantitative methods to measure anger. Clinical interviews, self-report measures, behavioral observations, and projective

techniques have exhibited conceptual confusion and yielded inconsistent results (Rosenzweig, 1976, 1978; Speilberger & Sydeman, 1994). Physiological and behavioral correlates of anger and hostility, as well as various manifestations of aggression, have also been widely investigated (Spielberger, Reheiser, & Sydeman, 1995). Until relatively recently, attempts to measure anger have failed to make crucial distinctions between (a) anger experienced as a temporary state or as a personality trait, (b) the experience and expression of anger, and (c) the different modes of anger expression (Spielberger, Krasner, & Solomon, 1988).

Early psychometric scales

Beginning in the mid-1950s, a number of self-report psychometric scales were developed to measure hostility (Buss & Durkee, 1957; Caine, Foulds, & Hope, 1967; Cook & Medley, 1954; Schultz, 1954; Siegel, 1956). The Buss-Durkee Hostility Inventory (BDHI) is generally regarded as the most carefully designed psychometric measure of hostility (Spielberger & Sydeman, 1994). Studies of the BDHI subscales have yielded mixed results. The BDHI was revised in 1992 to form the Buss-Perry Aggression Questionnaire (BPAQ), which was designed to assess four different components of aggression (Buss & Perry, 1992). Given its more detailed rating format, improved content validity, and high test-retest stability, the BPAQ appears to be a trait measure of individual differences in the disposition to engage in aggressive behavior (Spielberger, Reheiser, & Sydeman, 1995).

The need to distinguish between anger and hostility was explicitly recognized in the early 1970s with the appearance of several anger measures. For example, to assess the extent to which anger was evoked in a number of specific situations, Evans and

Stangeland (1971) developed the Reaction Inventory (RI). However, since the RI was developed primarily for use in clinical assessment, its potential as a research instrument was not extensively explored.

R.W. Novaco's work in anger assessment spans three decades and has produced three generations of anger measures. Similar in concept and format to the RI, Novaco's (1975) Anger Inventory (AI) consists of 90 statements that describe anger-provoking incidents. Subjects report the degree to which each incident would anger or provoke them. Biaggio, Supplee, and Curtis (1981) reported that the AI had poor test-retest reliability and concurrent validity, failing to find significant correlations between AI scores and self- or observer ratings of anger and hostility.

Subsequent revisions produced the Novaco Provocation Inventory (NPI; 1975, 1988), an instrument designed to assess anger responsiveness. Used primarily to aid Novaco's laboratory research on provocation, the NPI provides information about the types of situations most likely to arouse anger as well as the overall magnitude of a respondent's proneness to provocation. Validation studies have found the NPI to possess good concurrent and discriminative validity.

A subsequent measurement tool, the Novaco Anger Scale (NAS; 1975, 1994) solicits both anger experience and anger reactions by presenting potentially anger-provoking situations to respondents. Psychometric studies of the NAS have produced mixed results. Biaggio et al. (1980) reported that the NAS exhibited neither strong criterion nor concurrent validities, but Novaco's own research on the revised version (1994) indicated strong correlations with scores on Spielberger's State Anger Scale and Trait Anger Scale.

Zelin, Alder, and Meyerson (1972) designed the Anger Self-Report (ASR) to assess both the experience and the expression of anger. While early research findings with the ASR were promising, the scale has been used infrequently by other investigators, and its predictive and construct validities have not been firmly established (Biaggio, Supplee, & Curtis (1981).

The BDHI and the three major anger scales of the 1970s (RI, AI, ASR) were evaluated and compared by Biaggio et.al. (1981). On the basis of their findings, Biaggio and Maiuro (1985) concluded that evidence for the construct validity of these measures was fragmentary and limited. Additionally, none of these scales adequately distinguished between anger as an emotional state and individual differences in anger-proneness as a personality trait (Spielberger, Krasner, and Solomon, 1988).

Later anger measures

The 1980s saw three additional anger measures emerge. Siegel's Multidimensional Anger Inventory (MAI; 1986), sought to assess aspects of anger relevant to cardiovascular disease. Following the NPI's gauge of anger across several response dimensions, the MAI had good internal and test-retest reliabilities but modest to poor concurrent validities and factor differentiation (Siegel, 1986).

The Brief Anger-Aggression Questionnaire (BAAQ) developed by Mairuo, Vitaliano, and Cahn (1987) is an abbreviated form of the BDHI, which demonstrates strong internal consistency, concurrent validity (with BDHI), and modest criterion validity. While the BAAQ appears to have value for certain mental health screening decisions, its scope and brevity limit its potential for assessing anger-related psychological deficits in order to provide information for therapeutic intervention.

The phenomena assessed by the BDHI, RI, AI, ASR, and MAI appear to be heterogeneous and complex. A common problem with these measures is that, in varying degrees, the experience and expression of anger are confused with the situational determinants of anger reactions (Spielberger et al., 1995). Another limitation shared by these measures is that they fail to distinguish adequately between anger as an emotional state (angry feelings) and individual differences in proneness to anger as a persistent personal characteristic. Further, recent research suggests that it is important to evaluate the extent to which a person expresses anger outwardly toward the environment, suppresses or holds anger in, or endeavors to control anger expression altogether (Spielberger, Reheiser, & Sydeman, 1995). The foregoing measures do not attend to these variables associated with anger expression.

Measuring state and trait anger

To address the perceived theoretical and psychometric shortcomings of extant anger measures, Spielberger (1981, 1983) developed the State-Trait Anger Scale (STAS). Modeled after the State-Trait Anxiety Inventory (STAI; Spielberger, 1983; Spielberger, et al., 1999), the STAS was designed to assess the intensity of angry feelings at a particular time (state anger) and the frequency that anger is experienced over time (trait anger) (Spielberger, et al., 1983). In developing the STAS, state anger (S-Anger) was defined as " . . . a psychobiological state or condition consisting of subjective feelings of anger that vary in intensity from mild irritation or annoyance to intense fury and rage, with concomitant or arousal of the autonomic nervous system" (Spielberger et al., 1995, p. 47). It was further assumed that S-Anger fluctuates over time as a function of perceived affronts, injustice, or frustration. Trait anger (T-Anger) was defined as " . . .

individual differences in the frequency with which S-Anger was experienced over time" (Spielberger et al., 1995, p. 47). The presupposition of the researchers was that persons high in T-Anger perceive a broader range of situations as provocative and are likely to experience more frequent and intense elevations in S-Anger whenever anger-instigating conditions are encountered.

In a series of studies conducted by Deffenbacher and his colleagues (1992), the STAS T-Anger scale was used to assess the correlates and consequences of trait anger. Results supported the discriminant validity of the STAS scales. Individuals with high T-Anger scores reported experiencing more frequent and intense anger from day to day across a wide spectrum of aversive situations. In addition, high T-Anger respondents experienced anger-related physiological symptoms more than low T-Anger individuals, manifested stronger tendencies to express and suppress anger, and displayed more dysfunctional physical and verbal antagonism (Spielberger et al., 1995). High T-Anger individuals also reported experiencing a greater (devastating) impact from negative events and higher levels of anxiety than persons low in T-Anger (Story & Deffenbacher, 1995).

Subsequent factor analyses of the STAS indicated an additional distinction between state and trait anger formulations. In one study by Spielberger and his colleagues (Spielberger et al., 1983), STAS S-Anger items evidenced a single underlying factor for both males and females, pointing to a unitary emotional state varying in intensity. In contrast, factor analyses of the STAS T-Anger items identified two correlated factors, which were labeled Angry Temperament (T-Anger/T) and Angry Reaction (T-Anger/R). The T-Anger/T items describe individual differences in the

disposition to express anger, without specifying any provoking circumstance. The T-Anger/R items described angry reactions in situations that involve frustration and/or negative evaluations (Spielberger et al., 1995). In another psychometric study of the STAS, Crane (1981) found that higher T-Anger/R scores differentiated hypertensive patients from medical and surgical patients with normal blood pressure.

Measuring the expression of anger

Distinguishing between inward and outward modes of anger expression has long been recognized in psychophysiological investigations of the effects of anger on the cardiovascular system (Funkenstein, King, & Drolette, 1954). Building on Funkenstein's conceptual distinction between "anger in" and "anger out", Harburg and his associates have reported impressive evidence that demonstrates the fact that anger-in and anger-out have different effects on the cardiovascular system (Harburg, Blakelock, & Roeper, 1979; Harburg, Erfurt, Hauenstein, Chape, Schull, & Schork, 1973; Harburg & Hauenstein, 1980; Harburg, Schull, Erfurt, & Schork, 1970). Gentry and his colleagues confirmed and extended Harburg's findings (Gentry, Chesney, Hall, & Harburg, 1981; Gentry, Chesney, Gary, Hall, & Harburg, 1982).

Consistent with the procedures used by Funkenstein and his associates (1954), individuals are generally classified as anger-in if they suppress their anger or direct it inward (Averill, 1982; Tavris, 1982). Anger which is held in or suppressed is subjectively experienced as an emotional state, which varies in frequency and intensity as a function of provoking circumstances. Anger directed outward involves both the experience of anger as an emotional state as well as its manifestation in some form of observable behavior (Spielberger et al., 1995; Spielberger & Sydeman, 1994). In this understanding,

anger-out may be conceptualized as aggression and is expressed in physical acts (e.g., slamming doors, injuring another) or verbal assaults (e.g., insults, threats). These physical and verbal acts of aggression may be directed toward the source of provocation or expressed indirectly toward persons or objects associated with, or symbolic of, the provoking agent (Averill, 1982; Spielberger & Sydeman, 1994; Kenrick, Neuberg, & Cialdini, 1999).

This emphasis was confirmed by research with the STAS in assessing experiences of anger; the importance of assessing whether anger is suppressed or expressed toward other persons or objects in the environment also became apparent. Operating on the assumption that anger expression constitutes a single dimension, Spielberger and his colleagues (1985) constructed a unidimensional, bipolar scale (anger-in, anger-out) to assess anger expression, called the Anger Expression (AX) scale. Factor analyses of the AX items identified anger-in and anger-out as two independent factors rather than a unidimensional scale, and test construction of the AX Scale was modified to form homogeneous subsets of items for measuring anger-in and anger-out (Spielberger et al., 1995). The STAS and the AX were combined in 1988 to form the 44-item State-Trait Anger Expression Inventory (STAXI), which provides relatively brief, objectively scored measures of the experience, expression, and control of anger. The STAXI, which has been employed in numerous studies on the effects of anger in a wide variety of normal, clinical, and medical populations, possesses good concurrent, convergent, and divergent validity. (Johnson, 1984; Moses, 1992; Deffenbacher, 1992; Fuqua et al., 1991; Spielberger, Krasner, & Solomon, 1988).

Measuring anger control

Interest in the individual differences in the styles of anger control first generated research activity with Type A individuals. According to Glass (1977) and Burke (1982), Type A persons endeavor to gain and maintain control over their environment and relationships. To evaluate differences between Type A individuals and others in managing anger, a reliable and valid measure of individual differences in anger control was required. Hoshmand and Austin (1985, 1987) developed the Anger Control Inventory to assess cognitive and behavioral anger-control problems in clinical settings, but the items comprising this inventory have never been published and no research using this measure could be found except the studies reported by the authors (Hosmand & Austin, 1987). Lakoff's (1987) psycholinguistic work, however, contributed to the development of a theoretical framework with which to understand anger, suggesting that there are two distinct mechanisms for controlling anger that may be depicted by the metaphors of managing the heat of a liquid in a container. His anger metaphors have highlighted the need for measurement tools that differentiate between the reduction of suppressed anger and the control of outward expression of anger towards other people or objects.

Several researchers have sought to address this need by related work in the development of psychometrically sound measures of these two anger control styles (Spielberger, 1988; Spielberger, Krasner, & Solomon, 1988; Krasner, 1986; Sydeman, 1995). Spielberger and his colleagues (Spielberger et al., 1988) responded by developing a brief objective measure of individual differences in anger control (AX/Con). The AX/Con scales originally assessed individual differences in the frequency of individuals'

attempts to control the expression of angry feelings in aggressive behavior (Spielberger, 1988; Spielberger, Reheiser, & Sydeman, 1995). Item-content analyses suggested that a second scale was advisable to measure the ability to self-sooth in order to reduce the intensity of angry feelings that were experienced and suppressed. After extensive efforts to construct scales that would reflect these two factors, the Spielberger research team (Spielberger et al., 1995) developed the 8-item AX/Con-Out scale and the 8-item AX/Con-In scale. The items comprising the AX/Con-In scale describe anger control as calming down, cooling off, or relaxing in an effort to reduce the intensity of suppressed anger. The content of the AX/Con-Out items is related to controlling the outward expression of angry feelings and closely resembles the original STAXI AX/Con items (Spielberger et al., 1995).

The Mahan and DiTomasso Anger Scale

Most recently, Mahan and DiTomasso (1998) have designed the Mahan and DiTomasso Anger Scale (MAD-AS) as an important contribution to psychological research on anger. The MAD-AS arises out of a theoretical orientation that conceptualizes anger as an emotional state defined by the presence of physiological, cognitive, and behavioral dimensions. The MAD-AS reflects an understanding of anger as theoretically distinct from hostility and aggression but phenomenologically inseparable from these constructs. In other words, Spielberger's anger-hostility-aggression, or "AHA!" syndrome (Spielberger, Reheiser, & Sydeman, 1995) functions as a theoretical underpinning of the MAD-AS. Additional theoretical assumptions reflected in the MAD-AS are the differentiation between the intensity of anger as a transitory emotional state and individual differences in anger proneness as a personality trait, including the concept

of anger expression and resolution as multidimensional phenomena (Anger-In, Anger-Out, and Anger-Control).

The MAD-AS represents a significant improvement over existing tests of anger in its scope (recognizing the multidimensionality of anger), range (including physiological, cognitive, and behavioral components), and brevity (containing fewer items and shorter completion time). The MAD-AS, a 43-item inventory, comprises six main scales, distinguishing between different aspects of the anger experience and different modes of anger expression.

Present findings indicate sound psychometric properties. Factor analysis reveals several underlying dimensions reflecting key components of the anger phenomena, including cognitive ("Angry Cognitions", "Anger Justification/Blame"), physiological ("Physiological Arousal"), and behavioral ("Anger Dyscontrol", "Verbal Expression of Anger") domains (Mahan, 2000, p. 77). The MAD-AS, which demonstrates adequate validity in construct and criterion, has good internal consistency and test-retest reliability (Mahan, 2000). Limitations of the MAD-AS include poor reliability and stability on one of the subscales and assessment of a limited number of dimensions associated with anger (Mahan, 2000). Pending further research with broader samples, the MAD-AS may prove to be an effective, valid clinical screening inventory and treatment measurement device.

Research Issues

Research Rationale

Though anger is a common experience and facilitates much productive behavior, anger usually does much more harm than good. When people are very angry, they tend to behave dysfunctionally, acting vindictively, abusively, and injuriously. Anger often

overlaps with, helps create, and escalates maladaptive feelings such as depression and psychiatric disorders on multiple axes (DSM-IV, 1994). Anger, overt and covert, expressed and suppressed--is often associated with and exacerbates psychosomatic problems, including hypertension, heart problems, and ulcers.

The main disadvantages of human anger are manifest. Anger disorders, however, require clear definition, specific diagnosis, and effective treatment. Productive treatment, in turn, depends upon adequate assessment techniques and instruments so symptoms may be accurately identified, interventions appropriately chosen, treatment progress carefully monitored, and therapy outcomes wisely evaluated. Much work has been done in the development of anger measures to address the needs of scientists and practitioners; a variety of theoretical perspectives has been a consideration in their development. Clearly, there is a need for a psychometrically adequate tool to distinguish adaptive from maladaptive anger, and to delineate separate components of anger that are relevant for screening, evaluative, treatment, and research purposes (Spielberger & Sydeman, 1994; Spielberger et al., 1995). The present challenge is to improve upon existing measures of anger so that a clinically useful, psychometrically reliable and valid tool is available to therapists as they treat anger disorders week by week.

This challenge, addressed through present research, was designed to explore the psychometric properties of the MAD-AS anger measure in terms of reliability and validity as applied to distinct diagnostic groups found in outpatient psychiatric settings. . Through norming, which is critical in understanding and interpreting scores derived from the instrument, it is possible to examine individual differences in the construct being measured, and make relative comparisons of an individual's score with a group. A well-

normed, clinically sensitive anger scale such as the MAD-AS will facilitate assessment of anger frequency, intensity, and duration, style of anger expression, measurement of treatment outcome, and acquisition of experimental subjects for research. In screening, the clinician will be able to compare the patient's symptom manifestation with subclinical levels of anger in normal subjects to determine if clinical thresholds of symptom severity have been met. In treatment, judicious use of the MAD-AS will enable the clinician to strengthen the therapeutic alliance, adjust interventions to match identified areas of maladaptive anger functioning, monitor patient progress, and determine treatment outcomes. In research, the MAD-AS will facilitate the pretesting and selection of potential subject samples. This would be analogous to the use of the Beck Depression Inventory to perform subject selection functions in research on depression.

Research Hypotheses

The specific research hypotheses were formulated in the following way:

1. The MAD-AS will demonstrate a high level (.70 or greater) of internal consistency (homogeneity) with the overall research sample and within broadly defined outpatient psychiatric groups.
2. The MAD-AS will demonstrate a high level (.70 or greater) of test-retest reliability with control subjects and within a group of patients receiving treatment for anger related behavior.
3. The MAD-AS will demonstrate moderate correlation ($\leq$.50) with anxiety as measured by the Beck Anxiety Inventory.
4. The MAD-AS will demonstrate moderate correlation ($\leq$.50) with depression as measured by the Beck Depression Inventory.

5. The MAD-AS total scores will demonstrate construct validity by significantly and positively correlating (.70 or greater) with self-rated STAXI-2 scores.

6. The MAD-AS will show discriminative validity by producing significantly higher scores ($p<.05$) on the MAD-AS in the Anger Group on each dimension of anger compared to the Depression Group, the Anxiety Group, and the Control Group.

7. The factor structure of the MAD-AS will include the following six factors: 1) Anger Dyscontrol, 2) Anger Cognitions, 3) Verbal Anger Expressions, 4) Physiological Arousal, 5) Anger Justification, and 6) Externalization.

CHAPTER 2

Methodology

Subjects

Three hundred participants, adults ranging from 18-68 years of age, who are currently receiving mental health treatment were selected from an outpatient clinical population. Samples of one hundred subjects were also taken from a normal population of staff employees at thirteen outpatient mental health clinics, as well as from the general population. Outpatient participants were solicited through their therapists, and normal subjects (Control Group) were solicited at biweekly staff meetings at the participating outpatient clinics.

Outpatient subjects were chosen based on the primary reason for their referral for treatment. The inclusion criteria for subject participation was agreement between the therapist who referred the client for participation and the client's own description of his or her chief presenting problem in therapy. Subjects were selected for inclusion in one of three clinical groups according to the problem causing the greatest impairment in functioning at the time of referral: anger, depression, or anxiety. The anger referred group (Anger Group) of subjects were individuals chosen because the salient reason for their referral was aggressive behavior related to anger (e.g., road rage, spousal abuse, marital discord, work conflicts). The remaining two groups were selected based on the prominence of non-anger dominated clinical presentations. Accordingly, the depression-referred group (Depression Group) of subjects were individuals chosen because the salient reason for their referral was depression. The anxiety-referred group (Anxiety Group) of subjects were individuals chosen because the salient reason for their referral

was anxiety related. Subjects with a current history of Psychotic Disorder, Paranoid Disorder, Dementia, and/or other serious medical or developmental problems (e.g., Traumatic Brain Injury, Mental Retardation) were excluded from the study. Subjects who were currently taking antipsychotic medication (e.g., Prolixin, Haldol, Clozaril, Zyprexa, and Risperdal) were also excluded from the study. Subjects with a current history of criminal behavior who were participating in outpatient treatment as partial fulfillment of parole or probation conditions were excluded from the study.

Subjects, who were advised, in writing, about the nature of the study, were not required to sign a consent form before becoming part of this study. Subjects were permitted to withdraw from the study at any time. All information was anonymous. However, age, gender, and marital status information was required, along with an agreement to be retested at a later date (for normal and anger referred samples). The Control Group and the Anger Group were asked to complete the measurement instruments a second time two weeks later for the purpose of assessing test-retest reliability. A code number was affixed to their tests so that the later tests could be matched with the first tests.

Design

The study utilized a cross-sectional case-control research design to evaluate the psychometric properties of the anger scale and to obtain descriptive statistical data.

Description of Measures

Demographic form A Demographic Form which was designed for this study included items regarding personal, health, and psychosocial information deemed relevant to the purposes of this study.

The Mahan and DiTomasso Anger Scale

The Mahan and DiTomasso Anger Scale (MAD-AS; Mahan & DiTomasso, 1998) is a 43-item, Likert-type scale used for measuring anger. The instrument is analogous in concept and similar in format to the Beck inventories (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Beck, Epstein, Brown, & Steer, 1988). Each item is composed of four sentences or quartets that measure the presence or absence of an important aspect of the anger construct, including its frequency, intensity, and duration. Factor analysis suggests that the MAD-AS measures six components of anger that appear to be homogenous and stable over time. This test represents the development of a stylistically new and shorter scale for measuring self-reported physiological, cognitive, and behavioral aspects of anger. Its strengths include its assessment of anger's multidimensionality, brevity, clinical usefulness, construct validity, and aspects of reliability (i.e., internal consistency, test-retest reliability) (Mahan, 2000).

The State Trait Anger Expression Inventory-2

The State Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1988) is a 57-item scale that assesses State Anger, Trait Anger, and Anger Expression. State Anger is defined as a transitory emotional condition of varying intensity levels. Trait Anger is defined as the tendency to respond to a variety of situations with frequent elevations in state anger. Anger Expression is made up of the behavioral concomitants of the anger experience. The STAXI-2, based on the STAXI, possesses strong psychometric properties; it is brief, easy to administer, easy to score, and easy to incorporate into anger assessments (Fuqua et al., 1991; Spielberger, Reheiser, & Sydeman, 1995; Spielberger & Sydeman, 1994; Van der Ploeg, 1988).

The Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) is a 21-question inventory developed to create a clinical measure of anxiety symptoms which are minimally shared with those of depression, and is designed for use in psychiatric samples. Research indicates that the BAI possesses good internal reliability, factorial validity, and discriminant validity (Kabacoff, Segal, Hersen, & Van Hasselt, 1997). Results of this study suggest that both the subjective subscale and total score on the BAI can be somewhat useful as a quick screening instrument detecting the presence of a current anxiety disorder for adult psychiatric outpatients (Mahan, 2000).

The Beck Depression Inventory

The Beck Depression Inventory (BDI) was introduced in 1961 by Beck, Ward, Mendelson, Mock, and Erbaugh (1961) and was revised in 1971. The two versions have been found to be highly correlated (.94; Lightfoot & Oliver, 1985). The BDI has experienced wide popularity in both clinical and research contexts. It has been utilized for the detection of depression and the evaluation of cognitions associated with depression in clinical populations and normals (Marton, Churchard, Kutcher, & Korenblum, 1991; Piotrowsky, Sherry, & Keller, 1985). Over 1,000 research studies have been performed either on or using it since its introduction (Groth-Marnat, 1999).

Similar to the BAI in conception and format and available in several forms, the normal BDI form is a 21-item self-report inventory with excellent psychometric properties. A meta-analysis of studies seeking to establish internal consistency has shown them to range from .73 to .92 with a mean of .86 (Beck, Steer, & Garbin, 1988). Test-retest reliabilities have ranged from .48 to .86, depending on the interval between

retesting and type of population (Beck et al., 1988). This range may reflect the ambiguity over whether the variable(s) the BDI is measuring is a state or a trait (Groth-Marnat, 1999). Evaluation of content, concurrent, and discriminant validity as well as factor analysis has generally been favorable (Beck et al., 1961; Finer, Beebe, & Holmbecke, 1994; Beck et al., 1988; Byerly & Carlson, 1982). The BDI purports to measure primarily cognitive and affective aspects of depression and functions well as a clinical screening tool and an index of treatment effectiveness (Groth-Marnat, 1999).

Procedure

Measures were assembled into packets containing the necessary materials for the research project. Packets consisted of a large, 12" X 15" envelope and contained the following materials: (1) General Instructions; (2) Letter of Introduction; (3) Demographic sheet; (4) STAXI-2; (5) MAD-AS; (6) BDI; and (7) BAI. Examples of the General Instructions and Letter of Introduction forms are included in the Appendix. For those participants who were retested, a second MAD-AS was included, marked RT (retest). Each of the packets, its contents, and the retest copies were numbered. The retest copies were marked with the uppercase letters RT (retest). Marking the packets allowed the participants to identify which packets they needed to complete and permitted the researcher to match participants for the retest condition without revealing the identity of the participants.

For the Control Group, staff members of outpatient clinics were assembled in group (staff meeting) sessions conducted regularly at each outpatient clinic. Space was selected that ensures privacy, and the researcher in person distributed the packets. The researcher at the same staff meetings collected completed packets. When same-day

collection was impossible for some participants, packets were returned to the researcher at a subsequent staff meeting. Full oral instructions were given to aid persons in the accurate completion and return of the packet materials. All materials were placed in the packets and sealed when returned to the researcher. The researcher delivered oral instructions, distributed research materials, and collected all completed research packets on the same day for those Control Group participants selected from the general population.

Two weeks after the initial test distribution, retest packets were distributed to participants from the Control Group and Anger Group and collected in the same manner as the first administration. The packets were marked with a sticker reading "Test Retest". Printed instructions were placed in the packets informing participants that they would find an extra copy of the MAD-AS enclosed. The second MAD-AS bore the same participant number but was marked RT (retest) to assist in identification and matching for purposes of statistical analysis. The instructions directed the participant to complete the MAD-AS within two weeks after receiving the packet. At that time, the researcher retrieved the retest packets from each clinic. For Control Group participants in the general population, the researcher individually collected all retest packets two week after distributing the packets.

Outpatient participants received study packets from their individual therapists. Therapists met in group sessions with the researcher and were instructed on proper procedures for explanation and distribution to their participating clients (see the Appendix for an example of Instructions to Participating Therapists). Therapists reviewed the Letter of Introduction with the clients. The letter described the purpose of

the study, guaranteed confidentiality, and gave the opportunity to receive an abstract of the results. The letter also informed subjects that some of the items deal with personal thoughts, emotions, and behaviors that may prompt uncomfortable feelings. Subjects learned that they could discontinue their participation at any time, and that neither the content of their responses nor results of the study would impact their therapy in any way. Then, therapists distributed study packets individually to clients and clients completed the enclosed materials before leaving the clinic. Clinic staff collected the materials from the clients after the materials had been returned to the packets and sealed. The researcher retrieved the packets of finished materials from clinic staffs at predetermined times. In this way privacy when completing testing materials was safeguarded, anonymity was ensured, and collection was facilitated.

Data were collected and scored by the researcher and an independent examiner verified 25 percent.

Statistical Analysis

Data for this psychometric study were collected and entered into a database utilizing the Statistical Program for the Social Sciences (SPSS). Descriptive statistics were examined. Means and standard deviations were computed and frequency distributions for key demographic data were recorded. Raw test scores for the MAD-AS were converted to percentile ranks. A Cronbach's coefficient alpha reliability to assess the internal consistency of the total MAD-AS scale as well as for each subscale was calculated. Test-retest reliability for the MAD-AS was calculated by correlating the total scores obtained by the control group and the anger referral group on two separate occasions separated by a two-week interval. The total score on the MAD-AS was

correlated with the total scores on the STAXI-2, BDI, and BAI, using the Pearson Product Moment Coefficient of Correlation. Using the Pearson Product Moment Coefficient of Correlation, the total scores of the STAXI-2, BDI, and BAI were correlated as well.

Descriptive statistics were obtained for MAD-AS total scores with group membership serving as the independent variable. An analysis of variance (ANOVA) was conducted among study groups, first with all groups and then with outpatient groups only, with the total MAD-AS scores functioning as the dependent variable. A post-hoc Games-Howell test was administered including all research groups to ascertain the location of significant differences among groups. A multivariate analysis of variance (MANOVA) was conducted with group membership serving as the independent variable (anger referred, depression, anxiety, and control) and subscales factor scores on the MAD-AS factors serving as dependent variables. An overall Wilks' lambda was calculated to explore differences across groups on the dependent variables. A post-hoc univariate ANOVA, when justified was conducted on each of the subscales. A principal component, varimax rotated factor analysis of the entire MAD-AS scale was performed using a criterion of eigenvalues greater than 1.

CHAPTER 3

Results

A total of four hundred subjects volunteered to participate in this study. The study consisted of four groups, each containing one hundred subjects. Group 1, the outpatient Depression Group (n = 100), was composed of clients chosen because the salient reason for their referral was depression; it was the determination of their therapist that depression was the problem causing the most impairment in functioning at the time of referral. There were 43 males (43%) and 57 females (56%) in this group with an average age of 39 years. A total of 42 of the subjects were single (42%), 50 (50%) were married, 8 (8%) were cohabiting, and 37 (37%) were divorced.

Group 2, the outpatient Anxiety Group (n = 100), were clients referred to treatment because of anxiety-related impairment; these were solicited by their therapists because of the prominence of anxiety in treatment. There were 36 males (36%) and 64 females (64%) in the group with an average age of 38 years. A total of 49 (49%) of the subjects were single, 46 (46%) were married, 5 (5%) were cohabiting, and 31 (31%) were divorced.

Group 3, the outpatient Anger Group (n = 100), were individuals chosen because the salient reason for their referral was aggressive behavior related to anger. There were 55 males (55%) and 45 females (45%), with an average age of 36 years. A total of 46 (46%) of the subjects were single, 48 (48%) were married, 6 (6%) were cohabiting, and 30 (30%) were divorced.

The Control Group, group 4 (n = 100), consisted of staff members at thirteen outpatient mental health clinics and individuals selected from the general population who

were not in treatment. There were 43 males (43%) and 57 females (57%) with an average age of 41 years. A total of 38 (38%) subjects were single, 60 (60%) were married, 2 (2%) were cohabiting, and 18 (18%) were divorced at the time of the study.

Of the total group of subjects included in this study, 175 (44%) were single, 204 (51%) were married, 21 (5%) were cohabiting, and 116 (29%) were divorced. There were 177 males (44%) and 223 females (56%). The mean age was 38 years with a standard deviation of 11, with ages ranging from 18 to 68 years.

A frequency distribution for age was recorded for the whole research group (Table 1). Figures reflect that there were 67 (16.7%) subjects between the ages of 35-39, comprising the largest age range. The smallest age ranges were composed of 4 (1.0%) subjects between the ages of 65-69 and 15 (3.8%) subjects between the ages of 15-19.

Table 1
Frequency Distribution for Research Group: Age

Age	Frequency	Percentage
65-69	4	1.0%
60-64	11	2.7%
55-59	21	5.3%
50-54	30	7.5%
45-49	56	14.0%
40-44	60	15.0%
35-39	67	16.7%
30-34	56	14.0%
25-29	44	11.0%
20-24	36	9.0%
15-19	15	3.8%

On the category of race, a frequency distribution was recorded for the research group as a whole (Table 2). Caucasians represented the largest racial group in the study, providing 353 subjects and comprising 88.3% of the research group. Twenty-nine African-Americans took part in the study, representing 7.2% of the entire research group. The least represented racial groups, Native-American and those who did not describe themselves as being members of any listed racial group, were composed of 2 individuals in each group and each group represented 0.5% of the research sample.

Table 2
Frequency Distribution for Research Group: Race

Category	Frequency	Percentage
Caucasian	353	88.3%
African-American	29	7.2%
Hispanic	9	2.3%
Asian	5	1.2%
Native-American	2	0.5%
Other	2	0.5%

A frequency distribution for education (Table 3) for the entire research group revealed that the largest educational grouping in the study, high school education, was represented by 129 (32.2%) participants. The least represented group in the study attained less than a high school education and was composed of 15 (3.8%) subjects. Thirty-eight percent of research subjects obtained a college degree.

Table 3
Frequency Distribution for Research Group: Education

Education Level	Frequency	Percentage
Less than High School	15	3.8%
High School	129	32.2%
Some College	104	26.0%
BA/BS	74	18.5%
Masters	49	12.2%
Professional/Doctorate	29	7.3%

Frequency distributions for the raw test scores on the MAD-AS were computed, and scores were converted to percentile ranks (Table 4).

Table 4
MAD-AS Raw Scores, Frequency Distributions, and Cumulative Percentages

Score	Frequency	Percentage	Cumulative Percent
104	2	0.4%	100.0%
102	1	0.2%	99.5%
86	1	0.2%	99.3%
84	1	0.2%	99.0%
83	2	0.4%	98.8%
81	1	0.2%	98.3%
78	1	0.2%	98.0%
77	1	0.2%	97.8%
75	1	0.2%	97.5%
72	2	0.4%	97.3%
70	1	0.2%	96.8%
69	4	0.8%	96.5%
68	4	0.8%	95.5%
67	2	0.4%	94.5%
66	1	0.2%	94.0%
65	2	0.4%	93.8%
64	5	1.0%	93.3%
63	1	0.2%	92.0%
61	1	0.2%	91.8%
60	4	0.8%	91.5%
59	4	0.8%	90.5%
58	1	0.2%	89.5%
57	5	1.0%	89.3%
56	8	1.7%	88.0%
55	7	1.5%	86.0%
54	9	1.9%	84.3%
53	1	0.2%	82.0%
52	10	2.1%	81.8%
51	6	1.3%	79.3%

Score	Frequency	Percentage	Cumulative Percent
50	6	1.3%	77.8%
49	11	2.3%	76.3%
48	7	1.5%	73.5%
47	7	1.5%	71.8%
46	6	1.3%	70.0%
45	6	1.3%	68.5%
44	11	2.3%	67.0%
43	7	1.5%	64.3%
42	9	1.9%	62.5%
41	9	1.9%	60.3%
40	14	2.9%	58.0%
39	9	1.9%	54.5%
38	10	2.1%	52.3%
37	13	2.7%	49.8%
36	13	2.7%	46.5%
35	20	4.2%	43.3%
34	16	3.3%	38.3%
33	8	1.7%	34.3%
32	19	4.0%	32.3%
31	11	2.3%	27.5%
30	11	2.3%	24.8%
29	10	2.1%	22.0%
28	8	1.7%	19.5%
27	9	1.9%	17.5%
26	4	0.8%	15.3%
25	4	0.8%	14.3%
24	10	2.1%	13.3%
23	7	1.5%	10.8%
22	7	1.5%	9.0%
21	7	1.5%	7.3%
20	4	0.8%	5.5%
19	4	0.8%	4.5%
18	2	0.4%	3.5%
17	4	0.8%	3.0%
16	1	0.2%	2.0%
14	4	0.8%	1.8%
13	1	0.2%	0.8%
6	2	0.4%	0.5%

Factor Analysis of the MAD-AS

A principal component, varimax rotated factor analysis using a criterion of eigenvalues greater than 1, extracted six factors accounting for 54.2% of the variance (Table 5). A criterion of factor loading equal to, or exceeding .45 was used as a basis for retaining an item on a given factor. Eight factors meeting this criterion were identified. The seventh and eighth factors were composed of two items and one item, respectively, which appeared to be unreliable and unstable.

Factor 1, Behavioral Dyscontrol comprised nine items measuring the overt display of anger and anger-related behaviors. Those scoring high on this subscale appear more prone to experience anger and act out in anger-provoking situations. They also seem more prone to suffer interpersonal problems stemming from their anger.

Factor 2, Anger Resolution, consisted of nine items. These items measure duration of anger and the capacity to return to a pre-anger baseline. Items include having difficulty letting go of anger, a tendency to hold grudges, intolerance of others' mistakes, and a lingering sense of bitterness. Those scoring high on this factor feel a need to get even with those who have angered them.

Factor 3, Aggression, consisted of five items. This variable refers to the expression of anger through hostile attitudes and acting-out behavior. This expression involves thoughts of hurting others, threatening behavior toward others, and hitting others. People are likely to fear those who score high on this factor.

Factor 4, Physiological Arousal, comprised four items related to the self-reported physiological symptoms of arousal often associated with anger. The specific symptoms of arousal included accelerated heart rate, increased muscle tension, rapid breathing, and

feelings of restlessness and agitation. Those scoring high on this subscale are more likely to report symptoms underlying the physiological substrate of anger.

Factor 5, Externalization of Anger, consisted of six items and appears to measure the tendency to locate the causation of anger in influences outside of oneself. High scorers on this variable view others as intending to anger them and hold others accountable for their anger. Individuals scoring high on this subscale are more likely to experience anger in stressful situations. They feel bitter about things and have trouble letting go of things that have angered them in the past.

Factor 6, Verbal Expression of Anger, consisted of three items. These items include the impulsive expression of verbal insults, proneness to argue over disagreements, and verbal expression of annoyance toward others.

Table 5
Factor Loadings of the Principal Components Varimax Rotated Factor Analyses of the MAD-AS

Items	Factor 1 Behavioral Dyscontrol	Factor 2 Anger Resolution	Factor 3 Aggression	Factor 4 Physiological Arousal	Factor 5 External-ization	Factor 6 Verbal Expression
4. I anger more frequently than most people	0.50					
6. I am quick to anger	0.47					
9. I lose control when angry	0.73					
10. I throw things when angry	0.45					
11. I can control my temper	0.59					
13. I am a hot head	0.57					
21. My anger has caused me problems in my relationships	0.54					
27. When angry I let it show	0.55					
28. I lose control when angry	0.73					
1. I feel a need to get even with those who anger me		0.49				
3. I have trouble letting go of my anger		0.62				
7. I have trouble letting go of things that angered me in the past		0.50				
8. I hold grudges against those who have angered me		0.67				
16. I blame others for my anger		0.45				
17. I think about things that anger me		0.59				
25. I tolerate others mistakes		0.53				
33. I feel bitter about things		0.50				
36. Once angered I get over it quickly		0.73				
12. I hit those that anger me			0.79			
18. People fear me when I am angry			0.49			
19. When angry I have thoughts of hurting others			0.56			
29. I threaten people when angry			0.52			
34. When provoked I hit people			0.83			
38. When angry I feel my heart beating faster				0.78		
39. When angry my muscles feel tense				0.83		
40. When angry my breathing is rapid				0.82		
41. When angry I feel restless or agitated				0.67		
7. I have trouble letting go of things angering me in the past					0.48	
20. People intend to anger me					0.56	
23. The behavior of others causes me to get angry					0.67	
33. I feel bitter about things					0.47	
35. I get angry under stress					0.45	
43. In difficult situations I get angry					0.49	
30. I am argumentative						0.65
31. I tell people when they annoy me						0.70
32. When people disagree with me I argue						0.71
Eigenvalues	13.81	2.90	2.18	1.62	1.46	1.33
Percent of Variance	32.13	6.75	5.06	3.77	3.40	3.08

Coefficient Alpha Reliability and Test-Retest Reliability of the MAD-AS

Cronbach's coefficient alpha reliability was calculated to assess the internal consistency of the total MAD-AS scale as well as for each subscale. Coefficient alpha for the entire scale was equal to .94. For scales 1 through 6, the respective coefficient alpha values were Scale 1, .89, Scale 2, .86, Scale 3, .80, Scale 4, .84, Scale 5, .78, and Scale 6, .70 (Table 6).

Table 6
Internal Consistency Coefficients for the MAD-AS

FACTOR NUMBER	Coefficient Alpha
1	0.89
2	0.86
3	0.80
4	0.84
5	0.78
6	0.70
OUTPATIENT GROUP	
Anger	.94
Depression	.92
Anxiety	.94
TOTAL SCALE	0.94

Test-retest reliability was calculated by correlating the total scores obtained by the Anger Group and the Control Group on two separate occasions separated by a two-week interval. The test-retest reliability coefficient for the MAD-AS total score was .93. For each of the MAD-AS subscales the following test-retest reliability coefficients were obtained: Factor 1 ($r = .89$, $p<.01$), Factor 2 ($r = .89$, $p<.01$), Factor 3($r = .90$, $p<.01$), Factor 4($r = .87$, $p<.01$), Factor 5($r = .87$, $p<.01$), and Factor 6 ($r = .87$, $p<.01$). These data are found in Table 7.

Table 7
Test-Retest Reliability Coefficients for the MAD-AS

Factor	r	p
1	0.89	<0.01
2	0.89	<0.01
3	0.90	<0.01
4	0.87	<0.01
5	0.87	<0.01
6	0.87	<0.01
Total Scale	0.93	<0.01

Correlation of the MAD-AS Factor Scores

The factor scores on each of the MAD-AS factors were correlated. The inter-correlation matrix is shown in Table 8. All of the Pearson Product Moment Coefficients of Correlation were positively and significantly correlated. The correlations ranged from a low of $r = +.218$, $n = 400$, $p<.0001$, one tail, to a high of $r = +.792$, $n = 400$, $p<.0001$, one-tailed.

Table 8
Pearson Inter-correlation of Factors on the MAD-AS

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1		.674 p<0.0001	.656 p<0.0001	.407 p<0.0001	.647 p<0.0001	.545 p<0.0001
Factor 2			.429 p<0.0001	.441 p<0.0001	.792 p<0.0001	.402 p<0.0001
Factor 3				.291 p<0.0001	.382 p<0.0001	.428 p<0.0001
Factor 4					.448 p<0.0001	.218 p<0.0001
Factor 5						0.391 p<0.0001
Factor 6						

Correlation of the MAD-AS with the BDI, the BAI, and the STAXI-2

The total score on the MAD-AS was correlated with the total scores on the BDI and the BAI (Table 9). The Pearson Product Moment Coefficient of Correlation between the MAD-AS total score and the BDI total score was $r = +.548$, $n = 400$, $p<.01$, one-tailed, with a Coefficient of Determination equal to $r^2 = .3003$. The MAD-AS total score correlated with the BAI with $r = +.500$, $n = 400$, $p<.01$, one-tailed, with a Coefficient of Determination equal to $r^2 = .2500$.

Table 9
Correlations of MAD-AS, BAI, and BDI

		MADASTOT	BAITOT	BDITOT
MADASTOT	Pearson Correlation	1	.500**	.548**
	Sig. (1-tailed)	.	.000	.000
	N	400	400	400
BAITOT	Pearson Correlation	.500**	1	.689**
	Sig. (1-tailed)	.000	.	.000
	N	400	400	400
BDITOT	Pearson Correlation	.548**	.689**	1
	Sig. (1-tailed)	.000	.000	.
	N	400	400	400

**Correlation is significant at the 0.01 level (1-tailed)

The Pearson Product Moment Coefficient of Correlation between the MAD-AS total and the total score on the STAXI-2 was $r = +.490$, $n = 400$, $p<.01$, one-tailed, with a Coefficient of Determination equal to $r^2 = .2401$. These data are recorded in Table 10.

Table 10
Correlation of MAD-AS and STAXI-2

		MADASTOT	STAXI2TOT
MADASTOT	Pearson Correlation	1	.490**
	Sig. (1-tailed)	.	.000
	N	400	400
STAXI2TOT	Pearson Correlation	.490**	1
	Sig. (1-tailed)	.000	.
	N	400	400

**Correlation is significant at the 0.01 level (1-tailed)

Comparison of Anger Group with Depression, Anxiety, and Control Groups on MAD-AS

With group membership serving as the independent variable, descriptive statistics were obtained for MAD-AS total scores. The means and standard deviations for all research groups are presented in Table 11.

Table 11
Descriptive Statistics for Total MAD-AS Scores

Group	N	M	SD	SE	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Depression	100	39.9500	13.89526	1.38953	37.1929	42.7071
Anxiety	100	42.4600	16.02235	1.60223	39.2808	45.6392
Anger	100	49.4900	16.93749	1.69375	46.1292	52.8508
Control	100	30.1900	9.70337	.97034	28.2646	32.1154
Total	400	40.5225	15.93988	.79699	38.9557	42.0893

The ANOVA conducted for all research groups revealed significant differences, $F(3, 396) = 30.694$, $p<.0001$ (Table 12).

Table 12
Results of ANOVA for Total MAD-AS Scores for All Groups

	Sum of Squares	Df	Mean Square	F	Significance
Between Groups	19125.828	3	6375.276	30.694	.0001
Within Groups	82251.970	396	207.707		
Total	101377.80	399			

The ANOVA conducted for outpatient groups indicated significant differences, $F(2, 297) = 9.959$, $p<.0001$ (Table 13).

Table 13
Results of ANOVA for Total MAD-AS Scores for Outpatient Groups Only (Depression, Anxiety, and Anger)

	Sum of Squares	df	Mean Square	F	Significance
Between Groups	4891.087	2	2445.543	9.959	.0001
Within Groups	72930.580	297	245.558		
Total	77821.667	299			

The post-hoc Scheffe' test administered with all research groups identified significant differences across groups on the total MAD-AS scale as depicted in Table 14. Outpatient subjects who were depressed, anxious, or angry scored significantly higher on the total MAD-AS than control group subjects. Subjects in the Anger Group scored significantly higher than other outpatient groups on overall MAD-AS scores. Participants in the Anxiety Group scored higher than the subjects in the Depression Group on total MAD-AS scores, although the difference was not statistically significant.

Table 14
Results of Post-hoc Scheffe' Test Comparing Groups on Total MAD-AS Scores

(I) Group	(J) Group	Mean Difference (I-J)	SE	Significance	95% Confidence Interval	
					Lower Bound	Upper Bound
Depression	Anxiety	-2.5100	2.03817	.679	-8.2323	3.2123
	Anger	-9.5400*	2.03817	.000	-15.2623	-3.8177
	Control	9.7600*	2.03817	.000	4.0377	15.4823
Anxiety	Depression	2.5100	2.03817	.679	-3.2123	8.2323
	Anger	-7.0300*	2.03817	.008	-12.7523	-1.3077
	Control	12.2700*	2.03817	.000	6.5477	17.9923
Anger	Depression	9.5400*	2.03817	.000	3.8177	15.2623
	Anxiety	7.0300*	2.03817	.008	1.3077	12.7523
	Control	19.3000*	2.03817	.000	13.5777	25.0223
Control	Depression	-9.7600*	2.03817	.000	-15.4823	-4.0377
	Anxiety	-12.2700*	2.03817	.000	-17.9923	-6.5477
	Anger	-19.3000*	2.03817	.000	-25.0223	-13.5777

* The mean difference is significant at the .05 level.

Multivariate Analysis of Variance

A multivariate analysis of variance (MANOVA) with group membership serving as the independent variable (Anger, Depression, Anxiety, and Control) and subscale factor scores on the six MAD-AS factors serving as dependent variables, was calculated. An overall Wilks' lambda (.731, $p<.0001$) revealed a significant difference across groups on the dependent variables (Table 15). In order to test the homogeneity of covariance

matrices, a Box test (Norusis, 1988) was conducted. Results indicated that the covariance matrices of the dependent variables were unequal across groups, constituting a violation of the assumption of homogeneity of variances on dependent variables across groups (Table 15).

Table 15
Box's Test of Equality of Covariance Matrices and Wilks' Lambda for all Research Groups

	Box's M	F	df1	Df2	Value	Sig.
Box Test	215.169	2.481	84	355695.7		.0001
Wilks' Lambda		6.145			.731	.0001

Subsequently, a Wilks' lambda (.849, $p<.0001$) and Box's M (104.813, $p<.0001$) were calculated using only outpatient groups (Table 16).

Table 16
Box's Test of Equality of Covariance Matrices and Wilks' Lambda for Outpatient Groups

	Box's M	F	df1	Df2	Value	Sig.
Box Test	104.813	1.809	56	251956.8		.0001
Wilks' Lambda		3.550			.849	.0001

Post-hoc univariate ANOVA's on each of the subscales were found to be significant. Assuming unequal variances across study groups on the dependent variables, a Games-Howell post-hoc test was conducted using all study groups (Table 17) and revealed group differences on each factor. The Games-Howell test yielded the following results.

On Factor 1, Behavioral Dyscontrol, depressed clients scored significantly lower than anger clients ($p<.0001$) did and significantly higher than the controls ($p<.0001$).

The clients from the Anxiety Group scored significantly lower than Anger Group clients ($p<.0001$) and significantly higher than controls ($p<.0001$). Anger Group clients scored significantly higher than all other groups ($p<.0001$) and the Control Group scored significantly lower than all other groups ($p<.0001$).

On Factor 2, Anger Resolution, Depressed Group clients scored significantly lower than Anger Group clients ($p<.015$) did and significantly higher than Control Group clients ($p<.001$) do. Anxious clients scored significantly higher than controls ($p<.0001$). Anger Group clients scored significantly higher than depressed clients ($p<.015$) and controls ($p<.0001$), and Control Group participants scored significantly lower than all other groups ($p<.0001$).

On Factor 3, Aggression, depressed clients scored significantly lower than angry clients ($p<.0001$). Anxiety Group clients scored significantly lower than angry clients ($p<.0001$). The Anger Group scored significantly higher than all other groups ($p<.0001$) and the controls scored significantly lower than the angry clients ($p<.0001$).

On Factor 4, Physiological Arousal, Anger Group clients scored significantly higher than the control group participants ($p<.0001$). and the controls scored significantly lower than both the Anger Group ($p<.0001$) and Anxiety Group ($p<.0001$). The depressed ($p<.261$) and anxious client groups ($p<.955$) did not differ significantly from the angry clients on this variable.

On Factor 5, Externalization, the Anger Group scored significantly higher than the Control Group ($p<.0001$) did. The Control Group scored significantly lower than all other groups ($p<.0001$). On this variable, the Depressed Group ($p<.335$) and the Anxiety Group ($p<.557$) did not differ significantly from the angry clients.

On Factor 6, Anger Verbal Expression, the Anger Group scored significantly higher than the Control Group ($p<.0001$). The outpatient groups did not differ significantly on this variable.

Table 17
Results of Post-hoc Games-Howell Test Comparing Groups on each MAD-AS Factor

Dependent Variable	(I) problem	(J) problem	Mean Difference (I-J)	Std. Error	Sig.
FACTOR 1	1.00	2.00	-.0411	.06564	.929
		3.00	-.3344*	.06564	.000
		4.00	.2844*	.06564	.000
	2.00	1.00	.0411	.06564	.929
		3.00	-.2933*	.06564	.001
		4.00	.3256*	.06564	.000
	3.00	1.00	.3344*	.06564	.000
		2.00	.2933*	.06564	.001
		4.00	.6189*	.06564	.000
	4.00	1.00	-.2844*	.06564	.000
		2.00	-.3256*	.06564	.000
		3.00	-.6189*	.06564	.000
FACTOR 2	1.00	2.00	-.0722	.06577	.708
		3.00	-.2011*	.06577	.025
		4.00	.2911*	.06577	.000
	2.00	1.00	.0722	.06577	.708
		3.00	-.1289	.06577	.274
		4.00	.3633*	.06577	.000
	3.00	1.00	.2011*	.06577	.025
		2.00	.1289	.06577	.274
		4.00	.4922*	.06577	.000
	4.00	1.00	-.2911*	.06577	.000
		2.00	-.3633*	.06577	.000
		3.00	-.4922*	.06577	.000
FACTOR 3	1.00	2.00	-.0540	.05721	.766
		3.00	-.3400*	.05721	.000
		4.00	.0840	.05721	.271
	2.00	1.00	.0540	.05721	.766
		3.00	-.2860*	.05721	.000
		4.00	.1380	.05721	.055
	3.00	1.00	.3400*	.05721	.000
		2.00	.2860*	.05721	.000
		4.00	.4240*	.05721	.000
	4.00	1.00	-.0840	.05721	.271
		2.00	-.1380	.05721	.055
		3.00	-.4240*	.05721	.000
FACTOR 4	1.00	2.00	-.2475	.09604	.065
		3.00	-.1925	.09604	.266
		4.00	.2475*	.09604	.040
	2.00	1.00	.2475	.09604	.065
		3.00	.0550	.09604	.946
		4.00	.4950*	.09604	.000
	3.00	1.00	.1925	.09604	.266
		2.00	-.0550	.09604	.946
		4.00	.4400*	.09604	.000
	4.00	1.00	-.2475*	.09604	.040
		2.00	-.4950*	.09604	.000
		3.00	-.4400*	.09604	.000

Dependent Variable	(I) problem	(J) problem	Mean Difference (I-J)	Std. Error	Sig.
FACTOR 5	1.00	2.00	-.0233	.05780	.980
		3.00	-.1067	.05780	.301
		4.00	.3050*	.05780	.000
	2.00	1.00	.0233	.05780	.980
		3.00	-.0833	.05780	.596
		4.00	.3283*	.05780	.000
	3.00	1.00	.1067	.05780	.301
		2.00	.0833	.05780	.596
		4.00	.4117*	.05780	.000
	4.00	1.00	-.3050*	.05780	.000
		2.00	-.3283*	.05780	.000
		3.00	-.4117*	.05780	.000
FACTOR 6	1.00	2.00	-.0233	.06897	.987
		3.00	-.1800	.06897	.057
		4.00	.1667*	.06897	.046
	2.00	1.00	.0233	.06897	.987
		3.00	-.1567	.06897	.151
		4.00	.1900*	.06897	.026
	3.00	1.00	.1800	.06897	.057
		2.00	.1567	.06897	.151
		4.00	.3467*	.06897	.000
	4.00	1.00	-.1667*	.06897	.046
		2.00	-.1900*	.06897	.026
		3.00	-.3467*	.06897	.000

Based on observed means.

* The mean difference is significant at the .05 level.

CHAPTER 4

Discussion

The present study proposed to advance the treatment of anger disorders by exploring the psychometric properties of the MAD-AS scale, an anger assessment tool. Research sought to build on prior investigation of the reliability, validity, and factor structure of the MAD-AS in an inpatient setting by examining this measure using outpatient subjects. Several important findings were obtained in this study. Research results suggest that the MAD-AS represents a significant improvement over some existing anger measures in terms of its brevity, ease of administration, and standardization of scoring. The MAD-AS appears to possess sound psychometric properties in terms of its reliability and validity. Findings indicate that the MAD-AS scales reflect the multidimensional quality of anger, measuring anger's cognitive, physiological, and behavioral components. Results point to the capacity of the MAD-AS to distinguish between the internal and external expression of anger, as well as the distinction between the verbal and physical expression of anger. These characteristics suggest its potential usefulness in diverse settings. The MAD-AS may function in research contexts as a valuable aid in the screening of participants. To practitioners in outpatient mental health clinics, the MAD-AS can assist in the identifying of symptoms and the monitoring of treatment. The results of this study may have important implications for the use of the MAD-AS in the choice of interventions and the evaluation of outcomes in clinical work.

The MAD-AS Factor Structure

The results of the factor analyses indicate that the MAD-AS assesses different, but related, aspects of anger. Using a criterion of eigenvalues greater than one and a criterion of factor loadings equal to, or exceeding .45 as a basis for retaining an item on a given factor, the researcher extracted six factors. These components of anger correlate highly with each other and appear to reflect multiple dimensions of anger, both as it is experienced and expressed. The items in each subscale of the MAD-AS appear to be homogeneous, consistent, and stable over time.

In this six-factor solution, the very strong first factor clearly measured an anger dimension that taps elements of anger experience and expression. Subjects scoring high on Factor 1, Behavioral Dyscontrol, appear to experience anger more frequently than most people and exhibit a temperamental trait across situations. Compared to others, they are quick to anger, show their anger, and cause problems in their relationships through their anger. Items reflecting the loss of control of anger had the highest loading on this factor, suggesting that the capacity to manage anger is closely related to the frequency and intensity of anger experienced.

The second factor, Anger Resolution, appears to assess the duration of anger as an important component in anger experience. The subscale taps the ability of an individual to return to baseline following the elicitation of anger. This capacity seems to be associated with cognitive activity in which an individual dwells on the misdeeds and mistakes of other people. Those who score high on this factor have trouble letting go of past wrongs, hold grudges against those who have angered them, and blame other people for their anger. Unable to find productive solutions for anger-generating problems, these

persons feel a need to get even with those who anger them and are likely to contemplate retaliatory measures.

For high scorers on Aggression, the third factor of the MAD-AS, anger seems to function as a means of intimidation. They tend to create fear in others by threatening and striking people who anger them. This subscale also suggests that aggression is not an automatic reaction, but is mediated by intervening cognitive variables. By identifying angry thoughts as preceding aggressive actions, this factor appears to support conceptualizations that regard cognition as closely associated with affective and behavioral aspects of anger.

Those scoring high on Factor 4, Physiological Arousal, report physiological manifestations of their anger. Consistent with anger theories that espouse the important role of physical arousal in anger, score elevations on this factor point to the presence of bodily symptoms such as rapid heart beat and tense muscles underlying the subject's experience and expression of anger.

Factor 5, Externalization, appears to reveal the degree to which respondents attribute their anger to causes outside of themselves. They view their anger as a function of extrinsic factors. Elevations on this subscale indicate that respondents attribute their anger to the intentions and actions of others rather than to their own attitudes. Externalization of anger appears to support the theoretical position that anger does not occur apart from cognitive activity. This factor taps the function of appraisals, memories, perceptions, and interpretations of events in impacting people's level of anger.

The final factor, Verbal Expression, reflects the tendency to express anger in argument, criticism, and disagreement. Those scoring high on this subscale are more

vocal in their expression of anger and are likely to engage in verbal altercations more often, and for longer periods, than others.

The factors identified in the factor analyses of the 43 MAD-AS items were similar to those found in an earlier seven-factor solution for the MAD-AS (Mahan, 2000). In his factor analyses of the MAD-AS with inpatients and outpatients, Mahan obtained a factor structure that reflects substantial overlap with the broad dimensions of anger revealed in the findings of this present research. One of these factors, termed Difficulty with Anger Resolution, was subsequently jettisoned on the grounds of poor reliability and stability. Both studies found anger dyscontrol to be the salient factor underlying the MAD-AS measure. Additionally, each factor analysis revealed the externalization, verbalization, and resolution of anger as key elements of anger assessment. Findings in each study tapped the presence of cognitive and physiological factors as important components of the anger experience.

Minor differences between the research results included the relative strength of several factors in the present study--Resolution, Externalization, and Verbalization--in accounting for variance in scores. Factor analysis in the present study required the reconfiguration of Mahan's factors of Anger Dyscontrol, Verbal Expression, and Externalization by adding some items and deleting others. Factor analysis in the present study eliminated two of Mahan's factors - Angry Cognitions and Anger Justification - and subsumed the remaining items under Anger Resolution and Externalization. Finally, the present study isolated Aggression as a strong and cohesive factor in the MAD-AS.

Anger is a complex construct. As defined in this study, anger is a psychobiological emotional state or condition marked by subjective feelings that vary in

intensity from mild irritation or annoyance to intense fury and rage. Anger so conceptualized is generally accompanied by muscular tension and by arousal of the neuroendocrine and autonomic nervous systems. Over time, the intensity of anger is related to circumstances and varies as a function of perceived injustice, of being attacked or treated unfairly by others, or of frustration resulting from barriers to goal-directed behavior. The disposition of anger as a personality trait is defined in terms of individual differences in the proneness to perceive a wide range of situations as annoying or frustrating and by the tendency to respond to such situations with elevations in situational, or state, anger. Further, anger expression and anger control have been conceptualized in this study as having four major components. These include anger toward other persons or objects in the environment, anger directed inward, the control of angry feelings by preventing the expression of anger toward others or objects in the environment, and the control of suppressed angry feelings by calming down when angered.

It seems clear from the results of factor analysis that the MAD-AS provides a useful view of these important components of anger. As predicted, the MAD-AS reflects the broad range of physiological, cognitive, and behavioral variables associated with anger. It appears to distinguish crucial dimensions of anger experience and expression and permits the evaluator to determine how a given subject may consider, feel, and express anger across diverse settings. Differences among people in the way they control angry thoughts and impulses can be assessed by careful attention to the scores on specific factors of the measure. These findings indicate that the MAD-AS may help to clarify the

clinical profile of clients in outpatient settings when anger is a salient problem, as well as to facilitate the development of effective treatment plans for angry clients.

The MAD-AS and Group Comparisons

Research subjects were chosen from the general population (controls) and three groups of outpatient clients (angry, anxious, and depressed). In order to streamline the study and secure confidentiality, extensive intake data about the outpatients were not obtained nor were definitive diagnoses made. Outpatient subjects were grouped according to agreement between them and their therapists as to the salient reason for being in treatment. Accordingly, reliable and differential diagnoses of the outpatients were not attempted, and intensive comparisons across research groups were not within the scope of this study. Accepting these limitations, the research groups showed differences in the predicted directions on all dependent variables.

Outpatient subjects scored significantly higher on the total MAD-AS and each subscale than controls. Moreover, Anger Group participants scored significantly higher than other outpatient groups on overall MAD-AS scores and on several MAD-AS subscales. The higher scores on the MAD-AS obtained by outpatient groups suggest that clients experiencing clinically significant problems may have anger as a contributing factor. This appears true for those complaining of anxiety and depression as well as those referred for anger-related difficulties. Outpatients were carefully screened and those with current histories of psychotic or paranoid disorders, as well as those with serious organic, medical or developmental problems, were excluded. Therefore, differences in MAD-AS scores between controls and outpatients seem to reflect the sensitivity of the MAD-AS to the physiological, behavioral, and cognitive aspects of anger.

The presence of higher MAD-AS scores for the Anger Group compared to other outpatient groups suggests that angry clients experience anger with more intensity, frequency, and for longer periods of time than others do who experience anger. Such clients are more likely to have trouble controlling their anger. They are more likely to harbor angry thoughts, become physically aroused, and justify their anger by blaming it on others and circumstances. Anger-referred clients appear to have higher levels of situational anger and dispositional anger. Lacking adequate control of their anger, they are likely to suppress their angry feelings or act on their angry feelings in counterproductive ways. In these ways angry clients differ significantly from anxiety-referred and depression-referred clients, and people who are not in treatment.

Subjects in the Anger Group scored significantly higher than other outpatient subjects on three MAD-AS factors: Behavior Dyscontrol, Anger Resolution, and Aggression. Though scoring consistently higher on the remaining three factors - Physiological Arousal, Externalization, and Verbal Expression - angry clients did not differ significantly from anxious and depressed clients. These findings indicate that biological symptoms associated with anger do not appear to be anger-specific; they are often manifested in other psychiatric disorders. In addition to sharing somatic arousal with angry clients, clients who appear anxious or depressed may have as contributing factors the tendency to externalize blame for their condition, as well as to strike out verbally at others. On the other hand, anger-referred outpatients are remarkable for the severity and duration of their anger. When compared to anxious and depressed clients, they show an inability to effectively control their anger, resolve their anger, and channel their anger in non-aggressive ways.

Construct Validity of the MAD-AS

In the context of psychological assessment, construct validity refers to the content of a measure or scale; it also determines the measure in which it reflects the concept of interest (Cone & Foster, 1999). In relation to the present study on anger, the MAD-AS was expected to meet two conditions that, if satisfied, would demonstrate construct validity. First, the researcher predicted that the MAD-AS would reflect, in large part, the universe of content relevant to anger as it is revealed in six domains of anger. Second, the scores of the MAD-AS were predicted to sustain relationships required by the theory of anger outlined in this study.

The MAD-AS demonstrates construct validity as supported by factor analysis. A principal component, varimax, rotated factor analysis using eigenvalues greater than 1, extracted six factors accounting for 54.2% of the variance and supported a multifaceted conceptualization of anger.

Factor 1, Behavioral Dyscontrol, measures the overt display and loss of control associated with maladaptive anger. Almost four decades ago Berkowitz (1964) argued that anger and learned habits separately or together create a readiness to act in a hostile manner. He posited that stimuli associated with the present or previous anger instigators are necessary to cue aggressive responses. When presented with such cues to behavior, those scoring high on this subscale are likely to experience anger more quickly than others are. Once anger is experienced, they have more difficulty controlling their anger. Their anger tends to cause them more interpersonal problems. This factor seems to focus on an important behavioral component of anger.

Factor 2, Anger Resolution, measures such things as thoughts about retribution, attribution of intention, and obsession-like thoughts about anger- provoking situations. This subscale taps the cognitive aspects of anger. In this sense the angry person ruminates about past wrongs, which causes tension that is relieved when the offending agent is punished. Those scoring high on this subscale engage more frequently in thinking about situations that provoke their anger, thereby increasing the likelihood of precipitating anger and maintaining it.

Factor 3, Aggression, taps attitudinal and behavioral correlates of anger. According to current theory anger, hostility, and aggression are separate but related constructs (Spielberger et al., 1985). Anger is generally considered a more fundamental concept than either hostility or aggression and usually refers to a psychobiological emotional state consisting of feelings. The concepts of hostility and aggression are generally used to describe negative attitudes and destructive and punitive behavior (Spielberger, Jacobs, Russell, & Crane, 1983). Factor 3 isolates the hostile attitude and aggressive behavior associated with anger. High scorers on this factor harbor thoughts of hurting others and may experience attitudes that include meanness and viciousness. Using the language of Spielberger (1999), they may be classified as "anger-out" because they tend to express their anger physically toward other persons or objects in the environment of anger. Moreover, they may express this physical manifestation of anger either directly toward the source of provocation or frustration or indirectly toward individuals or objects closely associated with, and thus symbolic of, the provoking agent.

Factor 4, Physiological Arousal, assesses the physiological symptoms of anger. An anger attack includes a number of symptoms of physiological arousal such as

accelerated heart rate, hot flashes, muscle tension, and rapid breathing (Chesney, 1985). Some bodily reactions can be observed; others cannot (Kassinove & Sukhodolsky, 1995). High scorers on this factor are more likely to report symptoms underlying the physiological substrate of anger. The physiological substrate represents the arousal of the sympathetic nervous system and facilitates active responses to anger provoking stimuli (Kenrick, Neuberg, & Cialdini, 1999). A negative internal state at the time of provocation appears to transfer and to increase the probability and intensity of anger arousal. This factor seems to tap that internal negative bodily state and its physiological markers, which constitute an important element of anger.

Factor 5, Externalization, reflects a tendency to attribute the experience of anger to external causes. This involves the cognitive aspect of anger. Aversive stimuli, problems, opposition, and other stressful events are appraised through cognitive processes including labeling of subjective states as angry ones, elaboration of attitudinal biases, selective attention to negative elements, and external attributions of blame (Beck, 1999; Novaco, 1985). Factor 5 taps these appraisal processes as they relate to responses to stressful situations, adversarial behavior of others, and motives of others. High scorers are more likely to blame others for their anger, recycle inflammatory thoughts about the provocative event, and employ anger as the preferred method of coping with stress.

Factor 6, Verbal Expression, measures the expression of verbal insults, argumentativeness, and verbal expression of annoyance. This subscale taps the verbal and behavioral components of anger. This subscale fits closely with Seigman's (1993) view of anger as taking the form of loud rapid speech. Those who score high on this

subscale tend to be critical of others and express their anger outwardly rather than inhibit it or soothe it.

The MAD-AS subscales seem to identify and reflect key cognitive, physiological, and behavioral aspects of anger. These components of anger are experienced as occurring inseparably and simultaneously, and are typically presented as a holistic anger response.

The MAD-AS and Other Assessment Instruments

One aspect of the psychometric property of validity encompasses the relation of performance on a given psychological measure to performance on other measures at the same time or in the future and to other criteria. Construct validity includes the correlation of a measure with performance on another measure or criterion at the same point in time. Convergent validity is a form of construct validity that measures the extent to which two scales assess similar or related constructs. Using the Pearson Product Moment Coefficient of Correlation, the present research examined the construct validity of the MAD-AS in these domains as it related to three other assessment tools: the BAI, the BDI, and the STAXI-2.

It was expected that the MAD-AS would show a moderate correlation ($\leq .50$) with the BAI and BDI because these two scales are based on separate but related constructs (anxiety and depression, respectively). As predicted, the MAD-AS showed a moderate positive correlation with the BAI ($r = +.50$, $p < .01$), with a Coefficient of Determination equal to $r^2 = .25$. The MAD-AS evidenced a moderate positive correlation with the BDI ($r = +.548$, $p < .01$), with a Coefficient of Determination equal to $r^2 = .3003$. Thus, the MAD-AS demonstrated sound construct validity by producing comparable correlations

with the BAI and the BDI. These positive correlations are consistent with the clinical observation that anxious or depressed individuals frequently experience angry feelings that they do not readily acknowledge or express.

Inasmuch as the MAD-AS and STAXI-2 instruments purport to measure the construct of anger, the MAD-AS was expected to demonstrate convergent validity by significantly and positively correlating (.70 or greater) with self-rated STAXI-2 scores. The Pearson Product Moment Coefficient of Correlation between the MAD-AS total and the total score on the STAXI-2 was $r = +.490$, $n = 400$, $p<.01$, with a Coefficient of Determination equal to $r^2 = .2401$. The research assumption that the MAD-AS would strongly correlate with the STAXI-2 was not confirmed. Instead, results demonstrated a positive, but moderate, association.

Both the STAXI-2 and the MAD-AS appear to assess the experience, expression, and control of anger. The two STAXI-2 trait-anger scales are reflected in numerous MAD-AS items such as "I am a hot head" (Angry Temperament) and "When provoked I hit people" (Angry Reaction). The Externalization (Factor 5) scale of the MAD-AS is associated with STAXI-2's trait-anger scales because people high in trait-anger often feel others are targeting them for mistreatment, frustrating them, and creating problems for them.

Anger expression scales in the STAXI-2, Anger Expression-In (AX-I) and Anger Expression-Out (AX-O) have their counterparts in several MAD-AS factors. For example, the Behavioral Dyscontrol (Factor 1), Aggression (Factor 3), and Verbal Expression (Factor 6) scales are similar to Spielberger's AX-O scale by tapping the bent toward expressing anger in acts of violence toward persons or things in the environment

or in verbal acts such as insults or criticism. Anger Resolution (Factor 2) correlates with AX-I in that people with high scores on each measure tend to pout or sulk, harbor grudges, and ruminate about getting even, behaviors which issue in the suppression of anger. The Physiological Arousal scale (Factor 4) of the MAD-AS appears to relate closely to the STAXI-2's AX-I scale because people with high AX-I scores experience angry feelings but inhibit their expression, producing physiological symptoms.

The expectation that the MAD-AS would show a more robust correlation with the STAXI-2 was based in part on the strong positive correlation of the MAD-AS with the first version of the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1988). This relationship was demonstrated in an unpublished doctoral dissertation (Mahan, 2000) as $r = +.74$, $n = 180$, $p<.01$. However, the STAXI-2 represents a revision from the original STAXI that may account in part for the present results. On the basis of extensive research, the STAXI-2 has been expanded from 44 to 57 items (Spielberger, 1999). Three of the original STAXI subscales have been changed, and the revised STAXI-2 includes a new 8-item scale to measure three related but distinctive components of Spielberger's theory of state anger. This new subscale in the STAXI-2 also strives to assess different ways anger is controlled. While the MAD-AS taps anger control issues, it does not replicate the STAXI-2 in seeking to assess different preferences of anger management. Twenty-eight percent of STAXI-2 items are devoted to measuring this construct. Thus, deepening the level of sophistication and sensitivity in the STAXI-2 may have modified the relationship between it and the MAD-AS enough to account for a milder level of correlation. The number of items, the range of anger components

assessed, and the intensity of component specificity may lead to less overlap in the two measures' identification of anger-related phenomena.

Discriminative Validity of the MAD-AS

An instrument is said to have discriminative validity if its scores have been shown to produce expected mean differences between groups. The present study predicted that the MAD-AS would show discriminative validity by producing significantly higher scores in the Anger Group on each dimension of anger compared to the Control Group, the Depression Group, and the Anxiety Group. A MANOVA for all factors of the MAD-AS was conducted with group membership serving as the independent variable, and an overall Wilks' lambda was calculated to investigate differences across groups on each MAD-AS factor. Post-hoc univariate F-tests were administered to further compare research groups on each MAD-AS subscale.

The overall Wilks' lambda (.731, $p<.0001$) and subsequent Box test revealed that the covariance matrices of the dependent variables were unequal across groups, thereby violating the assumption of equality of variance across groups. It was concluded that the variance in the Control Group was likely to be much smaller than variance in outpatient group scores, both with regard to total MAD-AS scores and individual subscale scores. Allowing for this lack of variance homogeneity, the Games-Howell post-hoc test was conducted with all research groups.

The researcher expected that outpatient clients referred for anger-related difficulties at home or work would demonstrate higher symptom levels on anger-specific factors than either anxious or depressed clients, or individuals not in treatment at the time of testing. It was expected that anxious or depressed individuals would reveal anger as

part of their phenomenological experience but at lower levels than anger-referred clients would, and at higher levels than the Control Group would. Test results confirmed the research hypothesis that the Anger Group would score significantly higher than other study groups on the overall anger measure. Anger Group participants also scored higher than the remaining three research groups on all MAD-AS subscales. Statistically significant differences between anger clients and other outpatient groups were found on Factors 1, 2, and 3, but were not revealed on Factors 4, 5, and 6. In general, angry clients scored significantly higher than other anxious or depressed outpatients and controls, outpatient groups scored higher than controls, on MAD-AS measures of anger.

Higher scores on the MAD-AS for anger group participants showed that anger-referred clients tend to experience anger more frequently, more intensely, and for longer periods of time than other outpatient clients and controls. Their mode of anger expression is likely to be maladaptive and counterproductive. They are less successful than their non-treatment counterparts in efforts to control their anger, and more likely to blame external circumstances for their anger. In comparison to other outpatients who are in treatment for anxiety and depression, anger clients tend to be more inclined toward interpersonal conflict and are more likely to dwell on the results of such conflicts.

Comparative results on Factor 2, Anger Resolution, suggest that Anger Group clients tend to harbor angry feelings longer and seem unable to let go of their anger. They hold grudges, remain bitter, and feel a need to get even with those who have angered them. There is a clear cognitive element to this factor as well. Individuals scoring high on this factor tend to have angry thoughts and ruminate about things that anger them.

Comparative scores on Factor 3, Aggression, indicate that clients presenting with anger as their salient difficulty are more inclined to act out their hostility toward others. Hitting, threatening, and hurting others when provoked represent patterns of behaviors that arouse fear in others. When compared with each other, participants in non-anger groups were not significantly different on this subscale. This fact points to overt aggression as an important element in differential diagnosis of anger disorders from both anxiety and mood disorders.

Scores on Factor 4, Physiological Arousal, represent a departure from the pattern of higher scores for angry clients. Outpatient clients of each group were more likely to become aroused and experience somatic symptoms than were controls. However, outpatients did not differ significantly across groups on this variable. Physiological arousal refers to physical symptoms associated with anger including increased heart rate, muscle tension, shortness of breath, and feelings of agitation .While these physiological symptoms may trigger anger, they appear to be associated with anxiety and depression as well. Angry, anxious, and depressed persons appear to experience comparable levels of arousal, although they may express that agitation in different ways. It appears that anger, anxiety, and mood disorders share a common physiological substrate that plays an important role in the experience of psychological and emotional discomfort.

On Factor 5, Externalization, comparative scores indicate that angry clients differ significantly from non-treatment persons, but not from anxious or depressed clients in their tendency to blame circumstances and other people for their anger. Outpatient clients appear equally likely to resist accountability for their anger and attribute responsibility for their anger to stressful situations and the intentions of others. It appears

that clients in an outpatient setting tend to see events in their lives as causing them pain. They have angry perceptions about these events, and regard themselves as relatively innocent when attributing blame for these events.

On Factor 6, Verbal Expression of Anger, the outpatient groups did not differ significantly from each other but scored significantly higher than the Control Group in their proneness to express anger verbally. This verbal expression of anger may be an important contributing factor in the referral of an individual for outpatient therapy. Forms of verbal hostility such as insults, defiance, and threats are easily recognizable to others and are regarded by family members, employers, and other referral sources as indicative of a decline in personal adjustment and functioning.

The higher scores on the MAD-AS factors, obtained by the outpatient groups, show that anger plays a key role in common psychiatric disorders treated in outpatient mental health clinics. Anxious, depressed, and angry clients appear to experience more angry cognitions and are likely to become more aroused when angry. They are likely to justify their anger, blame others and circumstances for it, and argue with others when contradicted. When compared with clients, whose main presentation in treatment is anxiety or depression, anger-referred clients seem to have less control of their anger, are more likely to have relationship difficulties, and are more apt to act in aggressive fashion. These tendencies, in turn, appear fueled by the tendency of angry outpatients to dwell on past wrongs, hold grudges, and ruminate about those who have angered them. Angry cognitions appear to play an important part not only in their referral to outpatient therapy, but also in their capacity to engage in and to profit from treatment.

Reliability of the MAD-AS

Reliability, a broad concept, generally refers to the consistency of a measure. A measurement procedure is considered reliable to the extent that it produces stable, consistent measurements. When reliability is high, the correlation between two measurements should be strong and positive. The present study sought to establish the consistency of the MAD-AS by examining the degree of homogeneity of the items within the scale (internal consistency) and the stability of its test scores over time (test-retest reliability). The researcher predicted that the MAD-AS would demonstrate a high level (.70 or greater) of internal consistency with the overall research sample and within three outpatient mental health groups, as well as a high level (.70 or greater) of test-retest reliability with control and anger groups.

Cronbach's coefficient alpha was calculated to assess internal consistency for the total MAD-AS scale and for each of the subscales. Alpha coefficient measures of internal consistency were uniformly high across all scales and subscales. The entire scale was equal to .94. In order, values for subscales 1 through 6 were .89, .86, .80, .84, .78, and .70. Values for the outpatient Anger Group, Depression Group, and Anxiety Group were .94, .92, and .94, respectively.

Given the fact that the MAD-AS items were generated primarily on a rational basis, the internal consistency of these scales is noteworthy. In addition to providing evidence of the utility of the working definitions in guiding the item selection process, the high degree of internal consistency of the scales indicates that most people are sensitive to their experience of angry feelings and highly consistent in reporting the intensity and duration of the experience of these feelings. Equally impressive is the

finding that the internal consistency reliabilities of the scales and subscales remained high across research groups and were not influenced by psychopathology.

Test-retest reliability refers to the consistency of performance on a measure over time. When there is high test-retest reliability, scores from one administration of the test will correlate well with scores on the same instrument after a particular time interval has elapsed. Test-retest reliability for the MAD-AS was computed by correlating the total scores of two groups in the research sample (Control Group and Anger Group) on two separate occasions separated by a two-week interval. Total score test-retest reliability was .93. For each of the subscales the following alpha coefficients were obtained: Factor 1 ($r = +.89$, $p<.01$), Factor 2 ($r = +.89$, $p<.01$), Factor 3 ($r = +.90$, $p<.01$), Factor 4 ($r = +.87$, $p<.01$), Factor 5 ($r = +.87$, $p<.01$), and Factor 6 ($r = +.87$, $p<.01$). These data confirm the study hypothesis that the MAD-AS scores would show a high level of stability over time. The MAD-AS appears to possess sound reliability as a measure of the construct, anger.

Limitations of the Study

There are several limitations to the study. As tools to gather data, self-report inventories are notoriously susceptible to participant bias (Kazdin, 1998). The designs of the four self-report inventories that were used include items that are transparent, permitting subjects to distort their responses by understating or exaggerating their answers. The self-report measures were not equipped with special scales to assess test-taking attitudes, nor were measures of social desirability be employed to assess respondents' needs for social approval. Other subject biases may operate in self-report

measures depending on the wording of the questions, the format, and the question context (Anastasi, 1997; Schwarz, 1999).

Another limitation references the exclusive use of self-report inventories as dependent variables. Self-report measures used apart from more objective criteria may supply insufficient evidence that the construct of interest has really been assessed (Kazdin, 1998). A third limitation of the study has to do with the choice of subject groups. The subject sample derived from an adult, outpatient mental health population. This population did not adequately represent a general population. In addition, non-white populations (Caucasians, 88.3%; non-white, 11.7%), underrepresented the subject sample. Therefore, the generalizability of the findings will require further investigation.

These shortcomings were addressed in the following manner. Because the participants were aware of the assessment procedure, the conditions for responding were arranged so as to minimize response distortion. The subjects completed test measures under conditions of anonymity, ensuring confidentiality. Therapists were trained to tell the subjects that their best interests and treatment efficacy were served by honest self-evaluation.

Despite the study's sole reliance on self-report measures, two factors should mitigate any deleterious effects of their use. First, several studies indicate that reliable and valid data can be collected from self-report inventories (Kazdin, 1998; Milner, 1989; Elliott, Dunford, & Huizinga, 1987). Second, the measures proposed in this study have been demonstrated to provide meaningful data by research spanning two decades. The STAXI-2, BDI, and BAI have been extensively validated and shown to relate to non-self-

report criteria (Johnson, 1984; Kabacoff, Segal, Hersen, & Van Hasselt, 1997; Groth-Marnat, 1999).

The goal of this study was to provide normative data supporting the clinical use of the MAD-AS anger scale. Therefore, the limitation of the subject sample to key adult outpatient groups commonly treated in an outpatient clinic served the purposes of the research. Examining the utility of the MAD-AS for other worthy populations, such as clinically referred adolescents and members of minority groups, represents a future research challenge.

Summary

Recent advances in the conceptualization of anger have highlighted the need for improved instruments for the measurement of this emotion. Increased sophistication in identifying and distinguishing multiple components of anger has stimulated the development of a new anger assessment tool, the MAD-AS. This research employed a cross-sectional case-control research design to evaluate the psychometric properties of the anger scale and to obtain descriptive statistical data. Building on an earlier study involving subjects taken from inpatient and outpatient clinical populations (Mahan, 2000), this study involved outpatient participants with presenting problems of anger ($n = 100$), anxiety ($n = 100$), and depression ($n = 100$).

Research results indicate that the MAD-AS possesses sound psychometric properties for measuring the experience, the expression, and the control of anger. The MAD-AS demonstrates strong internal consistency and test-retest reliability. Moderate positive correlations of the MAD-AS with the BAI, BDI, and STAXI-2 support its construct validity. Factor analysis identified six subscales of the MAD-AS, recognizing

the multidimensionality of anger and reflecting important aspects of anger experience and expression. Findings point to the strong construct validity of the MAD-AS, as well as its capacity to discriminate between outpatient clients with anger as the main element of their clinical presentation, and outpatients who are primarily anxious or depressed.

As a 43-item self-report inventory, the MAD-AS represents an advance over many existing anger measurement instruments. The wide demographic sample, especially in terms of age and education, suggests its ease of use and comprehension. Its brevity and breadth indicate its value in outpatient clinical contexts where time is limited, yet thoroughness is important. The reliability of the MAD-AS points to its usefulness, especially as it monitors client progress as treatment moves forward. Clear subscales permit the MAD-AS to tap the salient components of anger experience and expression, while remaining sensitive to individual differences in the way people react to anger-provoking stimuli and their attempts to control anger reactions.

Maladaptive anger is related to serious personality problems, including difficulties in interpersonal relationships and many health-related disorders. Assessment of when, where, and why clients employ different anger expression strategies will not only contribute to clarifying the nature of anger and its expression, but also will help identity adaptive strategies that can be used effectively in angering situations. Effective treatment of anger-related problems requires reliable knowledge concerning an individual's experience of both contextual and dispositional anger and his or her modes of anger expression. The MAD-AS can play an important role in addressing these clinical issues. The present research appears to confirm the utility of this measurement of anger in the

screening of subjects, the planning of treatment, and the evaluation of therapeutic interventions with individuals experiencing anger-related problems.

REFERENCES

Alexander, F.G., & French, T.M. (Eds.). (1948). Studies in psychosomatic medicine: An approach to the cause and treatment of vegetative disturbances. New York: Ronald.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington DC: Author.

Anastasi, A., Cohen, N., & Spatz, D. (1948). A study of fear and anger in college students through the controlled diary method. Journal of Genetic Psychology, 73, 243-249.

Anastasi, A., & Urbina, S. (1997). Psychological Testing (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Averill, J.R. (1977, November). Anger. Paper presented at the Nebraska Symposium on Motivation.

Averill, J.R. (1979). Anger. In H. Howe & R. Dienstbier (Eds.), Nebraska Symposium on Motivation (Vol. 26). Lincoln: University of Nebraska Press.

Averill, J.R. (1982). Anger and aggression: An essay on emotion. New York: Springer-Verlag, Inc.

Averill, J.R. (1983). Studies on anger and aggression: Implications for theories of emotion. American Psychologist, 38, 1145-1160.

Averill, J.R. (1993). Illusions of anger. In R.B. Felson & J.T. Tedeschi (Eds.), Aggression and violence: Social interactions perspectives (pp.171-192). Washington, DC: American Psychological Association.

Bandura, A. (1973). Aggression: A social learning analysis. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1983). Psychological mechanisms of aggression. In R.G. Geen & E.I. Donnerstein (Eds.), Aggression: Theoretical and empirical reviews (Vol. 1, pp. 1-40). New York: Academic Press.

Baron, R.A., & Richardson, D.R. (1994). Human aggression (2nd ed.). New York: Plenum.

Beck, A.T. (1999). Prisoners of hate: The cognitive basis of anger, hostility, and violence. New York: Harper Collins.

Beck, A.T., Epstein, N., Brown, G., & Steer, R.A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. Journal of Consulting and Clinical Psychology, 56, 893-897.

Beck, A.T., & Steer, R.A. (1990). Manual for the Beck Anxiety Inventory. San Antonio, TX: The Psychological Corporation.

Beck, A.T., Steer, R.A., & Garbin, M. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, 8, 77-100.

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.

Bendig, A.W. (1962). Factor analytic scales of covert and overt hostility. Journal of Consulting Psychology, 26, 200.

Berkowitz, L. (1962). Aggression: A social psychological analysis. New York: McGraw-Hill.

Berkowitz, L. (1964). Aggressive cues in aggressive behavior and hostility catharsis. Psychological Review, 71, 104-122.

Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. Psychological Bulletin, 106, 59-73.

Berkowitz, L. (1990). On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. American Psychologist, 45(4), 494-503.

Berkowitz, L. (1993a). Aggression. New York: McGraw Hill.

Berkowitz, L. (1994). Is something missing? Some observations prompted by the cognitive-neoassociationist view of anger and emotional aggression. In L.R. Huesmann (Ed.), Aggressive behavior: Current perspectives (pp. 35-60). New York: Plenum.

Biaggio, M.K. (1980). Assessment of anger arousal. Journal of Personality Assessment, 44, 289-298.

Biaggio, M.K., Supplee, K., & Curtis, N. (1981). Reliability and validity of four anger scales. Journal of Personality Assessment, 45, 639-648.

Biaggio, M.K., & Maiuro, R.D. (1985). Recent advances in anger assessment. In C.D. Spielberger & J.N. Butcher (Eds.), Advances in personality assessment (Vol. 5, pp. 71-111). Hillsdale, NJ: Erlbaum.

Burke, R.J. (1982). Interpersonal behavior and coping styles of Type A individuals. Psychological Reports, 51, 971-977.

Buss, A.H., (1961). The psychology of aggression. New York: Wiley.

Buss, A.H., & Durkee, A. (1957). An inventory for assessing different kinds of hostility. Journal of Counseling Psychology, 21, 343-349.

Buss, A.H., & Perry, M. (1992). The aggression questionnaire. Journal of Personality and Social Psychology, 63, 452-459.

Byerly, E.C., & Carlson, W.A. (1982). Comparison among inpatients, outpatients, and normals on three self-report depression inventories. Journal of Clinical Psychology, 38, 797-804.

Caine, T.M., Foulds, G.A., & Hope, K. (1967). Manual of the hostility and direction of hostility questionnaire (HDHQ). London: University of London Press.

Cannon, W.B. (1929). Bodily changes in pain, hunger, fear, and rage. New York: Branford.

Chesney, M.A. (1985). Anger and hostility: Future implications for behavioral medicine. In M.A. Chesney & R.H. Rosenman (Eds.), Anger and hostility in cardiovascular and behavioral disorders (pp.277-290). New York: Hemisphere.

Cone, J.D., & Foster, S.L. (1999). Dissertations and theses from start to finish. Washington, DC: American Psychological Association.

Cook, W.W., & Medley, D.M. (1954). Proposed hostility and pharisaic-virtue scales for the MMPI. Journal of Applied Psychology, 18, 414-418.

Cramer, D. (1985). Irrational beliefs and strength versus inappropriateness of feelings. British Journal of Cognitive Psychotherapy, 3, 81-83.

Cramer, D., & Fong, J. (1991). Effect of rational and irrational beliefs on intensity and "inappropriateness" of feelings: A test of rational-emotive theory. Cognitive Therapy and Research, 15, 319-329.

Dalton, J.E., Blain, G.H., & Bezier, B. (1998). State-Trait Anger Expression Inventory scores of male sexual offenders. International Journal of Offender Therapy and Comparative Criminology, 42(2), 141-148.

Darwin, C. (1965). The expression of emotions in man and animals. Chicago: University of Chicago Press. (Originally published 1872)

Deffenbacher, J.L., Thwaites, G.A., Wallace, T.L., & Oetting, E.R. (1994). Social skills and cognitive relaxation approaches to general anger reduction. Journal of Counseling Psychology, 41, 386-396.

Deffenbacher, J.L. (1995). Ideal treatment package for adults with anger disorders. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 151-172). Washington, DC: Taylor & Francis.

Dembroski, T.M., MacDougall, J.M., Williams, R.B., & Haney, T.L. (1984). Components of Type A, hostility, and anger-in: Relationship to angiographic findings. Psychosomatic Medicine, 47, 219-233.

Dengerink, H.A. (1976). Personality variables as mediators of attack-instigated aggression. In R.G. Geen & E.C. O'Neal (Eds.), Perspectives on aggression (pp.61-98). New York: Academic Press.

Diamond, E. (1982). The role of anger and hostility in essential hypertension and coronary heart disease. Psychological Bulletin, 92, 410-433.

DiGiuseppe, R., Eckhardt, C.I., Tafrate, R.C., & Robin, M. (1994). The diagnosis and treatment of anger in a cross-cultural context. Journal of Social Distress and the Homeless, 3, 229-261.

DiGiuseppe, R. (1995). Developing the therapeutic alliance with angry clients. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 131-150). Washington, DC: Taylor & Francis.

DiGiuseppe, R., Tafrate, R.C., & Eckhardt, C.I. (1994). Critical issues in the treatment of anger. Cognitive and Behavioral Practice, 1, 111-132.

Dodge, K.A., & Coie, J.D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. Journal of Personality and Social Psychology, 53, 1146-1158.

Dollard, J., Miller, N.E., Doob, L.W., Mowrer, O.H., & Sears, R.R. (1939). Frustration and aggression. New Haven, CT: Yale University Press.

Dryden, W. (1990). Dealing with anger problems: Rational-emotive therapeutic interventions. Sarasota, FL: Practitioner's Resource Exchange.

Eckhardt, C.I., & Deffenbacher, J.L. (1995). Diagnosis of anger disorders. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 27-48). Washington, DC: Taylor & Francis.

Edmunds, G., & Kendrick, D.C. (1980). The measurement of human aggressiveness. New York: Wiley.

Ellis, A.E. (1973). Humanistic psychotherapy. New York: McGraw-Hill.

Ellis, A.E. (1977). Anger: How to live with it and without it. New York: Citadel Press.

Ellis, A.E., & Dryden, W. (1987). The practice of rational-emotive therapy. New York: Springer.

Evans. D.R., & Stangeland, M. (1971). Development of the reaction inventory to measure anger. Psychological Reports, 29, 412-414.

Feindler, E.L. (1995). Ideal treatment package for children and adolescents with anger disorders. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 173-196). Washington, DC: Taylor & Francis.

Feshbach, S. (1984). The catharsis hypothesis, aggressive drive, and the reduction of aggression. Aggressive Behavior, 10, 91-101.

Finer, E., Beebe, D.W., & Holmbecke, G.N. (1994). An evaluation of the BDI general distress at zero scores. Paper presented to the 102nd annual American Psychological Association Convention, Los Angeles, CA.

Forgays, D.K., Richards, J.C., Forgays, D.G., & Sujan, S. (1999). Examination of the AHA!-illness relation in male and female university students from Australia, India, and the United States. International Journal of Behavioral Medicine, 6(1), 64-78.

Freud, S. (1924). Collected papers (Vol. 1). London: Hogarth.

Freud, S. (1927). Beyond the pleasure principle. New York: Boni & Liverright.

Freud, S. (1936). The problem of anxiety. New York: W.W. Norton.

Freud, S. (1959). Why war? In J. Strachey (Ed.), Collected papers (Vol.5). London: Hogarth. (Original work published 1933)

Funkenstein, D.H., King, S.H., & Drolette, M.E. (1954). The direction of anger during a laboratory stress-inducing situation. Psychosomatic Medicine, 16, 404-416.

Fuqua, D.R., Leonard, E., Masters, M.A., Smith, R.J., Campbell, J.L., & Fischer, P.C. (1991). A structural analysis of the State-Trait Anger Expression Inventory. Educational and Psychological Measurement, 51, 139-146.

Gates, G.S. (1926). An observational study of anger. Journal of Experimental Psychology, 9, 325-331.

Geen, R.G. (1990). Human aggression. Pacific Grove, CA: Brooks/Cole.

Gentry, W.D., Chesney, A.P., Gary, H.G., Hall, R.P., & Harburg, E. (1982). Habitual anger-coping styles: 1. Effect on mean blood pressure and risk for essential hypertension. Psychosomatic Medicine, 44, 195-202.

Gentry, W.D., Chesney, A.P., Hall, R.P., & Harburg, E. (1981). Effect of habitual anger-coping pattern on blood pressure in black/whit, high/low stress area respondents. Psychosomatic Medicine, 43, 88.

Gerzina, M.A., & Drummond, P.D. (2000). A multimodal cognitive-behavioral approach to anger reduction in an occupational sample. Journal of Occupational & Organizational Psychology, 73(2), 181-195.

Glass, D.C. (1977). Behavior patterns, stress, and coronary disease. Hillsdale, NJ: Lawrence Erlbaum Associates.

Gonzalez, R.C., Biever, J.L., & Gardner, G.T. (1994). The multicultural perspective in therapy: A social constuctivsit approach. Psychotherapy, 31, 515-524.

Groth-Marnat, G. (1999). Handbook of psychological assessment (3rd ed.). New York: Wiley & Sons.

Harburg, E., Blakelock, E.H., & Roeper, P.J. (1979). Resentful and reflective coping with arbitrary/authority and blood pressure: Detroit. Psychosomatic Medicine, 3, 189-202.

Harburg, E., Erfurt, J.C., Hauenstein, L., Chape, C., Schull, W.J., & Schork, M.A. (1973). Socioecological stress, suppressed hostility, skin color, and black-white male blood pressure: Detroit. Psychosomatic Medicine, 35, 276-296.

Harburg, E., & Hauenstein, L. (1980). Parity and blood pressure among four race-stress groups of females in Detroit. American Journal of Epidemiology, 111, 356-366.

Harburg, E., Schull, W.J., Erfurt, J.C., & Schork, M.A. (1970). A family set method for estimating heredity and stress-1. Journal of Chronic Disease, 23, 69-81.

Hartmann, H., Kris, E., & Loewenstein, R. (1949). Notes on the theory of aggression. Psychoanalytic Study of the Child, 3, 9-36.

Hergenhahn, B.R. (1997). An introduction to the history of psychology (3rd ed.). Pacific Grove, CA: Brooks/Cole.

Hosmand, L.T., & Austin, G.W. (1985). Criteria in lay self-judgment of anger control. Journal of Research in Personality, 19, 89-94.

Hosmand, L.T., & Austin, G.W. (1987). Validation studies of a cognitive-behavioral anger control inventory. Journal of Personality Assessment, 51, 417-432.

Johnson, E.H. (1984). Anger and anxiety as determinants of elevated blood pressure in adolescents. Unpublished doctoral dissertation, University of South Florida, Tampa, FL.

Kabacoff, R.I., Segal, D.L., Hersen, M., & Van Hasselt, V.B. (1997). Psychometric properties and diagnostic utility of the Beck Anxiety Inventory and the State-Trait Anxiety Inventory with older adult psychiatric outpatient. Journal of Anxiety Disorders, 11, 33-47.

Kassinove, H., Eckhardt, C.I., & Endes, R. (1993). Assessing the intensity of "appropriate" and "inappropriate" emotions in rational-emotive therapy. Journal of Cognitive Psychotherapy: An International Quarterly, 7, 227-240.

Kassinove, H., & Eckhardt, C.I. (1995). An anger model and a look to the future. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 197-204). Washington, DC: Taylor & Francis.

Kassinove, H., & Sukhodolsky, D. (1995). Anger disorders: Basic science and practice issues. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 1-26). Washington, DC: Taylor & Francis.

Kaufmann, H. (1970). Aggression and altruism. New York: Holt, Rinehart, & Winston.

Kazdin, A.E. (1998). Research design in clinical psychology (3rd ed.). Boston: Allyn & Bacon.

Kenrick, D.T., Neuberg, S.L., & Cialdini, R.B. (1999). Social Psychology. Boston, MA: Allyn and Bacon.

Krasner, S.S. (1986). Anger, anger control, and the coronary prone behavior pattern. Unpublished master's thesis, University of South Florida, Tampa, FL.

Laird, J.D., Cuniff, M., Sheehan, K., Shulman, D., & Strum, G. (1989). Emotion specific effects of facial expressions on memory for life events. Journal of Personality and Social Psychology, 4, 87-98.

Lakoff, G. (1987). Women, fire, and dangerous things: What categories reveal about the mind. Chicago: The University of Chicago Press.

Lange, C.G., & James, W. (1922). The emotions. Baltimore: Williams & Wilkins.

Lazarus, R. (1991). Emotion and adaptation. New York: Oxford.Lorenz, K. (1966). On aggression. New York: Harcourt Brace-Jovanovich.

Lewis, M. (1993). The emergence of human emotions. In M. Lewis & J.M. Haviland (Eds.), Handbook of emotions (pp. 233-236). New York: Guilford.

Lightfoot, S.L., & Oliver, S.M. (1985). The Beck Inventory: Psychometric properties in university students. Journal of Personality Assessment, 49, 434-436.

Mahan, J.P. (2000). MAD-AS: Development and validation of a psychometric test for the measurement of anger. Unpublished doctoral dissertation. Philadelphia College of Osteopathic Medicine.

Mahan, J.P., & DiTomasso, R.A. (1998). A brief inventory for the measurement of anger. Unpublished Manuscript.

Maiuro, R.D., Vitaliano, P.P., & Cahn, T.S. (1987). A brief measure for the assessment of anger and aggression. Journal of Interpersonal Violence, 2, 166-178.

Malatesta, C., & Haviland, J. (1982). Learning display rules: The socialization of emotion expression in infancy. Child Development, 53, 991-1003.

Marton, P., Churchard, M., Kutcher, S., & Korenblum, M. (1991). Diagnostic utility of the Beck Depression Inventory with adolescent psychiatric outpatients and inpatients. Canadian Journal of Psychiatry, 36, 428-431.

McDougall, W. (1908). An introduction to social psychology. London: Methuen.

Meltzer, H. (1933). Students' adjustment in anger. Journal of Social Psychology, 4, 285-309.

Megargee, E.I. (1985). The dynamics of aggression and their application to cardiovascular disorders. In M.A. Chesney & R.H. Rosenman (Eds.), Anger and hostility in cardiovascular and behavioral disorders (pp.31-58). New York: Hemisphere.

Miller, T.Q., Smith, T.W., Turner, C.W., Guijarro, M.L., & Hallet, A.J. (1996). A meta-analytic review of research on hostility and physical health. Psychological Bulletin, 119(2), 322-348.

Moses, J.A. (1992). State-Trait Anger Expression Inventory, research edition. In D.J. Keyser & R.C. Swetland (Eds.), Test critiques (Vol. IX, pp. 510-525). Austin, TX: PRO-ED.

Moyer, K.E. (1976). The psychobiology of aggression. New York: Harper & Row.

Nisbett, R.E. (1993). Violence and U.S. regional culture. American Psychologist, 48, 441-449.

Norusis, M.J. (1988). SPSS advanced statistics guide (2^{nd} ed.). Chicago: SPSS.

Novaco, R.W. (1975). Anger control: The development and evaluation of an experimental treatment. Lexington, MA: Lexington Books.

Novaco, R.W. (1985). Anger and its therapeutic regulation. In M.A. Chesney & R.H. Rosenman (Eds.), Anger and hostility in cardiovascular and behavioral disorders (pp.203-226). New York: Hemisphere.

Novaco, R.W. (1988). Novaco Provocation Inventory. In M. Hersen and A. Bellack, (Eds.), Dictionary of behavior assessment techniques. New York: Pergamon Press.

Novaco, R.W. (1993). Clinicians ought to view anger contextually. Behavior Change, 10, 208-218.

Novaco, R.W. (1994). Anger as a risk factor for violence among the mentally disordered. In J. Monahan & H.J. Steadman (Eds.), Violence and mental disorder: Developments in risk assessment (pp. 21-59). Chicago: University of Chicago Press.

Patterson, G.R. (1985). A microsocial analysis of anger and irritable behavior. In M.A. Chesney & R.H. Rosenman (Eds.), Anger and hostility in cardiovascular and behavioral disorders (pp.83-100). New York: Hemisphere.

Piotrowsky, C., Sherry, D., & Keller, J.W. (1985). Psychodiagnostic test usage: A survey of the Society for Personality Assessment. Journal of Personality Assessment, 49, 115-119.

Plutchik, R. (1962). The emotions. New York: Random House.

Radke-Yarrow, M., & Kochanska, G. (1990). Anger in young children. In N.L. Stein, B. Leventhal, & T. Trabasso (Eds.), Psychological and biological approaches to emotion (pp. 297-310). Hillsdale, NJ: Erlbaum.

Rajita, S., Lovallo, W.R., & Parsons, D.A. (1992). Cardiovascular differentiation of emotions. Psychosomatic Medicine, 54, 422-435.

Richardson, F. (1918). The psychology and pedagogy of anger. Baltimore: Warwick & York.

Rosenman, R.H. (1985). Health consequences of anger and implications for treatment. In M.A. Chesney & R.H. Rosenman (Eds.), Anger and hostility in cardiovascular and behavioral disorders (pp.103-126). New York: Hemisphere.

Rosenzweig, S. (1976). Aggressive behavior and the Rosenzweig picture frustration study. Journal of Clinical Psychology, 32, 885-891.

Rosenzweig, S. (1978). The Rosenzweig Picture Frustration (P-F) Study basic manual and adult form supplement. St. Louis, MO: Rana.

Rothenberg, A. (1971). On anger. American Journal of Psychiatry, 128, 454-460.

Salzinger, K. (1995). A behavior-analytic view of anger and aggression. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 69-80). Washington, DC: Taylor & Francis.

Schachter, S., & Singer, J.E. (1962). Cognitive, social and physiological determinants of emotional state. Psychological Review, 69, 379-399.

Schultz, S.D. (1954). A differentiation of several forms of hostility by scales empirically constructed from significant items on the MMPI. Dissertation Abstracts, 17, 717-720.

Schwarz, N. (1999). Self reports: How questions shape the answers. American Psychologist, 54, 93-105.

Siegel, S. (1956). The relationship of authoritarianism. Journal of Abnormal and Social Psychology, 52, 368-373.

Siegman, A. W. (1994). From Type A to hostility to anger: Reflections on the history of coronary-prone behavior. In A. W. Siegman & T. W. Smith (Eds.), Anger, hostility and the heart (pp. 1—21). Hillsdale, NJ: Erlbaum.)

Spielberger, C.D., (1988). Manual for the State Trait Anger Expression Inventory. Odessa, FL: Psychological Assessment Resources.

Spielberger, C.D., Johnson, E.H., Russell, S.F., Crane, R.J., Jacobs, G.A., & Worden, T.J. (1985). The experience and expression of anger: Construction and validation of an anger expression scale. In M.A. Chesney & R.H. Rosenman (Eds.), Anger and hostility in cardiovascular and behavioral disorders (pp.5-30). New York: Hemisphere.

Spielberger, C.D., Krasner, S.S., & Solomon, E.P. (1988). The experience, expression, and control of anger. In M.P. Janisse (Ed.), Individual differences, stress, and health psychology (pp.89-109). New York: Springer-Verlag, Inc.

Spielberger, C.D., Reheiser, E.C., & Sydeman, S.J. (1995). Measuring the experience, expression, and control anger. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 49-68). Washington, DC: Taylor & Francis.

Spielberger, C.D., Ritterband, L.M., Sydeman, S.J., Reheiser, E.C., & Unger, K.K. (1995). Assessment of emotional states and personality traits: Measuring psychological vital signs. In J. A. Butcher (Ed.), Clinical personality assessment (pp.42-58). New York: Oxford University Press.

Spielberger, C.D., & Sydeman, S.J. (1994). State Trait Anxiety Inventory and State Trait Anger Expression Inventory. In M.E. Maruish (Ed.), The use of psychological tests for treatment planning and outcome assessment (pp.292-321). Hillsdale, NJ: Lawrence Erlbaum.

Spielberger, C.D., Sydeman, S.J., Owen, A.E., & Marsh, B.J. (1999). Measuring anxiety and anger with the State-Trait Anxiety Inventory (STAI) and the State-Trait Anger Expression Inventory (STAXI). In M.E. Maruish (Ed.), The use of psychological tests for treatment planning and outcomes assessment (2nd ed., pp.993-1021). Mahwah, NJ: Lawrence Erlbaum.

Spielberger, C.D., (1999). Manual for the State Trait Anger Expression Inventory-2. Odessa, FL: Psychological Assessment Resources.

Storr, A. (1968). Human aggression. New York: Atheneum.

Story, D., & Deffenbacher, J.L. (1986, April). A test of state-trait anger theory. Paper presented at the meeting of the Rocky Mountain Psychological Association, Denver, CO.

Sydeman, S.J. (1995). The control of suppressed anger. Unpublished master's thesis, University of South Florida, Tampa.

Tafrate, R.C. (1995). Evaluation of treatment strategies for adult anger disorders. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 109-130). Washington, DC: Taylor & Francis.

Tanaka-Matsumi, J. (1995). Cross-cultural perspectives on anger. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 81-90). Washington, DC: Taylor & Francis.

Tavris, C. (1982). Anger. New York: Simon and Schuster.

Tedeschi, J.T., & Felson, R.B. (1994). Violence, aggression, & coercive actions. Washington, DC: American Psychological Association.

Titchener, E.B. (1896). An outline of psychology. New York: Macmillan.

Tsytsarev, S.V., & Grodnitzky, G.R. (1995). Anger and criminality. In H. Kassinove (Ed.), Anger disorders: Definition, diagnosis, and treatment (pp. 91-108). Washington, DC: Taylor & Francis.

Van der Ploeg, H.M. (1988). The factor structure of the State Trait Anger Scale. Psychological Reports, 63, 978.

Williams, R.B., Barefoot, J.C., & Shekelle, R.B. (1985). The health consequences of hostility. In M.A. Chesney & R.H. Rosenman (Eds.), Anger and hostility in cardiovascular and behavioral disorders (pp.173-185). New York: Hemisphere.

Wundt, W. (1890). Outlines of psychology. New York: Dustav E. Stechert.

Yerkes, R.M., & Dodson, J.D. (1908). The relation of strength of stimulus to rapidity of habit formation. Journal of Comparative and Neurological Psychology, 18, 459-482.

Young, P.T. (1943). Emotion in man and animal. New York: Wiley.

Zelin, M.L., Alder, G., & Meyerson, P.G. (1972). Anger self-report: An objective questionnaire for the measurement of aggression. Journal of Consulting and Clinical Psychology, 39, 340.

Zillman, D. (1971). Excitation transfer in communication-mediated aggressive behavior. Journal of Experimental Social Psychology, 7, 419-434.

Zillman, D., & Bryant, J. (1974). Effect of residual excitation on the emotional response and delayed aggressive behavior. Journal of Personality and Social Psychology, 30, 782-791.

Zillman, D. (1979). Hostility and aggression. Hillsdale, NJ: Lawrence Erlbaum.

Zillman, D. (1983). Transfer of excitation in emotional behavior. In J. Cacioppo & R.E. Petty (Eds.), Social psychophysiology (pp. 215-240). New York: Guilford.

Zillman, D. (1994). Cognition-excitation interdependencies in the escalation of anger and angry aggression. In M. Potegal & J.F. Knutson (Eds.), Dynamics of aggression: Biological and social processes in dyads and groups (pp.45-71). Hillsdale, NJ: Erlbaum.

Appendix

General Instructions
Please read this information BEFORE opening this envelope.

- You should have already read our letter of introduction and should meet all of the requirements outlined in that letter. If you do not meet these requirements, please return this envelope to the researcher, Roger O. Beardmore, M.S.

- Thank you for agreeing to participate in our study.

- Each envelope will have an ID number at the top of the envelope.

- Each envelope will contain a page asking you some basic questions, a set of four surveys for you to fill out, and an envelope in which you are to return the completed forms. Please read and follow all directions at the top of all pages and surveys. It will take about 30 minutes to complete the surveys. Please **print** clearly.

- Place all of your completed forms and surveys into the envelope provided. You should seal and return your envelope to the staff person at your clinic who will be collecting it.

- **NOTE**: If your envelope has a sticker marked **RETEST**, you have been selected to take one of the surveys again in **TWO WEEKS**. Please follow the directions on your instruction sheet regarding filling out, sealing and returning the MAD-AS RETEST in the separately marked envelope provided. It will take about 10 minutes to complete the survey. The number on the separately marked envelope should correspond to the number on the original envelope.

- Again, thank you very much for your participation.

LETTER OF INTRODUCTION
Outpatient Groups

Dear Participant:

We are currently conducting a study on feelings in people who are receiving outpatient mental health treatment. If you are at least 18 years old and meet some other standards you may take part in this study.

If you agree to participate in this study you will be asked to fill out four surveys that will take about 30 minutes of your time. Your decision to be in this study is completely voluntary and you may decide not to be part of it or to stop being in the study at any point in time with no effect on your care.

The items in these surveys ask about feelings, thoughts, behaviors and other personal information about you. It is possible that by filling out these surveys you may learn something about yourself that you did not know before. Some people may find this upsetting or uncomfortable. In the unlikely event that this occurs, please contact your therapist.

Your responses to these surveys are completely anonymous which means that no one, including the investigators or your therapist, will be able to identify you. Two small groups of participants will be asked to complete one of the surveys two weeks later. These groups will use a secret code that only they will know to ensure privacy. This code will allow us to match the surveys while ensuring privacy. As a subject, you will not receive any information about the surveys that you complete. However, if you are interested in the results of our study, you may contact the investigators for a copy of the results for the group as a whole. Thank you for considering participation.

Feel free to contact the researchers if you have any questions or problems or if you need a referral at 215-871-6511.

Roger O. Beardmore, M.S.
Pennsylvania Counseling Services, Inc.
4918 Locust Lane
Harrisburg, PA 17109

Robert A. DiTomasso, Ph.D.,ABPP
Professor and Vice Chair
PCOM, Dept. of Psychology
4190 City Avenue
Philadelphia, PA 19131
215-871-6511

LETTER OF INTRODUCTION
Control Group

Dear Participant:

We are currently conducting a study on feelings in people who are receiving outpatient mental health treatment. If you are at least 18 years old and meet some other criteria you may take part in this study.

If you agree to participate in this study you will be asked to fill out four surveys that will take about 30 minutes of your time. Your participation in this study is completely voluntary and you may decide not to be in the study or to stop being in the study at any point in time.

The items in these surveys ask about feelings, thoughts, behaviors and other personal information about you. It is possible that by completing these surveys you may learn something about yourself that you did not know before. Some people may find this upsetting or uncomfortable. In the unlikely event that this occurs, please contact one of the referral sources or Dr. Robert DiTomasso. Contact information is listed below.

Your responses to these surveys are completely anonymous which means that no one will be able to identify you. You will be asked to complete one of the surveys two weeks after the first group of surveys. You will receive a secret code that only you will know to ensure privacy. This code will allow us to match the surveys while ensuring privacy. As a subject, you will not receive any information about the surveys that you complete. However, if you are interested in the results of our study, you may contact the investigators for a copy of the results for the group as a whole. Thank you for considering participation.

Feel free to contact the researchers if you have any questions or problems or if you need a referral at 215-871-6511.

Roger O. Beardmore, M.S.
Pennsylvania Counseling Services, Inc.
4919 Locust Lane
Harrisburg, PA 17109

Robert A. DiTomasso, Ph.D., ABPP
Professor and Vice Chair
PCOM, Dept. of Psychology
4190 City Avenue
Philadelphia, PA 19131
215-871-6511

Referral Sources

The Stevens Center
Carlisle, PA
717-243-6033

Philhaven Hospital
Mt. Gretna, PA
717-273-8871

INSTRUCTIONS TO PARTICIPATING THERAPISTS
ADMINISTRATION OF TEST MATERIALS

In group sessions at the outpatient clinic sites the responsible investigator will orally communicate these instructions to participating therapists. The researcher will orally review the purpose, scope, benefits, and procedure of the study with the participating therapists.

1. Researcher will prepare and review sample research packet with therapists.

2. Therapists will orally read and review the Letter of Introduction and General Instruction Sheet with subjects, testing for understanding.

3. Therapists will describe the purpose of the study, guarantee confidentiality, review benefits of participation, and give the opportunity to receive an abstract of the results with subjects.

"We are currently conducting a study on feelings and emotions in persons who are receiving outpatient mental health treatment. Your responses to these questionnaires are completely anonymous which means that no one, including the investigators or your therapist, will be able to identify you. By participating in this study, the investigators and your therapist will learn more about emotional health and how to improve outpatient treatment of emotional problems. If you are interested in the results of our study, you may contact the investigators for a copy of the results for the group as a whole."

4. Therapists will emphasize to subjects that they may withdraw from participation at any time, and that therapy will not be negatively impacted.

"Your participation in this study is completely voluntary and you may decide not to be in the study or to stop being in the study at any point in time with no negative effect on you or your treatment."

5. Before giving the study packet to subjects, the therapist will indicate the main problem for which the subject is currently being treated, i.e., the problem causing the most pain in the treatment of the subject. This will be done by marking the outside of the study packet with one of the following numbers:
   1 = Depression
   2 = Anxiety
   3 = Anger

6. Therapists will distribute study packets individually to subjects.

7. Therapists will direct subjects to complete materials before leaving clinic, place materials in sealed envelope, and deposit finished materials with designated clinic staff person before leaving clinic.

"You will be given enough time to complete the test materials before you leave the clinic today. When you have finished, please place all materials in the envelope provided, seal the envelope, and give the envelope to the clinic staff person as you leave."

8. Therapists will inform subjects in the Anger Group that they should open the retest packets two weeks after the initial distribution and complete the enclosed test materials. Therapists will inform subjects in the Anger Group that retest packets will be collected in the same manner as the first administration.

"You have been chosen to be in a special group that will complete one of the enclosed surveys twice. Take the second enclosed packet with the RETEST sticker and complete the enclosed survey in two weeks. Please place the completed survey in the envelope provided, seal the envelope, and return the sealed envelope to the same clinic staff person at the time of completion."

Therapist Acknowledgement

"I have been informed that this research is to be conducted in agreement with APA Ethical guidelines for conducting research with human subjects. I agree to collect information in strict accordance with this protocol as approved by the IRB at PCOM."

_____ Therapist Signature

DEMOGRAPHICS FORM

Check the appropriate box below or fill in the blank line (please print clearly). Use back of page if you need more space. Remember that your responses to this survey are completely anonymous.

___Male ___Female

Age: _____

___Single ___Married ___Co-Habiting

Race (Check one)
___White ___African-American ___Hispanic ___Asian ___Native-American ___Other

Education (Check one)
___Less than high school ___High School ___Some college ___BA/BS ___Masters
___Professional/Doctorate

Current treatment problem (Please check the main problem for which you are currently being treated. That is, the problem causing you the most difficulty in your life at this time)

___Depression ___Anxiety ___Anger ___I am not currently being treated

Current physical problems (all that apply)

___High blood pressure
___Migraine headaches
___Heart disease
___Asthma
___Gastro-intestinal problems
___Arthritis

Other _____

Please list medications currently being taken_____

Have you ever been arrested? ___Yes ___No

If yes, how many times? _____

Have you ever been incarcerated? ___Yes ___No

If yes, please list the charges:

_____

Have you ever been fired? ___Yes ___No

If yes, how many times? _____

Have you ever been divorced? ___Yes ___No

If yes, how many times? _____

University of South Florida
USF

April 4, 2002

Roger O. Beardmore
Philadelphia College of Osteopathic Medicine
316 Lori Drive
Harrisburg, PA 17112

Dear Mr. Beardmore:

In response to your recent request, I am very pleased to give you permission to reproduce the State-Trait Anger Expression Inventory (STAXI-2) for your dissertation research entitled:

A Normative Study of the Mahan and DiTomasso Anger Scale in an Outpatient Clinic Sample

It is my understanding that your research will be supervised by Professor Robert A. DiTomasso, and carried out in:

Clinic Sites of Pennsylvania Counseling Center

This permission is contingent on your agreement to share your research findings with us. I look forward to receiving further details about your procedures and the results of your study as such information becomes available.

Best wishes on your dissertation.

Sincerely,

Charles D. Spielberger, Ph.D., ABPP
Distinguished University Research Professor
Director, Center for Research in Behavioral
Medicine and Health Psychology

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