

DISSERTATION

CLIENT FACTORS PREDICTING OUTCOME IN GROUP TREATMENT FOR  
DRIVING ANGER

Submitted by

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Psychology

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

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UNDER OUR SUPERVISION BY HEATHER SMITH ENTITLED CLIENT  
FACTORS PREDICTING OUTCOME IN GROUP TREATMENT FOR DRIVING  
ANGER BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE  
DEGREE OF DOCTOR OF PHILOSOPHY.

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## ABSTRACT OF DISSERTATION

### CLIENT FACTORS PREDICTING OUTCOME IN GROUP TREATMENT FOR DRIVING ANGER

College students who scored in the top 25% on a measure of driving anger participated in an eight-week group therapy program designed to reduce their anger while driving. They were assigned randomly to either Cognitive, Behavioral, or Relaxation Coping Skills Therapy. Results confirmed driving anger was effectively lowered in therapy. Also, while high anger levels have sometimes been shown to interfere with treatment for other kinds of problems (Garfield, 1994; Lambert, Hunt, & Vermeersch, 2004), they did not have the same effect on treatments targeting anger specifically. Higher pretreatment driving anger was associated with a greater decrease in driving anger, angry cognitions while driving, aggressive driving anger expression, general trait anger, and to a lesser extent maladaptive general anger expression, and with an increase in positive coping strategies. Higher pretreatment trait anger was associated with a decrease in all of the above except for measures of driving anger. Measures of general anger expression did not predict therapy outcome as well as driving and general anger, but when associations were found, they were in the same direction.

Few main effects were observed for gender or treatment type, and those that were found were not consistent. Several interactions were observed between treatment, gender, and/or pretreatment anger level. The majority of interactions were between pretreatment anger and treatment, such that participants responded better to one treatment condition versus another based on whether they reported relatively higher or lower anger levels at pretreatment. These effects sometimes varied by gender. However, given the number of analyses, relatively few significant findings, and directional inconsistencies of these findings, no suggestions for treatment matching were made.

In conclusion, pretreatment driving and general trait anger did not interfere with treatment, but were associated with positive gains in therapy, and there was little consistent evidence that would support matching of client characteristics (e.g., gender, driving or general anger level or type, anger expression style) with treatment conditions, at least for short-term, driving anger focused, cognitive-behavioral interventions.

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### Client Factors Predicting Outcome in Group Treatment for Driving Anger

It was August 11, 1997. Twenty-two year old Jennifer Lynn Hywari was cruising on a major highway in St. Louis Missouri enjoying the warm summer day. Behind Jennifer in the left lane sped another motorist, who became incensed when Jennifer drove too slowly in front of his pickup. When Jennifer did not pull over to let him past, he was forced to slow down quickly, causing him to spill coffee on himself. In a rage, the motorist pulled along side her, threw his coffee at her out the window, then pulled in front of her and slammed on the brakes. Trying to avoid hitting him, Jennifer swerved across the median into oncoming traffic, where she was thrown from her car and killed instantly (The Partnership for Safe Driving, 2003).

Scenarios such as Jennifer's are repeated every day on roads across the U.S. Fortunately, most have less tragic consequences, but as in Jennifer's case these incidents can sometimes be life threatening. A report sponsored by the National Highway Traffic Safety Administration (NHTSA) found that the overall incidence of traffic accidents is rising, an increase that is not surprising given the rapidly increasing number of vehicles on the road and miles traveled per capita. However, in many communities the number of these accidents attributable to aggressive driving behavior is rising at a faster rate than can be explained by increased traffic alone (Stuster, 2004). A report commissioned by the AAA Foundation for Traffic Safety (Mizell, 1995) estimates that no fewer than 1,500

people are injured or killed each year in the United States as a result of aggressive driving, and that the number of aggressive driving incidents reported has increased every year from 1990. "From January 1990 to September 1, 1996, a period of 6 years and 8 months, there were at least 10,037 incidents of aggressive driving in the United States that were reported to Mizell and Company, International Security. At least 218 men, women, and children are known to have been murdered and 12,610 people injured as a result of these 10,037 incidents" (Mizell, 1995). In another survey of 526 British drivers, 9 out of 10 motorists reported having been the target of at least one aggressive driving behavior within the last year. Sixty-two percent reported being tailgated, 59% had lights flashed at them by other motorists, and nearly half (48%) had received aggressive or rude gestures. Twenty percent had been "deliberately obstructed", 16% were verbally abused, and 1% indicated having been physically assaulted by another driver. Sixty percent of drivers in the same study admitted to having engaged in at least one of these behaviors themselves during the preceding 12 months (Joint, 1995).

Most scholars agree that the problem of "road rage", along with more moderate forms of angry and aggressive driving behavior, is increasing. A major factor that is thought to contribute to this increase is congestion; there are simply more cars on the road traveling more miles. The NHTSA reports that between the years 1990 and 2001, 21 million new driver's licenses were issued (13% increase) and 30 million new vehicles arrived on the roads (16% increase). Furthermore, 600 billion more miles were traveled in 2000 than in 1991, a 27% rate of increase that is three times higher than the rate of population growth. Congestion leads to traffic delays, which can provoke impatience and aggression in some drivers. Other factors that have been called upon to explain



aggressive driving include: a societal trend toward disregard for others and/or for the law; our hurried, “running late” lifestyle; and the disinhibiting anonymity people feel behind the wheel (Ellison-Potter, Bell, & Deffenbacher, 2001; Ellison, Govern, Petri, & Figler, 1995; Stuster, 2004). This feeling of invisibility and even invincibility in our private vehicles explains how some people who are ordinarily calm and respectful can become rude, aggressive drivers on the road (Ellison-Potter et al., 2001).

Underlying much aggressive driving behavior, however, is a common emotional factor: anger. Thacker (1998) found that, on average, higher anger levels were associated with negative, less healthy styles of expressing anger, whereas lower levels of anger were related to more positive forms of expressing anger. Nearly everyone suffers occasional frustrations and anger-provoking events while driving and may even commit minor acts of aggression at times (Joint, 1995). Who has not occasionally sped around or tailgated a slow motorist? Some drivers, however, have developed “habitual or clinical” behavior that includes chronic anger, habitual or persistent aggressive driving, and a pattern of confrontations on the road (Stuster, 2004). For example, college age individuals who scored higher on measures of driving anger reported more frequent and intense anger, aggressive and risky behavior, and minor or near accidents than low-anger drivers (Deffenbacher, Huff, Lynch, Oetting, & Salvatore, 2000). They report higher anger in a variety of situations, tend to suppress anger or express it negatively and with more serious consequences, have poorer self-esteem, cope poorly with stressful events, and are more likely to abuse drugs and alcohol (Deffenbacher, 1996; Del Vecchio & O'Leary, 2004).

While incidents of true “road rage” such as the one that killed Jennifer Hywari are relatively rare, angry and aggressive drivers are unquestionably on the rise, and the consequences can be serious. To combat this increase in dangerous driving behavior, some communities have implemented programs targeted at increasing traffic enforcement and raising public awareness, with mixed success (Stuster, 2004). There are also several self-help treatment programs available and websites designed to educate the public about the magnitude of the problem and let them assess their own risky behavior (AAA Foundation for Traffic Safety, 2002, 2005; EDI & Adams, 2005). The major drawback of these self-help treatments is that people must actively seek out the information, which individuals most in need of intervention may or may not do. An alternative approach that has been demonstrated to be effective is to seek out drivers who admit to experiencing high levels of anger while driving and provide treatment focused on reducing this anger and the aggressive behaviors associated with it. Deffenbacher and his colleagues (Deffenbacher, Filetti, Lynch, Dahlen, & Oetting, 2002; Deffenbacher, Huff et al., 2000; Deffenbacher, Lynch, Filetti, Dahlen, & Oetting, 2003) have developed a successful research treatment program aimed at reducing dangerous driving behaviors in the high-risk college-age population, and has demonstrated that high anger drivers can be successfully identified and treated. Using cognitive, behavioral, and relaxation interventions, this research group has succeeded in assisting a large number of students to decrease their levels of anger and aggressive behavior (Deffenbacher, Filetti et al., 2002; Deffenbacher, Huff et al., 2000). However, as with other types of therapy, some clients show greater benefits than others from the treatment (Lambert & Bergin, 1994), and the reasons for these differences in outcome have not yet been fully explored. The purpose

of this paper is to look in more depth at one of the possible explanations for these differences: intraindividual client differences in level of general and driving anger and their expression.

### *Therapy Effectiveness*

The efficacy of psychotherapy as treatment for a wide range of psychological issues or concerns has been clearly established (Asay & Lambert, 1999; Behar & Borkovec, 2003; Grissom, 1996; Howard, Kopta, Krause, & Orlinsky, 1986; Smith, Glass, & Miller, 1980; Wampold, 2001). Anger-specific treatment is a relatively new area of research, primarily because until recently anger has not been a major focus in the psychological community (Deffenbacher & Deffenbacher, 2003; Holloway, 2003). Nevertheless, the studies that have been conducted have generally shown psychotherapy to be effective in treating both excessive levels of anger and a wide range of its behavioral manifestations (Beck & Fernandez, 1998a; Bowman-Edmonson & Cohen-Conger, 1996; Del Vecchio & O'Leary, 2004; DiGiuseppe & Tafrate, 2003; Sukhodolsky, 1998; Sukhodolsky, Kassinove, & Gorman, 2004; Tafrate, 1995). For example, in her treatment of adolescent parent abusers using the Duluth therapy model, Seales-Gordon (2003) employed a 10-session psychoeducational treatment which combined didactics, group discussion, video presentations, daily anger logs, and role-playing to help adolescents stop abusive behaviors and learn new ways of resolving conflict. Despite the small size of her sample and therefore her low level of statistical power, she found significant decreases in all forms of abusiveness from pretreatment to follow-up. Youth also tended to rate themselves as significantly improved on other measures such as conflict tactics, negotiating skills, and frequency of delinquent behaviors. This result is

consistent with one recent meta-analysis of 57 anger treatment studies in which DiGiuseppe and Tafrate (2003) found an overall effect size of .71 ( $n = 230$ ) for all dependent measures, indicating that 76% of those who received treatment were improved compared to controls. When dependent measures were examined individually, the posttreatment effect sizes were highest for aggressive behavior, followed by other variables that the authors described as most closely linked to the “core construct” of anger. Based on this finding, they concluded that anger interventions are specific to the constructs of anger, aggression and hostility and do not appear to work through other moderating factors such as negative affect, mental disturbance, or positive well-being. This provides support that anger does underlie aggressive driving behaviors and that these behaviors can be productively targeted in therapy as an area for change.

Anger treatment is not only effective in the short-term, but gains made during anger treatment seem to endure posttreatment. This is true whether follow-up measurements are collected at five weeks (Deffenbacher, Story, Stark, Hogg, & Brandon, 1987; Hazaleus & Deffenbacher, 1986), two months (Galovski & Blanchard, 2002), one year (Deffenbacher, Oetting, Huff, Cornell, & Dallager, 1996; Deffenbacher & Stark, 1992; Hazaleus & Deffenbacher, 1986), or 15 months (Deffenbacher, Dahlen, Lynch, Morris, & Gowensmith, 2000; Deffenbacher, McNamara, Stark, & Sabadell, 1990b; Deffenbacher, Oetting, Huff, & Thwaites, 1995; Deffenbacher, Story, Brandon, Hogg, & Hazaleus, 1988). On some outcome measures, clients may even continue to improve from posttreatment to follow-up (Deffenbacher, 1988; Deffenbacher et al., 1990b; Deffenbacher et al., 1987).

As mentioned previously, some research has focused on the reduction of driving-specific anger, and these studies have found consistently positive effects of group treatment. This has been true whether the interventions were cognitive, behavioral, relaxation-focused, or a combination of these (Deffenbacher, Filetti et al., 2002; Deffenbacher, Huff et al., 2000; Del Vecchio & O'Leary, 2004; Galovski & Blanchard, 2002; Galovski, Malta, & Blanchard, 2006; Rimm, DeGroot, Boord, Heiman, & Dillow, 1971). This is consistent with both the anger-specific and the general therapy outcome literature, which has consistently found no advantage for one theoretically-grounded, scientifically-sound treatment over another (see Beck & Fernandez, 1998b; Bowman-Edmonson & Cohen-Conger, 1996; DiGiuseppe & Tafrate, 2003; and Tafrate, 1995 for a review of anger treatments, and Ahn & Wampold, 2001; Lambert & Barley, 2002; Lambert & Bergin, 1994; Wampold, 2001 for reviews comparing a wide range of other general and specific therapies) . No known studies have directly compared individual and group treatments for driving anger; in fact, a Psychinfo literature search revealed no driving anger studies that included individual treatments. However, general therapy research suggests that these treatment modalities are likely to be equivalent for most clients (Morrison, 2001), so investigators have likely chosen the more cost- and time-effective group format to establish a preliminary literature base in this fledgling area. If differences exist, effect sizes for individual treatment would likely be even higher than those from group treatment (DiGiuseppe & Tafrate, 2003).

#### *Factors Contributing to Therapy Outcome*

Asay and Lambert (1999) and Lambert and Barley (2001) identified several components that have been documented to be essential to therapy outcome: 1) “common

factors”, or factors that are not tied to any particular therapy model. This includes the therapeutic alliance (the relationship between client and therapist) as well as personal qualities of the therapist not related to technique; 2) hope and expectancy (including placebo effects); 3) client/extratherapeutic factors; and 4) models/techniques. Although a thorough review of this enormous literature is beyond the scope of this paper (and in fact has been competently undertaken by several researchers, e.g., Garfield, 1994; Lambert & Barley, 2002; Lambert & Bergin, 1994; Luborsky, Auerbach, Chandler, Cohen, & Bachrach, 1971; Mohr, 1995; Talley, 1992; Wampold, 2001), a brief review of some key areas relevant to the current study seems appropriate.

#### *Common Factors*

*Therapeutic alliance.* The relationship between client and therapist, or therapeutic alliance, has been demonstrated to be a robust predictor of therapy outcome and has been described by Crits-Christoph and Connolly Gibbons (2003) as the most widely studied aspect of the process of treatment across an array of different psychotherapies. Based on their meta-analysis of 79 published and unpublished studies, Martin, Garske, and Davis (2000) determined that there is a moderate but consistent relationship between therapeutic alliance and outcome. Horvath and Symonds (1991) reached the same conclusion in their smaller meta-analysis of 24 studies. Generally, studies have shown alliance to have a direct relationship with outcome that is not accounted for by other factors. In one study of cognitive-behavioral and combination cognitive-behavioral/pharmacological treatments for depression, for example, patients’ perceptions of the therapeutic alliance predicted outcome in both treatment conditions even when controlling for early improvement and nine other patient characteristics that had been

previously shown to affect outcome (Klein et al., 2003). Some researchers who have attempted to quantify the impact of various therapeutic components that contribute to outcome (e.g., Kolb, Beutler, Davis, Crago, & Shanfield, 1985) have found that alliance is a stronger predictor than client factors in how patients will fare in therapy.

While not denying the well-documented import of alliance, other researchers have argued that client variables maintain a primary role in therapy outcome through their effect on that alliance. Hartley (1985) suggested that clients contribute to the alliance in several crucial ways: by acknowledging personal difficulty and their need for help; by being ready and willing to form an alliance; by feeling some degree of confidence in and attraction to the therapist; and by actively engaging in the tasks of therapy and applying what is learned there to their everyday lives. Some researchers have found client contribution to alliance to be a better predictor of therapy outcome than the alliance itself (Krupnick et al., 1996), and client ratings of alliance are generally better than therapist's ratings at predicting outcome (Horvath & Symonds, 1991). Some client characteristics seem to interfere with forming a therapeutic alliance, which in turn can lead to poorer outcome. Perfectionism, for example, has sometimes been shown to impede therapeutic progress by decreasing clients' ability to form an alliance with the therapist (Zuroff et al., 2000). Clients who are more anxious or who have lower cognitive functioning tend to rate their therapists as displaying less empathy, congruence, and unconditional positive regard, and clients who rate their therapists lower on these qualities show less improvement in self-efficacy and coping skills (Ritter et al., 2002).

Psychiatric severity also impacts the relationship between alliance and clients' progress in therapy, with some researchers reporting that more severely disturbed clients

are not as able to form a productive alliance, while others find few differences in alliance capacity between more and less severely disturbed clients (Horvath & Bedi, 2002). One possible explanation for this discrepancy could be that more severely disturbed individuals are indeed less likely to form an alliance, but those with weaker alliances are more likely to drop out of therapy (Horvath & Bedi, 2002) so that the observed relationship between alliance and outcome is artificially weakened. Petry and Bickel (1999) found that most opioid-dependent clients with few psychiatric symptoms completed drug treatment and therapeutic alliance did not significantly predict completion for those individuals. For those with moderate to severe symptom severity, however, those with above-average therapeutic alliances were more likely to complete treatment (75%) than those with weaker alliances (23%). This suggests that therapeutic alliance may be most important for those with more severe difficulties, whereas less disturbed clients may be able to profit from treatment even in the absence of a strong alliance with their therapist. Here again, client characteristics seem to mediate the relationship between alliance and outcome.

Few studies have examined the relationship between therapeutic alliance and anger treatment outcome, though researchers in the field have drawn attention to the importance of the alliance in anger treatment and the need for further study (Deffenbacher, 1999; Howells & Day, 2003). Studies that have directly assessed this relationship have yielded mixed results. In their study of group treatment for husband-to-wife violent couples, Brown and O'Leary (2000) found that the alliance between husbands and therapists predicted decreased physical and psychological aggression, whereas the alliance between wives and therapists did not. In the only study that



examined the relationship between alliance and driving anger treatment outcome some positive associations were observed, but results varied by dependent variable, point in time at which the alliance was measured, and from posttreatment to follow-up (Schwartz, 2005). Consistent with other research, when a relationship between alliance and one of the outcome measures was identified it tended to be small to moderate in size. Schwartz (2005) found group member engagement, which may be considered a measure of group cohesion or alliance to the group, to be the only measure to predict anger control at follow-up. This scale, which measures the degree to which a positive working atmosphere is present and reflects clients' involvement in treatment, was more highly associated with driving anger outcome than was the working alliance between therapist and client.

It stands to reason that the therapeutic alliance in anger treatment may be particularly dependent on client characteristics. Anger expression has been shown to decrease patients' ability to form a collaborative relationship with a therapist, and therapists may in turn have difficulty maintaining positive feelings toward angry clients (Burns, Higdon, Mullen, Lansky, & Wei, 1999). Anger treatment differs from other types of treatment because often clients do not see themselves as the one with the problem, but externalize blame to those who provoke their anger. They typically may not be seeking help to relieve their distress, but are referred by others or mandated to attend treatment so may not be personally invested. Evidence suggests that a large proportion of these clients terminate prematurely (Howells & Day, 2003). Even when they continue therapy and are invested in the outcome, their perspective on their feelings and behavior often differs so much from that of the therapist that it can be difficult for the client and

therapist to agree on mutual goals. Angry clients often believe that their own behavior is expected and warranted given their circumstances and that the therapist's role should be to help them figure out how to change the people around them. Attempts by the therapist, however gentle, to encourage the client to take personal responsibility for their feelings and behaviors may provoke anger and cause the client to feel misunderstood, thereby weakening the therapeutic alliance (Deffenbacher, 1999). In examining the relationship between alliance and outcome in anger treatment, therefore, it is particularly essential to consider how client characteristics have influenced the alliance. We do not yet have an adequate understanding of which characteristics are most likely to do so or how best to tailor treatment to client needs.

*Therapist effects.* A recent development in the psychotherapy literature is the growing recognition that there is considerable variation between therapists, and that the personal qualities of therapists affect treatment outcome (Ackerman & Hilsenroth, 2003; Garfield, 1997; Luborsky et al., 1986). Based on data from the National Institute of Mental Health Treatment of Depression Collaborative Research Program, one of the largest and best-designed treatment studies to date, Kim (2003) concluded that therapist effects were significantly greater than the effects of specific treatment type (cognitive-behavior vs. interpersonal therapies). He estimated that nearly 13% of the variance in termination score was attributable to therapist effects, while treatment differences explained 0% of the variance. Another study of 1841 clients over a period of two and a half years found similarly dramatic therapist effects. "The therapists whose clients showed the fastest rate of improvement had an average rate of change 10 times greater than the mean for the sample. The therapists whose clients showed the slowest rate of

improvement actually showed an average increase in symptoms among their clients” (Okiishi, Lambert, Nielsen, & Ogles, 2003, p. 361).

A meta-analysis of 15 studies including 27 treatments found that for all outcome measures and treatments, nearly 9% of the variance was due to therapists. This was considered a medium effect size. When dependent variables were examined individually, therapist effects were often even greater (Crits-Christoph et al., 1991; see also Wampold, 2001). Even when treatments are manualized and structured, therapists earn similar competency and adherence to protocol ratings, and outcome is generally positive, large therapist effects have been found (Huppert et al., 2001). Still unclear, however, is what specific therapist attributes underlie outcome differences. Gender and age of therapists have been hypothesized to affect outcome, but research does not generally support the conclusion that these are the central variables (Bowman, Scogin, Floyd, & McKendree-Smith, 2001; Talley, 1992). A few studies have shown a relationship between outcome and therapist experience (Crits-Christoph et al., 1991), but neither this nor professional affiliation reliably predict outcome (Lambert & Okiishi, 1997). While most researchers agree that positive therapist behaviors such as empathy and warmth and negative behaviors such as neglect and attack relate to outcome, no firm conclusions have yet been reached about the specific therapist characteristics that are most important. Even therapists with generally poorer outcomes have some successful cases, so there is likely an interaction between therapist qualities and client characteristics, including problem type and severity. Much more research is needed in this regard.

*Hope and Expectancies*

While many researchers have characterized hope and expectancies as “non-specific” or “common” factors in psychotherapy, others conceptualize clients’ expectations for treatment as an independent and critical factor in treatment outcome. Expectations about psychotherapy include expectancies of the duration of treatment, process of therapy and outcome of therapy (Joyce & Piper, 1998). Lambert and Barley (2001) estimated that about 15% of the variance in treatment outcome can be explained by client expectancies. While other researchers argue that the data are more equivocal (Garfield, 1994), certainly much evidence supports the hypothesis that clients’ beliefs about therapy and their own ability to change does influence their progress in therapy. Two studies of social anxiety, for example, found that clients who expressed higher expectations for benefit were more likely to improve and remain improved on some measures of anxiety (Chambless, Renneberg, Gracely, Goldstein, & Fydrich, 2000; Safren, Heimberg, & Juster, 1997). Research from the NIMH Treatment of Depression Collaborative Research Program found similar expectancy-outcome relationships in the treatment of depression (Shea, Elkin, & Sotsky, 1999).

The contribution of client expectations to treatment outcome appears to both mediate and be mediated by other relationship factors. Ilardi and Craighead (1994) identified four research-supported mechanisms through which non-specific therapy components (such as therapist warmth and empathy and provision of a credible treatment rationale) lead to early improvement in cognitive behavioral therapy for depression. These include: remoralization, reduced “depression about depression”, increased self-efficacy, and increased positive expectancies. Underlying all of these proposed

mechanisms may be a reduction in client's feelings of hopelessness. The therapeutic environment and relationship offered by the therapist instill the client with renewed hope that their problems are not too big to be solved and that things will improve. This infusion of hope can occur as early as the first session of therapy, or even earlier when clients make the decision to enter treatment (Garfield, 1994), and may explain part of the dramatic improvements that often occur in the early part of treatment.

Other researchers have proposed an alternate pathway between expectations and common factors, such that positive expectancies affect outcome primarily through their effect on the therapeutic alliance. Some studies have shown that clients who expect more positive outcomes are better able to form a strong alliance with their therapists, which in turn allows them to engage more productively in treatment (Gibbons et al., 2003; Meyer et al., 2002). Other research suggests that expectancies and quality of relationship, while highly correlated, have an additive effect on outcome (Joyce & Piper, 1998). Ethnicity and gender differences affect the type of expectations clients bring to therapy. The degree to which those expectations are met influences the therapeutic relationship, which in turn influences outcome. Chun (1997) found that Asian American clients expected more information regarding their psychological functioning, nature of therapy, more immediate problem solving, and greater insight to presenting problems than European American clients. His results also showed that women had higher expectations for therapist assessment and self-exploration of feelings and problems. Clients who perceived their therapists as fulfilling or surpassing their expectations reported higher depth ratings for their first session, which was regarded by Chun as a measure of better session outcome.

Regardless of the direction of the relationship between expectancies, alliance, and outcome, it is clear that many extratherapeutic client factors affect this relationship. Lightsey (1997), for example, found an interaction between expectancies and self-efficacy in his study of growth groups. For persons reporting high generalized self-efficacy, initial expectancies were positively associated with outcome. For those with lower generalized self-efficacy, initial expectancies were negatively associated with outcome. Lightsey speculates that those with high expectations but low efficacy may believe in the possibility of change but may become demoralized and give up easily, whereas those with low expectations but high efficacy may believe that they could successfully meet the requirements of the group but may not feel it is worth their effort. Only those with both high expectations and high efficacy will be motivated to put in the necessary work to achieve positive outcomes. In this case, then, an individual's belief about his or her ability to do the work of therapy moderates the relationship between expectancies and outcome.

Clients' presenting problem and symptom severity level has also been shown to affect expectancies. In one cognitive-behavioral treatment study cited earlier, "initial expectancy ratings accounted for modest but significant variance in posttreatment severity of social phobia and depression after covarying out variance that was shared between expectancies and pretreatment symptomatology" (Safren et al., 1997, p. 696). However, greater severity and duration of social phobia, generalized social phobia, and higher depression levels were associated with lower expectations for successful outcome. So again, while expectancies did predict outcome, the pretreatment attributes of the client

(in this case the symptom severity and type of anxiety) influenced the relationship between expectancies and outcome.

### *Client Characteristics*

Gonzalez (2002) described client characteristics as the “primary agent of change” in psychotherapy. In support of this assertion, he reviews several lines of evidence supported by years of research: more than 60% of clients improve before their first appointment and even more after a single session, inexperienced therapists tend to be just as effective as those with more experience, and self-help treatments often benefit clients as much as working with a therapist. The idea that the qualities of particular clients are crucial to the therapy process is obvious to the practicing clinician who has experienced remarkable success with certain clients but, using the same basic therapeutic style and techniques, unsatisfactory outcomes with others. Knox, Hess, Petersen, and Hill (2001), for example, found that some clients strongly desired and benefited from therapist self-disclosure, while others considered the same types of disclosure inappropriate and felt that they detrimentally blurred client/therapist boundaries. This illustrates the complexity of the relationship between client characteristics and outcome. In one study, clients with a more internalizing coping style fared better with professionally trained clinicians while those with an externalizing coping style improved more with paraprofessionals (Baker & Neimeyer, 2003). In another, depressed patients with an obsessive personality style showed greater benefit from interpersonal therapy, whereas cognitive therapy was more effective for patients with an elevated level of avoidant personality. Marital status also influenced which treatment was likely to be effective. Single and noncohabiting patients improved more after interpersonal therapy, while married patients did better with

cognitive therapy (Baker & Neimeyer, 2003). In a sample of seriously disturbed, treatment-resistant psychiatric patients, Blatt (1999) found that “anaclitic” patients (those preoccupied with issues of interpersonal relatedness) improved most when given long term psychodynamically-focused psychotherapy, while “introjective” patients (those preoccupied with establishing and maintaining a viable sense of self) benefited more from psychoanalysis. Additionally, introjective patients did better in therapy overall and tended to show a different pattern of improvement than their “anaclitic” counterparts.

Despite these documented interactions between treatment type and client characteristics, attempts to create a “recipe” for matching client to treatment have generally met with failure (Petry, Tennen, & Affleck, 2000). Project Match was arguably the largest matching study to date, but it largely failed to provide support for the matching hypothesis (Walters, 2002). In the 952-client outpatient arm of the study, for example, only three of the 21 a priori matching hypotheses were conclusively supported. The factors shown to interact with treatment were limited to: support for drinking, psychiatric severity, and trait anger (Stout et al., 2003). At one and three-year follow-up, clients high in anger fared better in Motivational Enhancement Therapy (MET) than in the other two MATCH treatments: Cognitive-Behavioral Therapy (CBT) and Twelve-Step Facilitation (TSF). Those lower in trait anger showed greater gain from CBT and TSF (Project MATCH Research Group, 1997). Apart from these three attributes, matching did not substantially improve outcome (Project MATCH Research Group, 1998a).

There is still much to learn about the interaction between client factors and treatment; however, this does not imply that no client characteristics relevant to therapy



have been identified. Using a mental health index calculated from well-being, symptom distress and life functioning, one research group has successfully developed a statistical means for predicting the course of response to therapy, and their model predicts accurately as much as 75% of the time (Leon, Kopta, Howard, & Lutz, 1999). They have shown, for example, that clients with mood or anxiety disorders respond differently to treatment than do clients with other types of disorders (Lueger, Lutz, & Howard, 2000; Lutz, Lowry, Kopta, Einstein, & Howard, 2001). This section will review briefly the many client characteristics that have been studied in relation to therapy outcome, and will then focus on two well documented factors that are particularly relevant to the present study: psychiatric severity, and hostility/anger. Because few differences have been found between characteristics relevant to group therapy and those relevant to individual treatment (Fuhriman & Burlingame, 1990), data from studies using either of these modalities will be included.

*Demographics.* For the most part, no clear pattern has emerged tying particular demographic characteristics to outcome. While a few studies have suggested that younger adults fare better in some types of treatments than do older adults (e.g., Dew et al., 1997; Jones, Krupnick, & Kerig, 1987; Kleber & Brom, 1987), most have not found a significant effect for age, and even in those that have the effect is generally small (Bernal, Bonilla, Padilla-Cotto, & Perez-Prado, 1998; Geiger, 1994; Gelhart, Hand-Ronga, & King, 2002; Talley, 1992). Mixed results have also been obtained for gender and race. While a few studies have reported a small advantage for female and White clients (e.g., Talley, 1992), reviews of the literature typically find no consistent relationship between these characteristics and outcome (e.g., Garfield, 1994; Howells & Day, 2003; Petry et

al., 2000). One relevant meta-analysis found that female children and adolescents improved more than boys in cognitive-behavioral therapy for anger-related problems, and mixed groups improved more than groups with just males (Sukhodolsky, 1998). Not all individual studies support these findings, however. In one study of adolescent parent-abusers, for example, boys showed larger decreases in abusiveness (Seales-Gordon, 2003). Neither of these findings appear to have been replicated in studies with adults.

Social class (including education level and employment) and marital status are two demographic factors that have been more clearly linked to treatment outcome. Though not all researchers agree that these client variables consistently predict outcome (Luborsky et al., 1971; Talley, 1992), the majority of recent evidence seems to suggest an advantage for married individuals and those of higher socioeconomic status (Ahuja, 1995; Durham, Allan, & Hackett, 1997; Geiger, 1994; Gelhart et al., 2002; Hamilton & Dobson, 2002; Petry et al., 2000). Based on a review of the client variable literature, Petry, Tennen, and Affleck (2000) concluded that those with lower social status, including fewer years of education, are less likely to remain in treatment. However, if they do continue they generally achieve comparable outcomes on measures such as level of symptomatology. Kleber & Brom (1987) found that lower incomes did not correlate with improvement overall, but that those with lower income benefited more from trauma desensitization and less from psychodynamic psychotherapy, while the reverse was true for those with higher incomes. So lower social class may not impede psychotherapeutic progress so much as necessitate a different therapeutic approach, including early intervention to promote retention in therapy. Similarly, while married people tend to make more progress than single and divorced people in therapy overall, there may be

interaction effects with type of treatment, length of treatment, and gender of client (Gelhart et al., 2002; Lorentzen & Hoglend, 2004; Petry & Bickel, 1999).

*Stress and trauma.* Clients with a history of trauma or abuse tend to achieve poorer outcomes in therapy than those without such history (Carty, 2001; Holmes, 1995a, 1995b; Mahon, Winston, Palmer, & Harvey, 2001; Michelson, June, Vives, Testa, & Marchione, 1998). For example, Holmes (1995a) reported that adult clients without a history of physical or sexual abuse showed significant improvement in their depressive and anxious symptoms after only three to six sessions of therapy, whereas those with an abuse history remained unimproved. A variety of factors, including type, length and severity of trauma, age at which it occurred, social supports available, perceived responsibility, whether or not the traumatic event was followed by self-injurious or suicidal thoughts and/or behaviors, and dissociative symptomatology have been shown to affect response to treatment (Michelson et al., 1998). Current level of stress and coping skills also appear to affect treatment outcome even when abuse history and other relevant variables such as symptom severity and diagnostic status are controlled (Ford & Kidd, 1998; Gunthert, 2002).

*Personality traits.* Many researchers have attempted to correlate personality characteristics with treatment success or failure, and many such associations have been found, but these findings are often neither robust nor replicable (Petry et al., 2000). In his review research on personality testing in therapy, for example, Garfield (1994) concluded that results have been generally unsuccessful in predicting outcome, except that those who comply with and complete the tests are less likely to drop out of treatment. Despite these discouraging findings, some researchers (e.g., Harkness & Lilienfeld, 1997) argue

that client personality traits are important to understand and consider, and the absence of consistent findings so far does not negate the probability that such predictors do exist. It may be that important interactions between personality, treatment type, therapist, etc. have not yet been examined, an idea that is supported by some of the research findings.

Using the Meyers-Briggs type indicator (MBTI), Vilas (1989) found that intuitive or perceptive types were more likely to benefit from treatment, particularly when male. Janowsky (1999) documented that MBTI types have been useful in predicting the type of therapy likely to be effective for a particular client, and that this has even been true for biological treatments. For example, he cites research showing that cognitive restructuring therapy techniques plus relaxation were most effective in treating patients who were sensing types, whereas relaxation therapy plus imagery rehearsal was most effective in treating anxiety disorder patients who were MBTI intuitive types. Cardiac Patients did best in a rehabilitation program if they scored on the MBTI as a combination of extroverted, thinking and judging types. One study using the NEO-PR personality profile showed that extraversion, conscientiousness, and openness were directly associated with favorable group treatment outcome, while neuroticism predicted poorer outcome (Ogrodniczuk, Piper, Joyce, McCallum, & Rosie, 2003). Another study of sexually abused women, on the other hand, found that group members with higher introversion and less agreeableness benefited most from treatment (Talbot, Duberstein, Butzel, Cox, & Giles, 2003). The research literature correlating MMPI profiles with treatment outcome is too voluminous to review here, but some evidence has linked outcome with Clinical scales 2 and 4 (depression and psychopathic deviancy, respectively) as well as with a variety of Content subscales including DEP, ANX, and

TRT (Anderson & Bauer, 1985; Chisholm, Crowther, & Ben-Porath, 1997). Once again, it is important to note that these findings are often unreplicated and contradictory.

Greater psychological mindedness has been frequently linked with better treatment effects (Conte, Ratto, & Karasu, 1996; McCallum, Piper, Ogrodniczuk, & Joyce, 2003; Piper, Joyce, McCallum, & Azim, 1998), as has a higher sense of mastery or control over one's life and therapy success (Steinmetz, Lewinsohn, & Antonuccio, 1983). Perfectionism and self-criticism have also been associated with depression therapy outcome, though these findings are complex. Higher levels of perfectionism may interfere, for example, with brief therapy for depression, but may actually contribute to success in longer treatment models (Blatt, 1999; Blatt & Felsen, 1993; Blatt, Quinlan, Pilkonis, & Shea, 1995; Blatt & Zuroff, 2002; Shahar, Blatt, Zuroff, & Pilkonis, 2003). Other researchers suggest that the effect of perfectionism is mediated by its impact on the therapeutic alliance (Zuroff et al., 2000) and by the poorer social networks available to those with high levels of perfectionism (Shahar, Blatt, Zuroff, Krupnick, & Sotsky, 2004). Psychological reactance, which refers to how likely a person is to attempt to restore behavioral freedom or interpersonal control when it is perceived as lost or threatened (Arnow et al., 2003; Baker & Neimeyer, 2003), is another of the relatively few personality variables that have been consistently associated with outcome. There is not generally a main effect for reactance; it neither hinders nor helps therapy per se. Rather, it appears that treatments can and should be tailored to the reactance level of the client and that an appropriate match on this dimension can enhance therapy outcome (Arnow et al., 2003; Petry et al., 2000).

*Stages of change and motivation for treatment.* Prochaska and Norcross (2002)

proposed that clients enter treatment at various stages of readiness for behavioral change, and that therapy technique should be tailored to the client's level of readiness.

Researchers have shown, for example, that readiness level predicts therapeutic outcome in treatment for bulimia (Franko, 1997; Wolk & Devlin, 2001), drug treatment and panic disorder (Petry et al., 2000). Motivation has been conceptualized as one important component of readiness for change (Howells & Day, 2003) and has been identified as one of the most often cited and research supported predictors of treatment outcome (Lambert et al., 2004). In one study of treatment for chronic fatigue syndrome, for example, motivation for treatment adherence better predicted treatment response than did severity of symptoms or duration of illness (Bentall, Powell, Nye, & Edwards, 2002). In another study of depression, patient commitment was the only client variable to predict symptom improvement. Alliance alone did not predict outcome, but commitment did predict alliance (Marmar, Gaston, Gallagher, & Thompson, 1989). Part of the importance of motivation may in fact be related to its impact on alliance. In her research on general therapy in a managed care setting, (Levy, 1999) found that clients who entered therapy with low motivation for treatment had difficulty establishing strong collaborative relationships with their therapists.

The effect of motivation on symptom reduction and therapeutic alliance may have particularly strong implications for anger treatment. Howells & Day (2003) point out that common circumstances and characteristics of individuals undergoing anger treatment may lessen their motivation for change, thereby reducing therapy effectiveness with this population. Some of these factors include the presence of personality disorders such as

psychopathic disorder, treatment setting and whether treatment was mandated, lack of correspondence between provider and client treatment goals, and cultural views about appropriate expression of anger. Unlike other affective states such as depression and anxiety (Conte, Plutchik, Picard, Karasu, & Vacarro, 1988; Garfield, 1994), anger may not be distressing to clients; in some cases, anger may even serve a positive social function. In these cases clients may display little motivation to change their behavior or even form strong alliances with their therapists. Therapy with these clients, then, may first need to focus on raising client readiness for change and establishing mutual therapeutic goals (Deffenbacher, 1999).

*Anger and hostility.* Relationship capacity, social skill and/or interpersonal competence have been established as among the most reliable predictors of therapy outcome. Clients with the most interpersonal disturbance have been found to be at highest risk for treatment failure (Harder et al., 1990; Hardy et al., 2001; Hoberman, Lewinsohn, & Tilson, 1988; Hoglend, 1995; Joyce & Piper, 1998; Lambert et al., 2004; Mohr, 1995; Moras & Strupp, 1982; Overstreet, 1993; Piper, Azim, McCallum, & Joyce, 1990). The association between relationship skills and therapy outcome may be partially mediated by the therapeutic alliance (Hardy et al., 2001) and has sometimes been shown to interact with treatment type (Piper et al., 1998; Shea & Elkin, 1996).

In studies that have examined trait anger, high levels of pretreatment anger have been associated with premature therapy dropout (Fassino, Abbate-Daga, Piero, Leombruni, & Rovera, 2003) and with poor therapy progress (Kleber & Blom, 1987; Shepherd, 1998). In one study of cognitive behavioral group therapy for social anxiety, for example, patients who were quick-tempered, experienced anger frequently, and

perceived unfair treatment were more likely to drop out of treatment (Erwin, Heimberg, Schneier, & Liebowitz, 2003). For those who completed treatment, more chronic pretreatment anger predicted greater posttreatment depressive symptom severity. The authors of this article speculated, “to the extent that anger suppression, intense episodes of anger, and chronic frustration and feelings of being treated unfairly predict poor treatment response and greater social anxiety and depressive symptom severity, it may be because they interfere with trust, rapport and expectancy for treatment outcome” (p. 346). On a positive note, those angry individuals who remained in therapy did show reductions in both their social anxiety and their anger levels, suggesting that while high anger levels may impede therapy effectiveness to some extent, the anger itself may respond to treatment even when that treatment is not anger-focused.

Although there certainly is evidence that anger is amenable to targeted treatment (e.g., Deffenbacher, 1988; Deffenbacher, 1995; Deffenbacher, McNamara, Stark, & Sabadell, 1990a; Deffenbacher et al., 1990b; Deffenbacher et al., 1988; Deffenbacher et al., 1987; Del Vecchio & O’Leary, 2004; DiGiuseppe & Tafrate, 2003; Sukhodolsky et al., 2004), it may respond less well to treatment than other types of psychological problems that are less characterological and/or interpersonal (Barkham, Rees, & Stiles, 1996; Kopta, Howard, Lowry, & Beutler, 1994). As shown previously, clients who fail to develop a good therapeutic alliance with their clinicians tend to respond less well to treatment, and anger may interfere with the development of this alliance (Burns et al., 1999; Horvath & Symonds, 1991). Mohr (1995) points out that patient anger often provokes negative emotions in even the most seasoned therapist, causing the therapist to react coldly or distance him or herself from the patient. This reaction from the therapist



further weakens the alliance, putting the patient at risk for poor treatment response. However, Mohr also suggests that this may be less true in more structured therapies such as cognitive-behavioral treatment.

Hostility is a related aspect of interpersonal style that has been documented to have a particularly strong relationship to therapy outcome. As defined by Del Vecchio and O'Leary (2004), hostility refers to a pervasive aggressive attitude that directs an individual toward aggressive behaviors. It is distinct from both the emotion of anger and the behavior of aggression, though the three concepts are related and obviously occur together. Even in the rare studies in which other types of interpersonal difficulties have not predicted individuals' response to treatment, hostility has generally retained its predictive power (Davies-Osterkamp, Strauss, & Schmitz, 1996). For example, contrasting clients who scored as "affiliative" on the Interpersonal Check List with those who scored in the "hostile" range, Filak, Abeles, and Norquist (1986) found the former group about twice as likely to be rated by therapist and client as "successful" in short term psychodynamic therapy. Put differently, 72% of those with an affiliative interpersonal stance had a highly successful outcome, whereas only 38% of hostile patients showed similar improvement.

Overstreet (1993) included hostility in his review of the most frequently cited predictors of negative response to treatment, and his own research provides further evidence for this relationship. He found that patients who received the lowest therapist-rated global outcome scores at the conclusion of Time-Limited Dynamic Psychotherapy (TLDP) tended to have entered treatment with high levels of interpersonal problems, including hostility. In another TLDP study (Conte, Plutchik, Picard, & Karasu, 1991),

patients who were most rejecting of others (a manifestation of hostility) at the outset of treatment were least likely to show improvement. Hostility has even been shown to interfere with the progress of patients in occupational and physical therapy (Burns et al., 1999). Only one study (Cohen, 1998) was located that did not support the association between hostility and poorer therapy outcome, and that was in a group treatment for binge eating disorder. Cohen acknowledged the incongruence of her finding with the majority of previous published research, most of which has examined outcome in individual therapy. She posited that hostility may not interfere with group treatment outcomes in the same ways it does for individual, and so group treatment may be an effective alternative for hostile clients. This possibility should be studied further.

One key to understanding the link between anger and hostility and poor therapy outcome may lie in the ego-syntonic nature of these attributes. The very definition of hostility implies that hostile clients will blame others for their difficulties and will not necessarily view themselves as in need of any change in this regard. Their motivation for change, therefore, may not be high, and as noted in a previous section, motivation level is associated with therapy outcome. One study found that those with high levels of interpersonal problems but low subjective distress responded poorly to treatment, while those with similar levels of interpersonal problems who were distressed by their difficulties responded much more favorably (Mohr et al., 1990). In this case, then, it would appear that the degree to which clients feel that they have a problem affects the benefit gained from treatment, and it may be that hostile clients in general underestimate their contribution to their difficulties. This may be why the hostility-affiliative dimension of personality has been shown to change little in response to treatment while other

personality traits respond more readily (Filak et al., 1986). What is still unknown is whether the effectiveness of therapy specifically designed to reduce anger, hostility, and aggression will also be hindered by higher levels of these characteristics. This question will be addressed in the present study.

*Psychiatric and symptom severity.* Psychiatric and/or symptom severity are arguably the client characteristics most often cited as reliable predictors of therapy outcome across a comprehensive array of problems, treatment approaches, and research methodologies (Garfield, 1994; Lambert et al., 2004). One of the studies associated with Project Match, for example, examined a wide range of client variables that had previously demonstrated a significant relationship with therapy outcome in an attempt to determine whether substance-abuse treatments could be effectively matched to client characteristics. Of the 10 well-researched client characteristics included in the research, only psychiatric severity was found to have any bearing on treatment selection (Petry et al., 2000). Another recent approach to therapy outcome research is dose- and phase-response modeling. Using empirically-derived patient profiling methods, Lutz, Howard, Kopta, Leon, Krause, Orlinsky and their research group (Howard et al., 1986; Howard, Moras, Brill, Martinovich, & Lutz, 1996; Kopta et al., 1994; Leon et al., 1999; Lueger et al., 2000; Lutz et al., 2001; Maling, Gurtman, & Howard, 1995; Orlinsky, Grawe, & Parks, 1994; Orlinsky & Howard, 1986) can predict individuals' course of treatment with a high degree of accuracy; in one study they accurately predicted the observed treatment response of 75% of 890 patients (Leon et al., 1999). It is noteworthy that of the seven predictors of improvement that have been included in their recent models, at least four are related to overall level of psychiatric functioning: subjective well-being, current

symptoms, current life functioning, and clinician rated global assessment of functioning (Lutz et al., 2001).

Based on their review of the literature to date, Luborsky and his colleagues (Luborsky et al., 1971) concluded that, “the [psychologically] healthier the patient is to begin with, the better the outcome – or the converse – the sicker he is to begin with, the poorer the outcome” (p. 148). More recent research continues to support this conclusion; for example, Harder et al. (1990) found that the Menninger Health-Sickness variable was the best predictor of two-year overall outcome in an outpatient therapy clinic, and that diagnostic severity was also significantly predictive. With few exceptions (e.g., Binen, 1999; Hazzard, Rogers, & Angert, 1993; Lorentzen & Hoglend, 2004), greater psychiatric disturbance has been associated with less improvement and poorer outcomes in both brief and longer-term therapy (Bernal et al., 1998; Clementel-Jones, Malan, & Trauer, 1990; Conte et al., 1988; Crits-Christoph & Connolly, 1993; Geiger, 1994; Hoglend, 1995; Jones et al., 1987; Lambert et al., 2004; Mohr, 1995). It has also been linked with higher rates of premature termination (McCallum, Piper, & Joyce, 1992; Petry & Bickel, 1999; Sacco-Laurens, 2000). Although little research has looked at the effect of psychiatric severity for anger treatment specifically, that which does exist has shown adverse effects similar to those found in other types of therapies (Howells & Day, 2003).

Comorbidity among psychiatric disorders has also been shown to interfere with treatment effectiveness. Ogrodniczuk, Piper, Joyce, and McCallum (2001) found that while the presence of one personality disorder did not measurably influence the outcome of therapy, the number of personality disorders a client exhibited was related to outcome

at posttreatment and one-year follow-up. The presence of a comorbid personality disorder has been associated with poorer outcome in anxiety treatment (Berger et al., 2004; Chambless et al., 2000; Feske, Perry, Chambless, Renneberg, & Goldstein, 1996), as has comorbid depression (Bowen, South, Fischer, & Looman, 1994; Chambless et al., 2000; Chambless, Tran, & Glass, 1997; Foa et al., 1983; Scheibe & Albus, 1996), anger (Erwin et al., 2003; Howells & Day, 2003), and “Axis 1 complexity”, the presence of more than one Axis 1 disorder (Durham et al., 1997). The presence of comorbid disorders also leads to poorer outcomes in treatments for eating disorders (Bossert-Zaudig, Zaudig, Junker, Wiegand, & Krieg, 1993; Guiffrida, Barnes, Hoskins, & Roman, 2001) and depression (Brent et al., 1998; Frank et al., 2000). While in a few studies comorbidity has been shown to either not affect or even to enhance treatment outcome (e.g., Mussell et al., 2000; Overstreet, 1993), it appears that in most cases diagnostic comorbidity, like other types of psychiatric disturbance, reduces the likelihood that a client will make positive gains in therapy.

Symptom severity is another variable that has been often linked to outcome in a wide range of disorders. Higher pretreatment levels of the symptom or disorder being treated consistently predicts higher posttreatment symptom levels, slower and incomplete remission, and greater risk of relapse. In a unique study of patients presenting to an emergency room after attempting to poison themselves, for example, severity of suicidal ideation six months later was related to baseline severity of depression and a prior history of self-harm (Guthrie et al., 2003). Their four-session psychodynamic-interpersonal intervention was shown effective only for those with less severe depression and no history of self-harm. Initial level of anxiety symptoms has also effectively predicted

outcome in treatment for post-traumatic stress disorder (Blanchard et al., 2003), obsessive-compulsive disorder (Castle et al., 1994), social phobia (Chambless et al., 1997), and panic disorder (Scheibe & Albus, 1996). In her study of cognitive-behavioral group treatment for social phobia, Mattia (1997) was able to correctly classify 82% of completers as either responders or non-responders on the basis of four pretreatment variables: pretreatment severity, reaction to treatment, age of onset, and depression. Consistent with other research, less pretreatment phobic severity predicted greater decrease in phobic severity over the course of treatment. Similarly, those entering eating disorder treatment with more severe symptoms have been shown to benefit less from treatment (Guiffrida et al., 2001; Mussell et al., 2000). Of course, not all research has supported the relationship between severity and outcome. A study of psychological interventions for chronic fatigue failed to predict response using severity and duration of illness, whereas client acceptance of the therapeutic rationale and motivation for treatment were significant (Bentall et al., 2002).

In all types of treatment for depression, pretreatment depression severity, typically measured using the Beck Depression Inventory (BDI) and/or the Hamilton Rating Scale for Depression (HRSD), is usually the best predictor of posttreatment depression scores (Hamilton & Dobson, 2002; Hoberman et al., 1988; Rehm, Kaslow, Rabin, & Willard, 1981; Saenz, 1987), accounting for nearly 50% of the variance in some studies (Neimeyer & Weiss, 1990; Steinmetz et al., 1983; Teri & Lewinsohn, 1986). Although individuals at all levels of severity improve with treatment, they tend to retain their relative rankings posttreatment (Hoberman et al., 1988; Steinmetz et al., 1983). In his study of group treatment for older adults, Cappeliez (2000) found that only 40% of

the severely depressed group responded to treatment, which he defined as obtaining posttreatment BDI scores of 10 or less. By comparison, 82% of the moderately depressed group responded, a difference between groups that was statistically significant. While the severe group did substantially improve, averaging a BDI drop of 15 points over the course of treatment, they tended to remain in the mild to moderate range of depressive symptomatology. In another study of depressed adolescents (Brent et al., 1998), each point of BDI score increase at intake resulted in an 8% decrease in symptomatic remission posttreatment. Similarly, the only predictor of functional outcome in this study was interviewer-rated depression scores at intake, with higher initial depression levels associated with poorer functional outcome scores.

The impact of symptom severity may be compounded by other factors related to overall psychiatric severity, including duration of illness, age of onset, and other psychiatric history. In their review of research on cognitive therapy for depression, Hamilton and Dobson (2002) associated poor response to treatment with high pretreatment severity, high chronicity, younger age at onset, and more previous episodes. One very large, well-designed, multisite study of depression treatment (Shea et al., 1999) supports these conclusions. Patients who started treatment with less severe depression, less chronicity, and less personality disturbance achieved better outcomes in both the short and long term, regardless of treatment condition. Another arm of the same NIMH study found that, “six characteristics, in addition to depression severity previously reported, predicted outcome across all treatments: social dysfunction, cognitive dysfunction, expectation of improvement, endogenous depression, double depression, and duration of current episode” (Sotsky et al., 1991, p. 997). As noted, patients whose first

depressive episode was earlier in life may need longer courses of therapy to achieve full remittance (Reynolds et al., 1998) and may have poorer long-term outcomes (Shea et al., 1999), possibly because of the greater number of depressive episodes they have experienced over the course of their lifetime.

Few researchers have directly addressed the question of how greater symptom severity, and higher levels of psychiatric distress more broadly, affects clients' response to treatment. Since those who start at a more impaired level have farther to go to achieve full recovery, it may be that the treatments administered in outcome studies are simply too short to facilitate full recovery in the most severely impaired patients (Lambert & Bergin, 1994). Indeed, researchers have shown that people at all levels of severity do respond to psychotherapy (Propst, Paris, & Rosberger, 1994) and continue to improve as treatment duration increases (Ahuja, 1995; Lorentzen & Hoglend, 2004; Shapiro, Barkham, Hardy, & Morrison, 1990; Talley, 1992). However, this explanation cannot fully account for the differences observed in the relative amount of change between groups. Beckham (1989), for example, found that depression level at the first therapy session was the best predictor of response at session six. On average, patients who were severely depressed at the beginning of treatment did not improve at all by the sixth session, whereas those with more moderate depression levels did show improvement. Beckham speculates that this discrepancy may be attributable to differences in change between the intake and first session. By the beginning of the first session, those who were going to respond rapidly to treatment had already started to improve (so that they were no longer in the severely depressed group), whereas those who continued to be severely depressed showed no such "placebo" response to the therapist, the setting, or



their decision to enter therapy. Garfield (1994) suggests that personality factors such as willingness to learn new coping strategies may also account for these findings. Other researchers have observed that clients who are more disturbed at the outset of treatment feel more frightened and stuck during treatment and have trouble seeing their problems from a new perspective (Hill, Helms, Spiegel, & Tichenor, 2001).

Given the importance of therapeutic alliance to therapy outcome in general, one possible explanation for the relationship between severity and outcome could be that psychiatric severity hinders treatment by impacting the ability of the client to form a strong alliance with the therapist. However, as noted in a preceding section, alliance has not been consistently found to mediate the relationship between psychiatric or symptom severity and therapy outcome (Horvath & Bedi, 2002). In fact, severity has not generally been shown to predict the strength of the alliance (Gibbons et al., 2003; Klein et al., 2003; Marmar et al., 1989). Nonetheless, a good working alliance may be particularly beneficial for those with greater levels of disturbance (Petty & Bickel, 1999). One study found that as severity increased, the process variables of warmth and respect became more relevant to symptomatic improvement. However, the process variables of warmth, respect, acceptance, and interest were much more highly related to client-rated, perceived final adjustment status than to actual change in symptoms as measured by the SCL-90 Global Severity Index. This suggests that clients can be satisfied with the therapist and with the outcome of therapy even in the absence of complete symptom remission (Eckert, Abeles, & Graham, 1988).

Higher *client-rated* level of distress at the outset of treatment has sometimes been associated with more favorable response to treatment, even though objective measures

and observer ratings of high severity are almost universally associated with poorer outcomes (Mohr, 1995). Overstreet (1993) found that those who entered treatment with the strongest complaints about their problems were more likely to achieve positive, clinically significant changes in their symptoms. Likely it is clients' motivation to change that explains this finding. Patients who are distressed about their symptoms, and who therefore view themselves as being more severely impaired, may be more likely to fully utilize therapy (Schneider & Klauer, 2001). Howells and Day (2003) suggest that the role of readiness for change, which includes motivation, may be even greater in anger-specific treatments than in other types of treatment. Therefore, pretreatment anger levels may be expected to affect outcome differentially based on how distressing the anger is to the client.

Symptom severity may also play a role in determining clients' response to anger treatments. Although these therapies are generally comparable in overall effectiveness, it is possible that anger treatments may work differentially for different levels of severity and even for different types of anger or anger expression. In their psychodynamic short-term therapy for stress-response syndromes, Jones and colleagues (1988) found that a more structured problem-solving approach was advantageous for more disturbed patients, whereas more expressive and exploratory approach was more effective for those who were less disturbed. Another study (Sloane, Staples, Whipple, & Cristol, 1977) similarly found that less disturbed patients secured more positive outcomes with analytically-oriented psychotherapy, whereas behavior therapy was equally successful for both high- and low-pathology patients. In their review of the literature on bulimia treatment, Guiffrida, Barnes, Hoskins, & Roman (2001) indicate that those with higher levels of

symptoms and longer illness duration do more poorly in treatment, as do those with impulse and personality disorders. These clients may require different and longer lasting treatments. Clients with borderline personality disorder, for example, may be more responsive to group than individual treatment and may require longer-term treatment to achieve recovery.

Other client characteristics may also inform treatment selection. While no client characteristic has been identified that consistently interacts with theoretical orientation (Binen, 1999), there are a variety of preliminary findings that suggest some approaches may work better than others depending on cognitive, emotional, social and other client variables, and that clients can be successfully matched to treatments on this basis (Beutler, Moleiro, Malik, & Harwood, 2003). A few characteristics that have been shown to discriminate between treatments are quality of object relations (Ogrodniczuk, Piper, McCallum, Joyce, & Rosie, 2002), avoidant versus obsessive personality styles (Barber & Muenz, 1996), levels of cognitive and social functioning (Blatt & Felsen, 1993; Sotsky et al., 1991), level of emotional distress (Karno, Beutler, & Harwood, 2002), psychological reactance (Beutler, Mohr, Grawe, Engle, & MacDonald, 1991; Karno et al., 2002), coping style and resistance potential (Beutler, Machado, Engle, & Mohr, 1993; Beutler et al., 1991), and client preference for treatment (Brown, Seraganian, Tremblay, & Annis, 2002).

#### *Purpose of the Current Study*

Despite the widespread and increasing problem of driving-related anger and aggression, little research has been devoted to this topic. In fact, there is a paucity of research in general related to anger and anger treatment. Recent studies have shown that

anger, including driving-specific anger, can be successfully treated (Bowman-Edmonson & Cohen-Conger, 1996; Deffenbacher, Filetti et al., 2002; Deffenbacher, Huff et al., 2000; Del Vecchio & O'Leary, 2004; DiGiuseppe & Tafrate, 2003; Galovski & Blanchard, 2002; Galovski et al., 2006; Sukhodolsky et al., 2004; Tafrate, 1995). However, as with all therapies, some clients respond better than others to therapy, and few studies have examined which factors most influence these differential outcomes. The current study will address this question of which client factors may influence therapeutic outcomes of driving anger reduction generally and/or which may interact with specific types of interventions and influence outcomes differentially by type of intervention. Prior literature suggests that (a) the level or severity of the presenting problem and (b) level of general anger, hostility, and interpersonal abrasiveness may influence the course of therapy. Therefore, the present study will investigate the prediction of therapeutic outcome from (a) the individual's pretreatment level of driving anger (i.e., the severity of the presenting problem) and (b) level of trait anger and forms of general anger expression (i.e., proxies for anger and hostility). Potential influence influences of these variables will be explored as a main effect across interventions and as a potential interactive factor with type of therapy.

### *Research Questions*

For each of the research questions below, outcome of driving anger reduction will be assessed by pretreatment to posttreatment and pretreatment to one-month follow-up change scores on the emotional, cognitive, and behavioral aspects of driving anger. Each of these dimensions may be assessed by more than one measure or scale. For example, in assessing forms of expressing anger behind the wheel (i.e., part of the behavioral

dimension), driving anger expression will be assessed by the adaptive/constructive and aggressive expression scales from the Driving Anger Expression Inventory (Deffenbacher, Lynch, Oetting, & Swaim, 2002). For each measure, a hierarchical regression model will be run for the change score. Gender, type of intervention, and the variable(s) of interest (e.g., pretreatment level of driving anger) will be entered on Step 1 with the interactions of these variables on Step 2. General influences will be identified by the main effect for the variable on Step 1, whereas interactions with type of therapy will be reflected in the type of therapy x variable interaction on Step 2. When investigating the influence of pretreatment level of driving anger on therapeutic outcomes, general anger and general anger expression will be included in the set of outcome variables, because they were employed to assess generalization of therapy to more general levels of anger and anger expression. Moreover, in each analysis, gender will be explored as a potential general factor that moderates outcome, as well as a possible interacting factor with client factors or type of therapy.

*Question 1:* Is pretreatment level of driving anger related to how much clients benefit from driving-anger treatment?

Pretreatment severity of the presenting concern is one client variable that has well studied and documented to affect treatment outcome. Often, those with the most severe symptoms derive less benefit from treatment or take longer to improve (Blanchard et al., 2003; Cappeliez, 2000; Guiffrida et al., 2001; Hamilton & Dobson, 2002; Hoberman et al., 1988; Mattia, 1997; Petry et al., 2000). No studies could be identified that directly replicated this finding for driving anger. Galovski and Blanchard (2002) examined a small group of court-ordered and self-referred aggressive drivers. They found a non-

significant trend for aggressive drivers who met diagnostic criteria for Intermittent Explosive Disorder to improve less in CBT treatment than aggressive drivers who did not. If it can be assumed that those with Intermittent Explosive Disorder have more intense anger symptoms than those who do not, this study provides weak support for the possibility that those with higher driving anger levels may benefit less from treatment than those with lower levels of pretreatment anger.

Two additional studies addressed the relationship between other types of anger severity and anger treatment outcome. In one such study, researchers triggered anger in males using racial stimuli (O'Donnell & Worell, 1973). Lower anger levels in response to the pretreatment anger arousal procedure predicted better outcome for clients in one of the four treatment conditions, Desensitization with Motor Relaxation (DM), but was not mentioned as a significant predictor for the other three conditions. Only eight subjects were in each treatment condition. Therefore, although this study may provide some evidence that pretreatment anger severity affects anger treatment outcome, it cannot be interpreted as providing strong evidence for this relationship. The second study, a meta-analysis of 40 anger treatments for children and adolescents, found no significant treatment effect size differences between the mild, moderate, and severe anger groups. However, there was a trend for the moderately angry group to benefit most from treatment (Sukhodolsky, Kassinove, & Gorman, 2004). The current study will continue to explore this possibility by examining whether drivers who report the most extreme pretreatment levels of driving anger (from a group that was selected based on their higher than average levels of anger on the road) respond differently to group treatment than do those whose anger is at more moderate levels.

*Question 2:* Is pretreatment level of general anger related to how much clients benefit from driving-anger treatment?

Several studies have shown that those who are more hostile tend to benefit less from therapy (Barkham et al., 1996; Burns et al., 1999; Conte et al., 1991; Filak et al., 1986; Kopta et al., 1994; Overstreet, 1993). Although this finding has evidently not been tested in treatments specifically targeted toward driving anger, it may be that drivers who have the highest levels of general or trait anger will be least likely to benefit from intervention.

*Question 3:* Does the pretreatment ways in which a person expresses his/her anger generally relate to how much clients benefit from driving anger treatment?

There is a small amount of research that suggests that those who express anger in a less overt, hostile manner (i.e., those lower on anger-out) might be expected to gain more from treatment, possibly because they are more able to develop more productive working alliances with the therapist (Burns et al., 1999; Filak et al., 1986; Mohr, 1995). Anger suppression may also interfere with treatment response. (Erwin et al., 2003). The current research will explore this area by assessing if pretreatment levels of outward negative anger expression (anger-out), anger suppression (anger-in), and/or efforts to reduce or control one's anger (anger-control) relates to outcome for a specific (driving) anger reduction intervention.

*Question 4:* Do the effects of driving anger level, general anger level, and/or anger expressive style vary by treatment type?

Many studies have identified interactions between client factors and therapeutic approach in therapies for a wide range of problems and issues, but only a few studies

have examined the interaction between client characteristics and the outcome of different anger treatments. Those that have were largely conducted by Deffenbacher and his colleagues (Deffenbacher, Filetti et al., 2002; Deffenbacher, Huff et al., 2000; Deffenbacher et al., 1990b; Deffenbacher, Oetting, Huff et al., 1996; Deffenbacher et al., 1995; Deffenbacher, Thwaites, Wallace, & Oetting, 1994). A meta-analysis that included many of these studies concluded that social skills and process group interventions were best for clients with difficulties controlling their anger, while cognitive therapies were most effective for those with a tendency to hold anger in. For those with anger-expression problems (e.g., angry outbursts), cognitive behavior treatments appear to be the treatment of choice, while those in a current angry state benefit most from relaxation therapies (Del Vecchio & O'Leary, 2004). Further support for a possible interaction between anger style and treatment type comes from Project Match, which found that substance-abuse clients higher in trait anger improved most in Motivational Enhancement Therapy, while those lower in trait anger benefited more from Cognitive Behavioral Therapy or Twelve-Step Facilitation (Project MATCH Research Group, 1997). The current study will expand on these findings, examining whether level and expressive style of anger interact with type of treatment (cognitive, behavioral and relaxation) in predicting driving anger treatment outcome. This information will allow therapists to more effectively choose interventions specific to their clients' needs. In summary, explorations of the variable [i.e., pretreatment level of (a) driving anger, (b) general, trait anger, and (c) general anger expression] x treatment interactions in the second step of the regression models will identify if the selected variables interact with type of treatment.



## Method

### *Participants*

Participants were 355 (146 male and 209 female) high-anger college student drivers from Colorado State University (mean age = 18.9). Of these, 118 were randomly assigned to an applied relaxation intervention, 119 to a cognitive intervention, and 118 to an aggression-incompatible, safe driving behavioral intervention. The majority of the sample (67.6%) were freshmen, 24.2% were sophomores, 5.4% were juniors, and 2.8% were seniors or “other”. Over eighty-four percent (84.2%) identified themselves as non-Hispanic White, while 7.9% identified as Hispanic/Latino, 3.1% as African American, 1.7% as Asian American, 1.7% as Native American, and 1.4% as “other”.

### *Measures*

*Demographic information.* Information about gender, age, ethnicity, and year in school was collected on pretreatment questionnaires.

*Driving Anger Scale (DAS).* Both the long- (33-item) and short- (14-items) forms of the DAS were used, the latter for screening participants and the former to assess treatment outcome. Items are rated on a 1-5 scale (1= not at all, 5= very much) according to the amount of anger experienced in a situation. For example, participants rate how angry or provoked they would feel if someone was weaving in and out of traffic, if a truck kicked up sand or gravel on the car they are driving, or if they were stuck in a traffic jam. The short- and long-forms are highly correlated ( $r = .95$ ) (Deffenbacher, Oetting, & Lynch, 1994), and short form  $\alpha$  reliabilities range from .80 - .93 while long-form  $\alpha$  reliability is .96. Ten-week test-retest reliabilities are .84 and .88, respectively (Deffenbacher, 2000). Scores on the DAS correlate positively with frequency and

intensity of anger in real world driving situations in both general and clinical samples. They also correlate positively with aggressive thinking and anger expression while driving as well as with risky driving behavior, trait anger, impulsiveness, and some crash-related outcomes. Scores correlate negatively with more adaptive/constructive anger thoughts and experiences (Deffenbacher, Lynch, Oetting, & Swaim, 2002; Deffenbacher, Petrilli, Lynch, Oetting, & Swaim, 2003).

Long-form scales assess anger in response to six types of situations: (1) 3-item ( $\alpha = .92$ ) Hostile Gestures (e.g. someone honks at you about your driving); (2) 4-item ( $\alpha = .81$ ) Illegal Driving (e.g., someone runs a red light or stop sign); (3) 4-item ( $\alpha = .87$ ) Police Presence (e.g., you pass a radar speed trap); (4) 6-item ( $\alpha = .91$ ) Slow Driving (e.g., someone is slow in parking and holding up traffic); (5) 9-item ( $\alpha = .92$ ) Discourtesy (e.g., Someone cuts in and takes the parking spot you have been waiting for.); and (6) 7-item ( $\alpha = .87$ ) Traffic Obstructions (e.g., You are behind a large truck and cannot see around it).

*Drivers Angry Thoughts Questionnaire (DATQ).* The DATQ is a 65-item measure of angry cognitions related to driving. Participants describe on a five-point scale (1 = not at all, 5 = all the time) how often a thought or one similar to it occurs when angry at another driver or event while driving. For example, individuals rate how often they think “What an idiot” or “I’m going to teach them a lesson”. The DATQ (Deffenbacher, Petrilli et al., 2003; Deffenbacher, White, & Lynch, 2004) yields five measures of angry cognitions when driving: (1) the 21-item ( $\alpha = .94$ ) Judgmental and Disbelieving thinking scale assesses drivers’ tendencies to disparage other drivers by questioning or expressing disbelief in their driving ability or right to be on the road (e.g.,

They shouldn't be allowed to drive.); (2) the 13-item ( $\alpha = .92$ ) Pejorative Labeling and Verbally Aggressive Thinking scale addresses negatively labeling or judging other drivers or thinking about engaging in verbally aggressive behavior (e.g., What a stupid driver.); (3) the 14-item ( $\alpha = .93$ ) Revenge and Retaliatory Thinking scale reveals thoughts or plans and associated behaviors to get back at other drivers (e.g., I'm going to slow down to spite them.); (4) the 8-item ( $\alpha = .93$ ) Physically Aggressive Thinking Scale assesses how often drivers have thoughts of doing physical harm to other drivers (e.g., They ought to be shot.); (5) the 9-item ( $\alpha = .83$ ) Coping Self-instruction scale indicates how often individuals engage in positive, adaptive ways of thinking that help them to cope with driving stressors (e.g., Nothing I can do about it so take it easy.). Thought patterns as measured by the DATQ are correlated with trait driving anger, anger in specific driving situations, anger expressed through aggressive driving, and aggressive and risky behavior on the road (Deffenbacher, Petrilli et al., 2003).

Judgmental/disbelieving thinking correlates positively with other types of driving anger-related thoughts. Pejorative labeling/verbally aggressive, revengeful/retaliatory, and physically aggressive thinking correlate highly and positively with one another. They also correlate positively with verbal, personal physical, and vehicular forms of anger expression, and negatively with adaptive/constructive anger expression. Coping self-instructions correlate negatively with using the vehicle to express anger and positively with adaptive/constructive expression of anger (Deffenbacher, Petrilli et al., 2003; Deffenbacher et al., 2004). Cognitions in the DATQ better predicted driving-related variables than did a general measure of hostile cognitions (Deffenbacher, Petrilli et al., 2003).

*Driving Anger Expression Inventory (DAX).* On the 49-item DAX, participants rate on a four-point scale (1 = almost never, 4 = almost always) how often they express their anger in the described manner. The DAX breaks down into four anger expression subscales: (1) Verbal Aggressive Expression (12 items,  $\alpha = .88$  to  $.90$ ), which measures verbally aggressive expression of anger through behaviors such as swearing or yelling at another driver or pedestrian; (2) Personal Physical Aggressive Expression (11 items,  $\alpha = .80$  to  $.84$ ), which addresses using one's physical being to express anger aggressively through things such as giving another driver the finger or attempting to physically fight with another driver; (3) Use of the Vehicle to Express Anger (11 items,  $\alpha = .88$  to  $.89$ ), which includes such behaviors as flashing one's lights or intentionally speeding up to frustrate another driver, using the vehicle as the medium of aggressive anger expression; and (4) Adaptive/Constructive Expression, which assesses the degree to which participants deal with anger in a safe or prosocial way, such as through relaxation, distraction, or purposeful engagement in constructive behavior (15 items,  $\alpha = .90$ ) (Deffenbacher, Lynch et al., 2002). Aggressive forms of anger expression correlate positively with each other, but are uncorrelated with or correlate negatively with adaptive/constructive expression. They also correlate positively with driving-related anger, aggression, and risky behavior, whereas adaptive/constructive expression tends to correlate negatively with these variables. Aggressive forms of anger expression can be summed into a Total Aggressive Expression Index ( $\alpha = .90$ ) (Deffenbacher, Lynch et al., 2002).

*Aggressive and Risky Behavior Indexes.* The 13-item Aggressive Behavior scale assesses how often in the preceding three months drivers report having expressed verbal

or physical aggression toward a car, passenger, pedestrian, or other drivers. Reliabilities on this index range from .85 - .89 (Deffenbacher, Richards, Filetti, & Lynch, 2005; Deffenbacher et al., 2004). On a scale from 0 to 5+, drivers rate how often they have participated in activities such as "flashed your headlights in anger?" or "swore at or called another driver or pedestrian names?". On the 15-question Risky Behavior scale ( $\alpha = .83 - .87$ ) (Deffenbacher, 2008), drivers report on a scale from 0 to 5+ how often in the last three months they engaged in risky behaviors while driving, including behaviors such as "drank alcohol and driven" and "passed unsafely". Aggressive and risky behavior are positively correlated, but somewhat distinct constructs. For example, some aggressive behaviors (e.g., tailgating or cutting someone off in anger) increase risk of accidents and injuries. Other aggressive behaviors (e.g., cursing at someone) do not necessarily incur increased risk to the driver or others involved. Likewise, some risky behaviors (e.g., speeding erratically in a rage) are also aggressive, whereas many other risky behaviors (e.g., drunk driving and speeding) increase risk, but are not motivated by anger or an intent to harm. To better separate the constructs of aggressive versus risky behavior, items in the Risky Behavior scale include only behaviors that are risky without reference to anger or intent to harm (e.g., driving without a seatbelt, or drifting into another lane). The Aggressive Behavior scale includes some behaviors done in anger that were also risky (e.g. tailgating or driving up close behind another driver in anger) because testing suggested that people recalled events done in anger more readily than those done with intent to hurt, harm or retaliate (Deffenbacher et al., 2004, 2005). The Aggressive and Risky Behavior indexes are correlated positively with driving anger, verbal, physical and vehicular forms of driving anger expression, and driving-related angry thoughts

(Deffenbacher, Lynch et al., 2002; Deffenbacher et al., 2004). On average, high anger drivers report more aggressive and risky behavior than do low anger drivers and more of some crash-related conditions (Deffenbacher, Deffenbacher, Lynch, & Richards, 2003; Deffenbacher et al., 2004).

*The Trait Anger Scale (TAS).* On the 10-item TAS ( $\alpha = .81 - .91$ ) (Spielberger, 1988, 1999) participants rate how they generally feel on a 4-point scale, where higher scores signify higher reported levels of trait or general anger. Two-week and two-month test-retest reliabilities range from .70 - .77 (Jacobs, Latham & Brown, 1988; Morris et al., 1996). Scores on the TAS correlate highly with other measures of anger, anger consequences, aggression and hostility and discriminate between high- and low- anger groups (Deffenbacher, Oetting, Lynch, & Morris, 1996; Deffenbacher, Oetting, Thwaites et al., 1996; Spielberger, Sydeman, Owen, & Marsh, 1999).

*Anger Expression Inventory (AX).* The 24-item AX (Spielberger, 1988) instructs individuals to rate how often they express themselves in various ways when angry or furious (1 = almost never, 4 = almost always). It yields three, 8-item scales: Anger-In, Anger-Out, and Anger-Control. Reliabilities on these scales range from .73 - .84. Anger-In refers to the tendency to suppress anger expression but seethe silently and harbor grudges. Anger-Out measures the extent to which individuals express anger in outward, negative ways, such as through verbal or physical aggression. Anger-Control refers to the ability to stay calm and control anger as it occurs. As would be expected, Anger-Out and Anger-Control are inversely related to one another, while Anger-In shows no or a low correlation with both. The AX is also correlated in logical ways to other measures of

anger, personality variables, and physiological measures (Deffenbacher, Oetting, Thwaites et al., 1996; Spielberger, 1999).

### *Procedure*

*Screening.* The short-form of the Driving Anger Scale (DAS) (Deffenbacher, Oetting et al., 1994) was administered to all introductory psychology students enrolled in the Fall and Spring 2002 and 2003 semesters (over 6000 students from 42 classes). Students were asked to check a box if they believed that they had a personal problem with driving anger and wanted to participate in counseling to address the problem. Those who indicated an interest in counseling were asked to provide their name, address, phone number and email address so that they could be contacted for the study.

Students were contacted by phone and email and invited to participate in the study if they scored in the upper quartile on the DAS (scores > 52) and endorsed items indicating that they believed driving anger was a problem for them and that they desired counseling for that problem. They were told that they would be required to complete pre-, post- and four week follow-up assessments lasting approximately one hour each. They were also informed that they had a three out of four chance of being assigned to a counseling group, which would meet weekly for eight weeks. They were asked for information about their schedules so that an appropriate group time could be selected if they were assigned to a treatment condition. Those who agreed to complete the study were assigned to one of three therapy treatment conditions or a no-treatment control group; assignment to groups was random but influenced by scheduling constraints.

*Assessment Measures.* Participants completed assessment measures approximately one week before counseling groups began, one week after groups ended,

and four weeks after the end of treatment. Pre-treatment measures included consent forms, demographic information, the long-form of the DAS, the DATQ, DAX, Aggressive Behavior and Risky Behavior Scales, TAS, and AX. Instruments were administered in that order so that responses on general anger measures would be less likely to influence driving variables. Students were assessed in small classrooms in groups of 10-20. Undergraduate and graduate research assistants administered the assessments by playing tape recorded instructions, which were used to enhance procedural consistency. After completing the assessment instruments, students were given three driving logs to complete and turn in during the following week. Those assigned to treatment conditions were given information regarding the meeting time and location for their group, while those in the control condition received a written explanation of post-treatment and follow-up assessment procedure.

Post- and follow- up assessment was identical to pre-treatment except that a) the consent form was not repeated; b) participants received personalized copies of the Anger Situations they had described in pre-treatment assessment so that they could rate their current level of anger in those same situations, and; c) driving logs were administered at follow-up but not at post-treatment.

*Interventions.* Treatment groups were facilitated by 4 female and 2 male advanced doctoral students in counseling psychology. Groups averaged six to ten members and met one hour weekly for eight weeks. There were three treatment conditions: relaxation coping skills, cognitive, and behavioral. To distribute therapist effects across these conditions, each therapist conducted all three types of groups, and conditions were assigned randomly to groups. The total number of groups was equal for



each condition (i.e. there were the same number of relaxation coping skills, cognitive and behavioral groups), but individual therapists did not necessarily conduct the same number of groups in each condition. Treatments were manualized using detailed weekly outlines; all conditions included a combination of didactic presentation, group discussion and sharing of personal experiences, and skill rehearsal. Group leaders received two hours of weekly supervision from Jerry Deffenbacher, Ph.D.

*Relaxation Coping Skills (RCS).* Procedures for RCS are fully described by Deffenbacher and his colleagues (Deffenbacher, Huff et al., 2000). In the first two sessions students were oriented to treatment. They were provided a rationale for how relaxation could be used to decrease emotional and physiological arousal associated with anger, thereby reducing overall anger levels while driving. They were taught progressive muscle relaxation and four specific relaxation coping skills: (a) relaxation without muscle tensing; (b) breathing cued relaxation (i.e., relaxing more with each deep breath); (c) cue-controlled relaxation (i.e., relaxing more with each repetition of a word or phrase, such as “relax”), and; (d) relaxation imagery (i.e., visualizing a peaceful and relaxing scene). During these sessions they also revealed their most anger-provoking driving situations, and the group collaborated to rank the resulting list of situations from least to most anger-provoking. Homework for the first two sessions included practicing relaxation on a daily basis, specifying in detail a description of one of the angering situations discussed in group, and monitoring their driving anger. Beginning in the third session, group members learned to apply relaxation skills to anger-provoking imagery. After relaxing themselves, they were instructed to visualize an angering driving scene generated by the group, imagine and experience their anger response to that situation for 30-60 seconds,

and then apply two of the four relaxation coping skills as prompted by the therapist. Clients were asked to signal relaxation, and when all were relaxed, they repeated the exercise using a new scene and a different combination of relaxation coping skills. This process was repeated as time allowed, with two scenes used per week. Homework for the 3rd through 7th sessions included practicing relaxation skills, creating detailed imagery for the two scenes to be used in the next session, and to begin applying relaxation coping skills to driving anger situations. Over the course of therapy scenes became increasingly anger-provoking (in accordance to the list generated by the groups) and procedures shifted from therapist to client control, so that clients learned to initiate relaxation on their own. Starting at session 5, clients were encouraged to begin applying their relaxation coping skills to difficult situations that were not related to driving. Maintenance strategies were introduced in the final session.

*Cognitive Therapy (CT).* CT applied to driving anger the cognitive-based anger protocols developed by Dahlen and Deffenbacher (2000; Deffenbacher, Dahlen et al., 2000). The intervention was designed to identify and change cognitions that provoke and maintain anger on the road. It included psychoeducation in how thoughts, appraisals, and construals of the situation contribute to anger, frequent Socratic questioning by the therapist (e.g., What might be another way to look at that situation or interpret another driver's actions?), and behavioral experiments and tryouts (e.g., How could you apply what you are learning in the real world? Could you look for situations in which others behave rudely and think of alternative explanations for their behavior?). It also included imaginal rehearsal in which students applied new cognitive skills to anger-engendering situations.

In the first session students were taught to view anger as a physical, emotional, cognitive, and behavioral reaction, and were informed that therapy would help them to develop new ways of thinking about and handling angering situations on the road. Students identified their most difficult driving situations and began examining how their thoughts and reactions increased anger and created problematic behavior in those situations. Based on their own experiences along with observations of others who effectively control anger while driving, they also identified thoughts and reactions that could lower anger and improve situations. Their homework for the week was to monitor the driving situations that angered them along with their angry thoughts, images and behaviors in response to these situations. Homework was reviewed at the beginning of session 2, and they continued discussing how they might think about, construe, or appraise situations so that they experience less anger. Using the example of being stuck in traffic, students were asked to list their anger-engendering cognitions and then discuss alternative ways to view or think about the situation that could decrease their anger. During the last 20 minutes, students were asked to imagine themselves in the situation and allow themselves to become angry. The therapist then instructed them to think about two or three anger-reducing cognitions that the group had identified and visualize themselves using those thoughts to lower their anger. When members signaled that their anger was lessened, the process was repeated two or three times using different anger-reducing thoughts and approaches. Homework involved continuing to self-monitor anger while driving and to begin recording attempts to lessen anger using the cognitive strategies discussed in the group.

Sessions 3 – 8 were similar in structure to session 2. First, homework was reviewed. They were then given two situations and asked to formulate a list of anger-promoting and anger-reducing cognitive responses to each situation. During the last 20 minutes, they were asked to visualize these situations and employ the anger-reducing strategies they had discussed. On two occasions, members were instead given the chance to rehearse these strategies in a novel and interactive way by role playing driving situations with other group members. One student pretended to be the driver in a typically anger-provoking situation on the road. Half of the group attempted to heighten the driver's anger by suggesting anger-engendering thoughts while the other half endeavored to help the driver control anger by suggesting anger-lowering thoughts. Roles were alternated periodically so that everyone had the opportunity to practice formulating anger-reducing cognitions. Homework for sessions 3-7 included self-monitoring of situations and attempts to control anger, behavioral experiments in which students purposefully changed their cognitive response to situations, and writing down a list of helpful thoughts and appraisals relevant to the two situations discussed during the session. Over the course of treatment clients became increasingly responsible for identifying and applying new cognitive strategies, and from session 5 onward they were explicitly encouraged to apply these skills to non-driving anger situations and other types of distress (e.g., test anxiety). Session 8 offered strategies for maintaining therapeutic gains.

*Behavior Therapy (BT).* BT applied the behavior-based protocols developed by Dahlen and Deffenbacher (2000; Deffenbacher, Dahlen et al., 2000). BT was parallel in most respects to CT, except that the focus was on changing clients' behavioral reactions

to (as opposed to their cognitions in response to) frustrating and anger-provoking driving situations. Students were encouraged to replace maladaptive and aggressive behaviors (e.g., honking the horn, cutting off other drivers) with calmer, safer behaviors (e.g., focusing on safe driving, slowing down and backing away, turning on the radio to distract from frustrating circumstances), thus creating new ways of reacting to and handling negative events on the road. The structure of sessions was identical to CT except that students were instructed to identify behaviors that increase anger as well as behaviors that reduce anger by helping the individual to cope, distract, or react calmly. Students were encouraged to formulate, visualize, rehearse and practice these more adaptive behavioral responses and eventually generalize them to non-driving situations.

## Results

### *Treatment-Related Change*

Since the primary research questions of this study involved the value of pretreatment client characteristics in the prediction of therapeutic change, it is important to establish that clients changed over the course of therapy. If change were not established, there would be little to predict. To address this issue, variables were analyzed by 3 (Treatment) x 3 (Assessment Time/Trials) repeated measures ANOVAs. Because of the number of analyses,  $\alpha$  was set at  $p < .01$ . Effect sizes were expressed in terms of  $\eta^2$  and interpreted within Cohen's (1988) criterion wherein effect sizes from .01 to .04 are considered small, from .04 to .14 moderate, and larger than .14 as large. Significant Trial effects and Treatment x Trial interactions were explored by Tukey tests. Significant Treatment x Trial interactions would suggest differential treatment effects over time and that prediction of change should be analyzed at the level of individual interventions. Significant Trial effects in the absence of Treatment x Trial interactions would suggest change over time and that interventions could be collapsed with prediction of change across all participants.

Means and standard deviations for all outcome measures and trials are reported in Table 1. Results of Treatment x Trial ANOVAs for all outcome measures are summarized in Table 2. For one variable, the DATQ Coping scale, there was a significant Treatment x Trials interaction, indicating that members of the treatment

Table 1

*Pretreatment, Posttreatment, and One-month Follow-up Means and Standard Deviations for Treatment Groups*

Measure	Time	Condition					
		Relaxation		Cognitive		Behavioral	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
DAS Total	Pre	128.87	10.19	127.26	10.62	128.20	10.17
	Post	89.67	19.44	88.05	19.90	86.17	21.61
	FU	84.19	21.70	82.23	21.01	81.56	20.69
DAS Hostile Gestures	Pre	12.67	2.20	12.76	2.62	12.75	2.40
	Post	8.14	3.24	7.97	3.19	7.88	3.14
	FU	7.47	2.93	7.40	2.98	7.37	2.92
DAS Illegal Driving	Pre	13.81	2.86	13.36	3.11	14.08	3.17
	Post	9.91	2.97	9.61	3.03	10.06	3.22
	FU	9.08	2.94	8.99	3.01	9.17	3.05
DAS Police Presence	Pre	14.87	3.36	14.45	3.28	14.08	3.58
	Post	9.92	4.06	10.40	4.22	9.77	3.66
	FU	9.61	4.19	10.02	4.17	9.24	3.48
DAS Slow Drivers	Pre	24.72	2.69	24.64	3.38	24.36	2.75
	Post	17.59	4.01	17.37	4.13	16.70	4.33
	FU	16.30	4.32	16.22	4.51	16.08	4.27
DAS Discourtesy	Pre	36.35	2.42	36.07	2.55	36.18	2.46
	Post	25.96	5.71	24.64	5.27	24.65	6.22
	FU	24.03	5.95	23.24	5.83	23.28	6.15
DAS Obstructions	Pre	26.46	4.27	25.98	3.98	26.75	3.62
	Post	18.15	5.61	18.05	5.11	17.10	5.80
	FU	17.71	6.02	17.90	11.29	16.42	5.00
DATQ Judgmental	Pre	66.47	18.90	64.15	16.75	65.32	17.29
	Post	47.70	15.68	46.65	15.02	45.55	16.78
	FU	43.29	14.76	42.07	12.57	42.25	16.35
DATQ Pejorative	Pre	53.31	9.47	52.97	9.04	53.72	8.11
	Post	36.56	11.02	34.61	11.31	33.86	10.90
	FU	32.03	10.85	31.50	9.78	31.21	11.13
DATQ Revenge	Pre	38.32	13.52	38.10	13.00	38.25	12.67
	Post	24.63	9.39	24.17	10.03	24.27	9.72
	FU	21.65	8.37	21.39	8.94	22.65	9.30
DATQ Physical	Pre	15.30	8.58	17.33	8.32	17.53	8.04
	Post	10.30	4.41	10.66	4.99	10.60	4.83
	FU	9.59	3.18	9.80	4.76	10.25	4.20
DATQ Coping	Pre	19.86	6.64	18.29	5.65	18.90	6.08
	Post	25.13	6.51	26.92	7.09	26.65	6.74
	FU	24.12	6.82	24.56	6.83	24.53	6.66
DAX Verbal	Pre	35.52	8.01	35.93	7.16	36.18	6.87
	Post	26.99	7.86	26.01	6.97	25.97	7.58
	FU	26.07	8.25	24.82	6.47	25.36	8.01
DAX Physical	Pre	16.42	4.36	16.45	4.40	16.68	4.73
	Post	14.39	3.90	13.71	3.93	14.09	4.15
	FU	13.80	3.39	13.46	3.73	14.09	4.40

Table 1

*Pretreatment, Posttreatment, and One-month Follow-up Means and Standard Deviations for Treatment Groups*

Measure	Time	Condition					
		Relaxation		Cognitive		Behavioral	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
DAX Vehicle	Pre	25.04	6.71	26.00	7.22	25.87	6.98
	Post	18.12	5.59	18.18	5.59	18.40	5.83
	FU	17.31	4.95	17.12	5.31	18.12	5.89
DAX Adaptive	Pre	29.23	7.45	27.14	7.19	28.38	7.27
	Post	37.86	7.93	39.42	8.74	39.49	8.24
	FU	37.43	8.68	37.93	9.67	38.05	8.83
DAX Aggressive	Pre	76.98	15.66	78.39	14.73	78.73	14.52
	Post	59.50	14.61	57.90	13.86	58.47	14.56
	FU	57.17	13.97	55.23	12.98	57.57	15.43
Aggressive Behavior	Pre	24.15	11.92	24.39	12.25	25.39	11.13
	Post	--	--	--	--	--	--
	FU	13.06	10.00	12.52	10.05	13.78	9.51
Risky Behavior	Pre	29.57	13.80	31.54	15.42	31.34	14.21
	Post	--	--	--	--	--	--
	FU	21.58	12.01	20.55	13.67	20.94	12.86
Trait Anger Scale	Pre	25.31	5.30	25.51	5.23	25.88	5.14
	Post	20.08	4.36	20.62	4.61	19.50	4.49
	FU	18.74	3.97	19.85	4.75	18.97	4.72
AX In	Pre	18.58	4.48	18.74	4.65	18.10	4.45
	Post	16.63	4.53	15.97	4.42	16.14	4.52
	FU	16.58	4.33	16.33	4.29	16.36	4.36
AX out	Pre	19.31	4.50	20.74	4.53	20.64	4.25
	Post	16.31	3.40	16.81	3.46	16.29	3.71
	FU	16.10	3.35	16.61	3.55	16.52	3.73
AX Control	Pre	19.96	4.25	18.89	4.21	18.95	4.29
	Post	21.57	4.43	21.66	4.28	21.81	4.43
	FU	22.56	4.70	21.82	4.44	21.92	4.49

*Note.* For all measures except DATQ Coping, DAX Adaptive, and AX Control, lower means are more favorable. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores. DAS = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire, DAX = Driving Anger Expression, Aggressive Behavior = Report of aggressive behavior over last three months, Risky Behavior = Report of risky behavior over last three months, AX = Anger Expression Inventory, Pre = Pretreatment, Post = Posttreatment, and FU = Four-week Follow-up.



Table 2

*Effects and Effect Sizes for Analysis of Measures of Driving Anger*

Measure	Treatment <i>F</i> (2, 352 )	Treatment $\eta^2$	Trials <i>F</i> (2, 704)	Trials $\eta^2$	Interaction <i>F</i> (4, 704 )	Interaction $\eta^2$
DAS Total	0.93	.005	1019.19**	.743	0.38	.002
DAS Hostile	0.05	.000	685.03**	.661	0.21	.001
Gestures						
DAS Illegal	1.06	.006	420.09**	.544	0.43	.002
Driving						
DAS Police	1.08	.006	427.69**	.549	1.32	.007
Presence						
DAS Slow	0.92	.005	736.97**	.677	0.40	.002
Drivers						
DAS	1.71	.010	998.69**	.739	0.69	.004
Discourtesy						
DAS	0.75	.004	387.80**	.524	1.83	.010
Obstructions						
DATQ	0.52	.003	379.46**	.519	0.31	.002
Judgmental						
DATQ	0.61	.003	779.09**	.689	1.20	.007
Pejorative						
DATQ	0.10	.001	455.23**	.564	0.31	.002
Revenge						
DATQ	1.74	.010	233.17**	.398	1.94	.011
Physical						
DATQ	0.12	.001	203.58**	.366	3.71*	.021
Coping						
DAX Verbal	0.29	.002	428.67**	.550	1.19	.007
DAX Physical	0.48	.003	101.82**	.225	0.68	.004
DAX Vehicle	0.52	.003	368.48**	.512	0.79	.004
DAX	0.22	.001	318.31**	.476	2.85	.016
Adaptive						
DAX	0.30	.002	441.07**	.558	1.16	.007
Aggressive						
Aggressive	0.52	.003	356.00**	.504	0.14	.001
Behavior						
Risky	0.07	.000	208.46**	.372	1.82	.010
Behavior						
Trait Anger	0.89	.005	367.21**	.511	2.02	.011
Scale						
AX In	0.32	.002	83.02**	.191	1.13	.006
AX Out	2.07	.012	234.13**	.400	2.22	.012
AX Control	0.79	.004	98.93**	.220	1.82	.010

\* $p < .01$ , \*\* $p < .001$ 

*Note.* DAS = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire, DAX = Driving Anger Expression, Aggressive Behavior = Report of aggressive behavior over last three months, Risky Behavior = Report of risky behavior over last three months, AX = Anger Expression Inventory, Pre = Pretreatment, Post = Posttreatment, and FU = Four-week Follow-up.

groups changed differentially across time. Post hoc tests indicated that the participants in the Cognitive and Behavioral groups improved more from pretreatment to posttreatment than did members of the Relaxation group, but this difference was not significant at one-month follow-up. Because no other interactions were found to corroborate this pattern, and because groups did not differ significantly at follow-up, this interaction was not considered a meaningful, replicable effect.

For all other measures, a consistent pattern was observed in which Trial effects were significant, but Treatment and Interaction effects were not. Because of the absence of meaningful interactions, Trials main effects were explored (Table 3). Treatment was consistently effective, with significant change from pretreatment to posttreatment and from pretreatment to follow-up ( $ps < .001$ ). Participants improved on all measures of driving anger, angry thoughts while driving, driving anger expression, aggressive and risky behavior, trait anger, and general anger expression. Outcomes did not vary significantly by treatment condition, suggesting that the Cognitive, Behavioral and Relaxation treatments were equally effective at promoting positive change. As shown in Table 3, on most measures participants either continued to significantly improve from posttreatment to follow-up (DAS Total, DAS Hostile Gestures, DAS Illegal Driving, DAS Police Presence, DAS Slow Drivers, DAS Obstructions, DATQ Judgmental, DATQ Pejorative, DATQ Revenge, DATQ Physical, DAX Verbal, DAX Vehicle, DAX Aggressive, and the Trait Anger Scale) or maintained change (DAS Discourtesy, DAX Physical, AX In, AX Out, AX Control). On two measures, the DATQ Coping Self-Instruction and DAX Adaptive Constructive Expression, participants lost some of their

Table 3

*Means and Standard Deviations Collapsed across Treatment Groups*

Measure	Pretreatment		Posttreatment		One Month Follow-up	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
DAS Total	128.11 <sub>a</sub>	10.32	87.96 <sub>b</sub>	20.33	82.66 <sub>c</sub>	21.11
DAS Gestures	12.72 <sub>a</sub>	2.41	8.00 <sub>b</sub>	3.18	7.41 <sub>c</sub>	2.94
DAS Illegal Driving	13.75 <sub>a</sub>	3.06	9.86 <sub>b</sub>	3.07	9.08 <sub>c</sub>	2.99
DAS Police	14.47 <sub>a</sub>	3.42	10.03 <sub>b</sub>	3.98	9.62 <sub>c</sub>	3.96
DAS Slow Drivers	24.57 <sub>a</sub>	2.96	17.22 <sub>b</sub>	4.17	16.20 <sub>c</sub>	4.36
DAS Discourtesy	36.20 <sub>a</sub>	2.47	25.08 <sub>b</sub>	5.76	23.51 <sub>b</sub>	5.97
DAS Obstructions	26.40 <sub>a</sub>	3.96	17.77 <sub>b</sub>	5.52	17.35 <sub>c</sub>	7.95
DATQ Judgmental	65.31 <sub>a</sub>	17.64	46.63 <sub>b</sub>	15.82	42.54 <sub>c</sub>	14.61
DATQ Pejorative	53.34 <sub>a</sub>	8.87	35.01 <sub>b</sub>	11.11	31.58 <sub>c</sub>	10.57
DATQ Revenge	38.22 <sub>a</sub>	13.03	24.35 <sub>b</sub>	9.69	21.90 <sub>c</sub>	8.87
DATQ Physical	16.72 <sub>a</sub>	8.35	10.52 <sub>b</sub>	4.74	9.88 <sub>c</sub>	4.10
DATQ Coping	19.01 <sub>a</sub>	6.15	26.24 <sub>b</sub>	6.81	24.40 <sub>c</sub>	6.75
DAX Verbal	35.88 <sub>a</sub>	7.35	26.32 <sub>b</sub>	7.47	25.41 <sub>c</sub>	7.61
DAX Physical	16.52 <sub>a</sub>	4.49	14.06 <sub>b</sub>	3.99	13.78 <sub>b</sub>	3.86
DAX Vehicle	25.64 <sub>a</sub>	6.97	18.23 <sub>b</sub>	5.65	17.51 <sub>c</sub>	5.40
DAX Adaptive	28.25 <sub>a</sub>	7.33	38.92 <sub>b</sub>	8.32	37.81 <sub>c</sub>	9.05
DAX Aggressive	78.03 <sub>a</sub>	14.95	58.62 <sub>b</sub>	14.32	56.66 <sub>c</sub>	14.16
Aggressive Behavior	24.65 <sub>a</sub>	11.76	--	--	13.12 <sub>b</sub>	9.84
Risky Behavior	30.82 <sub>a</sub>	14.48	--	--	21.02 <sub>b</sub>	12.83
Trait Anger Scale	25.57 <sub>a</sub>	5.21	20.07 <sub>b</sub>	4.50	19.19 <sub>c</sub>	4.51
AX In	18.48 <sub>a</sub>	4.53	16.24 <sub>b</sub>	4.49	16.42 <sub>b</sub>	4.32
AX Out	20.23 <sub>a</sub>	4.46	16.47 <sub>b</sub>	3.52	16.41 <sub>b</sub>	3.54
AX Control	19.26 <sub>a</sub>	4.26	21.68 <sub>b</sub>	4.37	22.10 <sub>b</sub>	4.54

*Note.* Means with different subscripts differ significantly at  $p < .01$ . For all measures except DATQ Coping, DAX Adaptive, and AX Control, lower means indicate less of that behavior. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores. DAS = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire, DAX = Driving Anger Expression, Aggressive Behavior = Report of aggressive behavior over last three months, Risky Behavior = Report of risky behavior over last three months, and AX = Anger Expression Inventory.

treatment gains between posttreatment and follow-up. However, they still maintained significant improvement from pretreatment.

Taken together, these findings suggest that, overall, treatment was effective. On nearly all measures and in all treatment conditions, participants improved markedly from pretreatment to posttreatment, and then continued to improve slightly between posttreatment to follow-up or at least maintained the changes they had made. Since there were no significant Treatment x Trials interaction effects on all but one measure, and the one interaction observed does not appear to represent a reliable and meaningful difference between groups, it was not necessary to conduct separate regression analyses for each treatment condition to answer the research questions. However, group status continued to be included in the models so that potential interactions with other variables could be observed.

*Was Pretreatment Level of Driving Anger Related to How Much Clients Changed?*

A series of multiple regression models was conducted to assess whether pretreatment scores on the DAS Total, a global measure of driving anger that incorporates all of the DAS subscales, would predict level of change on variables between pretreatment and posttreatment and between pretreatment and follow-up. These analyses also examined whether pretreatment DAS Total score interacted with gender or treatment group to predict outcome. For each analysis, the pretreatment DAS Total score, gender, and treatment group were entered on Step 1. Then, all two-way interactions were entered on Step 2, and three-way interactions on Step 3. Centered DAS Total scores were used to create the interaction terms (West, Aiken, & Krull, 1996). Gender and treatment group were dummy coded. For gender, male was coded 0 and

female was coded 1; positive  $\beta$  weights in the regression analyses therefore indicate that females improved more, whereas negative  $\beta$  weights indicate that males showed greater improvement. Treatment group was dummy coded using a standard coding scheme in which two variables (number of treatment conditions minus 1) were used to represent group membership (Cohen, Cohen, West, & Aiken, 2003). The Relaxation group was selected as the reference group and was therefore coded 0,0. Cognitive was coded 0,1, and Behavioral as 1,0. Both dummy variables were entered along with gender and DAS on the first step and were used to create the interactions on Steps 2 and 3. Since with three groups it is not possible to directly interpret the  $\beta$  on this variable, follow-up analyses were employed to understand any significant findings for treatment group. Due to the number of analyses being conducted,  $\alpha$  was again set at  $p < .01$ , and a step or variable also had to account for at least 1% of the variance ( $\Delta R^2 > .01$ ) to be considered a meaningful predictor of change (i.e., had to reach the lower limit of a small effect size to be considered meaningful).

For all measures, change percentage scores were calculated using the following formula:  $[(\text{Pretreatment} - \text{Posttreatment})/(\text{Pretreatment})] \times 100$ . This strategy was selected after an examination of the treatment outcome literature indicated that percentage change scores are often used instead of raw change scores to mitigate problems associated with dependence between pretreatment scores and outcome (Anson & Ponsford, 2006). Larger percentage change scores indicate greater improvement. In the regression analyses, therefore, a higher  $\beta$  for DAS pretreatment score indicates that higher pretreatment scores (more initial driving anger) was associated with greater change on the measure (higher percentage change scores).

Mean percentage of change from pretreatment to posttreatment and from pretreatment to follow-up on all dependent variables is shown in Table 4. At posttreatment, the amount of improvement ranged from about 10% for Anger Expression In to nearly 50% for the DATQ Coping scale. At follow-up, the smallest average change was about 9% for Anger Expression In, and the greatest was nearly 41% for the Aggressive Behavior Scale.

Table 5 shows the  $F$  values and  $\Delta R^2$  for the first set of models regressing pretreatment DAS scores on percentage change on the DAS scales. For all variables, and for both posttreatment and follow-up change scores, Step 1 was a significant predictor of change. Step 2 was significant for three of the DAS measures, including DAS Discourtesy, Slow Driving, and Traffic Obstructions at follow-up. Step 3 was not significant for any equations, and so will not be discussed further.

Standardized  $\beta$  values for Steps 1 and 2 can be found in Table 6. In each case, pretreatment DAS score accounted for a significant amount of the variance on Step 1 such that higher pretreatment levels of driving anger predicted greater change. This was true for both change from pretreatment to posttreatment and from pretreatment to follow-up. For one variable, the DAS Discourtesy, there was also a significant main effect for gender on Step 1, with males improving more between pretreatment and follow-up. This difference was not observed from pretreatment to posttreatment. Treatment condition did not significantly predict change in any of the analyses, a result consistent with previous findings that members of the three treatment groups did not improve differentially.

In each case in which Step 2 was significant, so was the interaction between gender and the second dummy variable representing treatment group. None of the other

Table 4

<i>Mean Percent Change and Standard Deviations Collapsed across Treatment Groups</i>				
Measure	Pre to Posttreatment		Pretreatment to Follow-up	
	<i>M % Change</i>	<i>SD</i>	<i>M % Change</i>	<i>SD</i>
DAS Total	30.92	16.74	35.05	17.42
DAS Gestures	36.09	24.99	40.54	23.74
DAS Illegal Driving	25.73	26.57	31.52	24.61
DAS Police	29.85	25.15	32.28	26.55
DAS Slow Drivers	29.10	18.40	33.20	19.29
DAS Discourtesy	30.41	16.50	34.71	17.14
DAS Obstructions	23.60	15.90	24.80	22.67
DATQ Judgmental	25.39	25.49	31.89	23.66
DATQ Pejorative	32.88	22.75	39.92	19.24
DATQ Revenge	31.68	27.09	38.97	22.75
DATQ Physical	27.61	31.06	30.60	33.45
DATQ Coping	-49.79	57.85	-38.88	53.75
DAX Verbal	24.82	21.43	27.64	20.19
DAX Physical	11.80	22.88	13.55	22.30
DAX Vehicle	25.62	23.62	28.52	22.45
DAX Adaptive	-45.41	45.43	-40.58	44.80
DAX Aggressive	23.07	19.69	25.80	18.32
Aggressive Behavior	--	--	40.94	44.96
Risky Behavior	--	--	25.07	42.88
Trait Anger Scale	19.54	19.54	23.16	18.49
AX In	10.31	22.04	8.71	23.21
AX Out	16.14	19.33	16.61	18.82
AX Control	-15.89	27.80	-18.02	27.98

*Note.* *n* for all variables was 354 or 355. DATQ Coping, DAX Adaptive, and AX Control are reverse scored such that negative percent change indicates increased positive behavior. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores. DAS = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire, DAX = Driving Anger Expression, Aggressive Behavior = Report of aggressive behavior over last three months, Risky Behavior = Report of risky behavior over last three months, and AX = Anger Expression Inventory.

Table 5

<i>Multiple Regression Analyses of Change Predicted from DAS Total Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 350)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 345)	$\Delta R^2$	<i>F</i> (2, 343)	$\Delta R^2$
DAS Total	PC	10.16**	.104	0.96	.012	0.24	.001
	FC	10.96**	.111	2.90	.036	0.86	.004
DAS Hostile Gestures	PC	6.49**	.069	0.87	.012	0.03	.000
	FC	6.15**	.066	0.94	.013	0.13	.001
DAS Illegal Driving	PC	11.54**	.117	0.57	.007	0.19	.001
	FC	13.05**	.130	1.24	.015	0.46	.002
DAS Police Presence	PC	7.81**	.082	1.73	.022	0.07	.000
	FC	8.94**	.093	3.02	.038	0.15	.001
DAS Slow Drivers	PC	10.64**	.108	1.01	.013	1.75	.009
	FC	9.48**	.098	3.98*	.049	3.82	.019
DAS Discourtesy	PC	3.70*	.041	0.85	.012	0.45	.002
	FC	7.08**	.075	3.50*	.045	0.80	.004
DAS Obstructions	PC	17.75**	.169	1.57	.019	0.06	.000
	FC	10.05**	.103	3.08*	.038	0.17	.001

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment DAS Total, gender, and treatment group. Step 2 = Gender x pretreatment DAS Total, treatment group x pretreatment DAS Total, and gender x treatment group. Step 3 = Pretreatment DAS total x gender x treatment group. DAS = Driving Anger Scale, PC = Change score from pretreatment to posttreatment, and FC = Change score from pretreatment to one-month follow-up.





interaction terms were significant. To better understand these findings, follow-up univariate ANOVAs were run for gender and treatment group for each dependent variable for which Step 2 was significant. In each case the ANOVA confirmed that the Gender x Treatment group interaction terms were significant: DAS Slow Driving,  $F(2,349) = 8.15, p < .001, \eta^2 = 0.045$ ; DAS Discourtesy,  $F(2, 349) = 7.62, p < .001, \eta^2 = 0.042$ ; and DAS Obstructions,  $F(2, 349) = 7.22, p < .001, \eta^2 = 0.040$ . On the DAS Discourtesy, the significant main effect for gender was again observed  $F(2, 349) = 6.62, p < .01, \eta^2 = 0.019$ . Graphs of the interactions are shown in Figures 1 - 3. On all three scales (DAS Slow Driving, DAS Discourtesy, and DAS Obstructions), males changed most if they were in the Relaxation group and least if assigned to the Cognitive group, whereas for females the pattern was reversed. Females in the Cognitive group showed greater reduction in slow driver-triggered anger than those in the Relaxation group. For the DAS Slow Driving and Discourtesy scales, males and females in the Behavioral group improved at an intermediate level, with males experiencing somewhat more change overall on these measures. However, as shown in Figure 3, for the DAS obstructions scale males and females in the Behavioral group improved at similarly high rates which were approximately equivalent to level of change in their other preferred condition (e.g. Relaxation for males and Cognitive for females).

In the next set of analyses, the DATQ scales were used as the measure of change. These scales measure the quantity and type of angry thoughts that students experienced while driving. Table 7 shows the  $F$  values and  $\Delta R^2$ . The interaction terms of Steps 2 or 3 were not significant in any of the analyses, so only significant findings on Step 1 were interpreted. Step 1 was significant for all measures, except for the DATQ Coping Self-

Figure 1

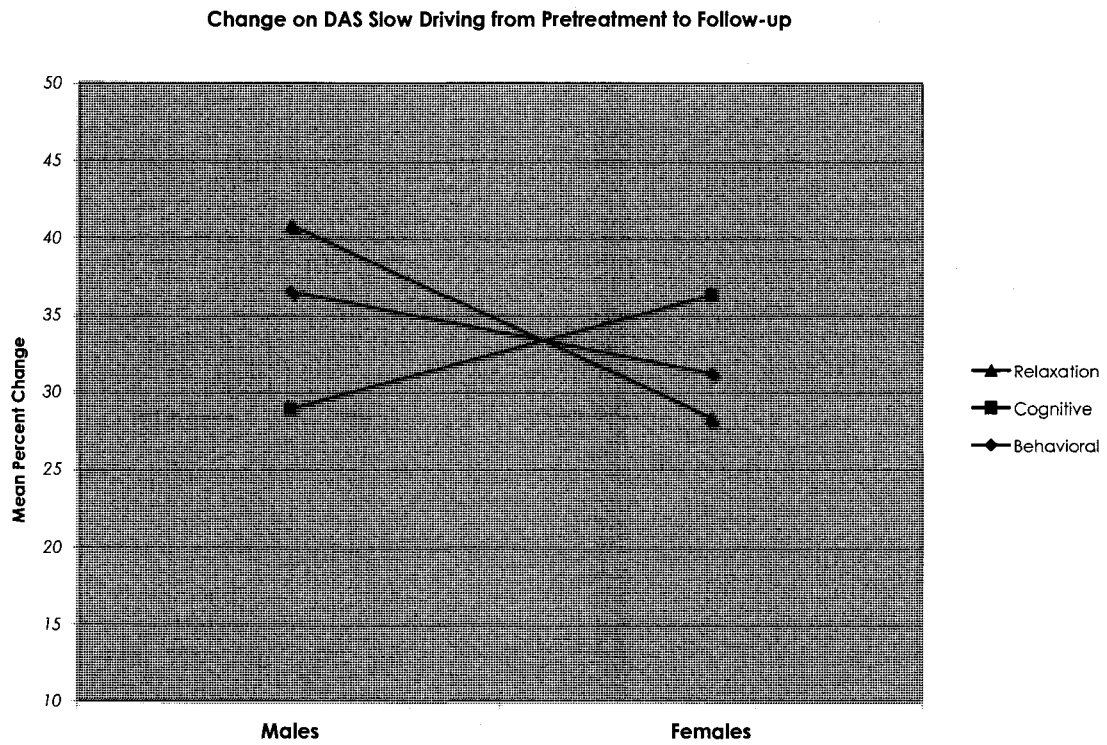


Figure 2

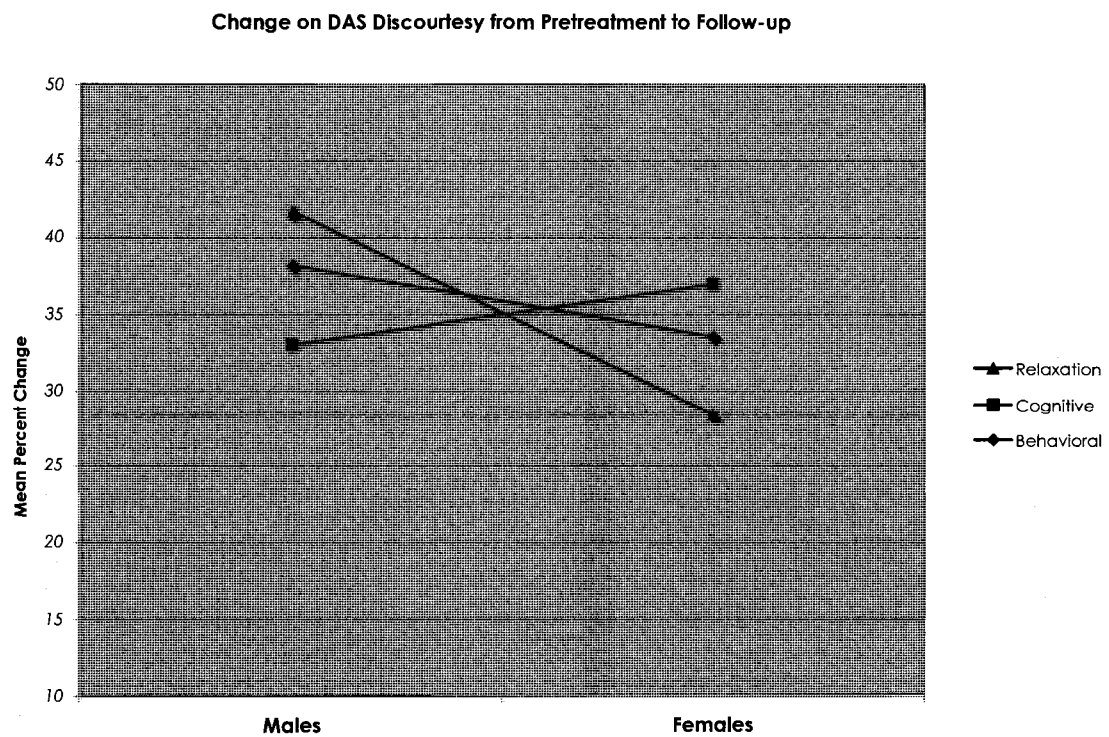


Figure 3

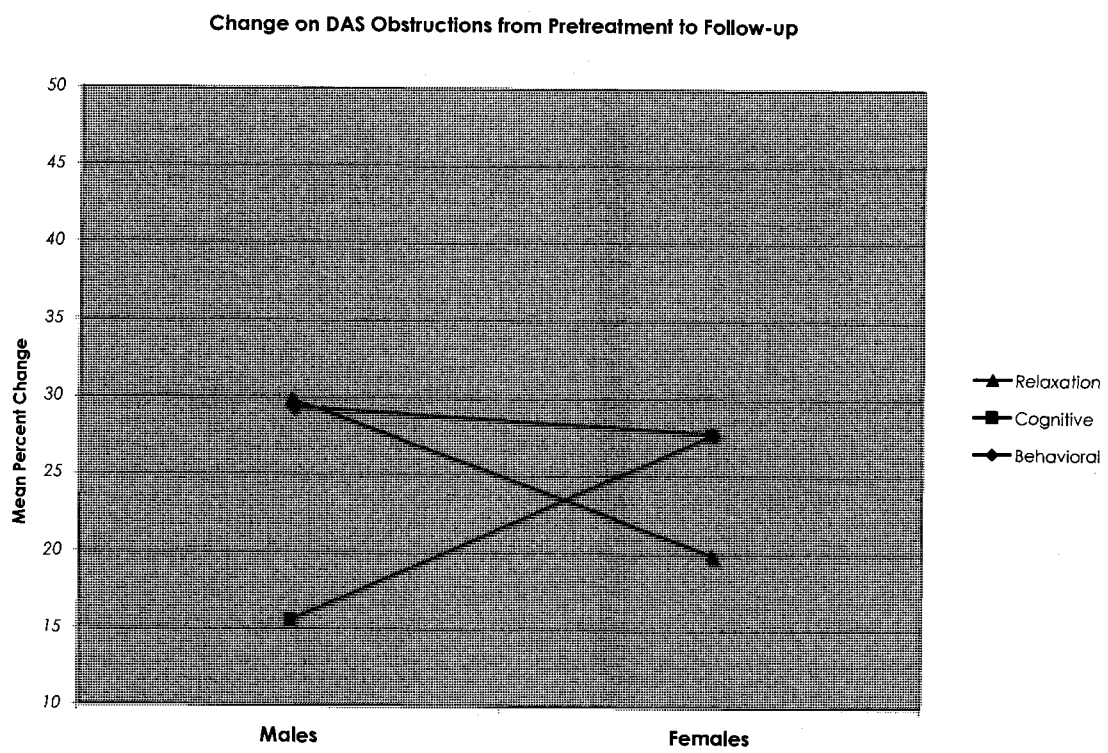


Table 7

<i>Multiple Regression Analyses of Change Predicted from DAS Total Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 350)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 345)	$\Delta R^2$	<i>F</i> (2, 343)	$\Delta R^2$
DATQ Judgmental	PC	7.14**	.075	0.99	.013	0.15	.001
	FC	10.84**	.110	0.96	.012	0.18	.001
DATQ Pejorative	PC	6.65**	.071	1.42	.019	4.59	.024
	FC	6.56**	.070	1.69	.022	2.90	.015
DATQ Revenge	PC	11.91**	.120	0.81	.010	0.65	.003
	FC	12.65**	.126	0.89	.011	2.30	.011
DATQ Physical	PC	9.35**	.097	1.40	.018	1.47	.008
	FC	7.60**	.080	1.30	.017	1.05	.006
DATQ Coping	PC	3.22	.036	1.65	.022	0.12	.001
	FC	1.34	.015	1.02	.014	1.62	.009

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment DAS Total, gender, and treatment group. Step 2 = Gender x pretreatment DAS Total, treatment group x pretreatment DAS Total, and gender x treatment group. Step 3 = Pretreatment DAS total x gender x treatment group. DAS = Driving Anger Scale, PC = Change score from pretreatment to posttreatment, and FC = Change score from pretreatment to one-month follow-up.

Instruction. Step 1  $\beta$  weights are shown in Table 8. DAS Total pretreatment scores significantly predicted change at posttreatment and follow-up on the DATQ Judgmental and Disbelieving Thinking, Pejorative Labeling and Verbally Aggressive Thinking, Revenge and Retaliatory Thinking, and Physically Aggressive Thinking Scales. Higher initial driving anger was associated with greater treatment-related decrease in the frequency of students' judgmental, pejorative, vengeful, and physically aggressive thoughts on the road. For the DATQ Coping Self-Instruction Scale, pretreatment driving anger was not associated with change from pretreatment to posttreatment or from pretreatment to follow-up. The second dummy treatment variable  $\beta$  was significant, but will not be examined further since the model as a whole did not significantly predict change on that measure. Gender did not enter in as a significant predictor of change on any measures; however, there was a significant main effect for treatment group for the DATQ Physical at posttreatment. Mean percent change for the Relaxation, Cognitive, and Behavioral groups were 20.65, 29.98, and 32.18 respectively. A follow-up ANOVA confirmed that Treatment effect was significant,  $F(2, 352) = 4.69, p < .01, \eta^2 = 0.026$ . However, none of the pairwise comparisons between groups quite attained significance.

Tables 9 and 10 present findings predicting change on forms of driving anger expression as well as aggressive and risky behavior on the road. Steps 2 and 3 were not significant for any measure, and Step 1 predicted change for all but the DAX Adaptive/Constructive Expression at follow-up. With the exception of the Risky Behavior scale, higher pretreatment DAS scores were associated with greater improvement in each case in which Step 1 was significant (scores on the DAX Adaptive are reverse-scored from other scales, so a negative  $\beta$  is associated with more change for

Table 8

*Multiple Regression Analysis of Change Predicted from DAS Total Pretreatment Score  
Standardized  $\beta$  Coefficients for Step 1*

Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
DATQ Judgmental	PC	.25**	.09	.06	.02
	FC	.30**	.12	.03	.01
DATQ Pejorative	PC	.24**	-.05	.14	.09
	FC	.25**	.07	.07	.02
DATQ Revenge	PC	.34**	.01	.04	.06
	FC	.35**	-.01	-.04	.03
DATQ Physical	PC	.25**	-.12	.18*	.16*
	FC	.25**	-.09	.10	.15
DATQ Coping	PC	-.08	.01	-.13	-.20*
	FC	-.05	.02	-.09	-.13

\* $p < .01$ , \*\* $p < .001$

*Note.* DAS = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from pretreatment to posttreatment, and FC = Change score from pretreatment to one-month follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Scoring for DATQ Coping is reversed from other measures.

Table 9

<i>Multiple Regression Analyses of Change Predicted from DAS Total Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
DAX Verbal	PC	6.07**	.065	0.55	.007	1.10	.006
	FC	7.89**	.083	0.61	.008	0.60	.003
DAX Physical	PC	9.62**	.099	0.91	.012	1.05	.005
	FC	9.14**	.095	1.06	.014	1.53	.008
DAX Vehicle	PC	10.57**	.108	1.19	.015	2.51	.013
	FC	10.08**	.104	0.43	.006	1.07	.006
DAX Adaptive	PC	4.37*	.048	0.53	.007	0.89	.005
	FC	2.45	.027	0.51	.007	3.48	.019
DAX Aggressive	PC	10.27**	.105	0.76	.010	1.74	.009
	FC	11.60**	.118	0.52	.007	1.52	.008
Aggressive Behavior	PC	--	--	--	--	--	--
	FC	6.85**	.073	1.10	.015	0.07	.000
Risky Behavior	PC	--	--	--	--	--	--
	FC	5.35**	.058	2.07	.027	2.54	.013

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment DAS Total, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment DAS Total, and treatment group x pretreatment DAS Total. Step 3 = Pretreatment DAS Total x gender x treatment group. DAS = Driving Anger Scale, DAX = Driving Anger Expression Scale. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores.



Table 10

*Multiple Regression Analysis of Change Predicted from DAS Total Pretreatment Score  
Standardized  $\beta$  Coefficients for Step 1*

Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
DAX Verbal	PC	.24**	-.05	.11	.10
	FC	.27**	-.07	.09	.12
DAX Physical	PC	.30**	-.06	.07	.11
	FC	.30**	-.07	.00	.07
DAX Vehicle	PC	.33**	-.04	.05	.09
	FC	.31**	-.06	-.01	.10
DAX Adaptive	PC	-.15*	-.01	-.11	-.19*
	FC	-.13	.00	-.05	-.12
DAX Aggressive	PC	.31**	-.05	.09	.11
	FC	.33**	-.07	.04	.13
Aggressive Behavior	PC	--	--	--	--
	FC	.24**	-.15*	.00	.00
Risky Behavior	PC	--	--	--	--
	FC	.13	-.16*	.12	.15

\* $p < .01$ , \*\* $p < .001$

*Note.* DAS = Driving Anger Scale, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores. For gender, negative  $\beta$  indicate greater improvement for males, whereas positive  $\beta$  indicates greater change for females. Scoring for DAX Adaptive is reversed from other measures.

those with higher initial anger levels). Gender predicted Aggressive Behavior and Risky Behavior, with males showing more change in response to treatment. On DAX Adaptive at posttreatment, treatment group also entered in significantly on Step 1. A follow-up ANOVA, however, did not confirm a significant effect for treatment; it narrowly missed the  $p < .01$  cutoff,  $F(2, 351) = 4.45, \eta^2 = 0.025$

A final set of analyses determined if levels of pretreatment driving anger predicted treatment-related change in trait anger and general anger expression (Tables 11 and 12). These were the only anger variables in the study not specifically related to driving, and they might therefore be expected to be less affected by initial driving anger levels. Once again, Steps 2 and 3 were not significant for any measures, indicating that there were no significant interactions between treatment, gender, and pretreatment DAS score. Step 1 was significant for both pretreatment to posttreatment and pretreatment to follow-up change on the Trait Anger, Anger Expression Out (AX Out), and Anger Expression Control (AX Control) scales, but not for Anger Expression In (AX In). In each case where Step 1 was significant, pretreatment DAS score was also significant; once again, higher pretreatment driving anger predicted greater change. There were no significant main effects for gender. There was, however, a significant main effect for treatment condition on the AX Out; group membership predicted degree of change from pretreatment to posttreatment. Once again, a follow-up ANOVA failed to confirm the main effect for treatment group,  $F(2, 351) = 3.38, p > .01, \eta^2 = 0.019$ .

#### *Was Pretreatment Level of Trait Anger Related to How Much Clients Changed?*

In the previous section, therapy outcome was predicted from pretreatment levels of the same attribute being addressed in treatment, namely driving anger. The current set

Table 11

<i>Multiple Regression Analyses of Change Predicted from DAS Total Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
TAS	PC	8.05**	.084	0.65	.009	3.15	.016
	FC	3.86*	.042	0.82	.011	1.64	.009
AX In	PC	0.56	.006	1.52	.021	0.82	.005
	FC	0.42	.005	1.84	.026	0.94	.005
AX Out	PC	8.87**	.092	0.43	.006	1.56	.008
	FC	9.84**	.101	0.74	.010	0.24	.001
AX Control	PC	7.24**	.076	0.60	.008	2.78	.015
	FC	4.10*	.045	1.06	.014	3.28	.018

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment DAS Total, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment DAS Total, and treatment group x pretreatment DAS Total. Step 3 = Pretreatment DAS Total x gender x treatment group. DAS = Driving Anger Scale, TAS = Trait Anger Scale, AX = Anger Expression Scale, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

Table 12

<i>Multiple Regression Analysis of Change Predicted from DAS Total Pretreatment Score</i>					
<i>Standardized <math>\beta</math> Coefficients for Step 1</i>					
Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
TAS	PC	.26**	.00	.11	-.02
	FC	.18*	-.03	.03	-.09
AX In	PC	.00	.00	.00	.08
	FC	.03	-.02	-.04	.03
AX Out	PC	.27**	-.02	.17*	.11
	FC	.29**	-.12	.10	.10
AX Control	PC	-.24**	-.03	-.14	-.14
	FC	-.20**	-.01	-.08	-.07

\* $p < .01$ , \*\* $p < .001$

*Note.* DAS = Driving Anger Scale, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. For gender, negative  $\beta$  indicate greater improvement for males, whereas positive  $\beta$  indicates greater change for females. Scoring for AX Control is reversed from other measures.

of analyses extended the question of who benefits most from treatment by examining the effects of general or trait anger, a related variable, but one not specifically targeted in the treatment. Trait anger has been linked in the research literature with poorer prognosis in therapy, but it is not clear what effect it will have on an anger-specific intervention. To address this question, a series of multiple regressions were conducted which were identical to those from the previous section, except that participants' trait anger (TAS) pretreatment score was used as the predictor variable.

Table 13 shows the  $F$  values and  $\Delta R^2$  for the models predicting change scores on the Driving Anger Scale (total and subscales). Step 1 was not significant for any of these measures, indicating that neither gender, treatment condition, nor pretreatment TAS score significantly predicted participants' degree of improvement on these driving anger variables. However, for the DAS Total, Slow Driving, Discourtesy, and Obstructions at follow-up, and the DAS Illegal Driving Scale at posttreatment, Step 2 was significant. For one measure, the DAS Illegal Driving Scale, Step 3 was also significant at both posttreatment and follow-up. The  $\beta$  values for all variables and steps are shown in Table 14. Gender x Treatment group variable 2 was the only interaction term to enter significantly on Step 2 for the DAS Slow Driving, Discourtesy, and Obstructions. These were the same interactions observed in the previous section when the DAS Total was used to predict change, and graphs of the interactions can be found in Figures 1, 2 and 3. In this equation, the Gender x Treatment group interaction also predicted change on the DAS Total. ANOVA findings for the DAS Total and the three measures explored previously are presented in Table 15. As can be seen in Figure 4, the pattern for the DAS Total was the same as for the DAS Slow Driving and Discourtesy. Males changed most if

Table 13

<i>Multiple Regression Analyses of Change Predicted from TAS Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
DAS Total	PC	0.40	.005	2.02	.028	2.93	.016
	FC	0.99	.011	3.19*	.044	3.12	.017
DAS Hostile Gestures	PC	0.08	.001	0.33	.005	0.66	.004
	FC	0.14	.002	1.01	.015	0.84	.005
DAS Illegal Driving	PC	0.36	.004	3.88*	.053	9.01**	.047
	FC	0.29	.003	2.67	.037	6.83*	.037
DAS Police Presence	PC	1.32	.015	1.70	.024	1.26	.007
	FC	0.81	.009	1.62	.023	0.82	.005
DAS Slow Drivers	PC	0.59	.007	2.07	.029	3.75	.021
	FC	0.75	.009	4.39*	.059	3.29	.018
DAS Discourtesy	PC	0.95	.011	1.80	.025	2.72	.015
	FC	1.67	.019	3.41*	.046	2.91	.016
DAS Obstructions	PC	1.61	.018	2.15	.030	0.36	.002
	FC	1.13	.013	3.75*	.051	1.28	.007

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment TAS, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment TAS, and treatment group x pretreatment TAS. Step 3 = Pretreatment TAS Total x gender x treatment group. TAS = Trait Anger Scale, DAS = Driving Anger Scale, PC = Percent change score from pretreatment to posttreatment, and FC = Percent change score from pretreatment to one-month follow-up.

Table 14

Multiple Regression Analyses of Change Predicted from TAS Pretreatment Score														
Standardized $\beta$ Coefficients for DAS Dependent Measures														
Step and Variable	Total		Hostile Gestures		Illegal Driving		Police Presence		Slow Driving		Discourtesy		Obstructions	
	PC	FC	PC	FC	PC	FC	PC	FC	PC	FC	PC	FC	PC	FC
Step 1:														
TAS at Pretreatment (A)	.01	.02	-.01	.02	-.01	.03	.07	.00	.04	.04	-.05	-.03	.04	.01
Gender (B)	-.01	-.10	.00	-.04	.05	-.03	.03	.00	.00	-.08	-.02	-.13	.00	.01
Group D1 (C)	.07	.04	.03	-.01	.05	.02	-.08	-.05	.07	.00	.09	.04	.11	.09
Group D2 (D)	.01	.00	.01	.00	.04	-.02	-.11	-.11	.01	-.01	.08	.04	-.03	-.03
Step 2:														
A x B	.17	.10	.07	.04	.19	.16	.08	.03	.19	.16	.16	.09	.15	.13
A x C	.05	-.01	-.05	-.06	.21*	.09	.15	.11	.07	-.02	.01	-.05	-.10	-.09
A x D	.12	.09	.00	.08	.22*	.13	.14	.04	.10	.05	.11	.02	.01	-.01
B x C	.06	.20	.07	.08	.08	.24	-.04	.03	-.03	.14	.06	.20	.06	.14
B x D	.17	.35*	.07	.13	.06	.11	.10	.22	.11	.41*	.14	.39*	.22	.38*
Step 3:														
A x B x C	-.27	-.29	-.14	-.11	-.44**	-.41**	-.18	-.15	-.29	-.28	-.26	-.27	-.10	-.14
A x B x D	-.20	-.14	-.07	.04	-.37*	-.28	-.11	-.05	-.25	-.06	-.20	-.08	-.04	.04

\* $p < .01$ , \*\* $p < .001$ 

Note. TAS = Trait Anger Scale, DAS = Driving Anger Scale, Group D1 = dummy variable 1 for treatment group, Group D2 = dummy variable 2 for treatment group, PC = Change score from Pretreatment to Posttreatment, FC = Change score from Pretreatment to One-month Follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Significant coefficients on Step 2 and 3 are only marked if the step as a whole was significant.

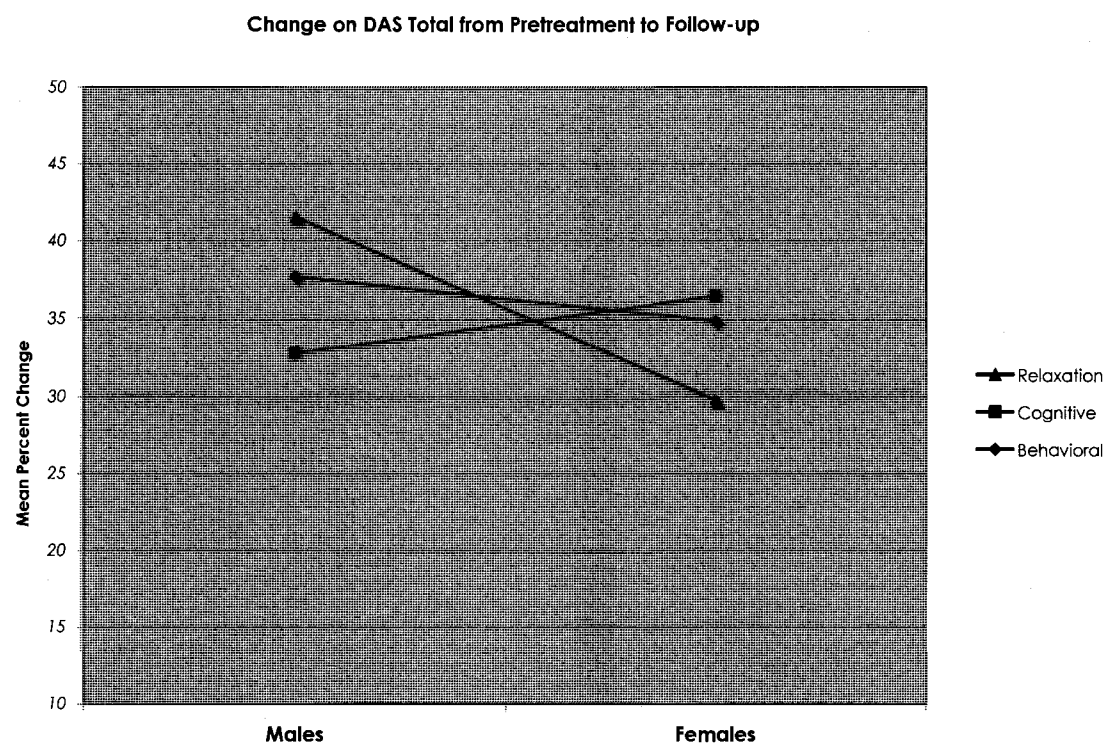
Table 15

<i>ANOVAs for Gender x Treatment Interactions Predicting Change on DAS Scales</i>					
Measure	<i>F</i> (5, 349)	$\eta^2$	Mean % Change Scores		
			Relaxation	Cognitive	Behavioral
DAS Total FU	5.86*	.032			
Males			41.50	32.74	37.67
Females			29.76	36.43	34.82
DAS Slow Drivers FU	8.15**	.045			
Males			40.79	28.90	36.53
Females			28.35	36.29	31.27
	7.62*	.042			
DAS Discourtesy FU					
Males			41.65	32.99	38.12
Females			28.37	36.92	33.50
	7.22*	.040			
DAS Obstructions FU					
Males			29.82	15.54	29.31
Females			19.90	27.61	27.71

\* $p < .01$ , \*\* $p < .001$

Note. FU = follow-up, DAS = Driving Anger Scale.

Figure 4





they were in the Relaxation group and least if assigned to the Cognitive group, whereas females in the Cognitive group showed greater driving anger reduction than those in the Relaxation group. Males and females in the Behavioral group changed at intermediate levels.

On the DAS Illegal at posttreatment the TAS x treatment group interactions were significant on Step 2, and the 3-way interactions were significant on Step 3. The same results were observed for DAS Illegal at follow-up, except that only one of the 3-way interactions was significant on Step 3. To better understand the 3-way interactions, two additional regression models were computed for both posttreatment and follow-up. In each, the TAS and treatment group were entered on Step 1, and the TAS x treatment group interactions were on Step 2. One equation included only males, and the other only females. For males, Step 2 was significant at posttreatment,  $F(2, 139) = 10.29, p < .001$ ,  $\Delta R^2 = 0.126$ , and follow-up,  $F(2, 139) = 6.65, p < .01$ ,  $\Delta R^2 = 0.085$ , as were the  $\beta$ s for TAS x Group. For females neither Step 2 as a whole nor any of the  $\beta$  coefficients were significant at either posttreatment or follow-up,  $F_s(2, 203) = 0.27$  and  $1.25, p_s > .01$ ,  $\Delta R^2 = 0.003$  and  $0.012$ . As shown in Figures 5 and 6, males in the Relaxation group who started low in trait anger experienced the greatest improvement, whereas, those with the highest pretreatment trait anger levels actually showed an increase in driving anger at posttreatment (and minimal positive change at follow-up). Males in the other treatment groups, on the other hand, experienced the usual pattern of somewhat greater improvement when they started out high on trait anger. Additionally, the percentage of change differences between those who started low on trait anger and those who started high were much less extreme in the Cognitive and Behavioral groups. The pattern for

Figure 5

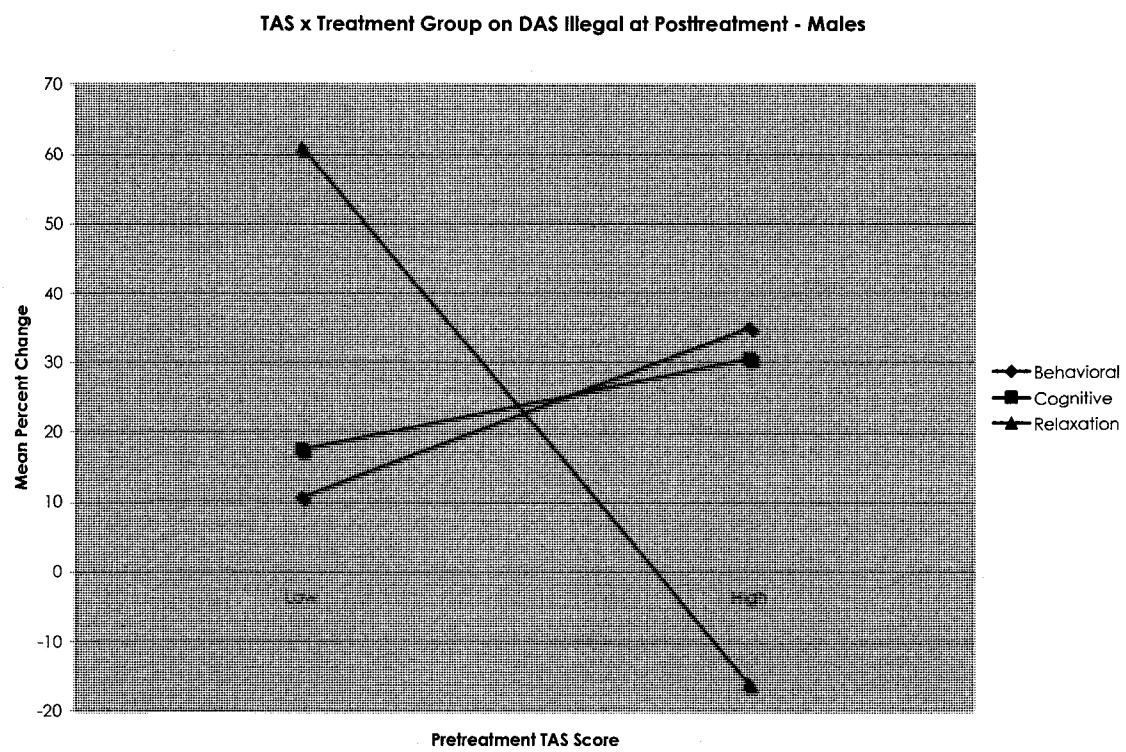
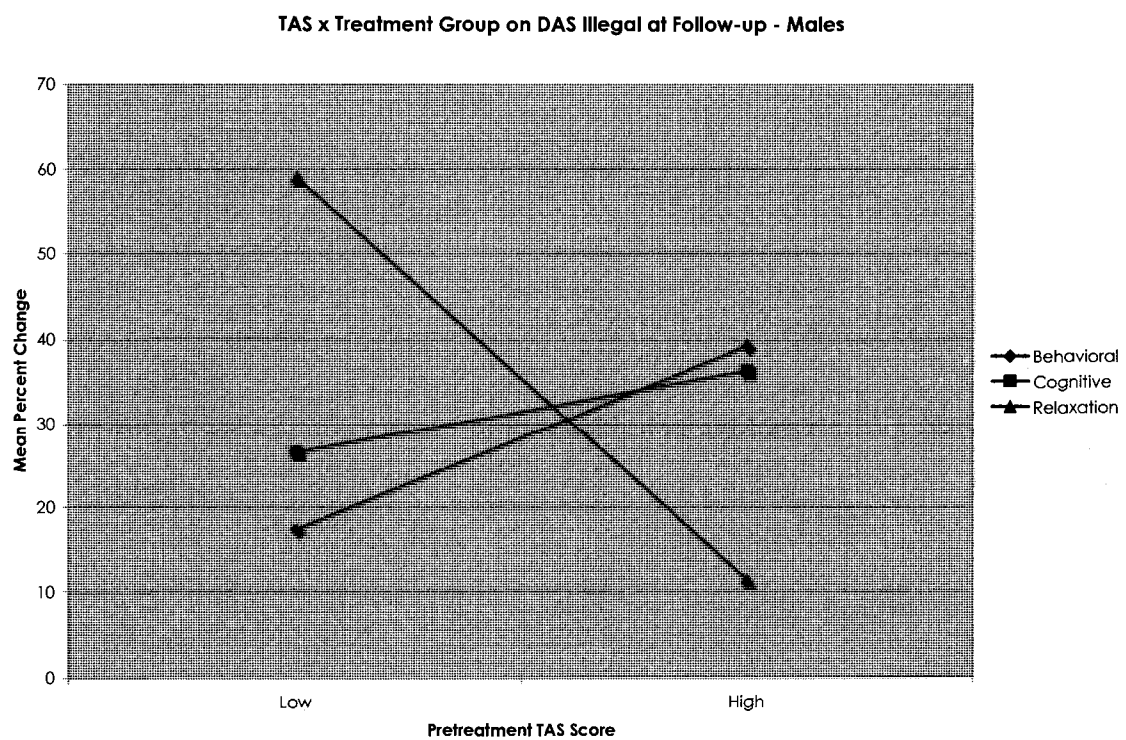


Figure 6



females was quite different (Figures 7 and 8), and though there were some differences observed between groups, as mentioned previously these TAS x group interactions were not significant. Females showed decreased anger at posttreatment and follow-up regardless of which group they were assigned to, with somewhat greater improvement (in most cases) if they started higher in trait anger.

Table 16 shows analyses predicting change on the DATQ scales. Step 2 was significant for the DATQ Coping at posttreatment; however, none of the  $\beta$  coefficients for the interactions on that step were significant so this finding will not be further interpreted. Step 2 did not predict change for any of the other measures. Step 1 predicted change for the DATQ Judgmental, DATQ Revenge, and DATQ Physical at both times. As indicated in Table 17, in each of those instances the TAS pretreatment score significantly predicted outcome, indicating that pretreatment level of trait anger was associated with how much participants decreased their judgmental, vengeful, and physically aggressive thoughts while driving. Those with higher pretreatment trait anger levels showed greater reduction in their angry thoughts after treatment.

For the DATQ Judgmental at posttreatment, gender also significantly predicted treatment outcome. Females showed greater treatment-related change than males in their judgmental thoughts. Treatment condition was a significant predictor of change for both the DATQ Physical and Coping at posttreatment (although for the DATQ Coping, the Step as a whole was not significant). A post hoc ANOVA confirmed that treatment group predicted outcome on the DATQ Physical,  $F(2, 354) = 4.69, p < .01, \eta^2 = 0.026$ . None of the Tukey-adjusted pairwise comparisons quite reached significance (Mean percent change scores: Relaxation = 20.65, Behavioral = 32.18, Cognitive = 29.98). For

Figure 7

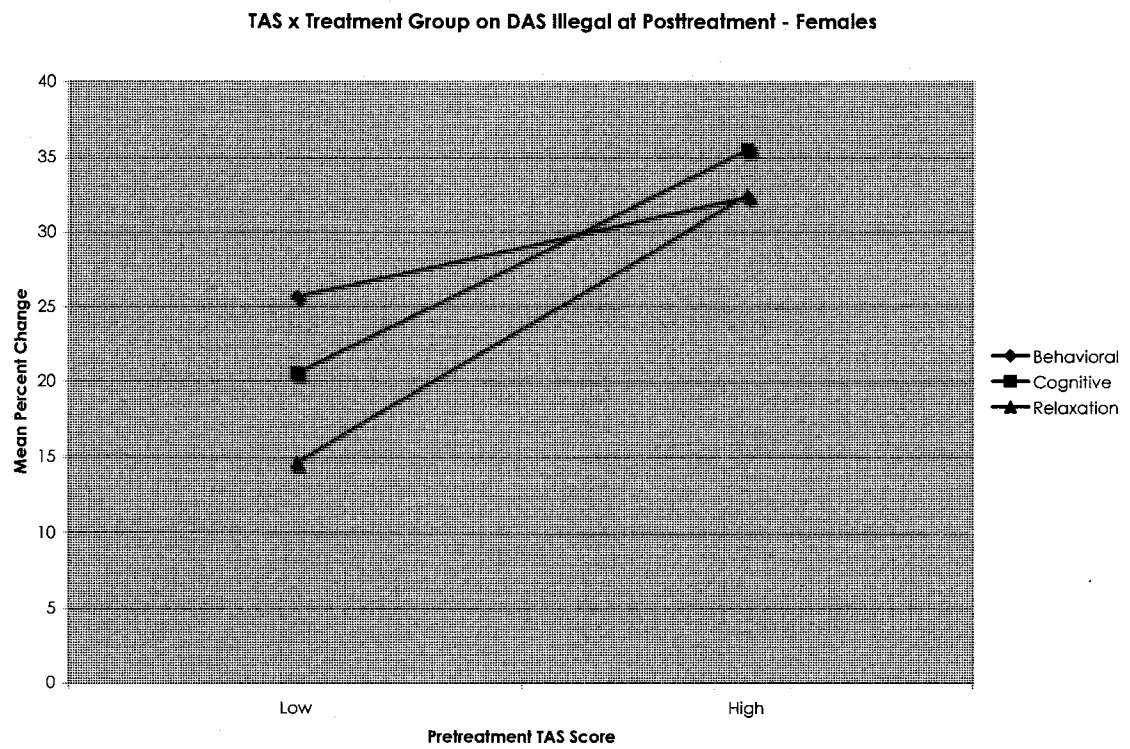


Figure 8

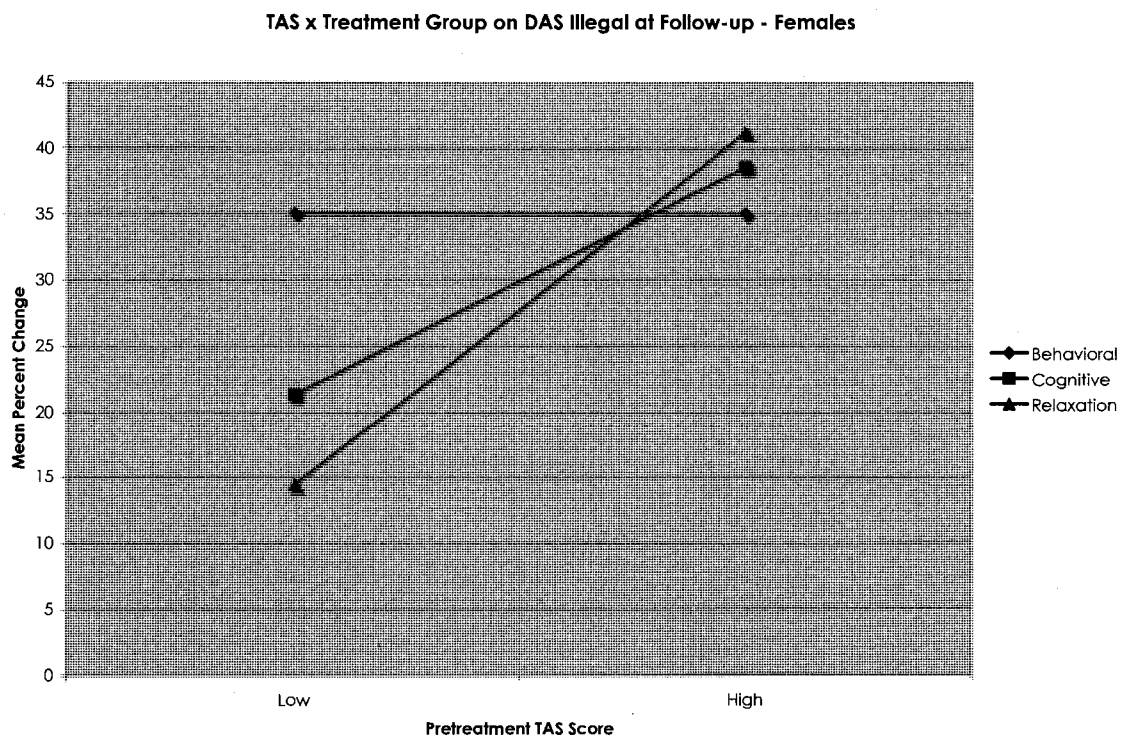


Table 16

<i>Multiple Regression Analyses of Change Predicted from TAS Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
DATQ Judgmental	PC	4.11*	.045	1.09	.015	0.39	.002
	FC	4.25*	.046	1.05	.014	1.70	.009
DATQ Pejorative	PC	3.21	.035	1.29	.018	1.39	.008
	FC	1.98	.022	1.56	.022	1.64	.009
DATQ Revenge	PC	6.26**	.067	1.08	.014	1.08	.006
	FC	6.39**	.068	1.52	.020	2.93	.015
DATQ Physical	PC	14.80**	.145	1.28	.016	1.57	.008
	FC	10.51**	.108	1.38	.018	0.68	.003
DATQ Coping	PC	2.73	.030	3.89*	.052	0.13	.001
	FC	1.54	.017	2.12	.029	0.61	.003

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment TAS, gender, and treatment group. Step 2 = Gender x pretreatment TAS, treatment group x pretreatment TAS, and gender x treatment group. Step 3 = Pretreatment TAS x gender x treatment group. TAS = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

Table 17

<i>Multiple Regression Analysis of Change Predicted from TAS Pretreatment Score</i>					
<i>Standardized <math>\beta</math> Coefficients for Step 1</i>					
Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
DATQ Judgmental	PC	.17*	.12	.04	.00
	FC	.15*	.16*	.01	-.01
DATQ Pejorative	PC	.15*	-.02	.12	.07
	FC	.13	-.04	.05	.00
DATQ Revenge	PC	.25**	.05	.01	.03
	FC	.25**	.03	-.07	.00
DATQ Physical	PC	.33**	-.09	.15*	.13
	FC	.30**	-.06	.07	.12
DATQ Coping	PC	-.04	.00	-.12	-.19*
	FC	-.07	.01	-.08	-.12

\* $p < .01$ , \*\* $p < .001$

*Note.* TAS = Trait Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from pretreatment to posttreatment, and FC = Change score from pretreatment to one-month follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Scoring for DATQ Coping is reversed from other measures.

the DATQ Coping, the follow-up ANOVA also confirmed that treatment group predicted outcome,  $F(2, 354) = 5.20, p < .01, \eta^2 = 0.029$ , with the Cognitive group showing significantly more improvement than the Relaxation group. *Ms* are: Relaxation = -36.76, Behavioral = -52.19, and Cognitive = -60.34.

The next set of analyses predicted change on the Driving Anger Expression scales and on the Aggressive and Risky Behavior (Table 18). Steps 2 and 3 were not significant for any measure. Step 1 was significant for all measures except the DAX Adaptive Expression at follow-up. Consistent with most previous analyses, the predictive power of this step was largely driven by pretreatment TAS score (Table 19), which significantly predicted change on all measures except for Risky Behavior at follow-up (including the DAX Adaptive follow-up, even though the step as a whole did not quite meet  $p < .01$ .) Higher pretreatment trait anger predicted greater decrease in problematic forms of driving anger expression, as well as aggression and risky behavior on the road. It also predicted an increase in adaptive forms of anger expression in response to treatment. For the Risky Behavior scale at follow-up, gender was significant, with males showing greater treatment gains than females. Treatment condition entered in significantly for only one variable: DAX Adaptive at posttreatment. This main effect was explored in the previous section predicting outcome from the DAS Total. As a reminder, the Cognitive group showed significantly greater gains than the Relaxation group, and the Behavioral group did not differ significantly from either other group.

A final set of analyses examined the effect of trait anger on treatment-related change in levels of general anger and anger expression. As shown in Table 20, Steps 2 and 3 were nonsignificant for all measures, indicating no interactions between gender,

Table 18

<i>Multiple Regression Analyses of Change Predicted from TAS Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 348)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 343)	$\Delta R^2$	<i>F</i> (2, 341)	$\Delta R^2$
DAX Verbal	PC	5.80**	.062	1.21	.016	0.29	.002
	FC	7.27**	.077	1.64	.022	2.41	.013
DAX Physical	PC	6.51**	.070	1.92	.025	3.42	.018
	FC	5.50**	.059	0.95	.013	4.24	.022
DAX Vehicle	PC	7.19**	.076	2.85	.037	2.13	.011
	FC	7.85**	.083	1.10	.014	1.24	.007
DAX Adaptive	PC	4.57*	.050	1.86	.025	0.20	.001
	FC	2.70	.030	0.97	.013	0.24	.001
DAX Aggressive	PC	7.94**	.084	2.07	.027	1.52	.008
	FC	9.54**	.099	1.59	.020	3.42	.017
Aggressive Behavior	PC	--	--	--	--	--	--
	FC	3.70*	.041	2.43	.033	0.54	.003
Risky Behavior	PC	--	--	--	--	--	--
	FC	4.74*	.051	1.75	.024	0.14	.001

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment TAS, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment TAS, and treatment group x pretreatment DAS TAS. Step 3 = Pretreatment TAS x gender x treatment group. TAS = Trait Anger Scale, DAX = Driving Anger Expression Scale. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores.

Table 19

*Multiple Regression Analysis of Change Predicted from TAS Pretreatment Score  
Standardized  $\beta$  Coefficients for Step 1*

Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
DAX Verbal	PC	.23**	-.03	.08	.08
	FC	.26**	-.04	.07	.09
DAX Physical	PC	.25**	-.03	.03	.09
	FC	.23**	-.04	-.03	.05
DAX Vehicle	PC	.27**	.00	.02	.06
	FC	.27**	-.02	-.04	.07
DAX Adaptive	PC	-.16*	-.03	-.09	-.18*
	FC	-.14*	-.02	-.04	-.11
DAX Aggressive	PC	.28**	-.02	.06	.09
	FC	.30**	-.04	.01	.10
Aggressive Behavior	PC	--	--	--	--
	FC	.16*	-.12	-.02	-.02
Risky Behavior	PC	--	--	--	--
	FC	.11	-.15*	.11	.14

\* $p < .01$ , \*\* $p < .001$

*Note.* TAS = Trait Anger Scale, DAX = Driving Anger Expression, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores. For gender, negative  $\beta$  indicate greater improvement for males, whereas positive  $\beta$  indicates greater change for females. Scoring for DAX Adaptive is reversed from other measures.



Table 20

<i>Multiple Regression Analyses of Change Predicted from TAS Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
TAS	PC	30.17**	.257	2.14	.022	2.01	.008
	FC	25.20**	.224	1.43	.016	0.23	.001
AX In	PC	0.91	.010	1.01	.014	0.65	.004
	FC	0.74	.008	2.09	.029	1.79	.010
AX Out	PC	19.07**	.180	1.57	.018	0.32	.001
	FC	15.04**	.147	1.53	.019	3.73	.018
AX Control	PC	3.53*	.039	0.73	.010	1.32	.007
	FC	2.12	.024	0.63	.009	1.36	.008

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment TAS, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment TAS, and treatment group x pretreatment TAS. Step 3 = Pretreatment TAS x gender x treatment group. TAS = Trait Anger Scale, AX = Anger Expression Scale, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

treatment condition, and pretreatment TAS score. Step 1 significantly predicted change at both posttreatment and follow-up for the TAS and the AX Out, and for the AX Control at posttreatment. As shown in Table 21, pretreatment TAS was the sole predictor of outcome in each case. Higher levels of pretreatment trait anger predicted greater improvement on both variables.

*Did General Anger Expression Relate To How Much Clients Benefitted From Driving Anger Treatment?*

Three dimensions of anger expression were examined in this section. The first, Anger Out, is a measure of how often participants overtly and negatively express their anger, such as through slamming doors or striking out at others. The second, Anger In, assesses individuals' preference for experiencing anger internally but keeping it hidden or suppressed. The third, Anger Control, measures students' ability to calm themselves. Anger In is not highly correlated with Out or Control, whereas Out and Control are moderately negatively correlated (Spielberger, 1988, 1999). While some measures of anger expression have been associated in the research literature with therapy outcome, there was little empirical basis on which to predict which types of anger expression might be most strongly linked with treatment-related change. It made sense, therefore, to examine each separately from the others. Using the same set of outcome variables included in previous findings, three more sets of analyses assessed how clients' general styles of anger expression at pretreatment might influence therapy-related change. Consistent with previous analyses, Step 1 included the anger expression measure at pretreatment, on Step 2 were the two-way interactions between gender, group, and the anger expression variable, and Step 3 entered the three-way interactions.

Table 21

<i>Multiple Regression Analysis of Change Predicted from TAS Pretreatment Score</i>					
<i>Standardized <math>\beta</math> Coefficients for Step 1</i>					
Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
TAS	PC	.49**	.03	.08	-.05
	FC	.46**	-.01	.00	-.11
AX In	PC	.06	.00	-.01	.08
	FC	.06	-.01	-.05	.03
AX Out	PC	.40**	.02	.13	.08
	FC	.37**	-.08	.06	.08
AX Control	PC	-.14*	-.07	-.11	-.13
	FC	-.14	-.05	-.04	-.05

\* $p < .01$ , \*\* $p < .001$

*Note.* TAS = Trait Anger Scale, AX = Anger Expression, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. For gender, negative  $\beta$  indicate greater improvement for males, whereas positive  $\beta$  indicates greater change for females. Scoring for AX Control is reversed from other measures.

*Anger Expression In.* The regression model including Anger Expression In, gender, and treatment group was a poor predictor of students' change on the Driving Anger Scales (Table 22). Step 1 was not significant for any variables, suggesting that pretreatment Anger Expression In did not have a main effect on outcome for any of these driving anger variables. Step 2 was significant for only DAS Slow Drivers and DAS Obstructions at follow-up. Consistent with previous analyses using DAS dependent measures, in both cases it was the Gender x Treatment Group Dummy Variable 2 interaction driving the effect as the only significant coefficient on the step. These interactions have been explained previously (see Table 15, Figures 1 and 3). It is noteworthy, however, that the model as a whole predicted outcome so poorly that two significant Gender x Group interactions that were observed previously (for DAS Total and DAS Discourtesy) did not push the step to significance in these analyses. There was one significant interaction on Step 3, for the DAS Discourtesy at posttreatment: AX In x Gender x Group D2 ( $\beta = -.35, p < .01$ ). To understand the nature of this interaction, regression analyses of the AX In x Group interaction were run for males and females. Graphs of these analyses can be found in Figures 9 and 10. When initial levels of Anger Expression In were low, males improved the most when assigned to the Relaxation condition and least in Cognitive. Effects were reversed when AX In was high, such that males now improved most in Cognitive and least in Relaxation. Females showed a similar pattern; those low in AX In improved most when assigned to a Behavioral group and least when in the Relaxation condition, whereas the opposite was true for those high in pretreatment AX In. Females on average followed the usual pattern in which high

Table 22

<i>Multiple Regression Analyses of Change Predicted from AX In Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 350)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 345)	$\Delta R^2$	<i>F</i> (2, 343)	$\Delta R^2$
DAS Total	PC	0.59	.007	0.86	.012	3.59	.020
	FC	1.62	.018	2.30	.032	0.51	.003
DAS Hostile Gestures	PC	0.58	.007	0.36	.005	1.09	.006
	FC	0.37	.004	0.50	.007	0.12	.001
DAS Illegal Driving	PC	0.60	.007	1.33	.019	0.70	.004
	FC	0.23	.003	1.34	.019	0.43	.002
DAS Police Presence	PC	1.16	.013	0.85	.012	1.05	.006
	FC	1.01	.011	1.39	.020	0.16	.001
DAS Slow Drivers	PC	0.62	.007	0.28	.004	1.32	.008
	FC	1.51	.017	3.30*	.045	1.10	.006
DAS Discourtesy	PC	1.05	.012	1.18	.017	5.36*	.029
	FC	3.01	.033	2.93	.039	1.36	.007
DAS Obstructions	PC	1.45	.016	1.82	.025	3.02	.017
	FC	1.24	.014	3.26*	.045	0.47	.003

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX In, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX In, and treatment group x pretreatment AX In. Step 3 = Pretreatment AX In Total x gender x treatment group. AX In = Anger Expression In Scale, DAS = Driving Anger Scale, PC = Percent change score from pretreatment to posttreatment, and FC = Percent change score from pretreatment to one-month follow-up.

Figure 9

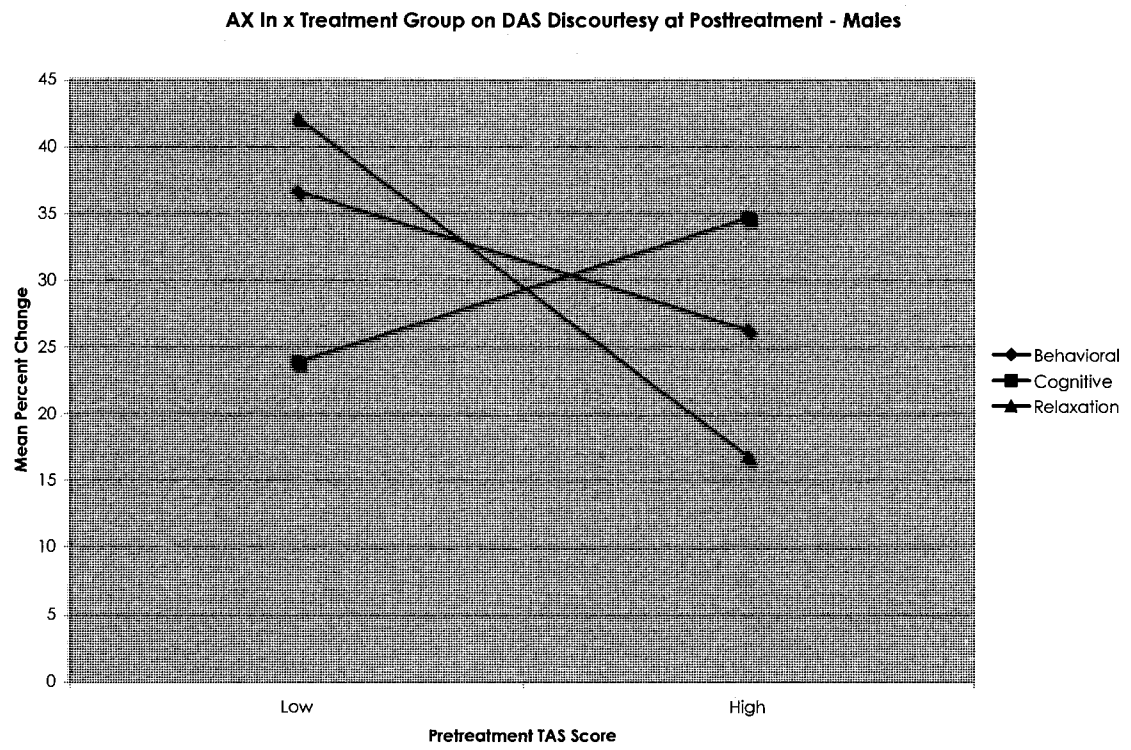
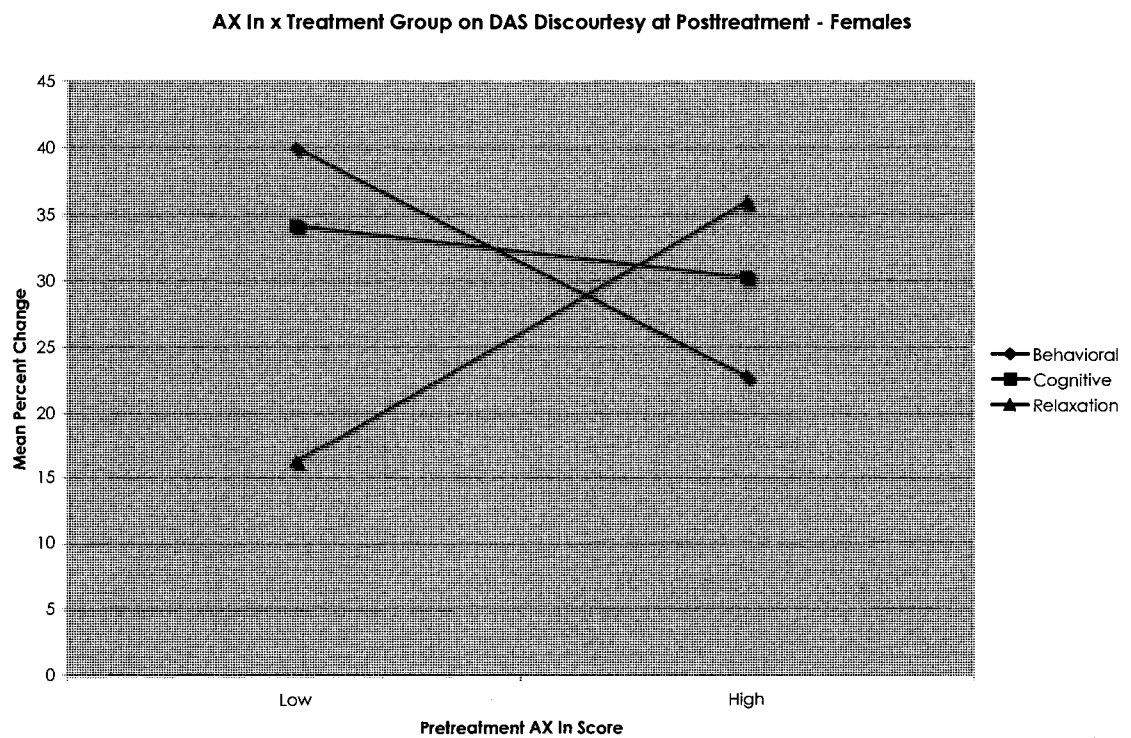


Figure 10



pretreatment anger was associated with better outcomes, whereas male outcome was more influenced by group.

For the Drivers Angry Thoughts Questionnaire, Step 2 was not significant for any measure. Step 1 predicted outcome for the DATQ Judgmental at follow-up and the DATQ Physical at posttreatment (Table 23). As shown in Table 24, for the DATQ Judgmental at follow-up, there was a main effect for both AX In and Gender. Those who started at higher AX In levels improved more than those at with less inwardly directed anger expression, and females improved more than males. For the DATQ Physical, Dummy Coded Variable 1 representing treatment group was significant. Post hoc testing confirmed this main effect for treatment group,  $F(2, 352) = 4.69, p < .01, \eta^2 = 0.026$ . Those assigned to the Behavioral condition ( $M = 32.18$ ) improved significantly more than did those in the Relaxation condition ( $M = 20.65$ ). Percent change for those in the Cognitive condition was not significantly different than either other group ( $M = 29.98$ ). Step 3 was significant only for the DATQ Coping at posttreatment. Once again, the regression model including AX In and Treatment Group on Step 1, and the interactions on Step 2, was run separately for males and females. For males, Step 1 was significant,  $F(3, 142) = 4.04, p < .01$ , whereas Step 2 was not,  $F(2, 140) = 3.23, p > .01$ , and only the  $\beta$  for AX In was significant ( $\beta = .22$ ). This indicates that, for males, higher pretreatment levels of AX In were associated with greater change, and treatment group did not significantly affect outcome. For females, Step 1 was not significant,  $F(3, 205) = 3.36, p > .01$ , and Step 2 was,  $F(2, 203) = 8.32, p < .001$ . Only the AX In x Treatment Dummy Group 2 interaction was significant on Step 2 ( $\beta = -.39$ ). A graph of this interaction can be found in Figure 11 (note that scoring on the DATQ Coping is reversed

Table 23

<i>Multiple Regression Analyses of Change Predicted from AX In Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
DATQ Judgmental	PC	3.16	.035	1.09	.015	3.32	.018
	FC	3.97*	.043	0.56	.008	1.77	.010
DATQ Pejorative	PC	1.17	.013	1.53	.021	2.45	.014
	FC	0.51	.006	1.32	.019	2.52	.014
DATQ Revenge	PC	1.99	.022	0.42	.006	2.20	.012
	FC	0.94	.011	0.48	.007	1.97	.011
DATQ Physical	PC	4.20*	.046	1.44	.019	0.04	.000
	FC	1.74	.019	1.24	.017	0.27	.002
DATQ Coping	PC	3.02	.033	2.96	.040	5.71*	.030
	FC	1.58	.018	0.92	.013	3.70	.020

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX In, gender, and treatment group. Step 2 = Gender x pretreatment AX In, treatment group x pretreatment AX In, and gender x treatment group. Step 3 = Pretreatment AX In x gender x treatment group. AX In = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

Table 24

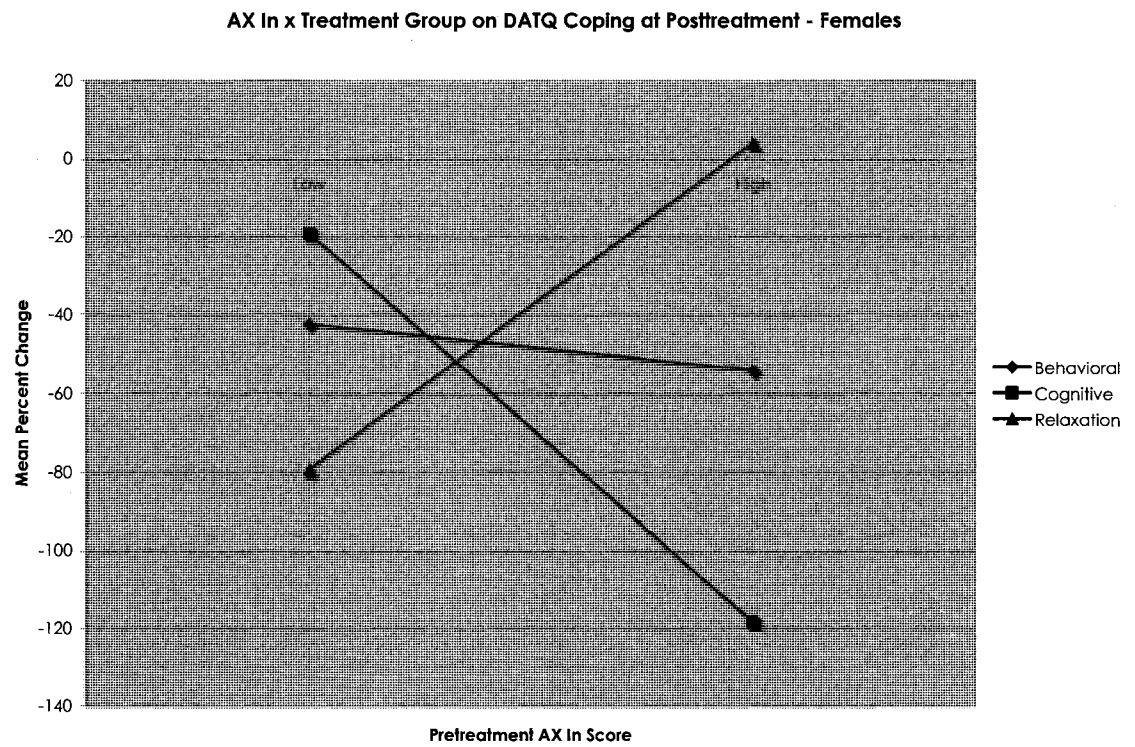
<i>Multiple Regression Analysis of Change Predicted from AX In Pretreatment Score</i>					
<i>Standardized <math>\beta</math> Coefficients for Step 1</i>					
Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
DATQ Judgmental	PC	.14*	.11	.06	.00
	FC	.14*	.15*	.03	-.01
DATQ Pejorative	PC	.00	-.03	.13	.07
	FC	.00	-.05	.06	.00
DATQ Revenge	PC	.14*	.03	.04	.03
	FC	.09	.02	-.05	.00
DATQ Physical	PC	.10	-.10	.18*	.14
	FC	.02	-.07	.10	.13
DATQ Coping	PC	.07	.01	-.12	-.19*
	FC	.07	.02	-.08	-.13

\* $p < .01$ , \*\* $p < .001$

*Note.* AX In = Anger Expression In Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from pretreatment to posttreatment, and FC = Change score from pretreatment to one-month follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Scoring for DATQ Coping is reversed from other measures.



Figure 11



from other measures such that negative percent change indicates an increase in positive coping thoughts). The difference between treatments was most dramatic for those who started at the highest pretreatment AX In levels. For these highly anger suppressing women, those assigned to the Cognitive condition experienced a mean percent improvement of nearly 120%, whereas those in the Relaxation condition reported essentially no change. This was opposite the pattern for low AX In females, who tended to improve most in Relaxation and least in Cognitive.

The next set of analyses examined how Anger Expression In related to change on Driving Anger Expression, Aggressive Behavior, and Risky Behavior. Step 1 was significant for one measure, Risky Behavior, and Step 3 was significant for DAX Verbal at posttreatment. There were no other significant findings for any measure (Table 25), indicating that, as a rule, Anger Expression In was not highly associated with outcome for these variables. On the Risky Behavior scale, only Gender was significant ( $\beta = -.15$ ), indicating that males showed a greater decrease in risky driving behaviors after treatment. Separate regressions were run for males and females for the DAX Verbal at posttreatment. The graph of the resulting interactions can be found in Figures 12 and 13. Once again, the interaction pattern was opposite for males and females. Whereas males who started low in AX In benefitted most from treatment in the Relaxation condition and least from Cognitive, low-AX In females showed almost no improvement if assigned to the Relaxation group but improved similarly in both the Behavioral and Cognitive groups. At high pretreatment AX In levels, males in the Relaxation condition showed little decrease in verbal anger expression, while those in Cognitive made significant treatment gains. Males assigned to the Behavioral condition tended to improve at

Table 25

<i>Multiple Regression Analyses of Change Predicted from AX In Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 348)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 343)	$\Delta R^2$	<i>F</i> (2, 341)	$\Delta R^2$
DAX Verbal	PC	1.39	.016	1.28	.018	5.11*	.028
	FC	1.25	.014	1.41	.020	4.23	.023
DAX Physical	PC	1.70	.019	1.08	.015	0.12	.001
	FC	0.57	.006	1.02	.015	0.40	.002
DAX Vehicle	PC	2.26	.025	0.47	.007	2.32	.013
	FC	1.71	.019	0.16	.002	1.22	.007
DAX Adaptive	PC	2.36	.026	0.84	.012	1.27	.007
	FC	0.89	.010	0.29	.004	1.00	.006
DAX Aggressive	PC	1.97	.022	0.94	.013	3.10	.017
	FC	1.38	.016	0.75	.011	2.30	.013
Aggressive Behavior	PC	--	--	--	--	--	--
	FC	1.78	.020	1.56	.022	4.06	.022
Risky Behavior	PC	--	--	--	--	--	--
	FC	3.83*	.042	1.73	.023	3.81	.020

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX In, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX In, and treatment group x pretreatment DAS AX In. Step 3 = Pretreatment AX In x gender x treatment group. AX In = Anger Expression In Scale, DAX = Driving Anger Expression Scale. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores.

Figure 12

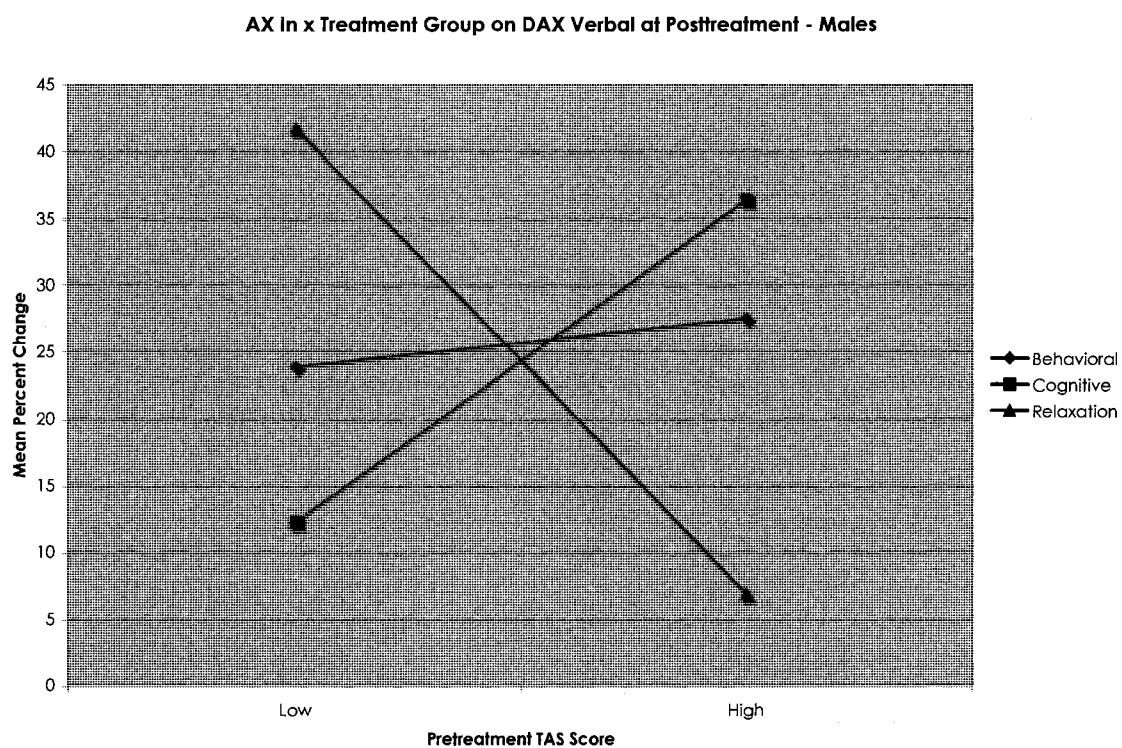
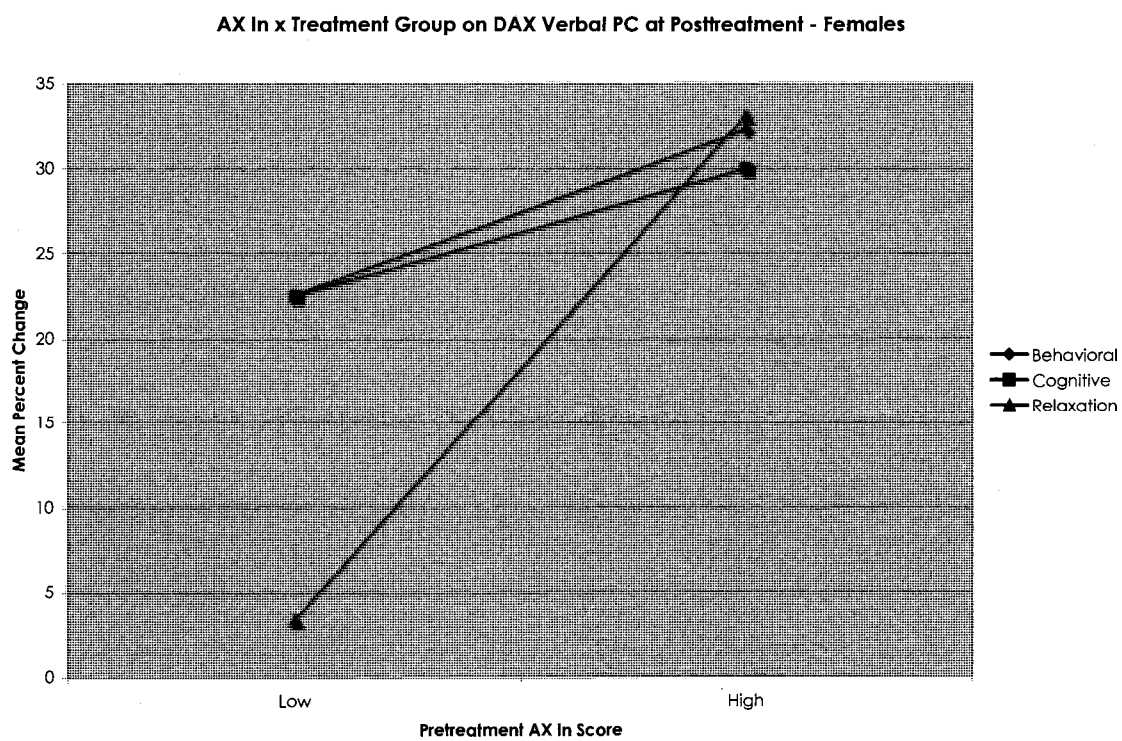


Figure 13



intermediate levels regardless of pretreatment anger in level. For high-AX In females the Relaxation group was marginally more effective, but there was much less difference between treatments than there was for either high AX In males or low AX In females. Females assigned to the Cognitive or Behavioral groups showed nearly as much decrease in anger expression as those who received Relaxation treatment.

A final set of analyses examined the effect of pretreatment Anger Expression In on trait anger and the three forms of general anger expression (Table 26). AX In was associated with outcome only for the AX In. Those who started highest on this measure showed the most improvement on the same measure at posttreatment and follow-up ( $\beta$ s = .33 and .42, respectively). Gender, treatment, and the interactions were not significant for any measure.

*Anger Expression Out.* Similar to findings for the Trait Anger Scale, the regression model for AX Out did not explain much of variance on the Driving Anger Scales (Table 27). Steps 1 and 3 were not significant for any variables. Step 2 was significant for four DAS measures at follow-up (but not posttreatment): Total, Slow Drivers, Discourtesy, and Obstructions. In each case, the Gender x Treatment Group Dummy Variable 2 interaction was the only significant interaction on the step (Table 28). These were the same interactions observed in two previous sets of analyses (Table 15, Figures 1 – 4) and so will not be discussed further in this section. Overall, these findings suggest that neither AX Out, gender, or treatment group were good predictors of outcome on the driving anger measures. Also, externally directed style of anger expression did not interact with gender or treatment to predict change on these variables.

Table 26

<i>Multiple Regression Analyses of Change Predicted from AX In Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 348)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 343)	$\Delta R^2$	<i>F</i> (2, 341)	$\Delta R^2$
TAS	PC	1.99	.022	0.82	.012	4.13	.023
	FC	1.08	.012	0.53	.007	0.86	.005
AX In	PC	11.31**	.114	2.36	.029	0.32	.002
	FC	19.36**	.181	1.68	.020	0.44	.002
AX Out	PC	2.39	.027	0.69	.010	0.22	.001
	FC	2.50	.028	1.48	.021	0.11	.001
AX Control	PC	2.10	.023	1.03	.014	0.24	.001
	FC	1.75	.020	0.53	.007	0.20	.001

\**p* < .01, \*\**p* < .001

*Note.* Step 1 = Pretreatment AX In, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX In, and treatment group x pretreatment AX In. Step 3 = Pretreatment AX In x gender x treatment group. AX In = Anger Expression In Scale, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

Table 27

<i>Multiple Regression Analyses of Change Predicted from AX Out Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
DAS Total	PC	0.42	.005	1.86	.026	0.57	.003
	FC	1.24	.014	3.14*	.043	0.21	.001
DAS Hostile Gestures	PC	0.10	.001	0.74	.011	0.12	.001
	FC	0.17	.002	1.33	.019	1.08	.006
DAS Illegal Driving	PC	0.57	.006	2.18	.030	1.95	.011
	FC	0.66	.007	2.26	.032	1.50	.008
DAS Police Presence	PC	1.41	.016	0.79	.011	0.16	.001
	FC	0.90	.010	1.71	.024	0.03	.000
DAS Slow Drivers	PC	0.60	.007	1.98	.028	2.71	.015
	FC	1.43	.016	4.01*	.054	0.50	.003
DAS Discourtesy	PC	0.80	.009	1.93	.027	1.19	.007
	FC	1.70	.019	3.46*	.047	0.14	.001
DAS Obstructions	PC	1.49	.017	2.21	.031	0.07	.000
	FC	1.20	.014	3.62*	.049	0.66	.004

\**p* < .01, \*\**p* < .001

*Note.* Step 1 = Pretreatment AX Out, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX Out, and treatment group x pretreatment AX Out. Step 3 = Pretreatment AX Out Total x gender x treatment group. AX Out = Anger Expression Out Scale, DAS = Driving Anger Scale, PC = Percent change score from pretreatment to posttreatment, and FC = Percent change score from pretreatment to one-month follow-up.

Table 28

*Multiple Regression Analysis of Change Predicted from AX Out Pretreatment Score*  
*Standardized  $\beta$  Coefficients for Step 2*

Measure	Time	AX Out x Gender	AX Out x D1	AX Out x D2	Gender x D1	Gender x D2
DAS Total	PC	.08	.00	.16	.08	.19
	FC	-.01	-.02	.12	.21	.37**
DAS Hostile Gestures	PC	-.07	-.04	.08	.08	.09
	FC	-.10	.01	.13	.10	.15
DAS Illegal Driving	PC	.09	.13	.21	.13	.10
	FC	.09	.08	.16	.26	.12
DAS Police Presence	PC	.01	.09	.10	-.01	.12
	FC	.00	.13	.07	.05	.24
DAS Slow Drivers	PC	.15	.02	.15	-.03	.11
	FC	.04	-.05	.09	.13	.40**
DAS Discourtesy	PC	.09	.01	.17	.09	.16
	FC	-.04	-.03	.08	.21	.41**
DAS Obstructions	PC	.10	-.13	.04	.06	.20
	FC	.09	-.10	.01	.13	.36**

\* $p < .01$ , \*\* $p < .001$

*Note.* AX Out = Anger Expression Out Scale, DAS = Driving Anger Scale. D1 = Dummy variable 1 and D2 = Dummy variable 2, both representing treatment group. PC = Change score from pretreatment to posttreatment, and FC = Change score from pretreatment to one-month follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Significant coefficients are marked only if the step as a whole was significant.

For the Drivers Angry Thoughts Questionnaire, Steps 2 and 3 were not significant for any measure. Step 1, however, significantly predicted outcome for all of the scales except Coping Self-Instruction at posttreatment and follow-up and the DATQ Pejorative at follow-up (Table 29). As shown in Table 30, for each instance in which Step 1 was significant, pretreatment AX Out significantly predicted outcome. Higher pretreatment levels of outwardly directed anger expression were associated with greater change. There was also a main effect for Gender on the Judgmental and Disbelieving Thinking scale, with females showing greater improvement.

The next set of analyses examined how Anger Expression Out related to change on Driving Anger Expression, Aggressive Behavior, and Risky Behavior. Step 1 was significant for all measures, whereas Steps 2 and 3 were not significant for any (Table 31). Table 32 provides standardized  $\beta$  weights for all variables on Step 1. Anger Out entered significantly for all scales such that higher pretreatment levels of outwardly directed anger predicted greater improvement after treatment. Gender entered in significantly for only the Risky Behavior scale, with males deriving greater benefit from treatment than females. Treatment group was not significant for any measure.

A final set of analyses examined the effect of pretreatment Anger Expression Out on treatment-related change on trait anger and the anger expression variables (Table 33). Step 1 was significant for the Trait Anger Scale and AX Out at posttreatment and follow-up, and for AX Control at posttreatment. Step 2 was not significant for any measures, indicating that there were no significant two-way interactions between anger expression and gender or treatment on any of the outcome measures. However, there were two significant three-way interactions on Step 3: AX Out at follow-up, and AX Control at



Table 29

<i>Multiple Regression Analyses of Change Predicted from AX Out Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 349)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 344)	$\Delta R^2$	<i>F</i> (2, 342)	$\Delta R^2$
DATQ Judgmental	PC	5.05*	.055	1.20	.016	0.64	.003
	FC	4.83*	.052	1.01	.014	0.95	.005
DATQ Pejorative	PC	3.63*	.040	1.81	.025	2.45	.013
	FC	2.65	.029	1.38	.019	1.09	.006
DATQ Revenge	PC	5.06*	.055	1.77	.024	1.42	.008
	FC	5.95**	.064	0.91	.012	1.56	.008
DATQ Physical	PC	15.78**	.153	0.96	.012	0.45	.002
	FC	11.98**	.121	1.09	.014	0.19	.001
DATQ Coping	PC	3.07	.034	2.17	.030	0.16	.001
	FC	1.75	.020	1.26	.018	0.52	.003

\**p* < .01, \*\**p* < .001

*Note.* Step 1 = Pretreatment AX Out, gender, and treatment group. Step 2 = Gender x pretreatment AX Out, treatment group x pretreatment AX Out, and gender x treatment group. Step 3 = Pretreatment AX Out x gender x treatment group. AX Out = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

Table 30

<i>Multiple Regression Analysis of Change Predicted from AX Out Pretreatment Score</i>					
<i>Standardized <math>\beta</math> Coefficients for Step 1</i>					
Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
DATQ Judgmental	PC	.20**	.14*	.02	-.03
	FC	.17**	.17**	-.01	-.03
DATQ Pejorative	PC	.17*	-.01	.10	.05
	FC	.16	-.03	.03	-.02
DATQ Revenge	PC	.23**	.06	-.01	.00
	FC	.25**	.04	-.09	-.03
DATQ Physical	PC	.35**	-.06	.12	.09
	FC	.32**	-.04	.05	.08
DATQ Coping	PC	-.07	.01	-.12	-.18
	FC	-.08	.02	-.08	-.11

\**p* < .01, \*\**p* < .001

*Note.* AX Out = Anger Expression Out Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from pretreatment to posttreatment, and FC = Change score from pretreatment to one-month follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Scoring for DATQ Coping is reversed from other measures. Significant coefficients are marked only if the step as a whole was significant.

Table 31

<i>Multiple Regression Analyses of Change Predicted from AX Out Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 348)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 343)	$\Delta R^2$	<i>F</i> (2, 341)	$\Delta R^2$
DAX Verbal	PC	6.69**	.071	1.21	.016	1.92	.010
	FC	7.94**	.084	1.00	.013	2.32	.012
DAX Physical	PC	9.89**	.102	1.23	.016	3.03	.015
	FC	8.87**	.092	0.75	.010	0.42	.002
DAX Vehicle	PC	5.13*	.056	1.46	.020	2.52	.013
	FC	5.97**	.064	0.27	.004	2.37	.013
DAX Adaptive	PC	5.54**	.060	2.50	.033	1.35	.007
	FC	3.93*	.043	1.43	.020	1.53	.008
DAX Aggressive	PC	8.49**	.089	1.45	.019	2.88	.015
	FC	9.90**	.102	0.59	.008	2.17	.011
Aggressive Behavior	PC	--	--	--	--	--	--
	FC	5.76**	.062	2.34	.031	1.38	.007
Risky Behavior	PC	--	--	--	--	--	--
	FC	5.67**	.061	1.62	.022	0.53	.003

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX Out, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX Out, and treatment group x pretreatment AX Out. Step 3 = Pretreatment AX Out x gender x treatment group. AX Out = Anger Expression Out Scale, DAX = Driving Anger Expression Scale. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores.

Table 32

*Multiple Regression Analysis of Change Predicted from AX Out Pretreatment Score*  
*Standardized  $\beta$  Coefficients for Step 1*

Measure	Time	Pretreatment Score	Gender	Treatment Dummy 1	Treatment Dummy 2
DAX Verbal	PC	.25**	.00	.06	.05
	FC	.27**	-.01	.04	.06
DAX Physical	PC	.31**	.00	.01	.05
	FC	.30**	-.02	-.05	.00
DAX Vehicle	PC	.23**	.01	.01	.03
	FC	.24**	-.01	-.05	.04
DAX Adaptive	PC	-.19**	-.04	-.08	-.15
	FC	-.19*	-.03	-.03	-.09
DAX Aggressive	PC	.29**	.00	.04	.05
	FC	.31**	-.02	-.01	.06
Aggressive Behavior	PC	--	--	--	--
	FC	.22**	-.11	-.04	-.04
Risky Behavior	PC	--	--	--	--
	FC	.14*	-.14*	.10	.12

\* $p < .01$ , \*\* $p < .001$

*Note.* AX Out = Anger Expression Out Scale, DAX = Driving Anger Expression, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores. For gender, negative  $\beta$  indicate greater improvement for males, whereas positive  $\beta$  indicates greater change for females. Scoring for DAX Adaptive is reversed from other measures.

Table 33

<i>Multiple Regression Analyses of Change Predicted from AX Out Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 348)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 343)	$\Delta R^2$	<i>F</i> (2, 341)	$\Delta R^2$
TAS	PC	8.07**	.085	0.94	.012	1.59	.008
	FC	7.93**	.084	0.60	.008	0.58	.003
AX In	PC	0.87	.010	0.89	.013	0.06	.000
	FC	0.53	.006	1.65	.023	0.48	.003
AX Out	PC	42.77**	.329	1.34	.013	3.80	.014
	FC	35.93**	.292	1.05	.011	5.95*	.023
AX Control	PC	5.18**	.056	1.39	.019	5.89*	.031
	FC	2.63	.029	1.39	.019	3.52	.019

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX Out, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX Out, and treatment group x pretreatment AX Out. Step 3 = Pretreatment AX Out x gender x treatment group. AX = Anger Expression Scale, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

posttreatment. As shown in Table 34, the AX Out was significant in each case in which Step 1 was significant, and there was also a significant main effect for AX Out in the two instances in which Step 3 reached significance. There was not a significant main effect for gender or group on any measure.

To better understand the three-way interactions, regressions were again run separately by gender. Graphs for the AX Out at follow-up can be found in Figures 14 and 15. For both males and females, high pretreatment AX Out scores were associated with greater change, and the effects of treatment group were different based on whether pretreatment AX Out scores were low or high. When initially low on anger expression out, males tended to improve most if assigned to the Relaxation condition, whereas Relaxation was least effective for males who started high in AX Out. Low AX Out males who were assigned to the Behavioral and Cognitive conditions actually experienced a 10 to 15% increase in outwardly directed anger expression at follow-up. In other words, treatment had an adverse affect on their anger expression. High AX Out males in these groups, on the other hand, improved least if assigned to the Relaxation condition and showed the most improvement in the Behavioral group. The pattern for females was similar, but reversed. Low AX Out females showed an increase in anger expression regardless of group, but did somewhat better if assigned to the Cognitive group. High AX Out females, on the other hand, showed an improvement of nearly 50% if assigned to the Relaxation group, and a smaller improvement if assigned to the Behavioral or Cognitive conditions.

Graphs for the three-way interactions predicting AX Control at posttreatment can be found in Figures 16 and 17. Males who started low in AX Out changed least if

Table 34

<i>Multiple Regression Analyses of Change Predicted from AX Out Pretreatment Score</i>								
Standardized $\beta$ coefficients for TAS and AX Dependent Measures								
Step and Variable	TAS		AX In		AX Out		AX Control	
	PC	FC	PC	FC	PC	FC	PC	FC
Step 1:								
AX Out at Pretreatment (A)	.26**	.27**	.06	.05	.57**	.53**	-.19**	-.16*
Gender (B)	.05	.01	.01	-.01	.06	-.04	-.07	-.04
Group D1 (C)	.06	-.02	-.01	-.04	.08	.01	-.11	-.05
Group D2 (D)	-.08	-.14	.07	.02	.00	.00	-.10	-.03
Step 2:								
A x B	.07	-.02	.00	.05	.01	.09	.12	.16
A x C	-.02	-.03	-.03	-.04	-.09	.05	.09	.01
A x D	.07	.05	-.03	-.09	.02	.01	.05	.06
B x C	-.04	-.01	-.08	-.29*	-.05	.07	.02	.02
B x D	.11	.12	.13	-.20	.11	.14	-.13	-.13
Step 3:								
A x B x C	-.20	-.07	.02	-.12	-.17	-.33*	.41**	.32*
A x B x D	-.16	.06	-.02	-.07	-.26*	-.27*	.21	.19

\* $p < .01$ , \*\* $p < .001$

*Note.* AX = Anger Expression. Group D1= dummy variable 1 for treatment group, Group D2= dummy variable 2 for treatment group, PC = Change score from Pretreatment to Posttreatment, FC = Change score from Pretreatment to One-month Follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Significant coefficients on Steps 2 and 3 are only marked if the step as a whole was significant.

Figure 14

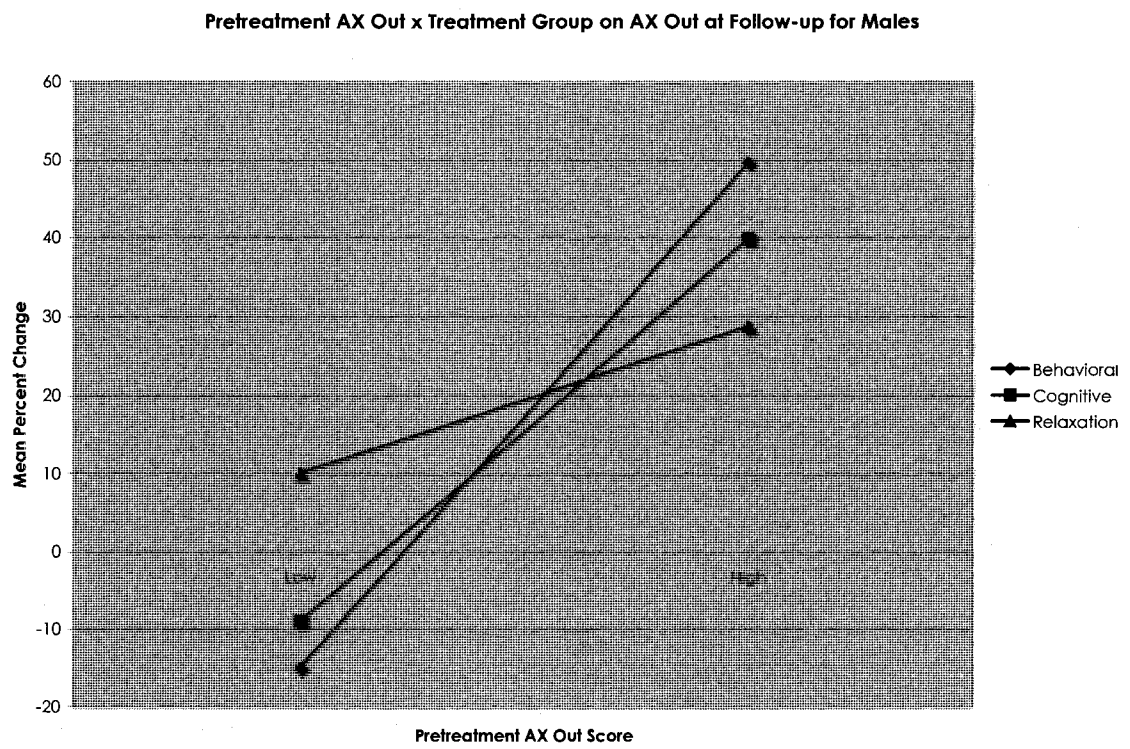


Figure 15

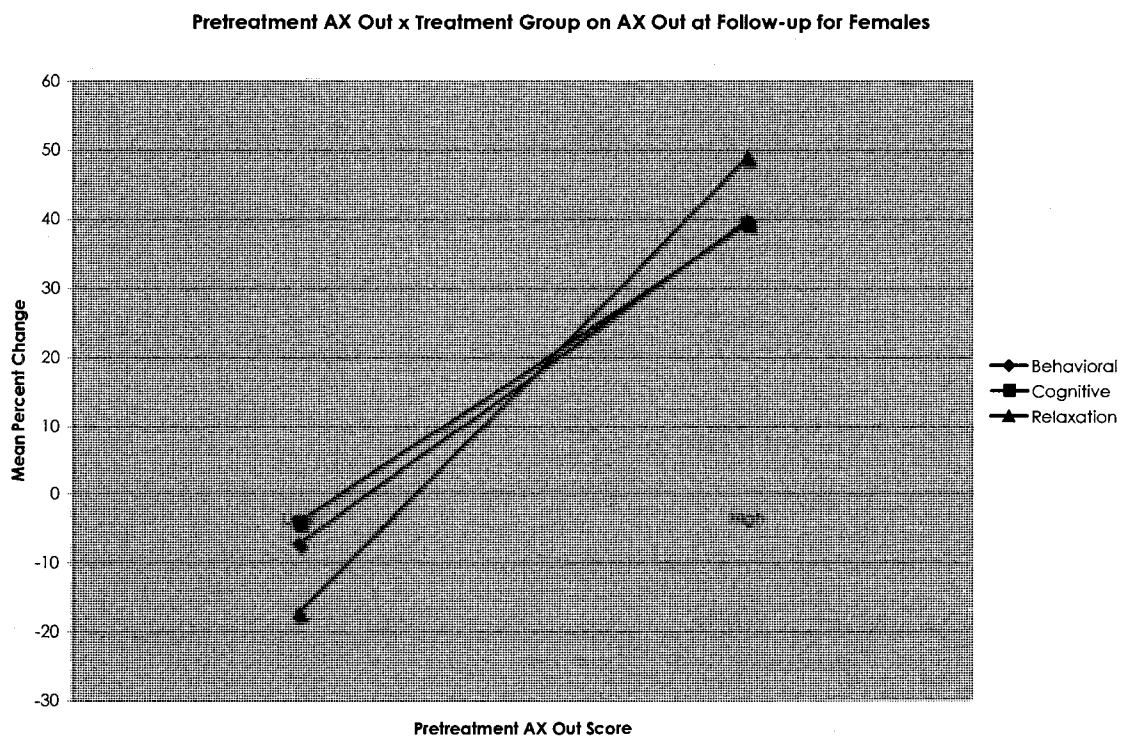


Figure 16

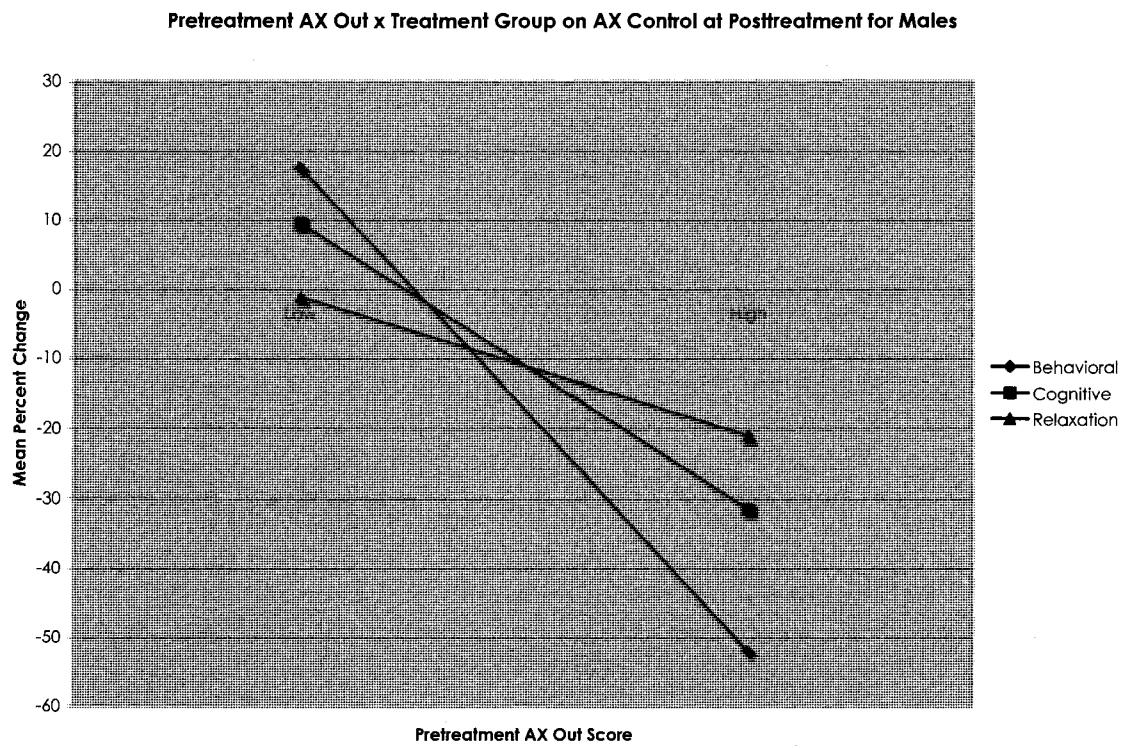
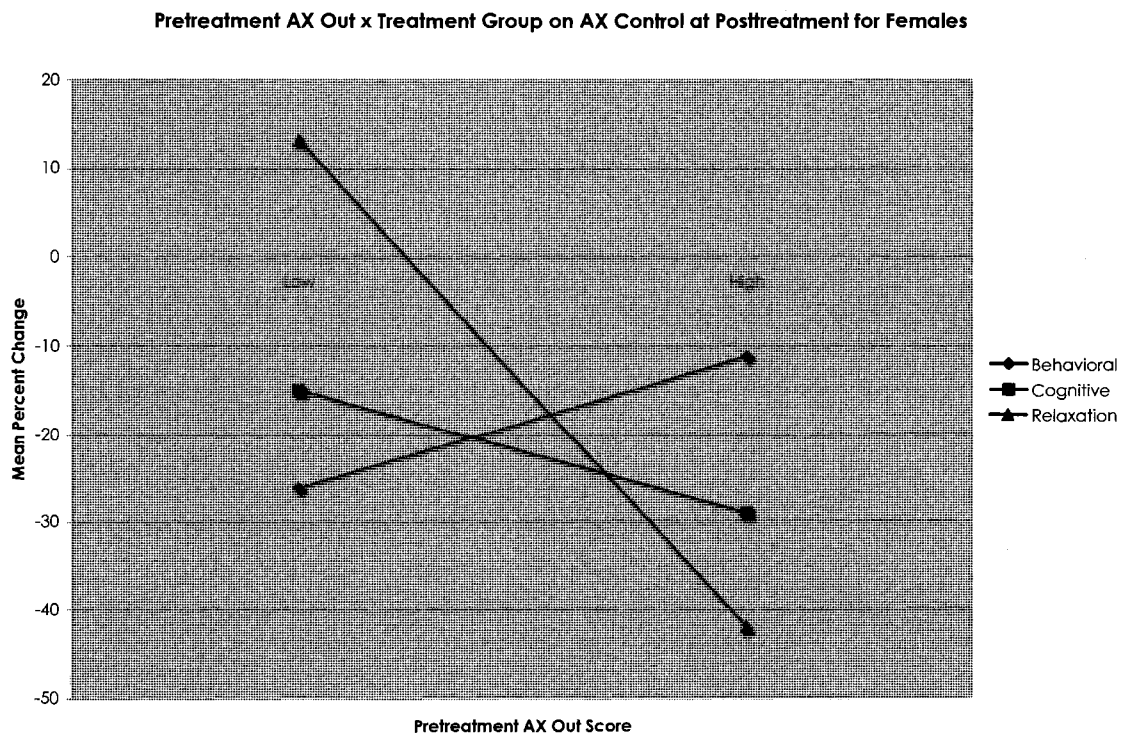


Figure 17





assigned to the Behavioral group, and most in the Relaxation group, with Cognitive intermediate (note that scoring is reversed for the AX Control, so that lower percentages below zero represent greater change). For low AX Out males, the difference in outcome between groups was not large, and on average students did not improve. Mean percent change ranged from -1.26 for members of the Relaxation condition to 17.46% for Behavioral (indicating a decrease in control for the latter group). For high AX Out males, the pattern was reversed, and positive change was much greater overall. Members of the Behavioral group experienced 52% improvement, whereas now Relaxation group participants improved approximately 21%. The Cognitive group was again in the middle. For females who started low in AX Out, the Behavioral condition was associated with greatest positive change (approximately 26%), while anger control for those in the Relaxation condition actually decreased by about 17% at posttreatment. Conversely, females who started high in AX Out showed approximately 52% improvement if assigned to Relaxation, 32% for Cognitive, and 11% in Behavioral.

*Anger Expression Control.* For the Driving Anger Scales, the regression equation including Anger Expression Control, Gender and Treatment Group was significant on Step 1 for three measures at follow-up: the DAS Total, Slow Drivers, and Discourtesy (Table 35). Step 2 was significant for DAS Total, Slow Drivers, Discourtesy and Obstructions at follow-up. In all cases, the same Gender x Treatment Group Dummy Variable 2 interaction that has been observed in multiple previous analyses explained the significant findings for Step 2. These findings can be found in Table 15 and in Figures 1 through 4. Step 3 was not significant for any measures.

Table 35

<i>Multiple Regression Analyses of Change Predicted from AX Control Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 350)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 345)	$\Delta R^2$	<i>F</i> (2, 343)	$\Delta R^2$
DAS Total	PC	1.34	.015	1.74	.024	0.07	.000
	FC	3.69*	.040	3.06*	.041	0.02	.000
DAS Hostile Gestures	PC	0.50	.006	0.39	.006	0.83	.005
	FC	0.53	.006	0.87	.012	0.47	.003
DAS Illegal Driving	PC	0.62	.007	2.82	.039	1.25	.007
	FC	1.25	.014	2.39	.033	0.61	.003
DAS Police Presence	PC	1.20	.014	1.03	.015	0.19	.001
	FC	2.24	.025	1.33	.018	0.08	.000
DAS Slow Drivers	PC	1.97	.022	1.68	.023	0.14	.001
	FC	4.66**	.051	4.37**	.057	0.20	.001
DAS Discourtesy	PC	1.37	.015	1.24	.017	0.21	.001
	FC	4.01*	.044	3.42*	.045	1.06	.006
DAS Obstructions	PC	2.46	.027	1.72	.024	0.84	.005
	FC	2.49	.028	3.08*	.041	0.32	.002

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX Control, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX Control, and treatment group x pretreatment AX Control. Step 3 = Pretreatment AX Control x gender x treatment group. AX Control = Anger Expression Control Scale, DAS = Driving Anger Scale, PC = Percent change score from pretreatment to posttreatment, and FC = Percent change score from pretreatment to one-month follow-up.

Table 36

## Multiple Regression Analyses of Change Predicted from AX Control Pretreatment Score

Standardized $\beta$ Coefficients for DAS Dependent Measures														
Step and Variable	Total		Hostile Gestures		Illegal Driving		Police Presence		Slow Driving		Discourtesy		Obstructions	
	PC	FC	PC	FC	PC	FC	PC	FC	PC	FC	PC	FC	PC	FC
Step 1:														
AX Control at Pretreatment (A)														
Gender (B)														
Group D1 (C)														
Group D2 (D)														
Step 2:														
A x B														
A x C														
A x D														
B x C														
B x D														

\* $p < .01$ , \*\* $p < .001$ 

Note. AX Control = Anger Expression Control Scale, DAS = Driving Anger Scale, Group D1 = dummy variable 1 for treatment group, Group D2 = dummy variable 2 for treatment group, PC = Change score from Pretreatment to Posttreatment, FC = Change score from Pretreatment to One-month Follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Significant coefficients on Step 2 and 3 are only marked if the step as a whole was significant.

In addition to the interactions on Step 2, there was a main effect on Step 1 for AX Control on the DAS Total, Slow Drivers, and Discourtesy at follow-up. Participants who started treatment with lower anger control improved more on these measures a month after treatment than those who entered treatment with greater control. There was also a main effect for Control on the DAS Total, Slow Drivers, and Discourtesy at follow-up. Participants who started treatment with lower anger control improved more on these measures a month after treatment than those who entered treatment with greater control. There was also a main effect for gender on the DAS Discourtesy. Males showed greater decrease in their angry response to discourteous drivers.

For the Drivers Angry Thoughts Questionnaire, Step 1 was significant for every measure (Table 37). For all but the DATQ Coping, there was a significant main effect for AX Control, such that lower pretreatment anger control was associated with greater improvement (Table 38). There was also a main effect for group on the DATQ Physical and the DATQ Coping at posttreatment. For the former, a post hoc ANOVA confirmed a significant effect for group,  $F(2, 352) = 4.69, p < .01, \eta^2 = 0.026$ . No between-group differences were found in post hoc testing, however. For the latter, the ANOVA again confirmed a significant effect for group,  $F(2, 352) = 5.20, p < .01, \eta^2 = 0.029$ , and there was a significant difference between the Relaxation ( $M = -36.76$ ) and Cognitive ( $M = -60.34$ ) groups. Because on the DATQ Coping negative scores reflect greater gain, this indicates that those in the Cognitive group showed greater gains on this measure after treatment. The Behavioral group ( $M = -52.18$ ) did not differ significantly from either of the other groups.

Table 37

<i>Multiple Regression Analyses of Change Predicted from AX Control Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 350)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 345)	$\Delta R^2$	<i>F</i> (2, 343)	$\Delta R^2$
DATQ Judgmental	PC	3.60*	.040	3.05	.041	0.09	.000
	FC	3.78*	.041	2.52	.034	0.63	.003
DATQ Pejorative	PC	6.03**	.064	3.08*	.040	0.14	.001
	FC	5.33**	.057	2.42	.032	0.26	.001
DATQ Revenge	PC	5.31**	.057	3.12*	.041	1.32	.007
	FC	7.11**	.075	3.97*	.050	0.03	.000
DATQ Physical	PC	7.96**	.083	3.82*	.048	1.62	.008
	FC	4.01*	.044	1.71	.023	0.75	.004
DATQ Coping	PC	3.43*	.038	0.86	.012	0.52	.003
	FC	5.36**	.058	3.45*	.045	1.14	.006

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX Control, gender, and treatment group. Step 2 = Gender x pretreatment AX Control, treatment group x pretreatment AX Control, and gender x treatment group. Step 3 = Pretreatment AX Control x gender x treatment group. AX Control = Driving Anger Scale, DATQ = Drivers Angry Thoughts Questionnaire. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

Table 38

## Multiple Regression Analyses of Change Predicted from AX Control Pretreatment Score

Step and Variable	Standardized $\beta$ Coefficients for DATQ Dependent Measures									
	Judgmental		Pejorative		Revenge		Physical		Coping	
	PC	FC	PC	FC	PC	FC	PC	FC	PC	FC
Step 1:										
AX Control at Pretreatment (A)	-.16*	-.14*	-.23**	-.23**	-.24**	-.28**	-.20**	-.26**	.12	.16*
Gender (B)	.10	.14	-.05	-.08	.01	-.01	-.12	-.10	.02	.04
Group D1 (C)	.03	.00	.10	.03	.00	-.08	.15*	.07	-.11	-.07
Group D2 (D)	-.02	-.02	.04	-.02	.00	-.03	.11	.10	-.18*	-.10
Step 2:										
A x B	-.21*	-.15	-.15	-.13	-.13	-.13	-.01	.06	-.06	-.02
A x C	-.01	-.10	.06	-.01	.09	-.01	.04	-.05	-.03	-.04
A x D	.12	.13	.12	.11	.16*	.16*	.20**	.19**	-.11	-.08
B x C	.09	.08	.19	.13	-.01	.07	.18	.21	.02	.05
B x D	.14	.10	.16	.21	-.01	.06	.03	.06	-.16	-.09

\* $p < .01$ , \*\* $p < .001$ 

Note. DATQ = Drivers Angry Thoughts Scale, AX = Anger Expression. Group D1 = dummy variable 1 for treatment group, Group D2 = dummy variable 2 for treatment group, PC = Change score from Pretreatment to Posttreatment, FC = Change score from Pretreatment to One-month Follow-up. The DATQ Coping is reversed from other measures. For gender, negative  $\beta$  indicate greater improvement for females, whereas positive  $\beta$  indicates greater change for males. Significant coefficients on Step 2 are only marked if the step as a whole was significant.

The three-way interactions on Step 3 were not significant for any measure. For five measures, the AX Control interacted with either gender or treatment group to create a significant interaction on Step 2. On the DATQ Judgmental at posttreatment, it was the AX Control x Gender interaction which best explained the significant effect of the step. As shown in Figure 18, males derived approximately the same moderate gain from treatment whether they started at low or high levels of anger control. Outcome for females, however, was influenced by their pretreatment AX Control scores. Those with the lowest control showed a posttreatment improvement in their judgmental thoughts while driving, whereas those with higher pretreatment control reported an increase in these thoughts.

For the DATQ Revenge and Physical, the significant interactions were between AX Control and the dummy coded variable 2 representing treatment group. Graphs of these findings can be found in Figures 19 through 22. For each of these measures, and consistent with most previous findings, results followed an overall pattern in which those who reported having the lowest anger control at pretreatment reported an improvement in their level of vengeful and physically aggressive thoughts while driving. Those with the highest control, on the other hand, reported much less improvement. This pattern was moderated by the treatment group to which participants were assigned, and the specific effect of group was not the same at posttreatment and follow-up. On the DATQ Revenge, participants with initially high control fared best at posttreatment if assigned to the Behavioral group, but nearly no improvement if assigned to the Cognitive Group.

The pattern was reversed for low-control participants. At follow-up, group assignment made less difference in outcome overall. High control participants in the

Figure 18

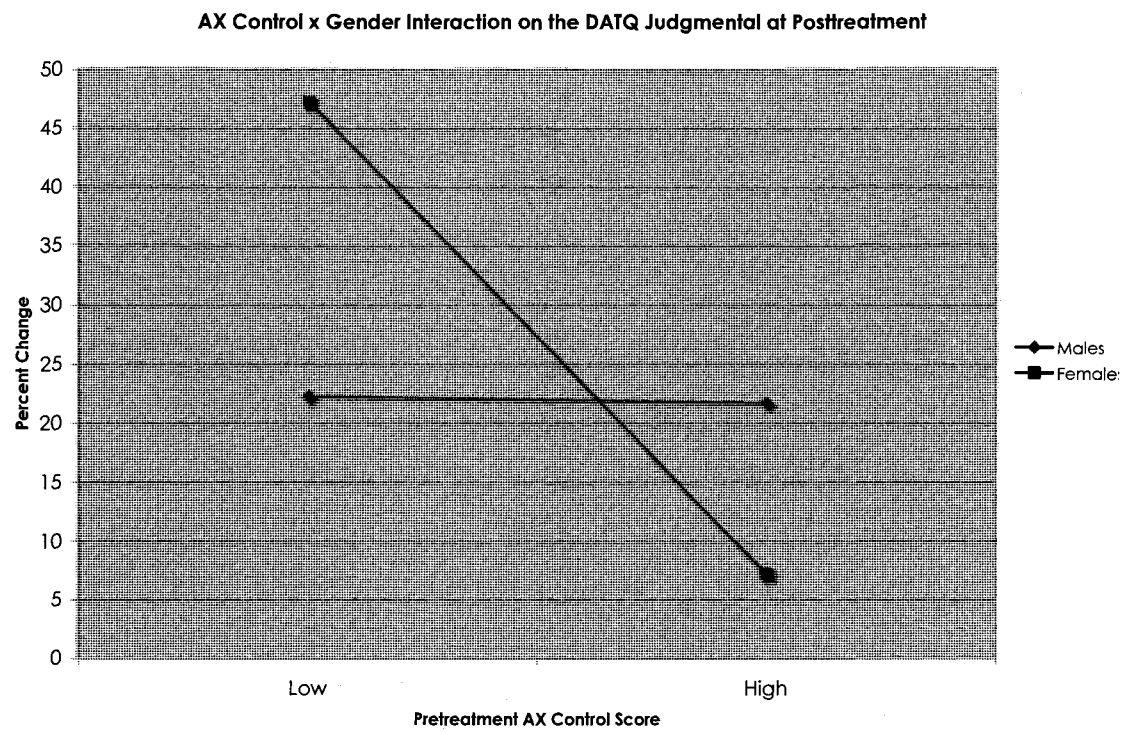




Figure 19

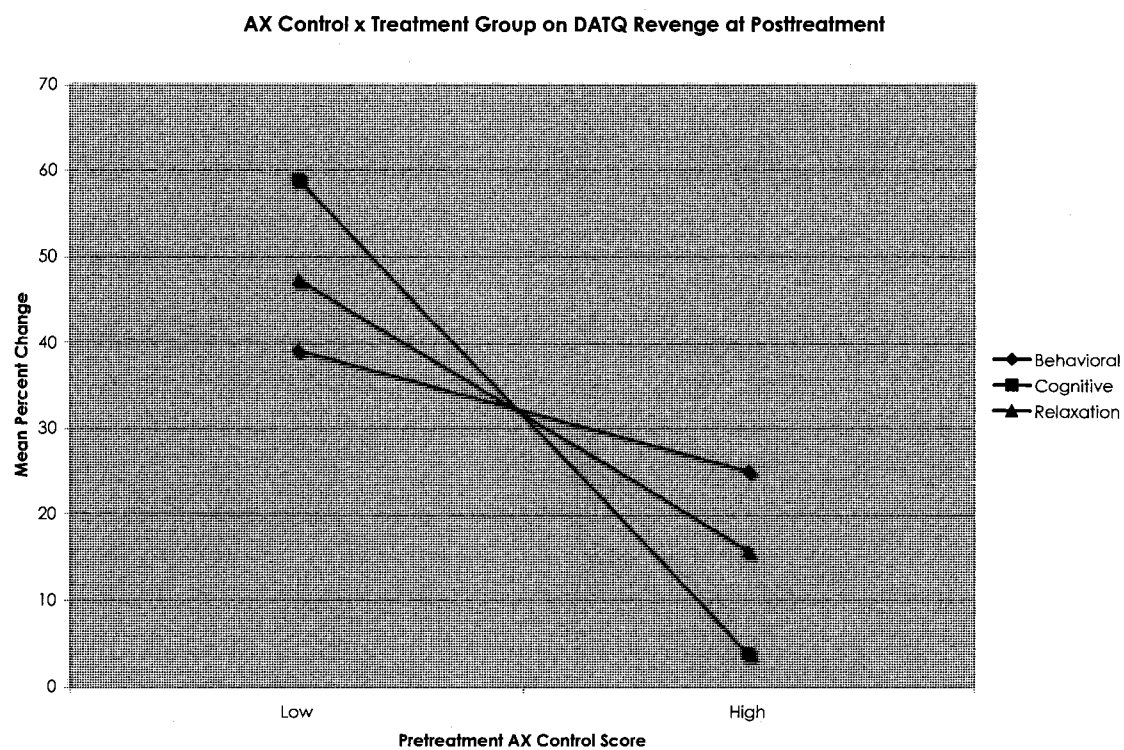


Figure 20

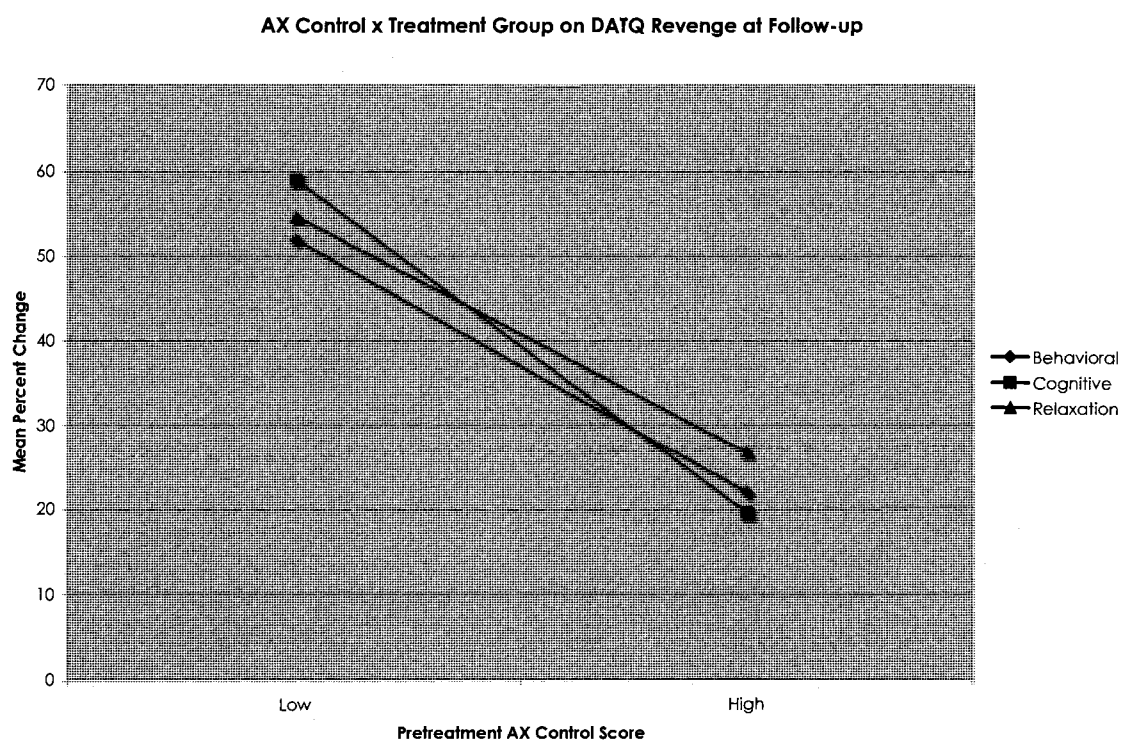


Figure 21

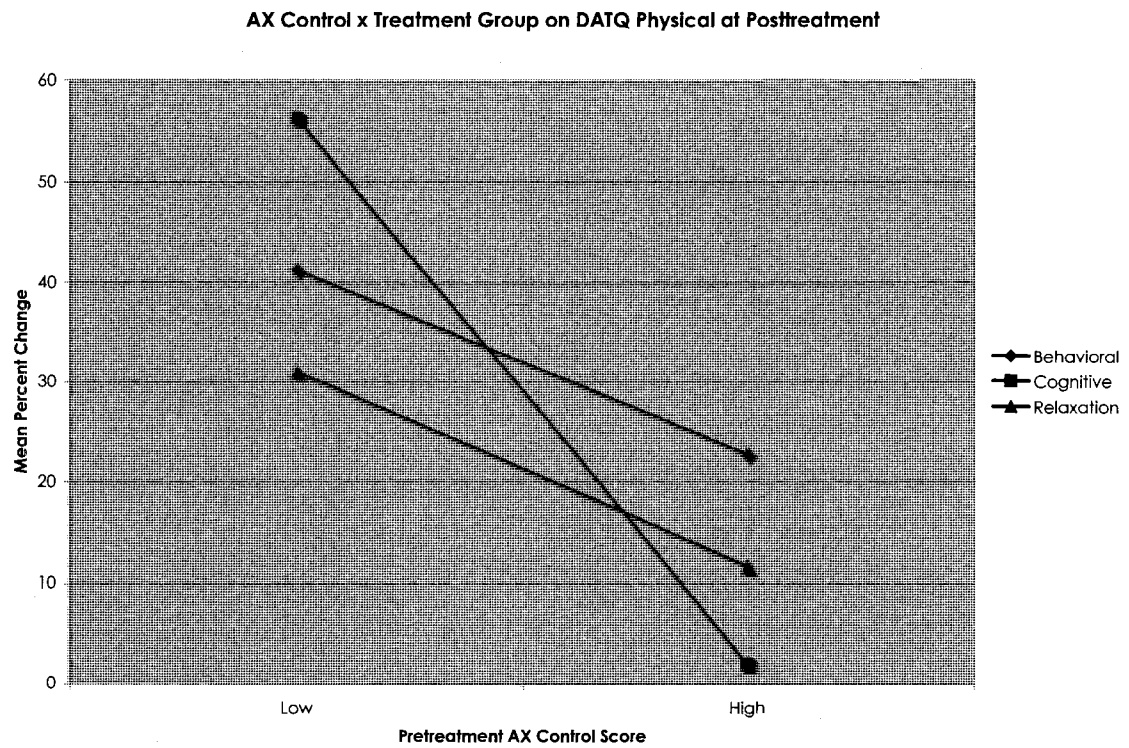
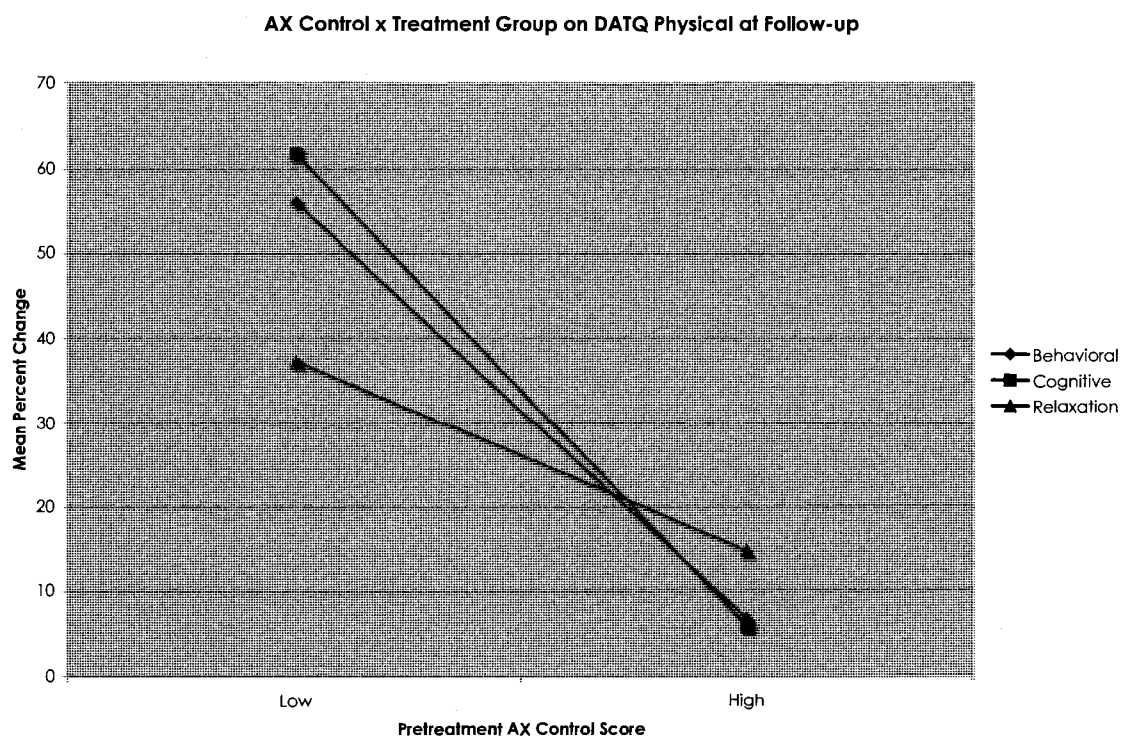


Figure 22



Cognitive group still showed the least benefit, whereas those in the Relaxation group benefited most from treatment. Those who started with low control showed the greatest decrease in vengeful thoughts when assigned to the Cognitive condition, and the least improvement in the Behavioral condition. Though the percentage of change varied, this basic pattern was similar for the DATQ Physically Aggressive Thoughts, except that at high levels of pretreatment control those who improved least were assigned to the Relaxation group.

The next set of analyses examined how Anger Expression Control related to change on Driving Anger Expression, Aggressive Behavior, and Risky Behavior. As shown in Table 39, Step 1 was significant for all measures except Aggressive Behavior. Step 2 was significant for DAX Verbal and DAX Aggressive at posttreatment and follow-up, DAX Physical and DAX Adaptive at posttreatment, and Aggressive Behavior at follow-up. Step 3 was not significant for any measure. Table 40 shows the  $\beta$  coefficients for all variables on Steps 1 and 2. AX Control predicted change on all of the DAX measures such that lower pretreatment levels of control were associated with higher levels of improvement. For the DAX Adaptive at posttreatment there was also a main effect for Group, but a follow-up ANOVA did not confirm this finding,  $F(2, 351) = 4.45$ ,  $p > .01$ ,  $\eta^2 = 0.025$ . On the Aggressive Behavior and Risky Behavior Scales, there was a main effect for Gender, with males showing greater decreases in these behaviors than females at follow-up. In each instance in which Step 2 was significant, the AX Control x dummy coded variable 2 representing treatment group was significant on the step. As

Table 39

<i>Multiple Regression Analyses of Change Predicted from AX Control Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 348)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 343)	$\Delta R^2$	<i>F</i> (2, 341)	$\Delta R^2$
DAX Verbal	PC	5.36**	.058	3.45*	.045	1.14	.006
	FC	4.94**	.054	4.06**	.053	2.38	.012
DAX Physical	PC	5.06**	.055	4.04**	.052	2.44	.013
	FC	6.10**	.065	2.82	.037	0.55	.003
DAX Vehicle	PC	4.66**	.051	2.73	.036	0.75	.004
	FC	5.95**	.064	1.80	.024	0.66	.003
DAX Adaptive	PC	6.04**	.065	3.68*	.048	1.10	.006
	FC	5.76**	.062	1.27	.017	0.68	.004
DAX Aggressive	PC	6.80**	.072	3.99*	.051	1.25	.006
	FC	7.87**	.083	3.80*	.048	0.81	.004
Aggressive Behavior	PC	--	--	--	--	--	--
	FC	2.82	.031	4.35*	.058	2.32	.012
Risky Behavior	PC	--	--	--	--	--	--
	FC	4.12*	.045	1.75	.024	2.80	.015

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX Control, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX Control, and treatment group x pretreatment AX Control. Step 3 = Pretreatment AX Control x gender x treatment group. AX Control = Anger Expression Control Scale, DAX = Driving Anger Expression Scale. PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up. Posttreatment scores were not obtained for Aggressive Behavior and Risky Behavior Scales due to time overlap with pretreatment scores.



shown in Figures 23 through 28, and consistent with the observed main effects, for each measure those who started with lower control experienced greater gain from treatment than those who started at high levels. As with the DATQ measures, treatment condition assignment affected the degree and nature of these disparities. For the DAX Verbal, at both posttreatment and follow-up, participants improved least if assigned to the Relaxation group, but whether the Cognitive or Behavioral group best promoted change depended on whether participants started high or low in anger control. Those with high pretreatment control benefitted most if they were in the Behavioral condition, and those with low control did best in the Cognitive group. In all cases, and particularly at follow-up, these between- group differences were modest. For the DAX Physical at posttreatment, high AX control students improved most if assigned to the Cognitive condition and least in Behavioral, whereas those with low AX control improved most in Behavioral and least in Relaxation. This was essentially the same for the DAX Adaptive, which is reverse scored from other measures. Those who started low in anger control showed a very large gain from treatment if assigned to the Cognitive condition, and a lesser gain if assigned to the Behavioral or Relaxation groups. Conversely, those who started high in AX Control changed most when assigned to the Behavioral group, less in Cognitive, and least in Relaxation. On the DAX Aggressive, those in the Behavioral condition improved most when pretreatment control was high, but less well than Cognitive (and on par with Relaxation) when control was low. The group differences were again bigger at posttreatment than at follow-up, particularly for those with high pretreatment control. As with previous analyses in which there was an interaction with

Figure 23

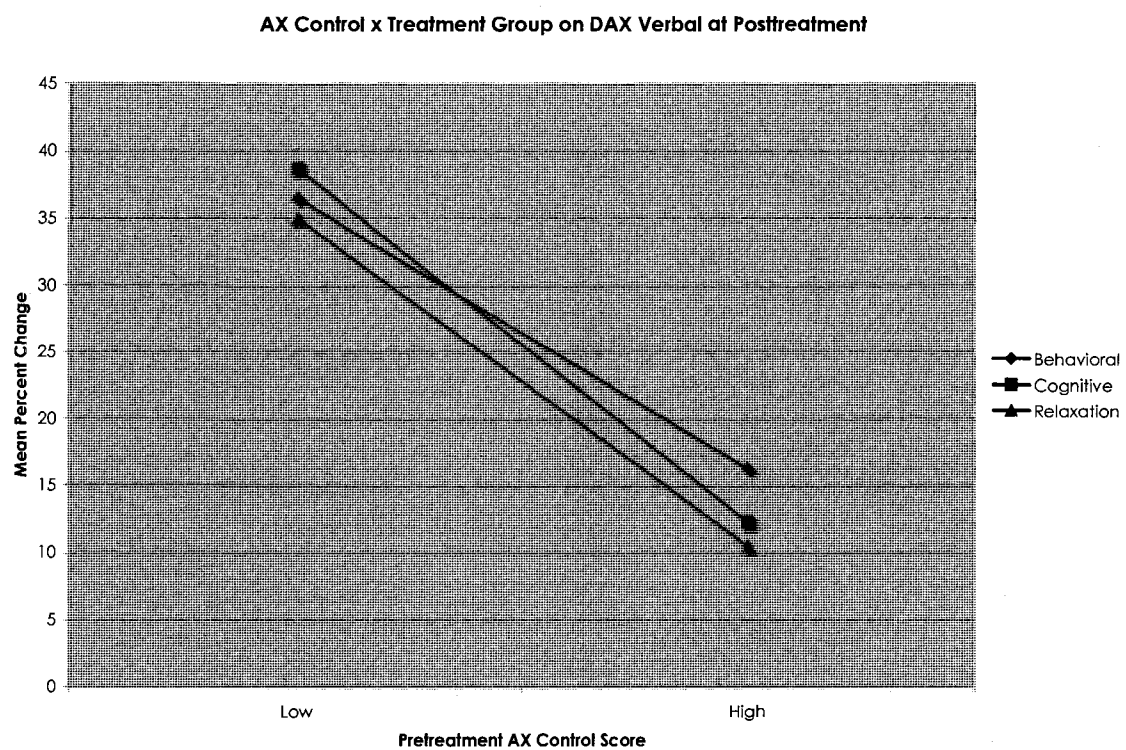


Figure 24

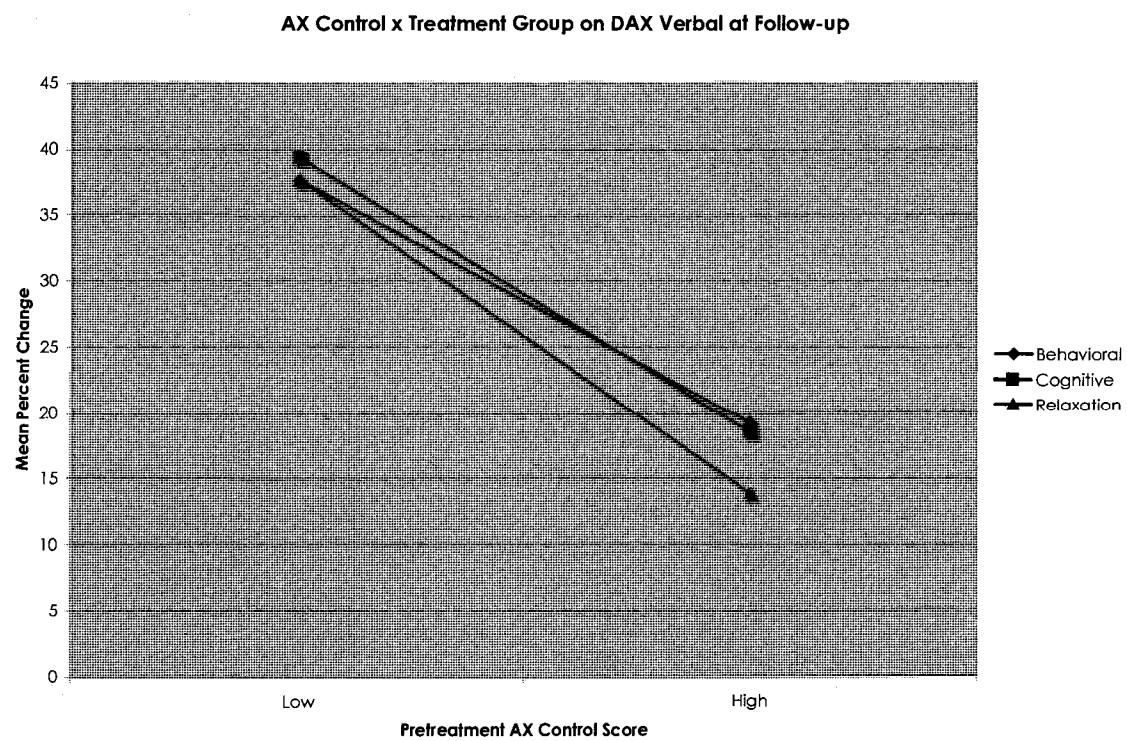




Figure 25

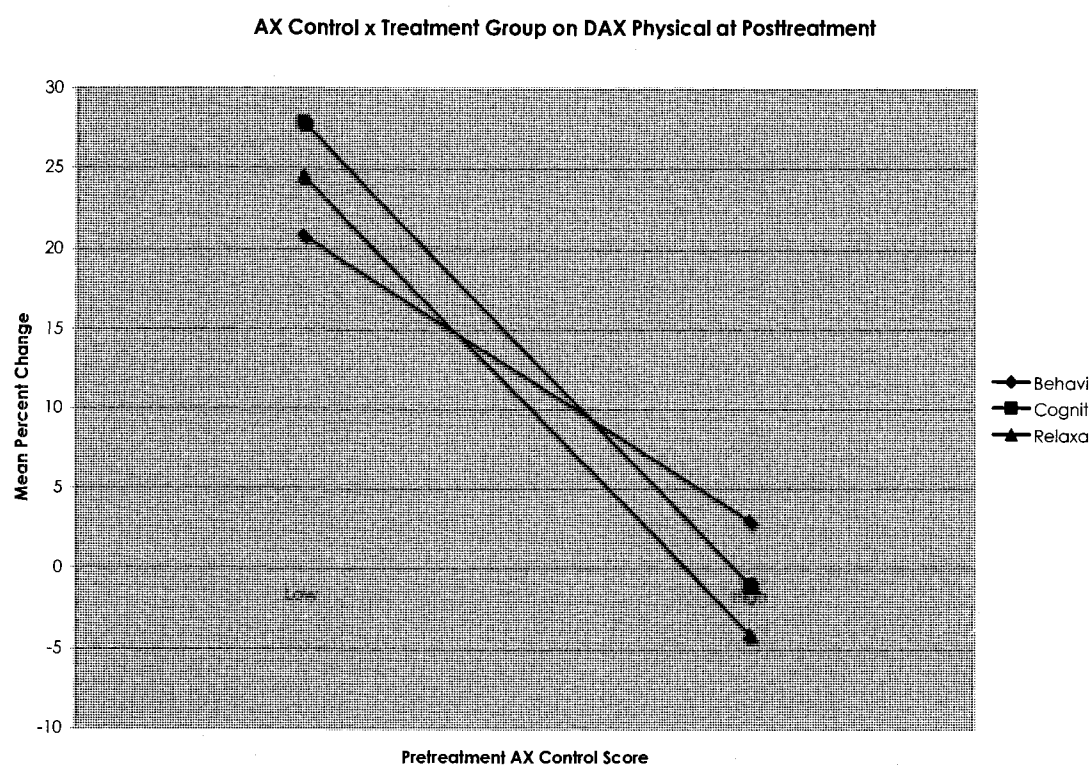


Figure 26

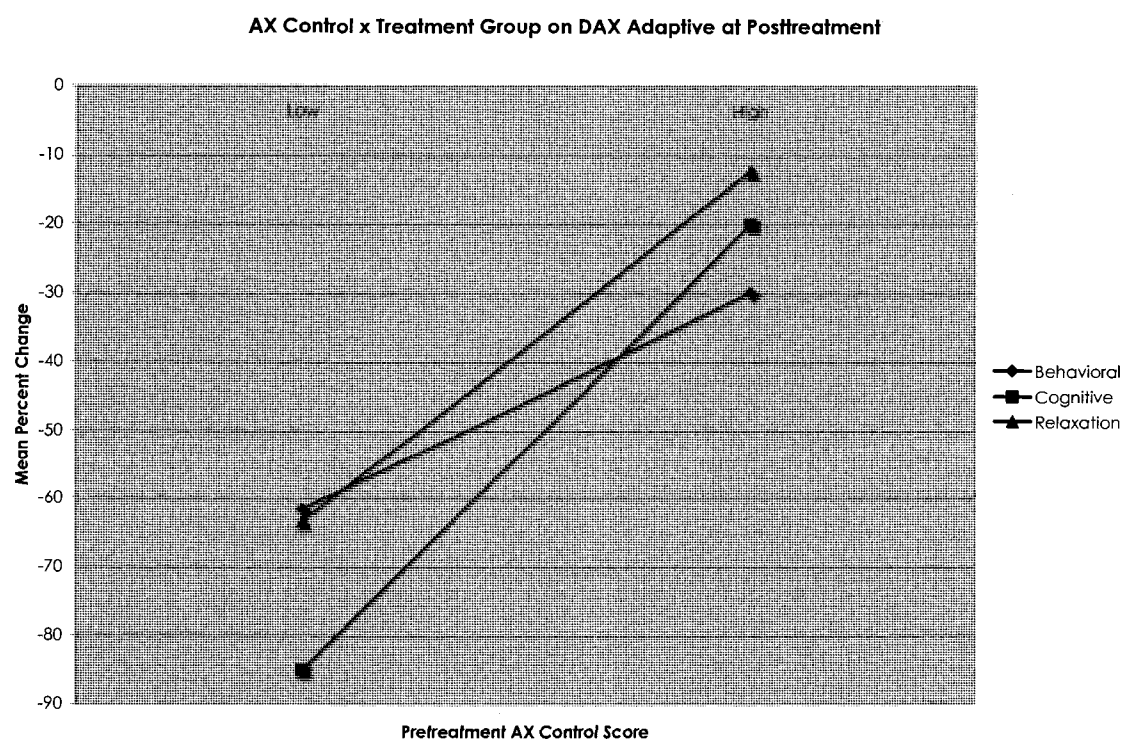




Figure 27

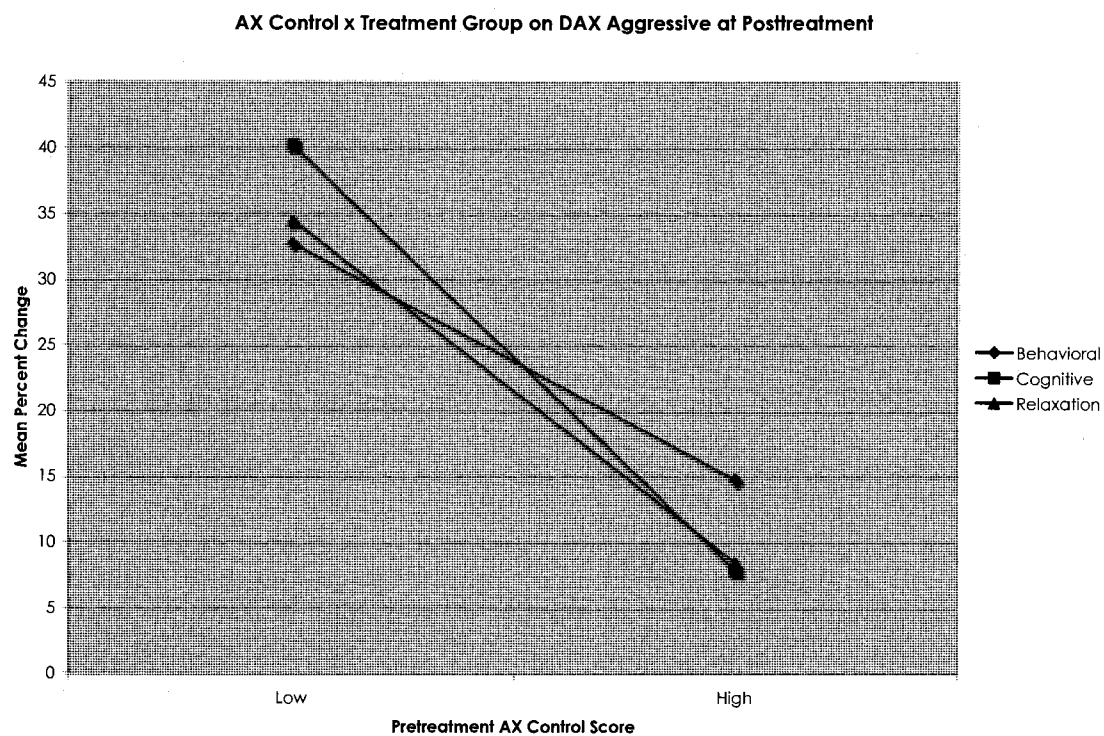
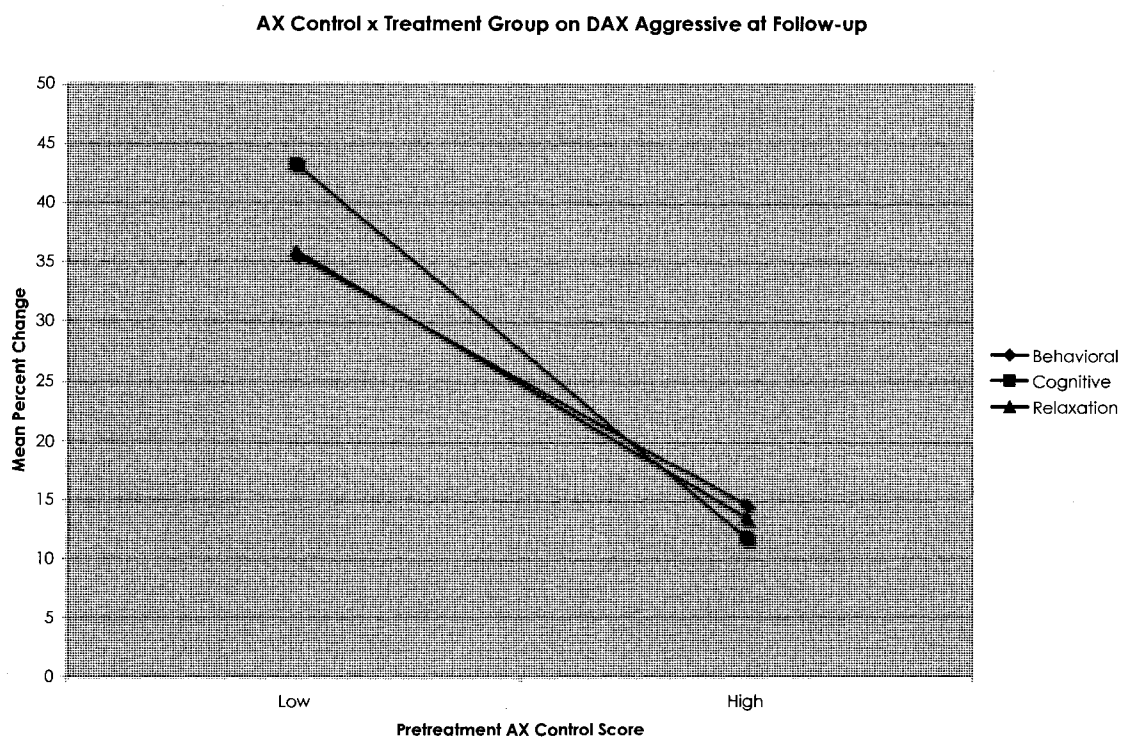


Figure 28



group and anger, group assignment had a greater effect when there was higher symptom severity (in this case low anger control).

For the Aggressive Behavior Scale (Figure 29), those in the Behavioral group showed similar gains regardless of their pretreatment level of anger control. At high pretreatment control levels, this was the most effective group; the Cognitive group members showed less improvement, and the Relaxation group changed the least. At low pretreatment control levels, however, the Behavioral group underperformed relative to the other two groups. Now the Relaxation group members showed the greatest decrease in aggressive behavior, and those in the Cognitive group showed an intermediate improvement.

The final set of analyses examined the relationship between AX Control at pretreatment and outcome on the Trait Anger Scale and the general anger expression measures. Step 1 was significant for all measures except for the AX In at posttreatment and follow-up (Table 41). In each case, only the AX Control was significant on the step (Table 42), indicating that lower pretreatment levels of anger expression control were associated with greater positive change. Step 2 was also significant for the TAS at follow-up, and for AX Control at posttreatment and follow-up. It was the AX Control x Dummy 2 Treatment Group variable that best accounted for this effect. The same pattern found in other AX Control analyses was again observed (Figures 30 through 32). Those who started at low anger control levels tended to show improved trait anger and anger expression out levels after treatment, whereas those with high pretreatment control levels tended to benefit much less from treatment, and in some cases even reported more anger and anger expression following treatment. For the TAS at follow-up and AX Out at

Figure 29

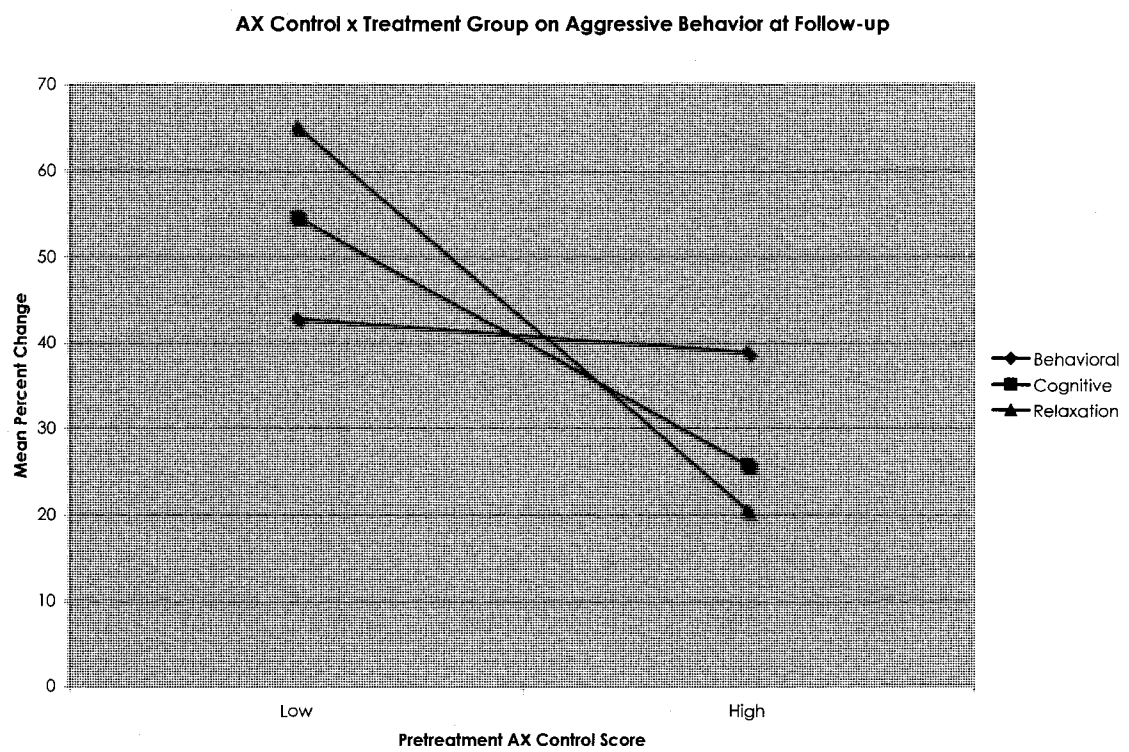


Table 41

<i>Multiple Regression Analyses of Change Predicted from AX Control Pretreatment Score</i>							
Dependent Measure	Time	Step 1		Step 2		Step 3	
		<i>F</i> (4, 348)	<i>R</i> <sup>2</sup>	<i>F</i> (5, 343)	$\Delta R^2$	<i>F</i> (2, 341)	$\Delta R^2$
TAS	PC	4.53*	.049	2.93	.039	0.80	.004
	FC	5.41**	.058	3.11*	.041	0.74	.004
AX In	PC	0.67	.008	1.06	.015	0.02	.000
	FC	0.35	.004	1.66	.023	0.43	.002
AX Out	PC	15.37**	.150	9.67**	.105	4.37	.019
	FC	9.25**	.096	7.01**	.084	2.85	.013
AX Control	PC	37.74**	.301	1.15	.011	3.12	.012
	FC	35.01**	.286	1.80	.018	1.37	.006

\* $p < .01$ , \*\* $p < .001$

*Note.* Step 1 = Pretreatment AX Control, gender, and treatment group. Step 2 = Gender x treatment group, gender x pretreatment AX Control, and treatment group x pretreatment AX Control. Step 3 = Pretreatment AX Control x gender x treatment group. TAS = Trait Anger Scale, AX Control = Anger Expression Control Scale, PC = Change score from Pretreatment to Posttreatment, and FC = Change score from Pretreatment to One-month Follow-up.

Table 42

<i>Multiple Regression Analyses of Change Predicted from AX Control Pretreatment Score</i>								
Standardized $\beta$ Coefficients for TAS and AX Dependent Measures								
Step and Variable	TAS		AX In		AX Out		AX Control	
	PC	FC	PC	FC	PC	FC	PC	FC
Step 1:								
AX Control at Pretreatment (A)	-.18**	-.22**	-.04	-.01	-.37**	-.29**	.54**	.54**
Gender (B)	.00	-.04	.00	-.01	-.03	-.12	.01	.03
Group D1 (C)	.09	.00	-.01	-.04	.12	.05	-.08	-.01
Group D2 (D)	-.06	-.13	.07	.03	.04	.05	-.06	.01
Step 2:								
A x B	-.07	-.15	-.08	-.10	-.11	-.17	.07	.00
A x C	.00	.02	-.04	-.05	.01	-.05	.05	.11
A x D	.18**	.16*	.03	-.01	.32**	.26**	-.01	.04
B x C	-.02	.00	-.07	-.28	.00	.10	.03	.05
B x D	.14	.13	.13	-.19	.16	.19	-.13	-.12

\* $p < .01$ , \*\* $p < .001$

*Note.* AX = Anger Expression. Group D1= dummy variable 1 for treatment group, Group D2= dummy variable 2 for treatment group, PC = Change score from Pretreatment to Posttreatment, FC = Change score from Pretreatment to One-month Follow-up. For gender, positive  $\beta$  indicate greater improvement for females, whereas negative  $\beta$  indicates greater change for males. Significant coefficients on Steps 2 and 3 are only marked if the step as a whole was significant.

Figure 30

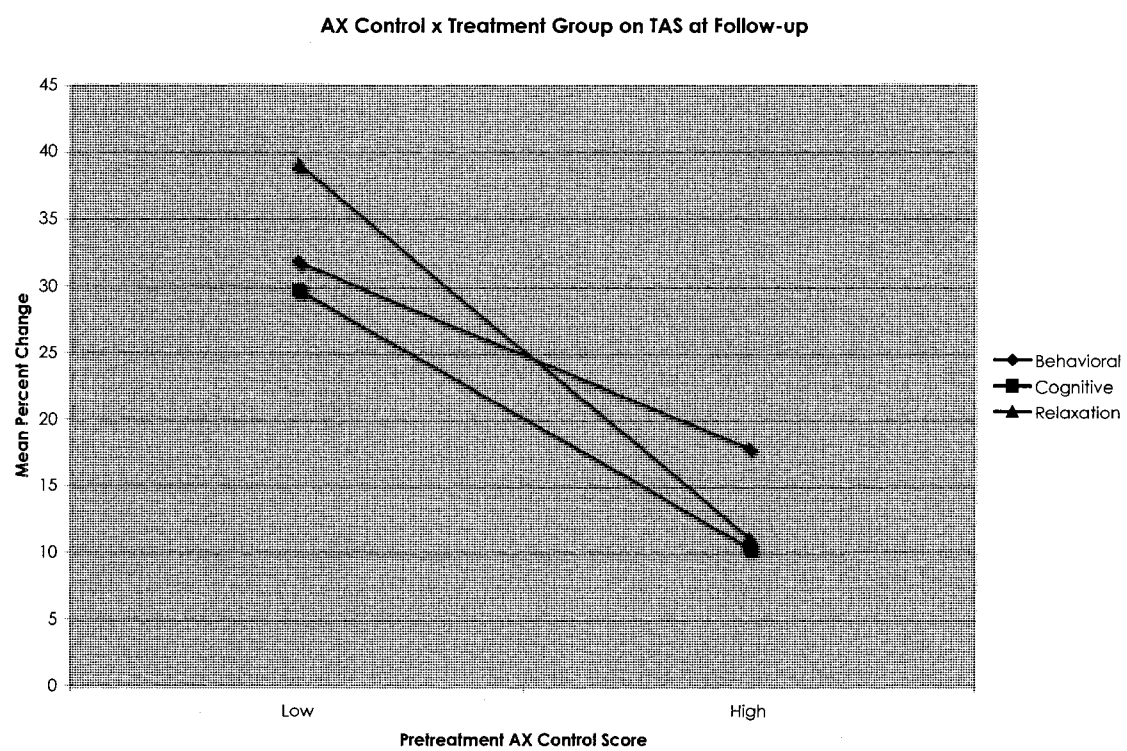


Figure 31

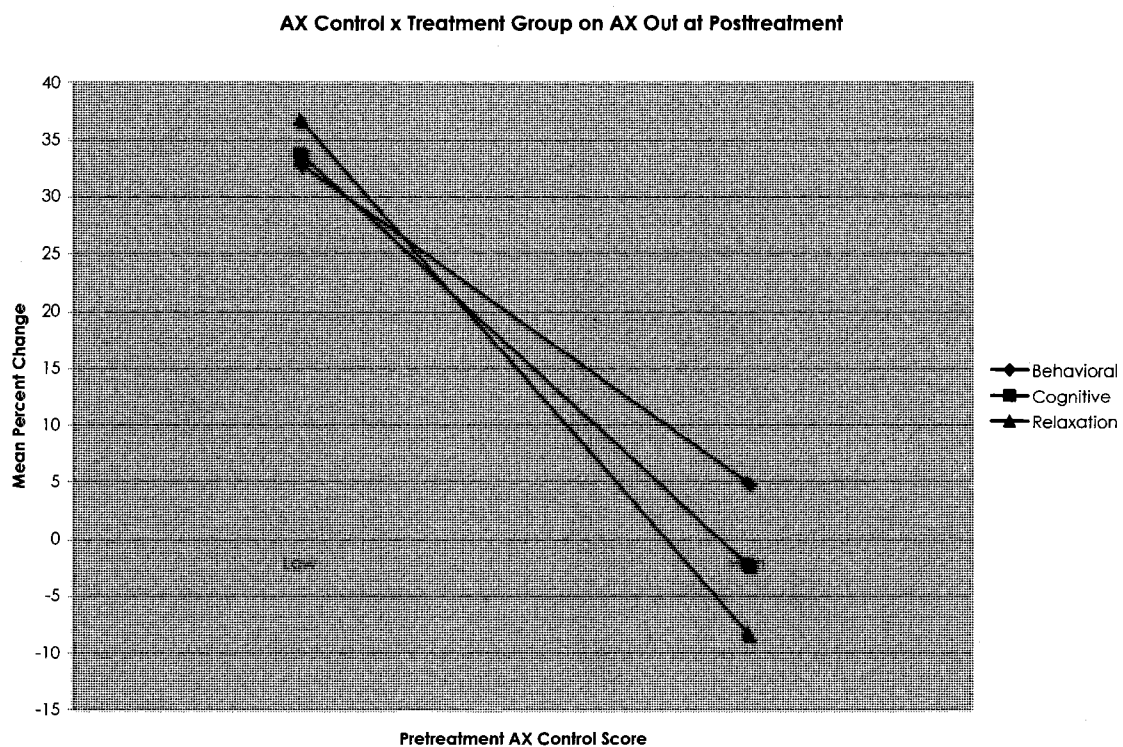
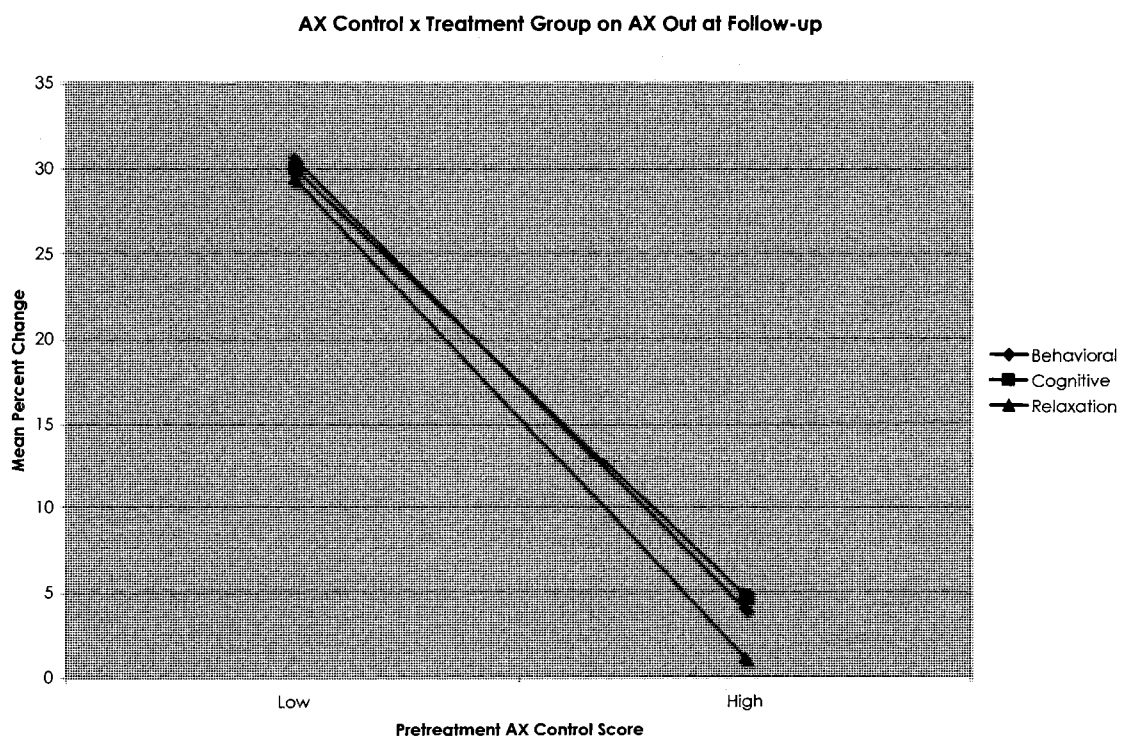


Figure 32



posttreatment, the group that was most effective when pretreatment control levels were high (Behavioral) was different than the group that was most effective when pretreatment control levels were low (Relaxation). For the AX Out at follow-up, the interaction was less pronounced, particularly at low pretreatment AX Control levels. The Relaxation group improved least regardless of pretreatment control, but the Cognitive group was slightly more effective at high control levels and the Behavioral at low control levels.



## Discussion

The present study was conducted to determine how pretreatment driving anger severity, trait anger severity, and general anger expression style related to client gains from group treatment for driving anger. It also clarified how these client variables might interact with client gender and treatment type to affect outcome. Three types of treatment groups, cognitive, behavioral, and relaxation, were evaluated. From pretreatment to posttreatment, treatments significantly reduced participants' overall driving anger, angry thoughts while driving, driving anger expression, aggressive and risky behavior, trait anger, and general anger expression. In all but two cases [the Coping Self-Instruction subscale of the Drivers Angry Thoughts Questionnaire (DATQ) and the Adaptive Constructive Expression subscale of the Driving Anger Expression scale (DAX)], these changes were maintained at one-month follow-up, and in many cases participants continued to improve during this time. Mean percent change from pretreatment ranged from 9% to nearly 50% for all measures, and change in aggressive behavior, the most dangerous part of driving anger, tended to be at the high end of that range. For all measures except one, DATQ Coping Self-Instruction, there were no significant differences in outcome between treatment groups. These findings were consistent with the majority of the research literature indicating that anger-focused group therapy, particularly manualized treatment, is effective for reducing both general and driving

anger, and that there is rarely any significant advantage for one type of treatment over any other (Ahn & Wampold, 2001; Del Vecchio & O'Leary, 2004; DiGiuseppe & Tafrate, 2003; Galovski & Blanchard, 2002; Sukhodolsky et al., 2004; Wampold, 2001).

### *How Level and Type of Anger Predicts Change in Response to Therapy*

To assess the effect of pretreatment anger levels and expression style on therapy outcome, pretreatment scores on five measures of various components of anger experience were utilized: the Driving Anger Scale (DAS), the Trait Anger Scale (TAS), and three Anger Expression Scales (AX) (i.e., Anger Expression In, Out, and Control). For each of these measures, a series of hierarchical regression analyses were conducted in which pretreatment anger level, gender, treatment group and the interactions between these variables were used to predict therapy-related change on 23 measures of anger. With a few exceptions which will be discussed later in greater detail, results showed a pattern in which higher levels of pretreatment anger predicted greater change in response to treatment, and there were relatively few significant interactions with gender or treatment group. Because there were few interactions, it is reasonable to first interpret the major findings at the level of main effects. Caveats and moderating factors will be discussed in later sections. What is noteworthy is that, in *every* case in which pretreatment anger related to change, the direction of the effect was the same: higher anger and lower anger control predicted better outcome.

### *Driving Anger*

The first research question addressed the effect of pretreatment DAS scores on outcome. Higher pretreatment levels of driving anger were associated with greater percent change on every outcome measure except four: 1) the DATQ coping, a measure

of how frequently participants used constructive coping thoughts to deal with anger; 2) the DAX Adaptive, a measure of how well participants use adaptive behaviors to deal with anger in driving situations, at follow-up (but not posttreatment); 3) the Risky Behavior Scale, a measure of how often participants engage in risky driving behavior; and 4) AX In, a measure of anger suppression generally. There were no significant interactions between pretreatment DAS scores and gender or treatment group.

Since participants were selected for treatment based on high levels of driving anger, the finding that higher driving anger levels correlated with greater improvement during treatment and for at least one-month afterward is encouraging, if surprising. Some previous research has suggested that greater pretreatment symptom severity has an adverse effect on outcome for both the problem being treated and for other types of issues (Garfield, 1994; Geiger, 1994; Hamilton & Dobson, 2002; Hoglend, 1995; Lambert et al., 2004; Lutz et al., 2001; Petry et al., 2000; Sotsky et al., 1991). However, the present findings suggest not only that driving anger is quite treatable, even in the relatively short span of eight weekly sessions, but that higher levels of pretreatment driving anger in fact relate to *better* treatment outcome. These results differ from those of Sukhodolsky (1998), whose meta-analysis of cognitive-behavioral treatments for children with anger problems indicated that children with moderate levels of anger improved more than those at either low or high anger levels. Among the young adults in the present study, it was instead those who reported the highest levels of driving anger who were most likely to gain the greatest improvement.

### *Trait Anger*

The second research question concerned the effect of pretreatment levels of general (or trait) anger on therapy response. Results for the Trait Anger Scale were similar to those for the DAS, with one major exception. Those with higher TAS levels showed greater change on all nearly all scales, again excepting the DATQ Coping, the DAX Adaptive at follow-up, the Risky Behavior scale at follow-up, and the AX In. Pretreatment TAS score also failed to predict change on the DATQ Pejorative and AX Control at follow-up. These findings indicate that higher pretreatment trait anger predicted a decrease in most types of angry thoughts while driving, driving anger expression, aggressive behavior while driving, trait anger and general anger expression out. Once again, these findings are different than what might have been predicted from the literature, but positive for therapists treating anger-related problems. While some researchers have found that high levels of trait anger, or hostility, which may be considered a proxy for trait anger, interferes with treatment for issues that are not anger-related, either directly (Cohen, 1998; Davies-Osterkamp et al., 1996; Erwin et al., 2003; Fassino et al., 2003; Filak et al., 1986; Kleber & Brom, 1987; Shepherd, 1998) or through its effect on the therapeutic alliance (Burns et al., 1999; Deffenbacher, 1999; Howells & Day, 2003), the present findings suggest that it does not impede therapy progress when anger is the concern being addressed, and in many cases may even be associated with greater, rather than lesser, improvement.

The one puzzling finding related to trait anger was that pretreatment level of trait anger, while related to nearly all other variables, was not directly associated with change on any of the Driving Anger Scales. That is, those higher on general trait anger did not

show greater driving anger reduction. It is not clear why this discrepancy would occur. It is possible that those with particularly high levels of trait anger screened themselves out of the study, so that the study population was relatively homogenous on this variable. However, this explanation was challenged by the fact that there was a substantial standard deviation for the TAS and trait anger levels predicted outcome on virtually all other measures, while it did not significantly relate to either the DAS total or any of its subscales. A more plausible possibility is that, because driving anger was the focus of treatment and because individuals were selected for the study based on their belief that they had a problem with driving anger and wanted treatment, their motivation to reduce driving anger (and the treatment's focus on doing so) masked any effect that trait anger might have otherwise had. Researchers have found that high levels of distress related to symptoms and greater readiness or motivation to change have a positive effect on outcome (Howells & Day, 2003; Overstreet, 1993; Schneider & Klauer, 2001). It is also possible that the constructs of trait anger and driving anger are distinct enough that trait anger has little effect on outcome. In support of this possibility, Ellison-Potter, Bell and Deffenbacher (2001) found no relationship between trait driving anger and students' aggressive driving behavior on a driving simulation task. They concluded that situational factors including anonymity, aggressive stimuli, and gender had more effect on driving behavior. In understanding degree of change on these driving specific variables in the present study, then, the other variables of gender, treatment group, and their interactions may have become more relevant. This possibility is supported by the fact that there were several significant interactions with gender and group on the DAS scales which will be described in a later section. However, a problem with this explanation is that the Trait

Anger Scale predicted change on a number of other driving-related measures that were correlated with the Driving Anger Scale. Clearly, more research would be needed to replicate and better understand these findings. Nevertheless, the failure of trait anger to relate significantly to treatment outcome for a targeted specific type of anger may be considered favorable to clinicians treating specific types of anger problems, since it suggests that clinicians can confidently address these problems without attempting to adapt treatment on the basis of pretreatment trait anger levels.

### *Anger Expression*

The third research question examined the effect of pretreatment anger expression style on therapy outcome. The research literature to date provided little clue as to how specific types of anger expression might affect response to treatment; however, evidence suggests that anger expression, including aggression, does play a role in outcome (Burns et al., 1999; Erwin et al., 2003; Sukhodolsky, 1998). The present study first examined how three types of anger expression related to outcome: Anger In, a measure of anger suppression; Anger Out, which measures outwardly directed anger expression; and Anger Control, a measure of how well participants could regulate their anger. Findings for each of these types of expression differed from one another, suggesting that these are in fact correlated but separate constructs (Deffenbacher, Lynch et al., 2002). As with pretreatment TAS, all three types of pretreatment AX scores showed little relationship to outcome on the DAS or its subscales. Neither AX In nor AX Out were related to any DAS measures. There was a main effect for AX Control for only the DAS Total, Slow Drivers and Discourtesy at follow-up, with students lower in initial anger control showing greater improvement. Pretreatment anger expression, like trait anger, apparently

had minimal impact on angry drivers' responses to driving anger-specific treatment. Students tended to improve in therapy regardless of their initial general anger expression styles. There was weak evidence that low anger control does relate to greater change on a few driving anger variables, but this effect became evident only at follow-up. Likely, the same factors discussed for trait anger are in effect here as well. As with trait anger, it is difficult to explain why anger expression would predict change on many measures correlated with the Driving Anger Scales but not with these scales themselves. It may be that the role of pretreatment anger expression in driving anger outcome is overshadowed by the effects of motivation, targeted treatment, interactions between gender and treatment group, and other variables not included in this study.

*Anger Expression Out.* On all DATQ measures except the DATQ Coping Self-Instruction at posttreatment and follow-up, and Pejorative Labeling and Verbally Aggressive Thinking at follow-up, overall aggressive anger expression related significantly to level of change. For each of the other DATQ subscales (Judgmental and Disbelieving Thinking, Pejorative Labeling and Verbally Aggressive Thinking at posttreatment, Revenge and Retaliatory Thinking, and Physically Aggressive Thinking), AX Out predicted outcome, such that higher pretreatment levels of outwardly directed anger related to greater reduction in angry thoughts. AX Out also predicted change on all subscales of Driving Anger Expression, the Aggressive and Risky Behavior scales, TAS, AX Out, and AX Control at follow-up. It did not predict change on AX Control at posttreatment, or on AX In.

This is consistent with previous findings showing that higher anger levels related to greater change, but takes that finding one step further by suggesting that even

participants with styles of externally-focused anger expression that might be considered aggressive or hostile responded well to treatment. This finding might be viewed as conflicting somewhat with one of the few other studies that directly addressed how client variables affect response to driving anger treatment. Galovski and Blanchard (2002) found a trend for angry drivers who met criteria for Intermittent Explosive Disorder (IED) to improve less than other non-IED aggressive drivers. However, IED is not a perfect proxy for Anger Out or any of the other variables included in the present study, so it is not surprising that their finding was not replicated. Additionally, they found only a trend for IED to impede response to treatment, not a statistically significant relationship. Conversely, in their study of non-specific general outpatient therapy, Conte and colleagues (1991) found no relationship between aggression and treatment outcome. However, they used a construct of aggression as a personality trait, not a measure of anger expression. Few personality variables have been consistently associated with treatment outcome (Petry et al., 2000), so it is not surprising that they found no effect. While it is not yet clear what effect outward negative expression of anger has on treatment response, the present study provided evidence that it was not detrimental for anger-specific treatment, and may have facilitated greater change, at least when intervention focused on anger.

*Anger Expression In.* Overall, the AX In was a poor predictor of therapy outcome. It predicted change on only two of the 23 measures: DATQ Judgmental at follow-up, and AX In at both assessments.

The AX In measures individuals' tendencies to seethe inwardly but avoid displaying anger. It is not surprising that overall this was a weaker predictor of



therapeutic change than Anger Out, because students volunteered for the study based on their recognition that they had a problem with anger and would benefit from treatment. Even though suppressed anger has been associated with negative health and other outcomes (Harburg, Julius, Kaciroti, Gleiberman, & Schork, 2003; Vandervoort, Ragland, & Syme, 1996), it is likely that individuals are more inclined to perceive themselves as having an anger problem when their behavioral reactions to anger feel out of control or harmful. No implications can be conclusively drawn from these findings without further research to confirm them, but it is interesting that higher Anger In was associated with reduction in judgmental and vengeful thoughts about other drivers. It seems reasonable to assume that group therapy clients focus on the therapeutic messages that seem most relevant to themselves, and so in this case those with a greater tendency to hold anger in may also tend to have more judgmental and vengeful thoughts. They may have been motivated, then, to successfully apply treatment to this particular manifestation of their anger (i.e., harboring grudges).

The present study has consistently found that high levels of a particular type of anger at pretreatment is associated with greater change on the same variable at posttreatment and follow-up, and AX In is no exception. The finding that higher AX In was associated with greater change at posttreatment for *only* AX In, but not AX Out or Control, again suggests that these are distinct constructs which differentially affect individuals' change in treatment. People who experience high levels of anger on an ongoing basis tend to cope differently with that anger on different occasions. Whereas at times they may become outwardly hostile or aggressive, on other occasions they attempt to suppress their anger, sometimes resulting in an angry outburst later on. At other times,

they are successful at using positive coping and anger control strategies. Therefore, even though at first glance it may seem somewhat contradictory, high anger drivers often report moderate levels of Anger Out, Anger In, *and* Anger Control (Deffenbacher, Oetting, Lynch et al., 1996). When considering the current findings, then, it appears that whereas starting out high in externally-focused anger expression may facilitate change on a wide array of anger measures, including aggression and risky behavior, a tendency to suppress anger does not have as strong an effect. To facilitate better therapy outcomes for all clients, future research should clarify what factors are most associated with change for individuals who favor a suppressive anger expression style.

*AX Control.* The third Anger Expression scale, AX Control, measures how well clients are able to control their temper and let go of anger. In addition to the DAS measures mentioned previously (DAS Total, DAS Slow Driving, and DAS Discourtesy at follow-up), low pretreatment levels of AX control were associated with greater change on all DATQ scales (except Coping at posttreatment), all Driving Anger Expression scales, the Trait Anger Scale, AX Out, and AX Control. It was not significantly associated with Aggressive or Risky Behavior or AX In. Once again, the specific pattern of results did not unambiguously support any particular theoretical position regarding which characteristics of anger are most related to a lack of anger control at pretreatment. However, results did support the assertion that students with lower anger control at pretreatment change on a variety of measures. As with individuals with initial high levels of driving anger and a tendency to express anger outwardly, those with less ability to control anger seemed to benefit most from treatment.

### *Significance of These Main Effects for Anger*

The consistency of findings in this study offers strong support for the idea that client variables, in this case symptom severity at pretreatment, are related to the process of therapeutic change. As is true in most research studies, the three main independent variables studied, driving anger, trait anger, and general anger expression style, did not relate significantly to every outcome variable at every point in time. However, they all predicted outcome in at least some of the variables, nearly all in the case of prediction from the DAS, and in every case the pretreatment level of a variable was strongly associated with level of change on the same variable at both posttreatment and follow-up. What is most striking is that in *every* case in which there was a statistically significant relationship between pretreatment anger level and degree of change, the relationship flowed in the same direction. High levels of anger or maladaptive anger expression and, conversely, low levels of anger control, were associated with greater change.

These findings are discrepant with some of the literature in other areas. Cappeliez (2000) and Neimeyer and Weiss (1990) for example, found that while clients who reported higher depression levels at pretreatment did improve in therapy, they were still more likely to be clinically depressed than those who started at more modest levels. In fact, in depression treatment, higher pretreatment severity is consistently associated with either lack of full recovery, maintenance of relative depression rankings at completion of treatment, or less recovery than those who are moderately or mildly depressed (Beckham, 1989; Brent et al., 1998; Cappeliez, 2000; Neimeyer & Weiss, 1990; Saenz, 1987; Steinmetz et al., 1983; Teri & Lewinsohn, 1986). Other researchers have also associated higher problem severity of other types with poorer response to treatment or a higher

dropout rate, and high anger levels have predicted poorer outcome in treatments for non-anger related problems (Erwin et al., 2003; Fassino et al., 2003; Kleber & Brom, 1987). Expressions of anger may interfere with clients' ability to form alliances with their therapists partly because it is difficult for the therapist to feel warmly attached to a client who is outwardly angry. Anger may also affect clients' motivation for treatment, since they are likely to believe that it is others, not themselves, who have a problem. Based on these types of research findings, the present study theorized that those with the highest driving anger might benefit less from treatment than their more moderately angry counterparts. However, as is evidenced by the current clear and consistent findings in the opposite direction, there are obviously additional factors that outweigh these in determining a client's response to driving anger-specific treatment. It may be that specific characteristics of the treatments employed in this study contributed to positive outcome. For example, the difficulty some therapists experience connecting warmly with angry clients might have been mitigated in the present study by the fact that therapists were trained to expect, treat and even purposefully elicit anger, so they might have been better able to create and maintain alliances with angry clients than therapists without such training. Increased education for all therapists about how to respond to clients' outward expression of anger might similarly minimize its impact in other types of therapy. Additionally, clients self-selected for intervention for anger reduction. Anger may impact outcome differently when clients *want* assistance to reduce their anger.

Consistent with the present findings, some other researchers have discovered links between higher pretreatment problem severity and better outcome. In the domain of anger-related therapies, Shepherd (1992) administered an integrated group treatment

program for wife abusers. Positive outcome was defined by a reduction in dysfunctional attitudes, trait anger and anxiety. Those he defined as “more successful completers” of his program reported both higher levels of abuse from their own parents and a higher frequency of abuse toward their children than did those who were less successful. The high problem severity/better outcome relationship has been shown in non-anger-specific interventions as well. In their group therapy treatment for sexual abuse survivors, Hazzard, Rogers and Angert (1993) found that those with more initial trauma-related symptomology reported more change on the SCL-90 R, a symptom checklist designed to detect psychological disturbance in several domains. The Project Match Research Group (1998a), similarly found that individuals with higher alcohol problem severity, including more alcohol involvement, more dependence, and type B alcoholism, achieved better outpatient alcoholism treatment outcomes at three years after treatment. They speculated that “those with more severe difficulties at intake mobilized themselves more effectively for recovery” (p. 10). Given the nature of the current study in which students acknowledged an anger problem and requested treatment, this may account for those starting with greater anger showed greater change. Just as those who had experienced abuse in their own childhoods may have been more aware of the repercussions of abuse and therefore more motivated to reduce their own abusive attitudes and behavior, students in the current study may have already been keenly aware of the negative effects of driving anger in their lives and motivated to reduce these effects. It would be interesting to replicate this study with a group of court-mandated clients, many of whom might not initially recognize a need to change or want to engage in therapy, and find out whether these findings were replicated. Such a study would help clarify the role of

problem recognition and motivation to change in anger treatment outcome (Howells & Day, 2003).

There is one additional caveat that warrants mentioning. It could be argued that clients who started at higher pretreatment levels of anger showed greater change because they had more room to improve. However, using a percentage change instead of raw change score addresses this issue by accounting for pretreatment score in change measurement. Secondly, high pretreatment levels of driving anger, trait anger, anger out and less anger control were associated with greater change on a wide variety of measures, not just the selection variable, and scores on these variables were somewhat independent from one another. For example, someone who scored high at pretreatment on the driving anger scales would not necessarily also score high on anger out, and yet higher DAS scores predicted greater change on that measure. Finally, as described above, researchers using similar measures of change (e.g., for depression) do not always get the same results, suggesting that if a real effect in the opposite direction had existed, it should have been detected.

#### *Role of Gender in Predicting Change*

Gender on its own played a small role in predicting treatment outcome. It had a main effect in the regression equations for only a few variables, and the findings were not consistent in each of the five models. In the equations predicted from the DAS and AX Control, males improved more on the DAS Discourtesy and Aggressive Behavior scales at follow-up. They also improved more on Risky Behavior, in all five models. Females showed greater improvement than males on the DATQ Judgmental at posttreatment

(predicted from the TAS and AX Out), and follow-up (predicted from the AX In and AX Out).

It is important not to overstate the significance of these findings, since for 19 of the 23 variables there was no observed gender effect. However, it is interesting to note that for the DATQ Judgmental, Aggressive Behavior, and Risky Behavior scales at pretreatment, there was already a significant difference between genders, in the same directions,  $F_s(1,353) = 33.03, 19.82, \text{ and } 37.28$  respectively,  $ps < .001$ . This difference could simply mirror the findings of the study overall in which those who start at higher levels of a variable tended to change more on that variable, but it might also provide insight into why that pattern emerged. It could be that males, tending to be more aggressive and engaging in more risky behaviors, were more likely to identify these as areas in need of improvement, and to pay special attention to them in treatment. Similarly, females may have viewed judgmental thoughts as an area in need of improvement. In other words, these particular scales may have reflected males' and females' unique approaches to experiencing and expressing anger. Overall, however, it appears that treatment is equally effective for males and females. This differs from findings by Sukhodolsky (1998), who observed that female children and adolescents improved more in anger treatment than boys, but it is consistent with the bulk of treatment outcome literature that generally finds no consistent, repeatable advantage for either sex (Garfield, 1986, 1994; Geiger, 1994; Petry et al., 2000).

#### *Role of Treatment Group in Predicting Change*

Most previous research has found that intervention type is a poor predictor of psychotherapy outcome. For most problems, credible, psychologically informed

treatments tend to have equal effectiveness (Ahn & Wampold, 2001; DiGiuseppe & Tafrate, 2003; Lambert & Barley, 2002; Lambert & Bergin, 1994). The current study basically supports these previous findings. On only one measure, the DATQ Coping scale at posttreatment, was there an ANOVA-derived main effect for treatment, with members of the Cognitive and Behavioral groups improving more than those in the Relaxation condition on this measure. This difference was not maintained at one-month follow-up. Similarly, there were main effects for treatment group in only 10 of the hundreds of regressions included in the study, and on only four different outcome measures: DATQ Coping (predicted from TAS and AX Control), DATQ Physical (predicted from DAS, TAS, and AX In and AX Control), DAX Adaptive (predicted from DAS, TAS, and AX Control) and AX Out (predicted from DAS). Even in these cases, the effect was not strong. In some cases the effect was significant in the follow-up ANOVA, but pairwise comparisons between treatments failed to reach significance. In others, the regression equation identified a significant main effect for treatment, but it was not confirmed by the ANOVA. Based on these findings, no conclusions can be drawn about the superiority of one type of group therapy over another for treating driving anger. On average, treatments did not differ, supporting the general conclusion that interventions are equally effective. However, it is interesting to note that, in each case where there *was* an observed effect, the Relaxation condition was less effective than either the Cognitive or Behavioral condition, or both. There were no instances in which the Relaxation condition was superior, nor were there any observed differences between the Cognitive and Behavioral groups.



*Interactions between Gender, Treatment Group, and Pretreatment Anger Variables*

Although gender and treatment group were both poor independent predictors of treatment outcome, there were interactions between them, as well as with the anger variables, that may clarify their role in predicting outcome. In treatment studies, interactions between variables sometimes explain response to treatment better than individual variables alone. For example, one study of cognitive-behavioral group therapy for depression (Gelhart et al., 2002) found that, while gender alone had no significant relationship with outcome, the gender by marital status interaction did predict how well clients would do in treatment. Females improved more if married, whereas males showed a greater decrease in depression if they were single or divorced. The current study examined three types of interactions which were hypothesized to potentially influence outcome: 1) gender by pretreatment anger level, 2) treatment by pretreatment anger level, and 3) gender by treatment. It also identified three-way interactions between all of these variables. In most cases there was no basis for predicting the direction of the effect, so current findings are exploratory and can be used as a basis for further research.

*Gender by Pretreatment Anger Interactions.* Gender has sometimes been shown to interact with personality characteristics to predict change. For example, Vilas (1989) found that intuitive or perceptive personality types (as identified by the Myers-Briggs Type Inventory) were more likely to benefit from treatment, particularly when male. It is conceivable, then, that anger levels might also interact with gender in this way. Although gender predictions were not a primary focus of the current study, gender was included in the models as a possible main effect, so it seemed logical to include the two-way and three-way gender interaction analyses as well because gender might moderate effects.

There was only one observed two-way interaction between gender and a pretreatment anger variable. For the DATQ Judgmental at posttreatment (but not at follow-up), AX Control interacted with gender such that males made similarly modest gains in treatment regardless of their pretreatment AX Control score, whereas females varied widely in their response based on pretreatment score. Females who started at lowest levels of control improved over 45% during treatment, whereas those who started at the highest control levels exhibited a decrease in judgmental thoughts of less than 10%. This isolated finding amongst the dozens of analyses does little to suggest that gender interacts with anger variables to predict change in general. However it is basically consistent with most of the previous findings in that less anger control at pretreatment significantly predicted greater change. For this one variable at only one time, males were not as influenced by pretreatment anger control levels, a finding that may be better understood in the context of the main effect for gender on this variable observed earlier. Recall that males in general improved significantly less than females on the DATQ Judgmental, although they still did improve overall. On most outcome measures both genders improved most when starting at a higher degree of anger severity (or lower control); perhaps males defied this pattern on this one measure largely because they started at lower judgmental levels to begin with.

*Treatment Group by Pretreatment Anger Interactions.* While treatment group main effects tended to be small or insignificant, some researchers have observed treatment interacting with client characteristics to predict change. Researchers have found relationships between treatment type and marital status (Baker & Neimeyer, 2003), personality style or type (Baker & Neimeyer, 2003; Blatt, 1999; Janowsky, 1999),

psychological reactance (Arnow et al., 2003), social functioning (Shea & Elkin, 1996), relationship skills (Piper et al., 1998; Shea & Elkin, 1996), and quality of object relations (Piper et al., 1998), to name a few. Project Match set out to discover if client characteristics could be successfully matched with treatment type to maximize therapeutic gain. By and large, their attempts were disappointingly unsuccessful (Cooney, Babor, DiClemente, & Del Boca, 2003; Fuller & Allen, 2000; Project MATCH Research Group, 1998b; Stout et al., 2003; Walters, 2002). Psychiatric severity, however, was shown to be useful in predicting outcome for different treatment types (Petry et al., 2000). Clients at low levels of severity achieved greater alcohol abstinence when completing a 12-step facilitation group (TSF) versus a cognitive-behavioral therapy group (CBT), whereas at high severity levels group assignment did not significantly predict outcome. Anger also interacted with group such that clients high in trait anger fared better in Motivational Enhancement Therapy than in TSF or CBT, whereas those low in anger benefitted more from TSF or CBT (Project MATCH Research Group, 1997, 1998a). Jones, Cumming and Horowitz (1988) also found an effect for symptom severity in their treatment groups for stress-response syndromes. The most disturbed patients benefitted most from a structured problem-solving based approach, whereas those who were less severely disturbed gained more from an expressive, exploratory approach. Based on these findings, anger severity might have interacted with treatment group to predict changes in driving anger and other anger-related measures, but the likely direction of any potential interactions was unknown.

There were fifteen significant group by anger interactions observed in the analyses for nine different outcome measures (i.e., there were six variables for which

there was an interaction at both posttreatment and follow-up). With the exception of the DAS Illegal, all significant interactions were between Group and AX Control. The two-way interaction between the Trait Anger Scale and Group on the DAS Illegal was observed at both posttreatment and follow-up, and there was also a significant three-way interaction between TAS, Group, and Gender at both times. Because the three-way interaction moderated the two-way interaction, these findings will be discussed in the next section on three-way interactions.

It is difficult to succinctly summarize the findings for the remaining interactions, because identical patterns of results were rarely observed for any two outcome variables, even for posttreatment and follow-up on the same variable. However, some trends emerged when the interactions were considered collectively. Firstly, it is noteworthy that none of the interactions substantially changed the basic pattern observed throughout the study in which those with low anger control changed more than those at high control levels. The interactions affected only which groups were most effective based on higher or lower pretreatment levels of anger control.

For those with high pretreatment anger control (i.e., lower problem severity), the Behavioral group was most effective in ten of fourteen instances, although in some cases (i.e., DAX Verbal and DAX Aggressive at follow-up) at least two of the groups improved so similarly that the practical differences between them were irrelevant. For three remaining measures, the DATQ Revenge at posttreatment and follow-up and the DATQ Physical at follow-up, it was the Relaxation group that was most effective for high control students. On the AX Out at follow-up there was a small advantage for Cognitive, but the Cognitive and Behavioral groups achieved nearly identical treatment gains.

There was more variation in which group had the least favorable outcome for high control students, though in a few cases the mean change scores for the three groups were clustered tightly together. However, it is noteworthy that, for these students, the least effective group was always either the Cognitive or Relaxation group, or both. With the single exception of the DATQ Physical at follow-up, in which the Cognitive and Behavioral groups were both similarly less effective than Relaxation for high control participants, the Behavioral group was never the least effective group for these students. Given that the Behavioral group was frequently the most helpful and never the least efficacious in these interactions, one tentative conclusion might be that those with relatively higher levels of anger control respond better to concrete, behavioral strategies for dealing with anger. This could be because, relative to low-control individuals, they already have access to the cognitive tools that can be used to reduce anger, and may also be in less need of relaxation training to calm their physiological responses. Alternatively, the Behavioral group may have bolstered their already effectual control strategies.

For low control participants (i.e., those with high problem severity), it was the Cognitive group that most often led to greatest treatment gains, again in ten of the fourteen interactions. In three more analyses (Aggressive Behavior, the TAS at follow-up, and AX Out at posttreatment) the Relaxation group was most effective. The same AX Out outlier that was observed for high-anger students was again observed. There was no unequivocal best group for low-anger students on this measure; all groups changed very similarly, with a tiny advantage for the Behavioral group.

Once again, the pattern for which groups led to least improvement was much less clear. In four instances these low-control clients showed least treatment gain in the

Relaxation group, in three cases members of the Behavioral group fared most poorly, and in one case those in the Cognitive group changed the least. For the other six analyses there were roughly equivalent results for either the Behavioral and Relaxation or Behavioral and Cognitive groups, with the third group (i.e., Cognitive or Relaxation) making greater gains. Once again, it is difficult to accurately interpret these findings, but the presence of these interactions suggest that pretreatment anger control level may have more bearing than driving anger, trait anger, anger in or anger out on clients' treatment responsiveness. Whereas high control participants tended to improve the most in the Behavioral groups, the Cognitive group appears to have an advantage for those who start treatment with less control over their anger. As conjectured earlier, perhaps those with high anger control already effectively employ cognitive strategies to decrease angry thoughts, feelings and impulses, and so do not benefit from learning these skills as much as individuals with low control. These findings might clarify the metaanalytic results of Del Vecchio and O'Leary (2004), who found an advantage for cognitive therapy over other therapies such as relaxation, cognitive behavioral therapy (CBT), and other treatments such as process group counseling and social skills training in treating driving anger. It may not be cognitive therapy, per se, that is most effective, but rather that this therapy is most effective with those with lower anger control. However, it should be noted that these researchers found other therapies (e.g., process group counseling) and CBT to be more useful than cognitive therapy for anger control problems specifically. They also found CBT to be the treatment of choice for anger expression problems. Since no CBT treatment was included in the present study, it is not possible to confirm their findings. They found cognitive therapy to be more effective than other treatments for

anger in, but this finding was not replicated, perhaps because their study was a meta-analysis and this effect was too small to be detected in a single study. There were no interactions or main treatment effects for the AX In outcome measure.

Though Relaxation training was more effective than other interventions for some students in some circumstances, there was no clear pattern that could be used to predict who would most benefit or when from learning relaxation coping skills. Though analyses of main effects for treatment group showed that Relaxation was as generally statistically on par with Behavioral and Cognitive therapies, the one significant treatment group main effect was between Relaxation and these other groups, with Relaxation training leading to less change. Therefore, one tentative conclusion from these finding might be that, given a choice between using relaxation training and the other modalities when trying to match clients to treatments, behavioral or cognitive therapy might be a safer choice. This could be considered consistent with the mixed results obtained in the meta-analysis by Del Vecchio and O'Leary (2004), who found effect sizes ranging from  $-.46$  to  $.80$  for relaxation-based therapies in treatment of anger suppression, whereas there tended to be strong positive effects for other treatment types. On the other hand, relaxation seemed to be the treatment of choice for those in a currently angry state. They concluded that more research would be needed to determine the superiority or inferiority of this treatment to others.

*Gender by Treatment Group Interactions.* There were four Gender by Treatment interactions that were powerful enough to be found in nearly every analysis in which they were included. These were for DAS Discourtesy, DAS Obstructions, DAS Slow Driving, and DAS Total. In each of these instances, males and females responded differently to

treatment based on which treatment condition they were assigned to. Males improved most on these driving anger variables when assigned to the Relaxation condition, whereas females did best in the Cognitive group. For both sexes, those assigned to the Behavioral condition either changed at intermediate levels or performed similarly to those in the preferred treatment (i.e., similar improvement to those in Relaxation if male, and similar improvement to those in the Cognitive condition if female). This finding suggests that gender and treatment group do have some role in how clients respond to treatment. Unfortunately, findings for these few variables are not by themselves compelling enough to be used to recommend treatment type assignment for males and females. They can, however, suggest a direction for future research. Once again, the driving anger outcome variables seemed to behave differently than other variables in the study. Neither trait anger nor anger expression was a good predictor of change on the Driving Anger Scales, whereas they were for almost all other measures in the study. Conversely, only for driving anger (including the DAS Total, which incorporates all of the other scales), did this gender by treatment group interaction have an effect. Possibly there is something unique about driving anger itself versus other anger measures, or perhaps students experience respond to treatment differently for the characteristic for which they were selected. Only additional research can clarify the meaning of these findings.

*Three-Way Interactions including Pretreatment Anger, Gender, and Treatment Group.* There were seven three-way interactions between pretreatment anger level, gender, and treatment groups. Two were predicted from the Trait Anger Scale, three from Anger Expression In, and two from Anger Expression out. To understand these findings, regressions including the two-way interactions were run separately for males



and females. This was chosen as the most straightforward way to visualize and understand the data, although it is important to acknowledge that other approaches would have been equally valid and would have presented a different conceptualization of the interaction (e.g., separate regressions could have been run for each treatment group, or for those who started high vs. low on anger).

At both posttreatment and follow-up, there was a three-way interaction predicting change on the DAS Illegal from the TAS. The findings at both times were very similar for males. At posttreatment, males who started low in pretreatment trait anger showed more than 40% greater improvement when assigned to the Relaxation group versus the Cognitive or Behavioral groups. At high levels, on the other hand, there was a nearly 50% advantage for the Behavioral and Cognitive groups over the Relaxation condition, and males in the Relaxation condition actually had worse mean scores than they did at pretreatment. At follow-up, the pattern was the same, but the differences between groups tended to be smaller, and all groups showed improvement from pretreatment. The pattern for females varied from posttreatment to follow-up. At posttreatment, females who started low in trait anger improved most when assigned to the Behavioral condition, improved intermediately in Cognitive, and changed least in the Relaxation group. Groups were separated by about 10% difference in change. Those who started high in anger improved most if in the Cognitive group and changed about 6% less if assigned to either of the other groups. At follow-up, low-anger women followed the same pattern noted previously, but now high-anger women in the Relaxation group improved about 7% more than those in the Behavioral group. Members of the Behavioral group showed

the same average amount of change whether high or low in anger. For females at both times, group assignment mattered more for those who started low in trait anger.

The next significant three-way interaction was for the DAS Discourtesy at posttreatment, predicted from the AX In. Males who started low in AX In showed greatest change if assigned to the Relaxation group and changed the least in the Cognitive group, whereas high AX In males followed the reverse pattern whereby they benefitted most from Cognitive and least from Relaxation. In both cases there was less than 20% difference between mean change scores for the most and least effective groups. Females also responded differently to group assignment based on their pretreatment anger levels, but not in the same way as males. Whereas low anger-in females changed most in Behavioral and least in Relaxation, high anger-in females responded best to Relaxation training and least to Behavioral therapy. The differences between groups were greater for those who started low AX In.

For the next interaction, the DATQ Coping predicted from AX In, the two-way AX In by Group interaction was not significant for males. Males followed the usual pattern of higher anger-in levels being associated with greater change, with nonsignificant differences between groups. Females, on the other hand, were differentially affected by group membership based on pretreatment AX In scores. At low AX In levels, the Relaxation group changed more than the Behavioral group, which in turned outperformed the Cognitive group. At high levels, group differences were even more extreme (about 120% difference in change between greatest and least change, versus 60% for low anger women), and now the Cognitive group changed the most and Relaxation least.

The fifth interaction was for the DAX Verbal at posttreatment, also predicted from the AX In. Males who started low in AX In benefitted most when assigned to the Relaxation group, followed by the Behavioral and then the Cognitive groups. High AX In males followed the opposite pattern (i.e., Cognitive was best followed by Behavioral and then Relaxation conditions). Low anger females, conversely, showed greatest change if assigned to either the Cognitive or Behavioral groups and changed nearly 40% less in Relaxation. At high levels of AX In, treatment group was much less important, with less than 8% difference between the most effective groups (Relaxation and Behavioral) and the least (Cognitive).

The next interaction predicted the AX Out at follow-up from Gender, Group, and pretreatment AX Out scores. As usual, both males and females changed more if they started higher in pretreatment anger, but the pattern of change and the effect of group membership was different for males and females. Low AX Out males decreased their anger by an average of about 10% if assigned to the Relaxation group, whereas their anger increased approximately 8 and 15% from pretreatment if they were assigned to the Cognitive or Behavioral groups, respectively. If initially high in AX Out, on the other hand, those in the Behavioral group improved by nearly 50%, those in Cognitive about 40%, and members of the Relaxation changed the least at nearly 30%. Once again, the Relaxation group in particular had a different effect for women than men based on pretreatment anger levels. Like males, low AX Out females tended to report increased anger from pretreatment, which was most pronounced for those in the Relaxation group. Females in the Cognitive group experienced the least increase in anger, with the Behavioral group close behind. At high AX Out, the pattern was again reversed. Now

the Relaxation group best promoted change of nearly 50%, and those in the other two groups reported approximately 40% less anger than before treatment began.

The final three-way interaction was for the AX Control at posttreatment, also predicted from the AX Out. Once again, males and females differed in which treatment type was most effective at low vs. high pretreatment AX Out. Whereas low AX Out males gained only if in the Relaxation condition (i.e., those assigned to the other two conditions actually reported less control than before treatment), low AX Out females fared best in Behavioral, followed by Cognitive group. Only in the Relaxation group did these women regress from pretreatment. Conversely, high AX Out males benefitted from all groups, but most from Behavioral and least from Relaxation, whereas now females improved most in Relaxation and least in Behavioral. The range of difference between groups was greater for females than males.

It is challenging to derive definitive information from these findings for two reasons: 1) the constructs of trait anger, anger in, and anger control are not the same and so could be expected to result in different patterns, and 2) accordingly, the specific pattern of results differed in each of the above analyses. Nevertheless, careful examination of the data does reveal that males who were initially lower in trait anger or anger suppression or higher in anger control consistently benefitted most from treatment if assigned to the relaxation condition, whereas males high in trait anger or anger suppression or lower in anger control responded better to the Cognitive or Behavioral interventions. With two exceptions, females exhibited the reverse pattern in which those low in trait anger or anger suppression or higher in anger control reduced their anger more when assigned to the Cognitive or Behavioral Conditions, and more angry/less

controlled females exhibited greater treatment gains if assigned to Relaxation. Of course, there were a much larger number of analyses in which no such interactions were observed, so it would be premature to draw firm conclusions based on these findings. However, future research could explore whether males and females truly do respond differently to treatments based on their preliminary anger profiles, with Cognitive and Behavioral interventions being more effective for high anger males and low anger females and Relaxation training being more effective for low anger males and high anger females.

#### *Limitations and Suggestions for Future Research*

A primary limitation of the current study is that, like many well-controlled studies, the clinical population was limited to college students. Participants tended to be in the 18-21 age range (95.5%), were predominantly white (84.2%) and female (58.9%), acknowledged having a problem with driving anger, and believed that they could benefit from treatment. It is not clear whether a similar study using a sample that was more representative of the general population, or using subjects who were mandated to treatment, would have had the same results. What is clear, however, is that anger can be treated successfully in at least some segments of the population, and that is particularly important for the high-risk young drivers included in this study. Even more significantly, higher pretreatment anger levels do not interfere with treatment, and in fact appeared to facilitate change.

Another potential criticism is that those who started with higher pretreatment anger levels changed more because they had more room to change. Using percentage change scores addresses this problem, as mentioned previously, by making the level of

change relative to pretreatment score. In concrete terms, this means that someone who started at a 31, the highest measured score on the AX Out, and who dropped to a 22 at posttreatment would be assigned a change score of about 29%. A similar change score (30%) could be achieved by someone who started at 20 and dropped down to 14, even though the actual amount of change (6 points) was less than that of the first participant (9 points). A second answer to this criticism is that those who started high on a particular anger variable tended to achieve greater gains on a wide array of other variables, some of which they may have started high on and others not. This lends further credence to the basic finding that high anger levels predicted more anger-related change across the board, and, importantly, did not interfere with treatment.

A third limitation of the present study is that, while it adds to our understanding of anger treatment and offers optimism that anger is a treatable problem, it is not clear what the clinical significance of these changes are. Aggressive and risky behavior, for example, have well documented roles in causing accidents and are of real practical concern. Students in this study improved an average of 41% and 25% respectively on self-report measures of these behaviors. What is not clear, however, is how this translates into real changes on the road. To follow-up, it would be useful to look at the real impact of these changes in students' accident rates, level of driving-related legal problems, and similar real-world measures. Even those numbers would not tell the whole story, however, since many of the difficulties associated with anger are in people's internal experience. A true clinical significance study would first require defining clinical guidelines for normal and problematic experience and expression of anger, and then determining whether treatment allowed clients to drop from clinically elevated

levels to within normal range (Jacobson & Truax, 1991). Anger may not yet be well understood or well defined enough to make this approach practical. For example, while there are well established guidelines for diagnosing depression and anxiety and understanding the problems associated with them, no similar metrics exist for anger. Some clinical diagnoses may include anger outbursts in their definitions, but there are not yet separate diagnoses for anger problems, particularly those involving internal experience (such as high levels of anger suppression) with no obvious external consequences. It should be the goal of future research to continue to refine our understanding of anger and its consequences for the individual and others, and to use this information to explore the practical effectiveness of anger treatments and to continue to improve them.

The current study did not include information about those who dropped out of treatment and whether they were different in some important way (e.g., perhaps more resistant to treatment or higher or lower in pretreatment anger levels) than those who remained in the study. Some research has shown effects for those who drop out that are not observed in those who complete the research (McCallum et al., 2003; Petry & Bickel, 1999; Sacco-Laurens, 2000). However, drop out after pretreatment assessment was very low (less than 5%) and was usually due to changed work schedules, dropping the psychology course to which the research was linked, or dropping out of school.

One last limitation of the current research is that outcome data was gathered solely from client self-report. Researchers have sometimes found differences between outcome as measured by self-report versus therapist rating or objective measurement (i.e., number of accidents or driving convictions). Karatzias and colleagues (2007), for

example, found different effects of problem severity on PTSD outcome for self-report versus a clinician-administered measure. For the latter, lower problem severity at pretreatment was related to better outcome, whereas for on self-report measures greater severity related to more change. They speculated that clients may be overestimating either problem severity at pretreatment or the amount of change during treatment. Given these findings, it is possible that the results of the current study in which higher severity was associated with greater change would also be different had other types of measures been used. Nevertheless, what the current study shows is that, at least from the clients' perspective, high levels of driving anger, trait anger, and maladaptive anger expression can be decreased such that clients report that they are more in control of their feelings and behavior. Additionally, one of the primary strengths of the current study is its high statistical power and large sample size, which without using self-report measures would have been very difficult to attain. Using self-report measures does not lead to faulty or incorrect outcome data, but rather yields data from one perspective. Further research clarifying why outcomes based on therapist or objective measures sometimes differ from those based on self-report measures might add another piece to the complex puzzle of how and why therapy is effective.

### *Summary and Conclusions*

The primary conclusions that can be drawn from the present study is that, 1) anger is a treatable problem that can be effectively addressed in therapy (Beck & Fernandez, 1998b; Bowman-Edmonson & Cohen-Conger, 1996; DiGiuseppe & Tafrate, 2003; Sukhodolsky et al., 2004; Tafrate, 1995), and 2) while high anger levels have sometimes been shown to interfere treatment for other kinds of problems (Garfield, 1994; Lambert et



al., 2004; Lutz et al., 2001; Michelson et al., 1998; Petry et al., 2000; Rehm et al., 1981), it does not appear to have the same effect on treatments that target anger specifically. In fact, the opposite appears to be true. Higher anger levels at pretreatment were consistently associated with greater improvement. On average, higher driving anger at pretreatment was associated with a greater decrease in driving anger, angry cognitions while driving, driving anger expression, trait anger, and to a lesser extent maladaptive anger expression in general, and with an increase in positive coping strategies for dealing with anger. Higher trait anger at pretreatment was associated with a decrease in all of the above except general driving anger. Measures of general anger expression did not predict therapy outcome as well as the other two anger types, but when associations were found, they were in the same direction. Higher levels of outwardly directed anger expression and poor anger control at pretreatment tended to be associated with better outcome. On average, anger suppression was a poor predictor of outcome, but when it did predict change, higher anger suppression was associated with greater change. These findings suggest that anger does not mirror the effects of other kinds of psychiatric disturbances, such as depression, in which high psychiatric severity is associated with poorer outcome (Guthrie et al., 2003). Instead, the social sanctions and negative outcomes associated with high anger levels, particularly outwardly expressed anger, may actually motivate clients to greater change.

The present study provides continued evidence that the constructs of trait anger, driving anger, anger expression out, anger expression in, and anger control, while correlated, are distinct from one another. While pretreatment levels of driving anger and trait anger tended to predict change on most variables, when no effect was found it was

most often for the coping and anger control measures. An interesting possible implication of this finding is that clients' ability to decrease their problematic internal anger experience and expression is not dependent on their ability to gain cognitive coping and control skills. Instead, it would appear that these positive coping strategies work somewhat independently to help individuals manage their anger, and are effective in some circumstances but not others. Similarly, while anger suppression can be negative in terms of health outcomes and internal experience, it was not as predictive of treatment outcome as other types of anger measures, and may need to be addressed differently in treatment.

Gender and treatment type were shown to have an effect on treatment outcome in some instances. On a few variables males tended to improve more, whereas on others females showed greater improvement. Similarly, the Cognitive and/or Behavioral groups were superior to the Relaxation intervention in six instances (four of which were on either cognitive coping or adaptive anger expression measures, which as just discussed tended to behave differently than other measures). However, given the number of analyses and relative scarcity of these findings, no suggestions for treatment can be made on these bases. There was also a trend for males and females to respond somewhat differently to relaxation versus other types of treatments, sometimes based on their pretreatment anger levels, but the effect was not consistent. The implications of these results for matching clients to treatment are far from clear and persuasive. They provide some support for the idea that matching client characteristics to treatments might be possible in some instances, but much more research would need to be done to confirm and expand upon these findings.

The fact that the current data did not unambiguously support the concept of matching clients to treatment, while disappointing, is consistent with the majority of other research on the topic. Three previous studies were identified that attempted to match client to treatment based on anger characteristics, and two of those failed to find differences in treatment response on this basis. Conoley, Conoley, McConnell and Kimzey (1983) divided a group of female students into anger repressors or anger “sensitizers” (e.g., avoidance vs. approach in anger provoking situations), expecting that this characteristic might mediate their response to treatment and cause them to respond better to either Rational Emotive-based therapy (ABC technique) or Gestalt therapy (Empty Chair technique). No differences were observed.

As noted previously, Project Match was a multisite, \$27 million study whose primary purpose was to identify factors that could be used to match client to treatment, and it also failed to support the matching hypothesis in 15 of 16 instances (Walters, 2002). Project Match did observe that clients who started higher in trait anger seemed to respond better to Motivational Enhancement Therapy than other treatments (Fuller & Allen, 2000; Project MATCH Research Group, 1997), a finding which corroborates research suggesting that anger can interfere with treatment for other types of non-anger problems based on its impact on motivation and possibly on therapeutic alliance. However, even in this study, results were by no means clear and consistent. Two authors (Fuller & Allen, 2000) summed up the overall findings, stating that “while these results only weakly support the patient-treatment matching hypothesis, they do suggest that there will be some incremental improvement in treatment outcome if outpatients are screened

for anger, type of social network, and psychiatric severity and aftercare patients for severity of alcohol dependence” (p. 363).

One common-sense assumption behind matching client to treatment type is mode specificity, the idea that specific interventions might create change along specific, related dimensions. Dahlen and Deffenbacher (2000) investigated the possibility that cognitive interventions would lead to changes in cognition, whereas a cognitive-behavioral treatment would result in both cognitive and behavioral changes. However, they found no support for this hypothesis, speculating that it was more likely that change in one area leads to change in other areas as well. Similarly, though Project Match found Motivational Enhancement Therapy most effective for angry clients, it did not produce changes in anger that would be expected according to the mechanisms suggested by cognitive-behavioral and motivational theory. Instead, it appeared to be other factors, such as empathy, therapeutic alliance, and motivation for change, that best explained outcomes (Cooney et al., 2003). The current study substantiates these conclusions, since there was no consistent and unique relationship between cognitive therapy and outcome on cognitive measures or behavioral treatment and behavioral measures. Instead, the present findings, as with most previous research, support the idea that treatment effects generalize. Treatment that targets the cognitive and emotional components of anger, for example, have been shown to have a large effect on aggressive behavior (DiGiuseppe & Tafrate, 2003). Based on their meta-analysis of anger studies, DiGiuseppe and Tafrate (2003) suggested that, “given the state of science in the anger area, practitioners should not choose interventions that have face validity for a client’s presenting anger symptoms” (p. 80). Instead, they should choose treatments that have been shown empirically to work

for those symptoms. Clients are evidently able to adapt themselves to the treatment they are offered, focusing on what is useful and relevant for themselves and discarding parts that are less beneficial. As appealing as it would be to find that specific therapeutic strategies could be targeted to client problems like a designer drug, the current study once again confirms that non-specific factors of therapy (such as therapist attributes, hope, motivation, and the like) are more important to overall outcome than any specific characteristics of the therapy itself (Wampold, 2001). If matching client to treatment is indeed possible, it may be necessary to change our conception of the way treatment works and find new bases for matching that more fully take these non-specific factors into account.

## References

- AAA Foundation for Traffic Safety. (2002). How to avoid aggressive driving. *Ashore Magazine* Retrieved March 16, 2006, from <http://www.safetycenter.navy.mil/media/ashore/issues/summer02/howtoavoid.htm>
- AAA Foundation for Traffic Safety. (2005). Are you an aggressive driver? Retrieved March 16, 2006, from <http://www.aaafoundation.org/quizzes/index.cfm?button=aggressive>
- Ackerman, S. J., & Hilsenroth, M. J. (2003). A review of therapist characteristics and techniques positively impacting the therapeutic alliance. *Clinical Psychology Review, 23*(1), 1-33.
- Ahn, H., & Wampold, B. E. (2001). Where oh where are the specific ingredients? A meta-analysis of component studies in counseling and psychotherapy. *Journal of Counseling Psychology, 48*(3), 251-257.
- Ahuja, H. (1995). Symptomatic and characterological change as measures of psychotherapy outcome in outpatient older adults, *Dissertation Abstracts International* (Vol. 56, pp. 1689).
- Anderson, W., & Bauer, B. (1985). Clients with MMPI high D-Pd: Therapy implications. *Journal of Clinical Psychology, 41*(2), 181-188.
- Anson, K., & Ponsford, J. (2006). Who benefits? Outcome following a coping skills group intervention for traumatically brain injured individuals. *Brain Injury, 20*(1), 1-13.

- Arnow, B. A., Manber, R., Blasey, C., Klein, D. N., Blalock, J. A., Markowitz, J. C., et al. (2003). Therapeutic reactance as a predictor of outcome in the treatment of chronic depression. *Journal of Consulting & Clinical Psychology, 71*(6), 1025-1035.
- Asay, T. P., & Lambert, M. J. (1999). The empirical case for the common factors in therapy: Quantitative findings. In M. A. Hubble & B. L. Duncan (Eds.), *The heart and soul of change: What works in therapy* (pp. 23-55). Washington, DC: American Psychological Association.
- Baker, K. D., & Neimeyer, R. A. (2003). Therapist training and client characteristics as predictors of treatment response to group therapy for depression. *Psychotherapy Research, 13*(2), 135-151.
- Barber, J. P., & Muenz, L. R. (1996). The role of avoidance and obsessiveness in matching patients to cognitive and interpersonal psychotherapy: Empirical findings from the Treatment for Depression Collaborative Research Program. *Journal of Consulting & Clinical Psychology, 64*(5), 951-958.
- Barkham, M., Rees, A., & Stiles, W. B. (1996). Dose effect relations in time-unlimited psychotherapy. *Journal of Consulting & Clinical Psychology, 64*(5), 927-935.
- Beck, R., & Fernandez, E. (1998a). Cognitive-behavioral self-regulation of the frequency, duration, and intensity of anger. *Journal of Psychopathology & Behavioral Assessment, 20*(3), 217-229.
- Beck, R., & Fernandez, E. (1998b). Cognitive-behavioral therapy in the treatment of anger: A meta-analysis. *Cognitive Therapy & Research, 22*(1), 63-74.

- Beckham, E. E. (1989). Improvement after evaluation in psychotherapy of depression: Evidence of a placebo effect? *Journal of Clinical Psychology*, 45(6), 945 - 950.
- Behar, E. S., & Borkovec, T. D. (2003). Psychotherapy outcome research. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of Psychology: Research Methods in Psychology* (Vol. 2, pp. 213-240). New York: John Wiley & Sons, Inc.
- Bentall, R. P., Powell, P., Nye, F. J., & Edwards, R. H. T. (2002). Predictors of response to treatment for chronic fatigue syndrome. *British Journal of Psychiatry*, 181(3), 248-252.
- Berger, P., Sachs, G., Amering, M., Holzinger, A., Bankier, B., & Katschnig, H. (2004). Personality disorder and social anxiety predict delayed response in drug and behavioral treatment of panic disorder. *Journal of Affective Disorders*, 80(1), 75-78.
- Bernal, G., Bonilla, J., Padilla-Cotto, L., & Perez-Prado, E. M. (1998). Factors associated to outcome in psychotherapy: An effectiveness study in Puerto Rico. *Journal of Clinical Psychology*, 54(3), 329-342.
- Beutler, L. E., Machado, P. P., Engle, D., & Mohr, D. (1993). Differential patient \* treatment maintenance among cognitive, experiential, and self-directed psychotherapies. *Journal of Psychotherapy Integration*, 3(1), 15-31.
- Beutler, L. E., Mohr, D. C., Grawe, K., Engle, D., & MacDonald, R. (1991). Looking for differential treatment effects: Cross-cultural predictors of differential psychotherapy efficacy. *Journal of Psychotherapy Integration*, 1(2), 121-141.
- Beutler, L. E., Moleiro, C., Malik, M., & Harwood, M. (2003). A new twist on empirically supported treatments. *Revista Internacional de Psicologia Clinica y*



*de la Salud/International Journal of Clinical & Health Psychology*, 3(3), 423-437.

Binen, L. M. (1999). Treatment outcome at a university counseling center (Doctoral dissertation, University of Missouri, 1999). *Dissertation Abstracts International*, 59 (8-B), 4455.

Blanchard, E. B., Hickling, E. J., Malta, L. S., Jaccard, J., Devineni, T., Veazey, C. H., et al. (2003). Prediction of response to psychological treatment among motor vehicle accident survivors with PTSD. *Behavior Therapy*, 34(3), 351-364.

Blatt, S. J. (1999). Personality factors in brief treatment of depression: Further analyses of the NIMH-sponsored Treatment for Depression Collaborative Research Program. In D. S. Janowsky (Ed.), *Psychotherapy Indications and Outcomes* (Vol. xv, pp. 23-45). Washington, DC: American Psychiatric Press.

Blatt, S. J., & Felsen, I. (1993). Different kinds of folks may need different kinds of strokes: The effect of patients' characteristics on therapeutic process and outcome. *Psychotherapy Research*, 3(4), 245-259.

Blatt, S. J., Quinlan, D. M., Pilkonis, P. A., & Shea, M. T. (1995). Impact of perfectionism and need for approval on the brief treatment of depression - the National Institute of Mental Health Treatment of Depression Collaborative Research Program revisited. *Journal of Consulting and Clinical Psychology*, 63(1), 125-132.

Blatt, S. J., & Zuroff, D. C. (2002). Perfectionism in the therapeutic process. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, Research, and Treatment* (pp. 393-406). Washington, DC: American Psychological Association.

- Bossert-Zaudig, S., Zaudig, M., Junker, M., Wiegand, M., & Krieg, J.-C. (1993).  
Psychiatric comorbidity of bulimia nervosa inpatients: Relationship to clinical  
variables and treatment outcome. *European Psychiatry*, 8(1), 15-23.
- Bowen, R., South, M., Fischer, D., & Looman, T. (1994). Depression, mastery and  
number of group sessions attended predict outcome of patients with panic and  
agoraphobia in a behavioral/medication program. *Canadian Journal of Psychiatry*  
*Revue Canadienne de Psychiatrie*, 39(5), 283-288.
- Bowman-Edmonson, C., & Cohen-Conger, J. (1996). A review of treatment efficacy for  
individuals with anger problems: Conceptual, assessment and methodological  
issues. *Clinical Psychology Review*, 16(3), 251-275.
- Bowman, D., Scogin, F., Floyd, M., & McKendree-Smith, N. (2001). Psychotherapy  
length of stay and outcome: A meta-analysis of the effect of therapist sex.  
*Psychotherapy: Theory, Research, Practice, Training*, 38(2), 142-148.
- Brent, D. A., Kolko, D. J., Birmaher, B., Baugher, M., Bridge, J., Roth, C., et al. (1998).  
Predictors of treatment efficacy in a clinical trial of three psychosocial treatments  
for adolescent depression. *Journal of the American Academy of Child &*  
*Adolescent Psychiatry*, 37(9), 906-914.
- Brown, P. D., & O'Leary, K. D. (2000). Therapeutic alliance: Predicting continuance and  
success in group treatment for spouse abuse. *Journal of Consulting & Clinical*  
*Psychology*, 68(2), 340-345.
- Brown, T. G., Seraganian, P., Tremblay, J., & Annis, H. (2002). Matching substance  
abuse aftercare treatments to client characteristics. *Addictive Behaviors*, 27(4),  
585-604.

- Burns, J. W., Higdon, L. J., Mullen, J. T., Lansky, D., & Wei, J. M. (1999). Relationships among patient hostility, anger expression, depression, and the working alliance in a work hardening program. *Annals of Behavioral Medicine*, 21(1), 77-82.
- Cappeliez, P. (2000). Presentation of depression and response to group cognitive therapy with older adults. *Journal of Clinical Geropsychology*, 6(3), 165-174.
- Carty, J. A. (2001). An examination of the relative effectiveness of three cognitive behavioral group treatments for depression in an Australian treatment-resistant population, *Dissertation Abstracts International* (Vol. 62, pp. 539).
- Castle, D. J., Deale, A., Marks, I. M., Cutts, F., Chadhoury, Y., & Stewart, A. (1994). Obsessive-compulsive disorder: Prediction of outcome from behavioural psychotherapy. *Acta Psychiatrica Scandinavica*, 89(6), 393-398.
- Chambless, D. L., Renneberg, B., Gracely, E. J., Goldstein, A. J., & Fydrich, T. (2000). Axis I and II comorbidity in agoraphobia: Prediction of psychotherapy outcome in a clinical setting. *Psychotherapy Research*, 10(3), 279-295.
- Chambless, D. L., Tran, G. Q., & Glass, C. R. (1997). Predictors of response to cognitive-behavioral group therapy for social phobia. *Journal of Anxiety Disorders*, 11(3), 221-240.
- Chisholm, S. M., Crowther, J. H., & Ben-Porath, Y. S. (1997). Selected MMPI-2 scales' ability to predict premature termination and outcome from psychotherapy. *Journal of Personality Assessment*, 69(1), 127-144.
- Chun, K. M. (1997). Relationship of client-therapist role expectation match to psychotherapy session outcome (Doctoral dissertation, University of California, 1997). *Dissertation Abstracts International*, 57 (9-B), 5909.

- Clementel-Jones, C., Malan, D., & Trauer, T. (1990). A retrospective follow-up study of 84 patients treated with individual psychoanalytic psychotherapy: Outcome and predictive factors. *British Journal of Psychotherapy*, 6(4), 363-374.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences (3rd ed.)*. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Cohen, L. R. (1998). *Patient pretreatment interpersonal problems and treatment outcome in group interpersonal psychotherapy for binge eating disorder*. Unpublished Doctoral dissertation, Yale University, 1998.
- Conoley, C. W., Conoley, J. C., McConnell, J. A., & Kimzey, C. E. (1983). The effect of the ABCs of Rational Emotive Therapy and the empty-chair technique of Gestalt Therapy on anger reduction. *Psychotherapy: Theory, Research & Practice*, 20(1), 112-117.
- Conte, H. R., Plutchik, R., Picard, S., & Karasu, T. B. (1991). Can personality traits predict psychotherapy outcome? *Comprehensive Psychiatry*, 32(1), 66-72.
- Conte, H. R., Plutchik, R., Picard, S., Karasu, T. B., & Vacarro, D. (1988). Self-report measures as predictors of psychotherapy outcome. *Comprehensive Psychiatry*, 29(4), 355-360.
- Conte, H. R., Ratto, R., & Karasu, T. B. (1996). The Psychological Mindedness Scale: Factor structure and relationship to outcome of psychotherapy. *Journal of Psychotherapy Practice & Research*, 5(3), 250-259.
- Cooney, N. L., Babor, T. F., DiClemente, C. C., & Del Boca, F. K. (2003). Clinical and scientific implications of Project MATCH. In T. F. Babor, U. o. C. H. Center, D.

- o. C. M. a. H. Care & e. al. (Eds.), *Treatment Matching in Alcoholism. International Research Monographs in the Addictions* (pp. 222-237). New York: Cambridge University Press.
- Crits-Christoph, P., Baranackie, K., Kurcias, J. S., Beck, A. T., Carroll, K., Perry, K., et al. (1991). Meta-analysis of therapist effects in psychotherapy outcome studies. *Psychotherapy Research*, 1(2), 81-91.
- Crits-Christoph, P., & Connolly Gibbons, M. B. (2003). Research developments on the therapeutic alliance in psychodynamic psychotherapy. *Psychoanalytic Inquiry*, 23(2), 332-349.
- Crits-Christoph, P., & Connolly, M. B. (1993). Patient pretreatment predictors of outcome. In N. E. Miller, L. Luborsky, J. P. Barber & J. P. Docherty (Eds.), *Psychodynamic Treatment Research: A Handbook for Clinical Practice* (pp. 177-188). New York: Basic Books, Inc.
- Dahlen, E. R., & Deffenbacher, J. L. (2000). A partial component analysis of Beck's cognitive therapy for the treatment of general anger. *Journal of Cognitive Psychotherapy*, 14(1), 77-95.
- Davies-Osterkamp, S., Strauss, B. M., & Schmitz, N. (1996). Interpersonal problems as predictors of symptom related treatment outcome in longterm psychotherapy. *Psychotherapy Research*, 6(3), 164-176.
- Deffenbacher, J. L. (1988). Cognitive-relaxation and social skills treatments of anger: A year later. *Journal of Counseling Psychology*, 35(3), 234-236.
- Deffenbacher, J. L. (1995). Ideal treatment package for adults with anger disorders. In H. Kassinove (Ed.), *Anger disorders: Definition, diagnosis, and treatment. Series in*

*clinical and community psychology* (Vol. xxii, pp. 151-172). Philadelphia: Taylor & Francis.

Deffenbacher, J. L. (1996). Cognitive-behavioral approaches to anger reduction. In K. S. Dobson & K. D. Craig (Eds.), *Advances in Cognitive-Behavioral Therapy* (Vol. 2, pp. 31-62). Thousand Oaks, CA: Sage Publications.

Deffenbacher, J. L. (1999). Cognitive-behavioral conceptualization and treatment of anger. *Journal of Clinical Psychology*, 55(3), 295-309.

Deffenbacher, J. L. (2000). The Driving Anger Scale (DAS). In J. Maltby, C. A. Lewis & A. Hill (Eds.), *Commissioned Reviews of 250 Psychological Tests* (pp. 287-292). Lampeter, Wales, United Kingdom: Edwin Mellen Press.

Deffenbacher, J. L. (2008). Anger, aggression, and risky behavior on the road: A preliminary study of urban and rural differences. *Journal of Applied Social Psychology*, 38(1), 22-36.

Deffenbacher, J. L., Dahlen, E. R., Lynch, R. S., Morris, C. D., & Gowensmith, W. N. (2000). An application of Beck's cognitive therapy to general anger reduction. *Cognitive Therapy & Research*, 24(6), 689-697.

Deffenbacher, J. L., & Deffenbacher, D. M. (2003). Where is the anger in introductory and abnormal psychology texts? *Teaching of Psychology*, 30(1), 65-67.

Deffenbacher, J. L., Deffenbacher, D. M., Lynch, R. S., & Richards, T. L. (2003). Anger, aggression and risky behavior: A comparison of high and low anger drivers. *Behaviour Research & Therapy*, 41(6), 701-718.

Deffenbacher, J. L., Filetti, L. B., Lynch, R. S., Dahlen, E. R., & Oetting, E. R. (2002).

Cognitive-behavioral treatment of high anger drivers. *Behaviour Research & Therapy*, 40(8), 895-910.

Deffenbacher, J. L., Huff, M. E., Lynch, R. S., Oetting, E. R., & Salvatore, N. F. (2000).

Characteristics and treatment of high-anger drivers. *Journal of Counseling Psychology*, 47(1), 5-17.

Deffenbacher, J. L., Lynch, R. S., Filetti, L. B., Dahlen, E. R., & Oetting, E. R. (2003).

Anger, aggression, risky behavior, and crash-related outcomes in three groups of drivers. *Behaviour Research & Therapy*, 41(3), 333-349.

Deffenbacher, J. L., Lynch, R. S., Oetting, E. R., & Swaim, R. C. (2002). The Driving

Anger Expression Inventory: A measure of how people express their anger on the road. *Behaviour Research & Therapy*, 40(6), 717-737.

Deffenbacher, J. L., McNamara, K., Stark, R. S., & Sabadell, P. M. (1990a). A

combination of cognitive, relaxation, and behavioral coping skills in the reduction of general anger. *Journal of College Student Development*, 31(4), 351-358.

Deffenbacher, J. L., McNamara, K., Stark, R. S., & Sabadell, P. M. (1990b). A

comparison of cognitive-behavioral and process-oriented group counseling for general anger reduction. *Journal of Counseling & Development*, 69(2), 167-172.

Deffenbacher, J. L., Oetting, E. R., Huff, M. E., Cornell, G. R., & Dallager, C. J. (1996).

Evaluation of two cognitive-behavioral approaches to general anger reduction. *Cognitive Therapy & Research*, 20(6), 551-573.

- Deffenbacher, J. L., Oetting, E. R., Huff, M. E., & Thwaites, G. A. (1995). Fifteen-month follow-up of social skills and cognitive-relaxation approaches to general anger reduction. *Journal of Counseling Psychology*, 42(3), 400-405.
- Deffenbacher, J. L., Oetting, E. R., & Lynch, R. S. (1994). Development of a driving anger scale. *Psychological Reports*, 74(1), 83-91.
- Deffenbacher, J. L., Oetting, E. R., Lynch, R. S., & Morris, C. D. (1996). The expression of anger and its consequences. *Behaviour Research & Therapy*, 34(7), 575-590.
- Deffenbacher, J. L., Oetting, E. R., Thwaites, G. A., Lynch, R. S., Baker, D. A., Stark, R. S., et al. (1996). State-Trait Anger Theory and the utility of the Trait Anger Scale. *Journal of Counseling Psychology*, 43(2), 131-148.
- Deffenbacher, J. L., Petrilli, R. T., Lynch, R. S., Oetting, E. R., & Swaim, R. C. (2003). The Driver's Angry Thoughts Questionnaire: A measure of angry cognitions when driving. *Cognitive Therapy & Research*, 27(4), 383-402.
- Deffenbacher, J. L., Richards, T. L., Filetti, L. B., & Lynch, R. S. (2005). Angry drivers: A test of State-Trait theory. *Violence and Victims*, 20, 455-469.
- Deffenbacher, J. L., & Stark, R. S. (1992). Relaxation and cognitive-relaxation treatments of general anger. *Journal of Counseling Psychology*, 39(2), 158-167.
- Deffenbacher, J. L., Story, D. A., Brandon, A. D., Hogg, J. A., & Hazaleus, S. L. (1988). Cognitive and cognitive-relaxation treatments of anger. *Cognitive Therapy & Research*, 12(2), 167-184.
- Deffenbacher, J. L., Story, D. A., Stark, R. S., Hogg, J. A., & Brandon, A. D. (1987). Cognitive-relaxation and social skills interventions in the treatment of general anger. *Journal of Counseling Psychology*, 34(2), 171-176.



- 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*(3), 386-396.
- Deffenbacher, J. L., White, G. S., & Lynch, R. S. (2004). Evaluation of two new scales assessing driving anger: The Driving Anger Expression Inventory and the Driver's Angry Thoughts Questionnaire. *Journal of Psychopathology & Behavioral Assessment, 26*(2), 87-99.
- Del Vecchio, T., & O'Leary, K. D. (2004). Effectiveness of anger treatments for specific anger problems: A meta-analytic review. *Clinical Psychology Review, 24*(1), 15-34.
- Dew, M. A., Reynolds, C. F., Houck, P. R., Hall, M., Buysse, D. J., Frank, E., et al. (1997). Temporal profiles of the course of depression during treatment: Predictors of pathways toward recovery in the elderly. *Archives of General Psychiatry, 54*(11), 1016-1024.
- DiGiuseppe, R. A., & Tafrate, R. C. (2003). Anger treatment for adults: A meta-analytic review. *Clinical Psychology-Science and Practice, 10*(1), 70-84.
- Durham, R. C., Allan, T., & Hackett, C. A. (1997). On predicting improvement and relapse in generalized anxiety disorder following psychotherapy. *British Journal of Clinical Psychology, 36*(1), 101-119.
- Eckert, P. A., Abeles, N., & Graham, R. N. (1988). Symptom severity, psychotherapy process, and outcome. *Professional Psychology Research & Practice, 19*(5), 560-564.

- EDI, & Adams, R. J. (2005). Prevent Road Rage. Retrieved March 16, 2006, from <http://www.awesomelibrary.org/road-rage.html>
- Ellison-Potter, P., Bell, P., & Deffenbacher, J. (2001). The effects of trait driving anger, anonymity, and aggressive stimuli on aggressive driving behavior. *Journal of Applied Social Psychology, 31*(2), 431-443.
- Ellison, P. A., Govern, J. M., Petri, H. L., & Figler, M. H. (1995). Anonymity and aggressive driving behavior: A field study. *Journal of Social Behavior & Personality, 10*(1), 265-272.
- Erwin, B. A., Heimberg, R. G., Schneier, F. R., & Liebowitz, M. R. (2003). Anger experience and expression in social anxiety disorder: Pretreatment profile and predictors of attrition and response to cognitive-behavioral treatment. *Behavior Therapy, 34*(3), 331-350.
- Fassino, S., Abbate-Daga, G., Piero, A., Leombruni, P., & Rovera, G. G. (2003). Dropout from brief psychotherapy within a combination treatment in bulimia nervosa: Role of personality and anger. *Psychotherapy and Psychosomatics, 72*(4), 203-210.
- Feske, U., Perry, K. J., Chambless, D. L., Renneberg, B., & Goldstein, A. J. (1996). Avoidant personality disorder as a predictor for treatment outcome among generalized social phobics. *Journal of Personality Disorders, 10*(2), 174-184.
- Filak, J., Abeles, N., & Norquist, S. (1986). Clients' pretherapy interpersonal attitudes and psychotherapy outcome. *Professional Psychology Research & Practice, 17*(3), 217-222.

- Foa, E. B., Grayson, J. B., Steketee, G. S., Doppelt, H. G., Turner, R. M., & Latimer, P. R. (1983). Success and failure in the behavioral treatment of obsessive-compulsives. *Journal of Consulting & Clinical Psychology, 51*(2), 287-297.
- Ford, J. D., & Kidd, P. (1998). Early childhood trauma and Disorders of Extreme Stress as predictors of treatment outcome with chronic posttraumatic stress disorder. *Journal of Traumatic Stress, 11*(4), 743-761.
- Frank, E., Shear, M. K., Rucci, P., Cyranowski, J. M., Endicott, J., Fagiolini, A., et al. (2000). Influence of panic-agoraphobic spectrum symptoms on treatment response in patients with recurrent major depression. *American Journal of Psychiatry, 157*(7), 1101-1107.
- Franko, D. L. (1997). Ready or not? Stages of change as predictors of brief group therapy outcome in bulimia nervosa. *Group, 21*(1), 39-45.
- Fuhriman, A., & Burlingame, G. M. (1990). Consistency of matter: A comparative analysis of individual and group process variables. *The Counseling Psychologist, 18*(1), 6-63.
- Fuller, R. K., & Allen, J. P. (2000). Patient-to-treatment matching. In G. Zernig, A. Saria & e. al. (Eds.), *Handbook of alcoholism. Pharmacology and toxicology.* (pp. 363-368).
- Galovski, T. E., & Blanchard, E. B. (2002). The effectiveness of a brief psychological intervention on court-referred and self-referred aggressive drivers. *Behaviour Research & Therapy, 40*(12), 1385-1402.

- Galovski, T. E., Malta, L. S., & Blanchard, E. B. (2006). *Road rage: Assessment and treatment of the angry, aggressive driver*. Washington, DC: American Psychological Association.
- Garfield, S. L. (1986). Research on client variables in psychotherapy. In S. L. Garfield & A. E. Bergin (Eds.), *Handbook of psychotherapy and behavior change* (3rd ed., pp. 213-256). New York: Wiley.
- Garfield, S. L. (1994). Research on client variables in psychotherapy. In A. E. Bergin & S. L. Garfield (Eds.), *Handbook of psychotherapy and behavior change* (4th ed., pp. 190-228).
- Garfield, S. L. (1997). The therapist as a neglected variable in psychotherapy research. *Clinical Psychology Science & Practice*, 4(1), 40-43.
- Geiger, L. A. (1994). Ethnic match and client characteristics as predictors of treatment outcome for anxiety disorders (Doctoral Dissertation, Fuller Theological Seminary, 1994). *Dissertation Abstracts International*, 54 (8-B), 4387.
- Gelhart, R. P., Hand-Ronga, N., & King, H. L. (2002). Group cognitive-behavioral treatment of depression and the interaction of demographic variables. *Journal of Cognitive Psychotherapy*, 16(4), 469-486.
- Gibbons, M. B. C., Crits-Christoph, P., de la Cruz, C., Barber, J. P., Siqueland, L., & Gladis, M. (2003). Pretreatment expectations, interpersonal functioning, and symptoms in the prediction of the therapeutic alliance across supportive-expressive psychotherapy and cognitive therapy. *Psychotherapy Research*, 13(1), 59-76.

- Gonzalez, D. M. (2002). Client variables and psychotherapy outcomes. In D. J. Cain (Ed.), *Humanistic psychotherapies: Handbook of research and practice*. (pp. 559-578). Washington, DC: American Psychological Association.
- Grissom, R. J. (1996). The magical number .7 +/- .2: Meta-meta-analysis of the probability of superior outcome in comparisons involving therapy, placebo, and control. *Journal of Consulting & Clinical Psychology*, 64(5), 973-982.
- Guiffrida, D. A., Barnes, K. L., Hoskins, C. M., & Roman, L. L. (2001). Client pretreatment characteristics as predictors of outcome in brief therapy for bulimia. *Journal of College Counseling*, 4(1), 63-72.
- Gunthert, K. C. (2002). Predictive role of daily coping and affective reactivity in cognitive therapy outcome, *Dissertation Abstracts International* (Vol. 63, pp. 527).
- Guthrie, E., Kapur, N., Mackway-Jones, K., Chew-Graham, C., Moorey, J., Mendel, E., et al. (2003). Predictors of outcome following brief psychodynamic-interpersonal therapy for deliberate self-poisoning. *Australian & New Zealand Journal of Psychiatry*, 37(5), 532-536.
- Hamilton, K. E., & Dobson, K. S. (2002). Cognitive therapy of depression: Pretreatment patient predictors of outcome. *Clinical Psychology Review*, 22(6), 875-893.
- Harburg, E., Julius, M., Kaciroti, N., Gleiberman, L., & Schork, M. A. (2003). Expressive/suppressive anger-coping responses, gender, and types of mortality: A 17-year follow-up (Tecumseh, Michigan, 1971-1988). *Psychosomatic Medicine*, 65(4), 588-597.

- Harder, D. W., Greenwald, D. F., Strauss, J. S., Kokes, R. G., Ritzler, B. A., & Gift, T. E. (1990). Predictors of two-year outcome among psychiatric outpatients. *Journal of Clinical Psychology, 46*(3), 251-261.
- Hardy, G. E., Cahill, J., Shapiro, D. A., Barkham, M., Rees, A., & Macaskill, N. (2001). Client interpersonal and cognitive styles as predictors of response to time-limited cognitive therapy for depression. *Journal of Consulting and Clinical Psychology, 69*(5), 841-845.
- Harkness, A. R., & Lilienfeld, S. O. (1997). Individual differences science for treatment planning: Personality traits. *Psychological Assessment, 9*(4), 349 - 360.
- Hartley, D. E. (1985). Research on the therapeutic alliance in psychotherapy. In R. E. Hales & A. J. Frances (Eds.), *Psychiatry update: American Psychiatric Association Annual Review* (pp. 532-549). Washington, DC: American Psychiatric Press.
- Hazaleus, S. L., & Deffenbacher, J. L. (1986). Relaxation and cognitive treatments of anger. *Journal of Consulting & Clinical Psychology, 54*(2), 222-226.
- Hazzard, A., Rogers, J. H., & Angert, L. (1993). Factors affecting group therapy outcome for adult sexual abuse survivors. *International Journal of Group Psychotherapy, 43*(4), 453-468.
- Hill, C. E., Helms, J. E., Spiegel, S. B., & Tichenor, V. (2001). Development of a system for categorizing client reactions to therapist interventions. In C. E. Hill (Ed.), *Helping skills: The empirical foundation* (Vol. xviii, pp. 41-60). Washington, DC: American Psychological Association.

- Hoberman, H. M., Lewinsohn, P. M., & Tilson, M. (1988). Group treatment of depression: Individual predictors of outcome. *Journal of Consulting & Clinical Psychology, 56*(3), 393-398.
- Hoglend, P. (1995). The relationship between patient characteristics, treatment variables and long-term outcome: A follow-up-study of 53 patients evaluated for brief dynamic psychotherapy. *Nordic Journal of Psychiatry, 49*(3), 223-224.
- Holloway, J. D. (2003, March 2003). Advances in anger management. *Monitor on Psychology, 34*, 54.
- Holmes, T. R. (1995a). History of child abuse - a key variable in client response to short-term treatment. *Families in Society - the Journal of Contemporary Human Services, 76*(6), 349-359.
- Holmes, T. R. (1995b). A history of childhood abuse as a predictor variable: Implications for outcome research. *Research on Social Work Practice, 5*(3), 297-308.
- Horvath, A. O., & Bedi, R. P. (2002). The alliance. In J. C. Norcross (Ed.), *Psychotherapy relationships that work: Therapist contributions and responsiveness to patients* (pp. 37-69). London: Oxford University Press.
- Horvath, A. O., & Symonds, B. D. (1991). Relation between working alliance and outcome in psychotherapy: A meta-analysis. *Journal of Counseling Psychology, 38*(2), 139-149.
- Howard, K. I., Kopta, S. M., Krause, M. S., & Orlinsky, D. E. (1986). The dose-effect relationship in psychotherapy. *American Psychologist, 41*(2), 159-164.

- Howard, K. I., Moras, K., Brill, P. L., Martinovich, Z., & Lutz, W. (1996). Evaluation of psychotherapy: Efficacy, effectiveness, and patient progress. *American Psychologist*, 51(10), 1059-1064.
- Howells, K., & Day, A. (2003). Readiness for anger management: clinical and theoretical issues. *Clinical Psychology Review*, 23(2), 319-337.
- Huppert, J. D., Bufka, L. F., Barlow, D. H., Gorman, J. M., Shear, M. K., & Woods, S. W. (2001). Therapists, therapist variables, and cognitive-behavioral therapy outcome in a multicenter trial for panic disorder. *Journal of Consulting & Clinical Psychology*, 69(5), 747-755.
- Ilardi, S. S., & Craighead, W. E. (1994). The Role of Nonspecific Factors in Cognitive-Behavior Therapy for Depression. *Clinical Psychology-Science and Practice*, 1(2), 138-156.
- Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, 59(1), 12-19.
- Janowsky, D. S. (1999). Therapist and patient personality characteristics and the nature, quality and outcome of psychotherapy: Focus on the Myers Briggs Type Indicator. In D. S. Janowsky (Ed.), *Psychotherapy indications and outcomes* (1st ed., Vol. xv, pp. 47-69). Washington, DC: American Psychiatric Press.
- Joint, M. (1995). Road Rage. Retrieved April 9, 2005, from <http://www.aaafoundation.org/resources/index.cfm?button=agdrtext#Aggressive%20Driving>



- Jones, E. E., Cumming, J. D., & Horowitz, M. J. (1988). Another look at the nonspecific hypothesis of therapeutic effectiveness. *Journal of Consulting & Clinical Psychology, 56*(1), 48-55.
- Jones, E. E., Krupnick, J. L., & Kerig, P. K. (1987). Some gender effects in a brief psychotherapy. *Psychotherapy: Theory, Research, Practice, Training, 24*(3), 336-352.
- Joyce, A. S., & Piper, W. E. (1998). Expectancy, the therapeutic alliance, and treatment outcome in short-term individual psychotherapy. *Journal of Psychotherapy Practice & Research, 7*(3), 236-248.
- Karatzias, A., Power, K., McGoldrick, T., Brown, K., Buchanan, R., Sharp, D., et al. (2007). Predicting treatment outcome on three measures for post-traumatic stress disorder. *European Archives of Psychiatry and Clinical Neuroscience, 257*(1), 40-46.
- Karno, M. P., Beutler, L. E., & Harwood, T. M. (2002). Interactions between psychotherapy procedures and patient attributes that predict alcohol treatment effectiveness: A preliminary report. *Addictive Behaviors, 27*(5), 779-797.
- Kim, D. M. (2003). Therapist effects and treatment effects in psychotherapy: Analysis on the National Institute of Mental Health Treatment of Depression Collaborative Research Program (NIMH TDCRP), *Dissertation Abstracts International* (Vol. 63, pp. 5523). University of Wisconsin.
- Kleber, R. J., & Brom, D. (1987). Psychotherapy and pathological grief controlled outcome study. *Israel Journal of Psychiatry & Related Sciences, 24*(1-2), 99-109.

- Klein, D. N., Schwartz, J. E., Santiago, N. J., Vivian, D., Vocisano, C., Castonguay, L. G., et al. (2003). Therapeutic alliance in depression treatment: Controlling for prior change and patient characteristics. *Journal of Consulting & Clinical Psychology, 71*(6), 997-1006.
- Knox, S., Hess, S. A., Petersen, D. A., & Hill, C. E. (2001). A qualitative analysis of client perceptions of the effects of helpful therapist self-disclosure in long-term therapy. In C. E. Hill (Ed.), *Helping skills: The empirical foundation* (Vol. xviii, pp. 369-387). Washington, DC: American Psychological Association.
- Kolb, D. L., Beutler, L. E., Davis, C. C., Crago, M., & Shanfield, S. B. (1985). Patient and therapy process variables relating to dropout and change in psychotherapy. *Psychotherapy: Theory, Research, Practice, Training, 22*(4), 702-710.
- Kopta, S. M., Howard, K. I., Lowry, J. L., & Beutler, L. E. (1994). Patterns of symptomatic recovery in psychotherapy. *Journal of Consulting & Clinical Psychology, 62*(5), 1009 -1016.
- Krupnick, J. L., Sotsky, S. M., Simmens, S., Moyer, J., Elkin, I., Watkins, J., et al. (1996). The role of the therapeutic alliance in psychotherapy and pharmacotherapy outcome: Findings in the National Institute of Mental Health Treatment of Depression Collaborative Research Program. *Journal of Consulting & Clinical Psychology, 64*(3), 532-539.
- Lambert, M. J., & Barley, D. E. (2001). Research summary on the therapeutic relationship and psychotherapy outcome. *Psychotherapy, 38*(4), 357-361.
- Lambert, M. J., & Barley, D. E. (2002). Research summary on the therapeutic relationship and psychotherapy outcome. In J. C. Norcross (Ed.), *Psychotherapy*

*relationships that work: Therapist contributions and responsiveness to patients*

(Vol. xii, pp. 17-32). London: Oxford University Press.

Lambert, M. J., & Bergin, A. E. (1994). The effectiveness of psychotherapy. In A. E. Bergin & S. L. Garfield (Eds.), *Handbook of psychotherapy and behavior change* (4th ed., pp. 143-189). New York: Wiley.

Lambert, M. J., Hunt, R. D., & Vermeersch, D. A. (2004). Optimizing outcome through prediction and measurement of psychological functioning. In D. P. Charman (Ed.), *Core processes in brief psychodynamic psychotherapy: Advancing effective practice* (pp. 23-45). Mahwah, NJ: Lawrence Erlbaum Associates.

Lambert, M. J., & Okiishi, J. C. (1997). The effects of the individual psychotherapist and implications for future research. *Clinical Psychology-Science and Practice*, 4(1), 66-75.

Leon, S. C., Kopta, S. M., Howard, K. I., & Lutz, W. (1999). Predicting patients' responses to psychotherapy: Are some more predictable than others? *Journal of Consulting & Clinical Psychology*, 67(5), 698-704.

Levy, E. G. (1999). Therapeutic process in a managed care type setting: The working alliance, pretreatment characteristics and outcome (Doctoral dissertation, University of Texas at Austin, 1999). *Dissertation Abstracts International*, 59 (9-B), 5094.

Lightsey, O. R., Jr. (1997). Generalized self-efficacy expectancies and optimism as predictors of growth group outcomes. *Journal for Specialists in Group Work*, 22(3), 189-202.

- Lorentzen, S., & Hoglend, P. (2004). Predictors of change during long-term analytic group psychotherapy. *Psychotherapy and Psychosomatics*, 73(1), 25-35.
- Luborsky, L., Auerbach, A. H., Chandler, M., Cohen, J., & Bachrach, H. M. (1971). Factors influencing the outcome of psychotherapy: A review of quantitative research. *Psychological Bulletin*, 75(3), 145-185.
- Luborsky, L., Crits-Christoph, P., McLellan, A. T., Woody, G., Piper, W., Liberman, B., et al. (1986). Do therapists vary much in their success? Findings from four outcome studies. *American Journal of Orthopsychiatry*, 56(4), 501-512.
- Lueger, R. J., Lutz, W., & Howard, K. I. (2000). The prediction and observed course of psychotherapy for anxiety and mood disorders. *Journal of Nervous & Mental Disease*, 188(3), 127-134.
- Lutz, W., Lowry, J., Kopta, S. M., Einstein, D. A., & Howard, K. I. (2001). Prediction of dose-response relations based on patient characteristics. *Journal of Clinical Psychology*, 57(7), 889-900.
- Mahon, J., Winston, A. P., Palmer, R. L., & Harvey, P. K. (2001). Do broken relationships in childhood relate to bulimic women breaking off psychotherapy in adulthood? *International Journal of Eating Disorders*, 29(2), 139-149.
- Maling, M. S., Gurtman, M. B., & Howard, K. I. (1995). The response of interpersonal problems to varying doses of psychotherapy. *Psychotherapy Research*, 5(1), 63 - 75.
- Marmar, C. R., Gaston, L., Gallagher, D., & Thompson, L. W. (1989). Alliance and outcome in late-life depression. *Journal of Nervous & Mental Disease*, 177(8), 464-472.

- Martin, D. J., Garske, J. P., & Davis, M. K. (2000). Relation of the therapeutic alliance with outcome and other variables: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 68*(3), 438-450.
- Mattia, J. I. (1997). Prediction of the outcome of cognitive-behavioral group therapy for social phobia, *Dissertation Abstracts International* (Vol. 57, pp. 6582).
- McCallum, M., Piper, W. E., & Joyce, A. S. (1992). Dropping out from short-term group therapy. *Psychotherapy: Theory, Research, Practice, Training, 29*(2), 206-215.
- McCallum, M., Piper, W. E., Ogrodnick, J. S., & Joyce, A. S. (2003). Relationships among psychological mindedness, alexithymia and outcome in four forms of short-term psychotherapy. *Psychology & Psychotherapy: Theory, Research & Practice, 76*(2), 133-144.
- Meyer, B., Pilkonis, P. A., Krupnick, J. L., Egan, M. K., Simmens, S. J., & Sotsky, S. M. (2002). Treatment expectancies, patient alliance, and outcome: Further analyses from the national institute of mental health treatment of depression collaborative research program. *Journal of Consulting and Clinical Psychology, 70*(4), 1051-1055.
- Michelson, L., June, K., Vives, A., Testa, S., & Marchione, N. (1998). The role of trauma and dissociation in cognitive-behavioral psychotherapy outcome and maintenance for panic disorder with agoraphobia. *Behaviour Research & Therapy, 36*(11), 1011-1050.
- Mizell, L. (1995). Aggressive Driving. Retrieved March 16, 2006, from <http://www.aaafoundation.org/resources/index.cfm?button=agdrtext#Aggressive%20Driving>

- Mohr, D. C. (1995). Negative outcome in psychotherapy: A critical review. *Clinical Psychology Science & Practice*, 2(1), 1-27.
- Mohr, D. C., Beutler, L. E., Engle, D., Shoham-Salomon, V., Bergan, J., Kaszniak, A. W., et al. (1990). Identification of patients at risk for nonresponse and negative outcome in psychotherapy. *Journal of Consulting & Clinical Psychology*, 58(5), 622-628.
- Moras, K., & Strupp, H. H. (1982). Pretherapy interpersonal relations, patients' alliance, and outcome in brief therapy. *Archives of General Psychiatry*, 39(4), 405 - 409.
- Morrison, N. (2001). Group cognitive therapy: Treatment of choice or sub-optimal option? *Behavioural & Cognitive Psychotherapy*, 29(3), 311-332.
- Mussell, M. P., Mitchell, J. E., Crosby, R. D., Fulkerson, J. A., Hoberman, H. M., & Romano, J. L. (2000). Commitment to treatment goals in prediction of group cognitive-behavioral therapy treatment outcome for women with bulimia nervosa. *Journal of Consulting and Clinical Psychology*, 68(3), 432-437.
- Neimeyer, R. A., & Weiss, M. E. (1990). Cognitive and symptomatic predictors of outcome of group therapies for depression. *Journal of Cognitive Psychotherapy*, 4(1), 23-32.
- Ogrodniczuk, J. S., Piper, W. E., Joyce, A. S., & McCallum, M. (2001). Using DSM Axis II information to predict outcome in short-term individual psychotherapy. *Journal of Personality Disorders*, 15(2), 110-122.
- Ogrodniczuk, J. S., Piper, W. E., Joyce, A. S., McCallum, M., & Rosie, J. S. (2003). NEO-five factor personality traits as predictors of response to two forms of group psychotherapy. *International Journal of Group Psychotherapy*, 53(4), 417-442.

Ogrodniczuk, J. S., Piper, W. E., McCallum, M., Joyce, A. S., & Rosie, J. S. (2002).

Interpersonal predictors of group therapy outcome for complicated grief.

*International Journal of Group Psychotherapy*, 52(4), 511-535.

Okiishi, J. C., Lambert, M. J., Nielsen, S. L., & Ogles, B. J. (2003). Waiting for

supershrink: An empirical analysis of therapist effects. *Clinical Psychology &*

*Psychotherapy*, 10, 361-373.

Orlinsky, D. E., Grawe, K., & Parks, B. K. (1994). Process and outcome in

psychotherapy: Noch einmal. In S. L. Garfield & A. E. Bergin (Eds.), *Handbook*

*of psychotherapy and behavior change* (4th ed., pp. 270 - 376). New York: Wiley.

Orlinsky, D. E., & Howard, K. I. (1986). Process and outcome in psychotherapy. In S. L.

Garfield & A. E. Bergin (Eds.), *Handbook of psychotherapy and behavior change*

(3rd ed., pp. 311 - 381). New York: Wiley.

Overstreet, D. L. (1993). Patient contribution to differential outcome in time-limited

dynamic psychotherapy: An empirical analysis (Doctoral dissertation, Wright

Institute, 1993). *Dissertation Abstracts International*, 54 (5-B), 2766.

Petry, N. M., & Bickel, W. K. (1999). Therapeutic alliance and psychiatric severity as

predictors of completion of treatment for opioid dependence. *Psychiatric*

*Services*, 50(2), 219-227.

Petry, N. M., Tennen, H., & Affleck, G. (2000). Stalking the elusive client variable in

psychotherapy research. In C. R. Snyder & R. E. Ingram (Eds.), *Handbook of*

*psychological change: Psychotherapy processes & practices for the 21st century*

(pp. 88-108). New York: John Wiley & Sons.

- Piper, W. E., Azim, H. F., McCallum, M., & Joyce, A. S. (1990). Patient suitability and outcome in short-term individual psychotherapy. *Journal of Consulting & Clinical Psychology, 58*(4), 475-481.
- Piper, W. E., Joyce, A. S., McCallum, M., & Azim, H. F. (1998). Interpretive and supportive forms of psychotherapy and patient personality variables. *Journal of Consulting & Clinical Psychology, 66*(3), 558-567.
- Prochaska, J. O., & Norcross, J. C. (2002). Stages of change. In J. C. Norcross (Ed.), *Psychotherapy relationships that work: Therapist contributions and responsiveness to patients* (pp. 303-313). London: Oxford University Press.
- Project MATCH Research Group. (1997). Project MATCH secondary a priori hypotheses. *Addiction, 92*(12), 1671-1698.
- Project MATCH Research Group. (1998a). Matching alcoholism treatments to client heterogeneity: Project MATCH three-year drinking outcomes. *Alcoholism: Clinical & Experimental Research, 22*(6), 1300-1311.
- Project MATCH Research Group. (1998b). Matching patients with alcohol disorders to treatments: Clinical implications from project MATCH. *Journal of Mental Health, 7*(6), 589-602.
- Propst, A., Paris, J., & Rosberger, Z. (1994). Do therapist experience, diagnosis and functional level predict outcome in short term psychotherapy? *Canadian Journal of Psychiatry / Revue Canadienne de Psychiatrie, 39*(3), 168-176.
- Rehm, L. P., Kaslow, N. J., Rabin, A. C., & Willard, R. (1981). *Prediction of outcome in a self-control behavior therapy program for depression*. Paper presented at the meeting of the American Psychological Association, Los Angeles.



- Reynolds, C. F., III, Dew, M. A., Frank, E., Begley, A. E., Miller, M. D., Cornes, C., et al. (1998). Effects of age at onset of first lifetime episode of recurrent major depression on treatment response and illness course in elderly patients. *American Journal of Psychiatry*, 155(6), 795-799.
- Rimm, D. C., DeGroot, J. C., Boord, P., Heiman, J., & Dillow, P. V. (1971). Systematic desensitization of an anger response. *Behaviour Research & Therapy*, 9(3), 273-280.
- Ritter, A., Bowden, S., Murray, T., Ross, P., Greeley, J., & Pead, J. (2002). The influence of the therapeutic relationship in treatment for alcohol dependency. *Drug and Alcohol Review*, 21(3), 261-268.
- Sacco-Laurens, B. M. (2000). Research attrition and sampling bias in psychotherapy outcome studies, *Dissertation Abstracts International* (Vol. 60, pp. 5789).
- Saenz, M. I. (1987). The relationship between pretreatment person variables and outcome in a time-limited cognitive-behavioral group treatment for depression (Doctoral dissertation, University of Oregon, 1987). *Dissertation Abstracts International*, 47 (7-B), 3124-3125.
- Safren, S. A., Heimberg, R. G., & Juster, H. R. (1997). Clients' expectancies and their relationship to pretreatment symptomatology and outcome of cognitive-behavioral group treatment for social phobia. *Journal of Consulting & Clinical Psychology*, 65(4), 694-698.
- Scheibe, G., & Albus, M. (1996). Predictors of outcome in panic disorder: A 5-year prospective follow-up study. *Journal of Affective Disorders*, 41(2), 111-116.

- Schneider, W., & Klauer, T. (2001). Symptom level, treatment motivation, and the effects of inpatient psychotherapy. *Psychotherapy Research*, 11(2), 153-167.
- Schwartz, E. (2005). Therapeutic alliance, group climate, and client self-efficacy: Influences on outcome in group therapy for driving anger reduction (Doctoral dissertation, Colorado State University, 2003). *Dissertation Abstracts International*, 65 (8-B), 4304.
- Seales-Gordon, L. M. (2003). Correlates of treatment effectiveness for adolescent perpetrators of parent abuse (Doctoral dissertation, University of Minnesota, 2003). *Dissertation Abstracts International*, 63 (12-B), 6582.
- Shahar, G., Blatt, S. J., Zuroff, D. C., Krupnick, J. L., & Sotsky, S. M. (2004). Perfectionism impedes social relations and response to brief treatment for depression. *Journal of Social & Clinical Psychology*, 23(2), 140-154.
- Shahar, G., Blatt, S. J., Zuroff, D. C., & Pilkonis, P. A. (2003). Role of perfectionism and personality disorder features in response to brief treatment for depression. *Journal of Consulting & Clinical Psychology*, 71(3), 629-633.
- Shapiro, D. A., Barkham, M., Hardy, G. E., & Morrison, L. A. (1990). The second Sheffield psychotherapy project: Rationale, design and preliminary outcome data. *British Journal of Medical Psychology*, 63(2), 97-108.
- Shea, M. T., & Elkin, I. (1996). The NIMH Treatment of Depression Collaborative Research Program. In C. Mundt, M. J. Goldstein, K. Hahlweg, P. Fiedler & e. al. (Eds.), *Interpersonal factors in the origin and course of affective disorders* (pp. 316-328). London: Gaskell.

- Shea, M. T., Elkin, I., & Sotsky, S. M. (1999). Patient characteristics associated with successful treatment: Outcome findings from the NIMH Treatment of Depression Collaborative Research Program. In D. S. Janowsky (Ed.), *Psychotherapy indications and outcomes* (pp. 71-90). Washington, DC: American Psychiatric Press.
- Shepherd, K. L. (1998). *Prediction of treatment outcome using the MMPI-2*. Unpublished Doctoral dissertation, Kent State University, 1998.
- Shepherd, R. H. (1992). *Group psychotherapy for wife abusers: Client variables that affect treatment outcome*. Unpublished Doctoral dissertation, University of Calgary, 1992.
- Sloane, R. B., Staples, F. R., Whipple, K., & Cristol, A. H. (1977). Patients' attitudes toward behavior therapy and psychotherapy. *American Journal of Psychiatry*, 134(2), 134-137.
- Smith, M. L., Glass, G. V., & Miller, T. I. (1980). *The benefits of psychotherapy*. Baltimore: The Johns Hopkins University Press.
- Sotsky, S. M., Glass, D. R., Shea, M. T., Pilkonis, P. A., Collins, J. F., Elkin, I., et al. (1991). Patient predictors of response to psychotherapy and pharmacotherapy: Findings in the NIMH Treatment of Depression Collaborative Research Program. *American Journal of Psychiatry*, 148(8), 997-1008.
- Spielberger, C. D. (1988). *State-Trait Anger Expression Inventory* (1st ed.). Odessa, Florida Psychological Assessment Resources.
- Spielberger, C. D. (1999). *State-Trait Anger Expression Inventory* (2nd ed.). Odessa, Florida Psychological Assessment Resources.

- 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 testing for treatment planning and outcomes assessment (2nd ed)* (pp. 993-1021). Mahwah, NJ: Lawrence Erlbaum Associates.
- Steinmetz, J. L., Lewinsohn, P. M., & Antonuccio, D. O. (1983). Prediction of individual outcome in a group intervention for depression. *Journal of Consulting & Clinical Psychology, 51*(3), 331-337.
- Stout, R., Del Boca, F. K., Carbonari, J., Rychtarik, R., Litt, M. D., & Cooney, N. L. (2003). Primary treatment outcomes and matching effects: Outpatient arm. In T. F. Babor, University of Connecticut Health Center, Department of Community Medicine and Health Care & et al. (Eds.), *Treatment matching in alcoholism. International research monographs in the addictions*. (pp. 105-134). New York: Cambridge University Press.
- Stuster, J. (2004). *Aggressive Driving Enforcement: Evaluation of two demonstration programs* (Final Report No. DOT HS 809 707): National Highway Traffic Safety Administration.
- Sukhodolsky, D. G. (1998). Cognitive-behavioral treatment programs for anger-related problems in children and adolescents: A meta-analytic study, *Dissertation Abstracts International* (Vol. 58, pp. 4475): Hofstra University, 1998.
- Sukhodolsky, D. G., Kassinove, H., & Gorman, B. S. (2004). Cognitive-behavioral therapy for anger in children and adolescents: A meta-analysis. *Aggression & Violent Behavior, 9*(3), 247-269.

- Tafrate, R. C. (1995). Evaluation of treatment strategies for adult anger disorders. In H. Kassirer (Ed.), *Anger disorders: Definition, diagnosis, and treatment* (pp. 109-129). Philadelphia: Taylor & Francis.
- Talbot, N. L., Duberstein, P. R., Butzel, J. S., Cox, C., & Giles, D. E. (2003). Personality traits and symptom reduction in a group treatment for women with histories of childhood sexual abuse. *Comprehensive Psychiatry*, 44(6), 448-453.
- Talley, J. E. (1992). *The predictors of successful very brief psychotherapy: A study of differences by gender, age, and treatment variables*. Springfield, IL: Charles C. Thomas.
- Teri, L., & Lewinsohn, P. M. (1986). Individual and group treatment of unipolar depression: Comparison of treatment outcome and identification of predictors of successful treatment outcome. *Behavior Therapy*, 17(3), 215-228.
- Thacker, S. L. (1998). Family of origin functioning as it relates to adult experience and expression of anger (Doctoral dissertation, Colorado State University, 1998). *Dissertation Abstracts International*, 58 (12-B), 6830.
- The Partnership for Safe Driving. (2003). A killer: Anger behind the wheel. *Ashore Magazine*. Retrieved March 17, 2006, from <http://www.safetycenter.navy.mil/media/ashore/issues/summer03/AngerBehindWheel.htm>
- Vandervoort, D. J., Ragland, D. R., & Syme, S. L. (1996). Expressed and suppressed anger and health problems among transit workers. *Current Psychology: Developmental, Learning, Personality, Social*, 15(2), 179-193.

- Vilas, R. C. (1989). Counseling outcome as related to MBTI client type, counselor type and counselor-client type similarity (Doctoral dissertation, University of Iowa, 1989). *Dissertation Abstracts International*, 50 (4-A), 878-879.
- Walters, G. D. (2002). Lessons learned from project MATCH. *Addictive Disorders & Their Treatment*, 1(4), 135-139.
- Wampold, B. E. (2001). *The great psychotherapy debate: Models, methods, and findings* (Vol. xiii). Mahwah, N.J.: L. Erlbaum Associates.
- West, S. G., Aiken, L. S., & Krull, J. L. (1996). Experimental personality designs: Analyzing categorical by continuous variable interactions. *Journal of Personality*, 64(1), 1-48.
- Wolk, S. L., & Devlin, M. J. (2001). Stage of change as a predictor of response to psychotherapy for bulimia nervosa. *International Journal of Eating Disorders*, 30(1), 96-100.
- Zuroff, D. C., Blatt, S. J., Sotsky, S. M., Krupnick, J. L., Martin, D. J., Sanislow, C. A., III, et al. (2000). Relation of therapeutic alliance and perfectionism to outcome in brief outpatient treatment of depression. *Journal of Consulting & Clinical Psychology*, 68(1), 114-124.

## Appendices

*DRIVING ANGER SCALE – LONG FORM*

**Directions:** Below are several situations you may encounter when you are driving. Try to imagine that the incident described is actually happening to you, then indicate the extent to which it would anger or provoke you. Mark your response by filling in the bubble to the right.

	<u>Not</u> <u>At All</u>	<u>A</u> <u>Little</u>	<u>Some</u>	<u>Much</u>	<u>Very</u> <u>Much</u>
1. Someone in front of you does not start up when the light turns green.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Someone is driving too fast for the road conditions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. A pedestrian walks slowly across the middle of the street, slowing you.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Someone is driving too slowly in the passing lane holding up traffic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Someone is driving right up on your back bumper.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Someone is weaving in and out of traffic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Someone cuts in front of you on the freeway.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Someone cuts in and takes the parking spot you have been waiting for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Someone is driving slower than reasonable for the traffic flow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. A slow vehicle on a mountain road will not pull over and let people by.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. You see a police car watching traffic from a hidden position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Someone backs right out in front of you without looking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Someone runs a red light or stop sign.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Someone coming toward you at night does not dim their headlights.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. At night someone is driving right behind you with bright lights on.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. You pass a radar speed trap.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Someone speeds up when you try to pass them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Someone is slow in parking and holding up traffic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. You are stuck in a traffic jam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Someone pulls right in front of you when there is no one behind you.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



	<u>Not At All</u>	<u>A Little</u>	<u>Some</u>	<u>Much</u>	<u>Very Much</u>
21. Someone makes an obscene gesture toward you about your driving.	O	O	O	O	O
22. You hit a deep pothole that was not marked.	O	O	O	O	O
23. Someone honks at you about your driving.	O	O	O	O	O
24. Someone is driving way over the speed limit.	O	O	O	O	O
25. You are driving behind a truck which as material flapping around in the back.	O	O	O	O	O
26. Someone yells at you about your driving.	O	O	O	O	O
27. A police officer pulls you over.	O	O	O	O	O
28. You are behind a vehicle that is smoking badly or giving off diesel fumes.	O	O	O	O	O
29. A truck kicks up sand or gravel on the car you are driving.	O	O	O	O	O
30. You are behind a large truck and cannot see around it.	O	O	O	O	O
31. You encounter road construction and detours.	O	O	O	O	O
32. A bicyclist is riding in the middle of the lane and slowing traffic.	O	O	O	O	O
33. A police car is driving in traffic close to you.	O	O	O	O	O

#### **Six Scales Involved in Long-form (33-item) Driving Anger Scale (DAS):**

1. 3-item *Hostile Gestures* ( $\alpha = .87$ ) Items generally involve physical, verbal, or vehicular expression of displeasure toward the driver—Items 21, 23, and 26.
2. 4-item *Illegal Driving* ( $\alpha = .80$ ) Items involve illegal driving behaviors of other drivers—Items 2, 6, 13, and 24.
3. 4-item *Police Presence* ( $\alpha = .79$ ) Items involve presence of police involvement in one form or another—Items 11, 16, 27, and 33.
4. 6-item *Slow Driving* ( $\alpha = .81$ ) Items involve behavior of other drivers or pedestrians which slow down or impede the driver—Items 1, 3, 4, 9, 10, and 18.
5. 9-item *Discourtesy* ( $\alpha = .81$ ) Items involve behaviors of others that are primarily seen as discourteous, without thought or rude, rather than illegal or impeding—Items 5, 7, 8, 12, 14, 15, 17, 20, and 32.
6. 7-item *Traffic Obstructions* ( $\alpha = .78$ ) Items involve traffic conditions, other than impeding behaviors of other drivers, that slow the individual down or cause frustration—Items 19, 22, 25, 28, 29, 30, and 31

### *DRIVERS' ANGRY THOUGHTS QUESTIONNAIRE*

**Directions:** Below are a number of thoughts people have when they are angry or hostile when driving. Take a few seconds to think about whether that thought (or one similar to it) occurs to you **when you are angry at another driver or about something when you are driving.** Read each statement and then fill in the bubble indicating how much you think this thought (or one similar to it) **when you are angry while driving.** Please answer all questions:

	<u>Not At All</u>	<u>Some- times</u>	<u>Moderately Often</u>	<u>Often</u>	<u>All the Time</u>
1. What an idiot!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. They don't seem to think they can hurt others doing that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I'm going to get back at them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I'm not going to let them do that to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Just what we need, someone who thinks they are more important than others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I want to yell at them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I want to kick their ass.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I'm going to get revenge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I'm going to give them the finger.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I want to curse at them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I hate drivers like that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Get off my ass!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I'm going to box them in and show them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I'm going to slow them up on purpose.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I feel like telling them off.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I'm going to get even with them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. They are going to get someone killed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. People like you ought to have to take a driver's test.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. You didn't even look!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I'm going to slam on my brakes and back them off.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. They shouldn't be allowed to drive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. They ought to be shot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. I'm going to slow down to spite them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. How rude!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Cope with it, sometimes you just have to live with bad drivers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. What a stupid driver!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. Where do they get off doing this?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I would like to hurt them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. Why don't they have to drive like the rest of us?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	<u>Not</u> <u>At All</u>	<u>Some-</u> <u>times</u>	<u>Moderately</u> <u>Often</u>	<u>Often</u>	<u>All the</u> <u>Time</u>
30. They are not going to get away with that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. Where are the cops when you need them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Damn it!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. I'm going to tailgate them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. I can't believe they're so inconsiderate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. What an ass!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. They are going to kill someone doing that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. Who do they think they are?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. What a dumb ass!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39. I want to beat them up.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40. I want to run them off the road.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41. I want to kill them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42. What a jerk!	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43. That's unsafe.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44. How did that person get a license?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45. They think they are the only people on the road.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46. Who in their right mind would drive like that?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47. They think they are above the rules.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48. Just back off and relax.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
49. This is crazy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50. Nothing I can do about it so take it easy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
51. I'll just have to call and tell them I'll be late.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
52. Get people like them off the road.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
53. Don't even make eye contact with people like that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
54. I'm so angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
55. Just calm down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
56. Just turn up the radio and tune them out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
57. I want to punch them out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
58. I'll cut them off and see how they like it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
59. I would like to beat the hell out of them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
60. They are clueless.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
61. I'm going to return the favor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
62. I am so pissed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
63. I'm going to teach them a lesson.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
64. Chill out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
65. Just pay attention to my driving, others can be crazy if they want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Five scales involved in Driver's Angry Thoughts Questionnaire (DATQ):**

1. 21-item *Judgmental and Disbelieving Thinking* ( $\alpha = .94$ )—Items 2, 5, 17, 18, 19, 21, 24, 27, 29, 31, 34, 36, 37, 43, 44, 45, 46, 47, 49, 52, and 60.
2. 13-item *Pejorative Labeling and Verbally Aggressive Thinking* ( $\alpha = .92$ )—Items 1, 6, 10, 11, 12, 15, 26, 32, 35, 38, 42, 54, and 62.
3. 14-item *Revenge and Retaliatory Thinking* ( $\alpha = .93$ )—Items 3, 4, 8, 9, 13, 14, 16, 20, 23, 30, 33, 58, 61, and 63.
4. 8-item *Physically Aggressive Thinking* ( $\alpha = .93$ )—Items 7, 22, 28, 39, 40, 41, 57, and 59.
5. 9-item *Coping Self-Instruction* ( $\alpha = .83$ )—Items 25, 48, 50, 51, 53, 55, 56, 64, and 65.

### *DRIVING ANGER EXPRESSION INVENTORY*

**Directions:** Everyone feels angry or furious from time to time when driving, but people differ in the ways that they react when they are angry while driving. A number of statements are listed below which people have used to describe their reactions when they feel angry or furious. Read each statement and then fill in the bubble to the right of the statement indicating how often you generally react or behave in the manner described when you are angry or furious while driving. There are no right or wrong answers. Do not spend too much time on any one statement.

	<u>Almost Never</u>	<u>Some- times</u>	<u>Often</u>	<u>Almost Always</u>
1. I give the other driver the finger.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I drive right up on the other driver's bumper.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I drive a little faster than I was.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I try to cut in front of the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I call the other driver names aloud.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I make negative comments about the other driver	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I follow right behind the other driver for a long time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I try to get out of the car and tell the other driver off.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I yell questions like "Where did you get your license?"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I roll down the window to help communicate my anger.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I glare at the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I shake my fist at the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I stick my tongue out at the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I call the other driver names under my breath.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I speed up to frustrate the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. I purposely block the other driver from doing what he/she wants to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I bump the other driver's bumper with mine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I go crazy behind the wheel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I leave my brights on in the other driver's rear view mirror.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I try to force the other driver to the side of the road.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I try to scare the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. I do to other drivers what they did to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	<u>Almost Never</u>	<u>Some- times</u>	<u>Often</u>	<u>Almost Always</u>
23. I pay even closer attention to being a safe driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. I think about things that distract me from thinking about the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I think things through before I respond.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I try to think of positive solutions to deal with the situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. I drive a lot faster than I was.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. I swear at the other driver aloud.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I tell myself its not worth getting all mad about.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. I decide not to stoop to their level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. I swear at the other driver under my breath.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. I turn on the radio or music to calm down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. I flash my lights at the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. I make hostile gestures other than giving the finger.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. I try to think of positive things to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. I tell myself it's not worth getting involved in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. I shake my head at the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. I yell at the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39. I make negative comments about the other driver under my breath.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40. I give the other driver a dirty look.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41. I try to get out of the car and have a physical fight with the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42. I just try to accept that there are bad drivers on the road.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43. I think things like "Where did you get your license?"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44. I do things like take deep breaths to calm down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45. I just try and accept that there are frustrating situations while driving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46. I slow down to frustrate the other driver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47. I think about things that distract me from the frustration on the road.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48. I tell myself to ignore it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
49. I pay even closer attention to other's driving to avoid accidents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Scales involved in the Driving Anger Expression Inventory (DAX):**

1. 12-item *Verbal Aggressive Expression* ( $\alpha = .88$ ) Items generally involve overt and covert verbal aggression with some nonverbal behaviors such as glares—Items 5, 6, 9, 11, 14, 28, 31, 37, 38, 39, 40, and 43
2. 11-item *Personal Physical Aggressive Expression* ( $\alpha = .84$ ) Items generally involve physically aggressive displays or behavior, but not where the person is using the car as an instrument of intimidation, aggression, and frustration—Items 1, 8, 10, 12, 13, 17, 18, 20, 21, 34, and 41
3. 11-item *Use of the Vehicle to Express Anger* ( $\alpha = .86$ ) Items generally involve using the vehicle or one's driving behavior to frustrate, intimidate, or express displeasure with the another driver—Items 2, 3, 4, 7, 15, 16, 19, 22, 27, 33, and 46
4. 15-item *Adaptive/Constructive Expression* ( $\alpha = .90$ ) Items generally involve cognitive and behavioral strategies for safe driving, problem-solving, distraction and cognitively reframing the situation—Items 23, 24, 25, 26, 29, 30, 32, 35, 36, 42, 44, 45, 47, 48, and 49

	0	1	2	3	4	5+
1. Driven without using your seat belt?	O	O	O	O	O	O
2. Drank alcohol and driven?	O	O	O	O	O	O
3. Been drunk and driven?	O	O	O	O	O	O
4. Driven 10-20 mph over the limit?	O	O	O	O	O	O
5. Driven 20+ mph over the limit?	O	O	O	O	O	O
6. Passed unsafely?	O	O	O	O	O	O
7. Tailgated or followed another vehicle too closely?	O	O	O	O	O	O
8. Changed lanes unsafely?	O	O	O	O	O	O
9. Drifted into another lane?	O	O	O	O	O	O
10. Switched lanes to speed through slower traffic?	O	O	O	O	O	O
11. Gone out of turn at a red light or stop sign?	O	O	O	O	O	O
12. Made an illegal turn (e.g., illegal right turn on red light)?	O	O	O	O	O	O
13. Driven recklessly?	O	O	O	O	O	O
14. Run a red light or stop sign?	O	O	O	O	O	O
15. Entered an intersection when the light was turning red?	O	O	O	O	O	O



**Please note:**

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