

The Displaced Aggression Questionnaire

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Previous measures of aggressive personality have focused on *direct aggression* (i.e., retaliation toward the provoking agent). An original self-report measure of trait *displaced aggression* is presented. Exploratory and confirmatory factor analyses provided support for a 3-factor conceptualization of the construct. These analyses identified an affective dimension (angry rumination), a cognitive dimension (revenge planning), and a behavioral dimension (general tendency to engage in displaced aggression). The trait measure demonstrated good internal consistency and test–retest reliability as well as convergent and discriminant construct validity. Unlike other related personality measures, trait displaced aggression significantly predicted indirect indicators of real-world displaced aggression (i.e., self-reported domestic abuse and road rage) as well as laboratory displaced aggression in 2 experiments.

Keywords: aggression, displaced aggression, rumination, aggressive personality, domestic abuse

Luis steps onto a crowded bus on his way to work one morning. As he is entering, another man bumps into him, spills hot coffee onto Luis's new shirt, and quickly darts away. On his 45-minute commute to work, all Luis can think about is how angry he is feeling. He cannot stop thinking about how he would enjoy getting even with the coffee-sloshing provocateur. When he gets to work, he is in a foul mood. A good-natured coworker comments jokingly on Luis's "fashion by Starbucks" appearance. Luis becomes furious and proceeds to insult the coworker.

The preceding anecdote illustrates a general phenomenon. When some people are in a bad mood, they are likely to "take it out" on innocent others. In the current research we argue that individual differences in the tendency to exhibit *displaced aggression* may contribute to such behavior. We describe next the development of the Displaced Aggression Questionnaire (DAQ), the first self-report measure designed to assess individual differences in the tendency to displace aggression.

Displaced Aggression and Triggered Displaced Aggression (TDA)

Displaced aggression occurs when a person is provoked, is unwilling or unable to retaliate against the original provocateur,

and subsequently aggresses against a seemingly innocent target (Dollard, Doob, Miller, Mowrer, & Sears, 1939; Hovland & Sears, 1940). For instance, a man insults his wife for no apparent reason after having been berated previously by his boss. A meta-analysis of laboratory studies on the construct—operationalized as aggression directed toward a human target other than the source of initial provocation—reported a moderate effect size ($d = .54$; Marcus-Newhall, Pedersen, Carlson, & Miller, 2000). Oftentimes, the target provides no justification or instigation to warrant a retaliatory response from the aggressor. However, on other occasions the "innocent" target may provide a trivial and ambiguous instigation ("a trigger") to aggress. For instance, in our opening example, Luis perceived the coworker's comment as hostile and subsequently displayed a disjunctively escalated aggressive response toward the witty coworker. This is an example of TDA (Aviles, Earleywine, Pollock, Stratton, & Miller, 2005; Bushman, Bonacci, Pedersen, Vasquez, & Miller, 2005; Miller, Pedersen, Earleywine, & Pollock, 2003; Pedersen, Gonzales, & Miller, 2000; Vasquez, Denson, Pedersen, Stenstrom, & Miller, 2005). Such disjunctively escalated aggression refers to a level of aggression exceeding norms of reciprocity and tit-for-tat matching rules (Axelrod, 1984; Gouldner, 1960).

The current research represents the first investigation into individual differences in the tendency to displace aggression. Existing investigations of aggressive personality have been constrained to instances of *direct aggression* (i.e., retaliation toward the provoking agent). There is good reason to believe that personality differences exist in the tendency to engage in displaced aggression and that rumination plays an important role. For instance, in addition to laboratory studies on rumination and TDA (Bushman et al., 2005), spousal or child abusers are characterized as harming innocent others when stressed, frustrated, or provoked. Understanding individual differences in displaced aggression may have especially important ramifications for society at large. Following a provocation, individuals high in this trait presumably are likely to aggress

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against undeserving others such as family members, fellow drivers, or coworkers. Assessment of such individual differences may be a starting point for reducing the harm associated with domestic abuse, road rage, and workplace aggression.

Rumination

What happens between the initial provocation and the subsequent aggressive act? When an individual is confronted with a provocation, there are a number of emotion regulation strategies he or she may use to cope with the aversive event. We hypothesize that individuals high in trait displaced aggression predominantly use *rumination* to cope with life's provocations. We know from laboratory research that angry feelings resulting from a provocation are relatively short-lived for most people, usually dissipating within 10 min (Fridhandler & Averill, 1982; Tyson, 1998). However, there are many instances of real-world displaced aggression in which an aggressor harms innocent others when substantially more than 10 minutes have elapsed since the provoking event (as was the case with Luis in our opening anecdote). Indeed, sometimes days or weeks may pass. What accounts for these occurrences? As indicated, we hypothesize that those who take it out on others are likely to ruminate about the initial provocation (Miller et al., 2003). Specifically, these individuals are likely to focus on their angry mood and to plan retaliation. We hypothesize that this ruminative activity maintains aggression-related affect, cognition, and arousal and thereby increases negative emotional reactions toward those they subsequently encounter.

On the basis of Berkowitz's (1989, 1990, 1993) cognitive neo-associationistic model of aggression and consistent with the general aggression model (GAM; C. A. Anderson & Bushman, 2002), Miller et al. (2003) proposed a theory of TDA. They argued that individuals may ruminate about the initial provocation and further that rumination maintains aggressive affect and cognition by keeping a cognitive representation of the provocation highly accessible. Rumination, which can be conceptualized within the GAM as either a situational or a personality factor, is likely to increase aggression-related cognition, affect, and arousal. This, in turn, increases the strength of association between aggression-related concepts in the network. Each time a person thinks about or relives a provoking incident (or its accompanying negative affect), a new activation spreads through the network, making its aggression-related components more accessible and in turn increasing the likelihood of subsequent aggressive behavior. Such rumination-induced priming has been implicated in marital conflict (Kachadourian, Fincham, & Davila, 2005). Relatedly, Bushman (2002) demonstrated that a laboratory manipulation of rumination about a provocation increased aggression toward the source of that provocation. Similarly, Konečni (1974) found that preventing participants from ruminating decreased direct aggression.

Relevant to the current research, in a series of three laboratory studies, rumination about a provocation increased aggression toward the source of a subsequent minor annoyance (*viz.*, the triggering agent in the TDA paradigm; Bushman et al., 2005). Also consistent with the GAM, laboratory manipulations of rumination increased cardiovascular arousal, as well as aggressive affect and cognition (Pedersen, Denson, Goss, Vasquez, & Miller, 2005; see also Rusting & Nolen-Hoeksema, 1998). In the current research, we argue that individual differences in rumination about an initial provocation are intricately linked to behavioral displays of dis-

placed aggression. It is likely that everyday stressors and provocations prime aggression-related affect, arousal, and cognition, which are maintained or increased by angry rumination and thoughts of revenge. Such chronic priming effects might then cause one to emotionally overreact in social encounters with close others. Over time, an individual may learn to take out his or her aggressive urges on others, a practice that can manifest itself in a long-term general behavioral tendency to harm those other than the source of the initial provocation.

Trait Displaced Aggression

Researchers have explored a number of dimensions related to aggressive personality. These include the tendency to engage in verbal and physical aggression; the frequent experience of hostility and anger (Buss & Perry, 1992); the chronic accessibility of aggressive constructs (Dill, Anderson, & Deuser, 1997), often resulting from exposure to violent media (C. A. Anderson & Bushman, 2001); gender (Bettencourt & Miller, 1996); anger expression (Spielberger, Reheiser, & Sydeman, 1995); narcissism and self-esteem (Bushman & Baumeister, 1998); and frontal electroencephalogram asymmetry and approach-withdrawal tendencies (Harmon-Jones & Allen, 1998; Hewig, Hagemann, Seifert, Naumann, & Bartussek, 2004).

The first major goal of the current investigation was to identify individual differences in *displaced* aggression. All prior research on aggressive personality (with the possible exception of domestic violence research) has focused on direct aggression (*i.e.*, retaliation toward the source of provocation). To our knowledge, there is no existing individual-difference measure to assess the general tendency to engage in displaced aggression. We note that individual differences in displaced aggression are not orthogonal to individual differences in direct aggression. Many of the same processes that influence general trait aggressiveness also apply to trait displaced aggression. For example, biological factors, social learning, emotional instability (*e.g.*, neuroticism), frequent anger experience, and hostile attributional styles remain important correlates of displaced aggression. Therefore, we expected moderate correlations between the DAQ and trait measures of direct aggression. Consequently, the individual-difference measure that we developed in the current research builds on this prior work in trait aggression.

Those high in trait displaced aggression differ in an important manner from those high in general trait aggressiveness. Specifically, unlike direct aggressors, individuals with a strong tendency to exhibit displaced aggression are hypothesized to be behaviorally inhibited when provoked. When exposed to a provocation, we hypothesize that individuals who are high in displaced aggression are likely to inhibit direct aggression toward the provocateur. Indeed, one unique aspect of our construct is its positive relationship to behavioral inhibition. This is entirely novel, as previous work on direct aggressiveness has revealed a positive relationship between anger, trait aggression, and the behavioral approach system (Harmon-Jones, 2003; Harmon-Jones & Allen, 1998; Harmon-Jones & Sigelman, 2001; Hewig et al., 2004). Thus, we hypothesize that when provoked, individuals high in trait displaced aggression are likely to have an activated "flight" system whereas those high in direct aggression are likely to have an activated "fight" system.

A second goal of the current research is to provide clarification of the dimensions underlying trait displaced aggression. Past research has focused primarily on cognitive or affective features of the provocation-focused ruminative personality. In the current research, we hypothesized the existence of three related but distinct components of trait displaced aggression: (a) an *affective* component consisting of the tendency to focus on one's anger following a provocation (angry rumination), (b) a *cognitive* component referring to the tendency to hold a grudge for a prior provocation and plan for retaliation (revenge planning), and (c) a *behavioral* component referring to a general tendency to behave aggressively toward those other than the source of the initial provocation (behavioral displaced aggression).

A small yet highly relevant body of research has concentrated on conceptualizations of rumination that focus specifically on responses to provocations. We believe such *provocation-focused rumination* (e.g., thinking about and reliving a negative event or an angering incident, as was the case in the opening anecdote about Luis) more closely corresponds to the layperson's definition. Provocation-focused rumination has been shown to increase anger and direct aggression to a greater extent than self-focused rumination (Pedersen et al., 2005).

Within the realm of provocation-focused rumination, researchers have concentrated on affective and cognitive components. The *affective* aspect of provocation-focused rumination consists of the negative affect, especially anger, that results from a provocation (Caprara, 1986; Sukhodolsky, Golub, & Cromwell, 2001). Sukhodolsky et al. (2001) viewed anger as a primary component of rumination and developed the Anger Rumination Scale to assess individual differences pertaining to the "tendency to focus on angry moods, recall past anger experiences, and think about the causes and consequences of anger episodes" (p. 689). The scale predicted self-reported direct aggression among athletes (Maxwell, 2004). Thus, it is likely that individuals who focus on angry feelings should maintain this negative affect (Miller et al., 2003). A large body of research indicates that regardless of its source, negative affect produces a readiness to aggress (C. A. Anderson, 2001; Berkowitz, 1993; Lindsay & Anderson, 2000). Such priming effects increase the likelihood that ambiguous events will be perceived aggressively. In this manner, individuals who ruminate angrily may be likely to aggress against close others with whom they have extended daily contact (e.g., family, coworkers, annoying drivers).

Most researchers have concentrated on the *cognitive* aspects of provocation-focused rumination. Caprara (1986) conceptualized rumination as a continuum with those likely to rapidly abandon distress and vengefulness motivation on one end (dissipators) and those likely to focus on negative affect and think about revenge on the other end (ruminators); nevertheless, all but 2 of the 15 items that make up Caprara's (1986) Dissipation-Rumination Scale assess the tendency to remember past provocations or the motivation to retaliate. The scale has proven useful in predicting direct aggression when participants were given the opportunity to ruminate (Collins & Bell, 1997). Similarly, in the forgiveness literature, researchers have conceptualized ruminative thought as the source of desire for revenge (Mauger et al., 1992; McCullough, Bellah, Kilpatrick, & Johnson, 2001; McCullough et al., 1998). Studies using the Dissipation-Rumination Scale have found negative correlations between vengeful trait rumination and forgiveness (Berry, Worthington, Parrott, O'Connor, & Wade, 2001, 2005).

Among married couples, cognitive measures of rumination about interpersonal transgressions decreased forgiveness (Kachadourian et al., 2005) and marital satisfaction (Paleari, Regalia, & Fincham, 2005). Still other researchers have failed to differentiate between cognitive and affective components of provocation-focused rumination, thus combining anger-related aspects with thoughts of revenge (e.g., the Rehearsal subscale of the Emotional Control Questionnaire; Roger & Najarian, 1989). In conceptualizing trait displaced aggression, we hypothesized that both affective (angry rumination) and cognitive (revenge planning) components of provocation-focused rumination would be a part of the construct.

Rumination has also been conceptualized in a number of ways that are distinct from provocation-focused rumination. In the current research we compared our measure with measures based on these other perspectives on rumination referred to as *self-focused rumination*. Such a theoretical perspective describes rumination as "self-focused attention" or directing attention inward on the self, particularly on one's own negative emotions (Lyubomirsky & Nolen-Hoeksema, 1995; Nolen-Hoeksema & Morrow, 1991, 1993; Trapnell & Campbell, 1999). A large body of research demonstrates that self-focused rumination increases depressive symptoms and lengthens episodes of depressed mood (e.g., Carver, Scheier, & Weintraub, 1989; Nolen-Hoeksema, Morrow, & Fredrickson, 1993). Self-focused rumination also exacerbates anger, stress, anxiety, and worry (Morrison & O'Connor, 2005; Muris, Roelofs, Meesters, & Boomsma, 2004; Rusting & Nolen-Hoeksema, 1998; Segerstrom, Tsao, Alden, & Craske, 2000; Watkins, 2004). Within the category of self-focused rumination, researchers have distinguished between *reflective* and *brooding* rumination (Trapnell & Campbell, 1999; Treynor, Gonzales, & Nolen-Hoeksema, 2003; Watkins, 2004). Trapnell and Campbell (1999) created the Rumination-Reflection Questionnaire to assess these two distinct types of rumination. Reflective rumination is believed to be an adaptive self-regulatory process in which individuals are motivated to focus inward to satisfy curiosity or self-understanding, whereas maladaptive brooding rumination is initiated in response to "threats, losses, or injustices" (Trapnell & Campbell, 1999, p. 297). Other definitions of rumination have included "a class of conscious thoughts that revolve around an instrumental theme and that recur in the absence of immediate environmental demands" (Martin & Tesser, 1996, p. 12). Martin and Tesser viewed the occurrence of a blocked goal as the main instigation to ruminate. Still others have suggested that self-focus leads to comparison of the actual self with the desired self, which in turn may cause increased negative affect (e.g., Duval & Wicklund, 1972).

In summary, trait displaced aggression shares some features with trait measures of brooding self-focused rumination (e.g., unwanted repetitive thoughts, exacerbated negative affect) but not reflective or goal-oriented self-focused rumination. In addition, although positively correlated, trait displaced aggression differs qualitatively from general trait negative affect because it is specifically concerned with affective, cognitive, and behavioral responses to provocations (e.g., Watson, Clark, & Tellegen, 1988).

Although previous research has investigated individual differences in provocation-focused rumination (e.g., Caprara, 1986; Sukhodolsky et al., 2001), the DAQ is novel in that it contains these elements as well as an additional assessment of the behavioral tendency to aggress against undeserving others when provoked. Together, these three factors provide a detailed description

of the affective, cognitive, and behavioral elements that characterize trait displaced aggression.

The Current Research

In the five phases of research that follow, we report on the development of the DAQ. We first selected items and established the hypothesized three-factor structure (i.e., Angry Rumination, Revenge Planning, and Behavioral Displaced Aggression). We confirmed the factor structure of the final 31-item scale in two separate samples. In a correlational study, we demonstrated concurrent discriminant and convergent construct validity. We also present evidence on the temporal stability of the DAQ. Finally, we provide behavioral evidence of construct validity in two laboratory studies in which the DAQ predicted displaced aggression whereas other theoretically relevant measures did not.

Phase 1: Initial Item Selection

The purpose of Phase 1 was to develop an initial item pool for subsequent data analysis. As other researchers have done (e.g., Amirkhan, 1990; Mauger et al., 1992), we used preexisting personality measures as a starting point. Specifically, we administered three measures of rumination as well as measures of trait irritability, anger, and hostility. We also administered measures of trait verbal and physical aggression (Buss & Perry, 1992) to verify that the preliminary items were related to self-reported aggressive behavior. We examined our data with exploratory factor analysis to identify a subset of useful items. We then correlated these factors with self-reported aggression. This subset of items was then used in a second phase of item development.

Method

Participants

A total of 521 (71% female and 29% male) University of Southern California (USC) and California State University, Long Beach (CSULB) undergraduates enrolled in psychology courses completed the materials in exchange for extra course credit.

Materials

Rumination measures. We administered three measures of trait rumination. First was the 20-item ($\alpha = .88$) Dissipation–Rumination Scale (Caprara, 1986), which assesses individual differences along a continuum ranging from the tendency to shrug off provocations and annoyances (dissipation-oriented personality) to the tendency to extensively focus on thoughts of revenge and to hold a grudge in response to provocations (rumination-oriented personality). Second, the Scott–McIntosh Rumination Inventory (Scott & McIntosh, 1999) is a 9-item measure that assesses three distinct aspects of rumination: emotionality ($\alpha = .68$), distraction ($\alpha = .48$), and motivation ($\alpha = .82$). The scale is theoretically consistent with Martin and Tesser's (1996) emphasis on blocked goals as an antecedent to rumination and therefore focuses on reactions to failed goal attainment. Third, seven items ($\alpha = .84$) from Mauger et al.'s (1992) Forgiveness of Others Scale were used in the current study to assess *trait vengefulness*, which is defined as the motivation to seek revenge in response to provocation. These items were related to greater rumination about an offense, greater negative affect, and less forgiving (McCullough et al., 2001).

Irritability Scale. Trait irritability was assessed with the 30-item ($\alpha = .90$) Irritability Scale (Caprara, 1985). This scale assesses the tendency to respond to situations offensively and to emotionally overreact to frustrating situations. It also has predicted laboratory aggression (K. B. Anderson, Anderson, Dill, & Deuser, 1998).

Aggression Questionnaire. The Aggression Questionnaire (Buss & Perry, 1992) is a 29-item measure consisting of four subscales: Hostility ($\alpha = .83$), Anger ($\alpha = .84$), Physical Aggression ($\alpha = .85$), and Verbal Aggression ($\alpha = .82$). This scale has proven useful in predicting laboratory and real-world aggression (Bushman & Wells, 1998; Buss & Perry, 1992). The latter two subscales were included as a source of preliminary validity information.

Procedure

Participants completed the measures at home as part of a multiple-page packet at the beginning of the semester. All items were rated on bipolar 7-point Likert-type scales ranging from 1 (*extremely uncharacteristic of me*) to 7 (*extremely characteristic of me*). Four randomized versions of the questionnaire were administered to participants.

Results

Items were reverse scored when necessary. Missing values were replaced with the mean for that item. Missing data did not exceed 2.5% for any single item.¹ To obtain an adequate starting point for item selection and subsequent data collection, we conducted an exploratory factor analysis with oblique rotation on the Dissipation–Rumination Scale, Scott–McIntosh Rumination Inventory, vengeance items, and Anger and Hostility subscales from the Aggression Questionnaire. Analysis of items and a scree plot resulted in four interpretable factors, accounting for 40% of the variance in responses. The eigenvalues of these four factors were 18.42, 3.63, 2.96, and 2.46, respectively. An item was said to load on a particular factor if the loading was .40 or greater. The four retained factors consisted of 32 items. The first factor contained 4 items related to the individual's sensitivity to personal insult (Sensitivity to Insult; $\alpha = .60$). The second factor contained 10 items relevant to experiencing anger and irritability (Anger/Irritability; $\alpha = .90$), and the third factor contained 15 items related to holding grudges and plotting revenge (Vengeance/Grudge Holding; $\alpha = .90$). Finally, the fourth factor was the 3-item Motivation subscale from the Scott–McIntosh Rumination Inventory ($\alpha = .82$).

To determine the association of the four retained factors with physical and verbal aggression, we created composites of each factor and correlated them with the Aggression Questionnaire Physical and Verbal Aggression subscales. The first three factors, but not the Motivation subscale, were moderately associated with trait physical and verbal aggression (see Table 1).

Discussion

Phase 1 provided a starting point for the development of our new measure. An exploratory factor analysis suggested the presence of four latent variables, which accounted for much of the variance in the observed scores. Three of these factors (Sensitivity to Insult, Anger/Irritability, and Vengeance/Grudge Holding) were significantly related to reliable and valid trait measures of general physical and verbal aggression (Buss & Perry, 1992). The 32 items associated with these factors were used in the second and final phase of item selection.

¹ This item was "I am often sulky" from the Dissipation–Rumination Scale (Caprara, 1986).

Table 1
Robust Correlations Among the Four Factors From Phase 1 and the Physical and Verbal Aggression Subscales of the Aggression Questionnaire

Subscale and factor	1	2	3	4	5	6
1. Physical Aggression	—					
2. Verbal Aggression	.41*	—				
3. Sensitivity to Insult	.28*	.31*	—			
4. Anger/Irritability	.54*	.44*	.56*	—		
5. Vengeance/Grudge Holding	.52*	.43*	.59*	.59*	—	
6. Motivation subscale	-.02	.03	-.07	-.15*	-.11	—

* significant, controlling for familywise error rate ($\alpha = .05$)

Phase 2: Item Selection and Factor Structure Finalized

The purpose of Phase 2 was to obtain the final item set for our new measure of displaced aggression and to finalize the factor structure of the scale. We used exploratory and confirmatory factor analyses to identify the factor structure. We also provide preliminary validity evidence. The data from Phase 1 served as a starting point for this second and final wave of item selection. Specifically, in Phase 2, we not only administered the 32 items composing the four factors from Phase 1 but in addition included two existing rumination scales and several original items designed to assess stable individual differences in the behavioral tendency to engage in displaced aggression (i.e., aggression toward those other than the source of a provocation). We hypothesized that a three-factor structure consisting of affective, cognitive, and behavioral elements would emerge. We tested this hypothesis with exploratory and confirmatory factor analysis.

Method

Participants

A total of 471 USC and CSULB undergraduates enrolled in a psychology course completed the materials in exchange for extra course credit.

Materials

Items from Study 1. We administered the 32-items composing the four retained factors from Phase 1. These were Sensitivity to Insult ($\alpha = .52$), impulsivity ($\alpha = .88$), Vengeance/Grudge Holding ($\alpha = .89$), and the Motivation subscale from the Scott-McIntosh Rumination Inventory ($\alpha = .76$).

Anger Rumination Scale. Although one study found only a single factor (Maxwell, 2004), this 19-item scale (Sukhodolsky et al., 2001) assesses four broad aspects of ruminative responses to anger-provoking experiences: angry afterthoughts ($\alpha = .83$); thoughts of revenge ($\alpha = .73$); angry memories ($\alpha = .81$); and understanding of causes ($\alpha = .68$). The scale has good internal consistency and good test-retest reliability over 1 month ($r = .77$; Sukhodolsky et al., 2001).

Emotional Control Questionnaire. The 14-item Rehearsal subscale (Roger & Najarian, 1989) was included in the current study ($\alpha = .81$). This subscale assesses ruminative, grudge-holding tendencies and thoughts of retaliation. The subscale has adequate internal consistency and good test-retest reliability ($r = .80$) and is significantly related to trait measures of aggression (Roger & Najarian, 1989).

Displaced aggression. We included 24 original items ($\alpha = .90$) designed to assess the trait tendency to harm innocent others when provoked (e.g., "When someone or something makes me angry I am likely to take it out on another person").

Verbal and physical aggression. The Physical ($\alpha = .83$) and Verbal Aggression ($\alpha = .77$) subscales from the Aggression Questionnaire (Buss & Perry, 1992) were also included to provide preliminary validation of our measure.

Procedure

As in Phase 1, participants completed the scales at home as part of a multiple-page packet at the beginning of the semester. All items were rated on bipolar 7-point Likert-type scales ranging from 1 (*extremely uncharacteristic of me*) to 7 (*extremely characteristic of me*). Participants were asked to complete the measures honestly and were informed that their responses would remain anonymous. Four randomized versions of the items composing the questionnaire were administered to participants.

Results

Items were reverse scored when necessary. Missing values were replaced with the mean for that item. Missing data did not exceed 1.7% for any single item.²

An exploratory factor analysis was used as a starting point to determine the factor structure of the current data. Two items were excluded because they showed low variability (i.e., standard deviations less than 1.0).³ An exploratory factor analysis with maximum likelihood estimation and oblique rotation on all of the items except the Verbal and Physical Aggression subscales from the Aggression Questionnaire was conducted. Analysis of a scree plot and proportion of variance accounted for resulted in a four-factor solution, accounting for 39% of the variance. The eigenvalues for these four factors were 26.98, 5.12, 3.73, and 3.09, respectively. Additional factors did not account for more than 2% of the variance. To help reduce the number of items in the final scale, we considered an item to load on a particular factor if the loading was .50 or greater (vs. .40 or greater in Phase 1).

The first factor consisted of 10 items related to negative affect. Specifically, these items were related to anger-based rumination resulting from provocations (e.g., "When angry, I tend to focus on my thoughts and feelings for a long period of time"). This factor, which we named Angry Rumination, consisted primarily of items from the Anger Rumination Scale (Sukhodolsky et al., 2001), but

² This item was "I keep thinking about events that angered me for a long time" from the Anger Rumination Scale.

³ The two excluded items were "When angry, I have harmed a pet" and "I was a bully in school." These items were originally written to assess trait displaced aggression.

also included two of our a priori items designed to assess displaced aggression (e.g., “Sometimes I can’t help thinking about times when someone made me mad”) and an additional two items from the Rehearsal subscale of the Emotional Control Questionnaire (e.g., “I often find myself thinking over and over about things that have made me angry”; Roger & Najarian, 1989).

The second factor consisted of 10 items concerned with general tendencies to engage in displaced aggression (e.g., “When someone or something makes me angry I am likely to take it out on another person”). We named this factor Behavioral Displaced Aggression.

The third factor consisted of 11 items concerned with planning for retaliation in response to provocations (e.g., “If somebody harms me, I am not at peace until I can retaliate”). We named this factor Revenge Planning.

As in Phase 1, the fourth factor to emerge was the three-item Motivation subscale from the Scott–McIntosh Rumination Inventory. We did not include this factor in subsequent analyses because it was uncorrelated with self-reported direct aggressiveness in Phase 1 and Phase 2 (see below).

An initial confirmatory factor analysis with EQS 6.1 (Bentler, 2005) was conducted to confirm the factor structure suggested by the exploratory method. We specified a hierarchical factor analytic model in which all three subscales loaded on a higher order trait displaced aggression factor. Investigation of Mardia’s (1970) coefficient suggested a significant deviation from multivariate normality, normalized estimate = 71.01. We therefore relied on a robust residual-based chi-square goodness-of-fit test (Yuan & Bentler, 1998) as well as robust goodness-of-fit indices. Significance tests for factor loadings were calculated with robust standard errors. As is customary in structural equation modeling, convergent evidence of good model fit from multiple tests is highly desired. Because fit indices are often highly correlated, Hu and Bentler (1999) advocated reporting nonredundant fit indices, and we adopted this strategy. Evaluation of Lagrange multiplier and Wald statistics suggested that four items loaded on more than one factor. Thus, a new model was created with these four items removed from analysis.⁴ The chi-square goodness-of-fit test was nonsignificant, $\chi^2(431, N = 471) = 453.90, p = .22$, and other goodness-of-fit indices revealed a good model fit, $\chi^2/df = 1.05$, comparative fit index (CFI) = .93, root-mean-square error of approximation (RMSEA) = .05. Guidelines for good model fit suggest a chi-square to degrees-of-freedom ratio of less than 2.00 and a CFI in the mid .90s, whereas RMSEA (a residual-based index) values of .06 or lower are believed to indicate a good fit (Hu & Bentler, 1999; Raykov & Marcoulides, 2000; Ullman, 2001). Moreover, each of the three subscale factors loaded highly and significantly on the higher order trait displaced aggression factor. Thus, these preliminary data revealed adequate support for our hypothesized factor structure. The final scale with confirmatory factor loadings is presented in Table 2.

To obtain preliminary concurrent construct validity, we created composites of the four separate factors and correlated them with the Physical and Verbal Aggression subscales of the Aggression Questionnaire. Internal consistency reliability was high for the Angry Rumination ($\alpha = .92$), Behavioral Displaced Aggression ($\alpha = .91$), and Revenge Planning ($\alpha = .91$) factors and was moderate for the fourth factor ($\alpha = .76$). Table 3 presents correlations between the four factors and the Verbal and Physical Aggression subscales from the Aggression Questionnaire. As pre-

viously noted, because the fourth factor (i.e., the Motivation subscale from the Scott–McIntosh Rumination Inventory) was unrelated to the Aggression Questionnaire Physical and Verbal Aggression subscales in both studies, we decided to drop this factor from the final scale. This is consistent with a previous study that failed to find relationships between the Scott–McIntosh Rumination Inventory and these subscales (Brown & Phillips, 2005). Internal consistency for the final scale was high ($\alpha = .94$).

Discussion

Phase 2 identified items for the final scale and confirmed the hypothesized three-factor structure in a college student sample. Specifically, exploratory and confirmatory factor analyses identified an affective dimension (Angry Rumination), a cognitive dimension (Revenge Planning), and a behavioral dimension (Behavioral Displaced Aggression). Each of these three dimensions was moderately related to self-reported direct verbal and physical trait aggressiveness (Buss & Perry, 1992). To obtain further confidence in our hypothesized factor structure, we attempted to replicate the findings of Phase 2 in a national community sample.

Phase 3: Replication of Factor Structure in a National Community Sample—Evidence of Concurrent Convergent and Discriminant Construct Validity

Phase 2 provided confirmatory evidence concerning the three-factor structure underlying our displaced aggression personality dimension in a college student sample. However, we would have greater confidence in our factor structure if we could observe the same structure in a new sample. In addition, the construct validity data in Phase 2 was limited to the Physical and Verbal Aggression subscales of the Aggression Questionnaire (Buss & Perry, 1992). Before proceeding, we deemed it necessary to establish more thorough convergent and discriminant construct validity. To these ends, we conducted a third phase of data collection with a fairly large national community sample of Internet respondents. Our goals were to (a) replicate the previously obtained three-factor structure in a new sample, (b) provide thorough concurrent convergent and discriminant construct validity data by coadministering a variety of existing theoretically relevant personality measures, and (c) obtain normative data for our measure. To control for acquiescence response set, we also report on the development of two alternative reverse-keyed forms of the DAQ.

Method

Participants

A total of 1,013 Internet respondents (mean age = 39 years, $SD = 12.31$, range = 18 to 83; 84% female, 16% male) completed the survey in exchange for a chance to win \$200. Participants were recruited through a

⁴ These four items were “After being irritated or annoyed, I am extremely short-tempered for the rest of the day” from our displaced aggression items; “I easily fly off the handle with those who don’t listen or understand” from the Irritability Scale (Caprara, 1985); “When someone insults or hurts me, I think for hours about things I could have said or done to get even” from the Forgiveness of Others Scale (Mauger et al., 1992); and “Sometimes I fly off the handle for no good reason” from the Aggression Questionnaire (Buss & Perry, 1992).

Table 2
Items From the Three Subscales of the Final Questionnaire

Subscale and item	Source
Angry Rumination (.80, .84)	
I keep thinking about events that angered me for a long time. (.85, .87)	Anger Rumination Scale (Sukhodolsky et al., 2001)
I get "worked up" just thinking about things that have upset me in the past. (.79, .77)	Emotional Control Questionnaire (Roger & Najarian, 1989)
I often find myself thinking over and over about things that have made me angry. (.79, .84)	Emotional Control Questionnaire
Sometimes I can't help thinking about times when someone made me mad. (.67, .74)	Displaced Aggression (original item)
Whenever I experience anger, I keep thinking about it for a while. (.77, .74)	Anger Rumination Scale
After an argument is over, I keep fighting with this person in my imagination. (.63, .66)	Anger Rumination Scale
I re-enact the anger episode in my mind after it has happened. (.71, .73)	Anger Rumination Scale
I feel angry about certain things in my life. (.54, .59)	Anger Rumination Scale
I think about certain events from a long time ago and they still make me angry. (.75, .83)	Anger Rumination Scale
When angry, I tend to focus on my thoughts and feelings for a long period of time. (.64, .71)	Displaced Aggression
Revenge Planning (.85, .78)	
When someone makes me angry I can't stop thinking about how to get back at this person. (.81, .85)	Anger Rumination Scale
If somebody harms me, I am not at peace until I can retaliate. (.72, .77)	Dissipation-Rumination Scale (Caprara, 1986)
I often daydream about situations where I'm getting my own back at people. (.71, .75)	Emotional Control Questionnaire
I would get frustrated if I could not think of a way to get even with someone who deserves it. (.71, .80)	Forgiveness of Others Scale (Mauger et al., 1992)
I think about ways of getting back at people who have made me angry long after the event has happened. (.75, .78)	Emotional Control Questionnaire
If another person hurts you, it's alright to get back at him or her. (.68, .74)	Forgiveness of Others Scale
The more time that passes, the more satisfaction I get from revenge. (.65, .73)	Dissipation-Rumination Scale
I have long living fantasies of revenge after the conflict is over. (.73, .77)	Anger Rumination Scale
When somebody offends me, sooner or later I retaliate (.62, .76)	Dissipation-Rumination Scale
If a person hurts you on purpose, you deserve to get whatever revenge you can. (.59, .77)	Forgiveness of Others Scale
I never help those who do me wrong. (.48, .46)	Dissipation-Rumination Scale
Displaced Aggression (.60, .71)	
When someone or something makes me angry I am likely to take it out on another person. (.84, .81)	Displaced Aggression
When feeling bad, I take it out on others. (.81, .84)	Displaced Aggression
When angry, I have taken it out on people close to me. (.74, .78)	Displaced Aggression
Sometimes I get upset with a friend or family member even though that person is not the cause of my anger or frustration. (.72, .73)	Displaced Aggression
I take my anger out on innocent others. (.71, .83)	Displaced Aggression
When things don't go the way I plan, I take out my frustration on the first person I see. (.71, .74)	Displaced Aggression
If someone made me angry I would likely vent my anger on another person. (.68, .77)	Displaced Aggression
Sometimes I get so upset by work or school that I become hostile toward family or friends. (.71, .76)	Displaced Aggression
When I am angry, I don't care who I lash out at. (.58, .68)	Displaced Aggression
If I have had a hard day at work or school, I'm likely to make sure everyone knows about it. (.56, .56)	Displaced Aggression

Note. Confirmatory factor loadings (in parentheses) are from Phases 2 and 3, respectively. Following each subscale are factor loadings on higher order trait displaced aggression.

general purpose Web site (www.about.com). Although Whites were over-represented, all major ethnic groups were present (87% White, 3.5%

multiracial, 2.8% Latino, 2.4% Black, 1.4% Asian, 1% Native American, 0.4% Middle Eastern).

Table 3
Robust Correlations Among the Four Factors From Phase 2 and the Physical and Verbal Aggression Subscales of the Aggression Questionnaire (Buss & Perry, 1992)

Factor or subscale	1	2	3	4	5	6
1. Physical Aggression	—					
2. Verbal Aggression	.42*	—				
3. Angry Rumination	.39*	.35*	—			
4. Revenge Planning	.60*	.44*	.62*	—		
5. Displaced Aggression	.43*	.45*	.55*	.57*	—	
6. Motivation subscale	-.03	.13	-.04	-.04	-.04	—

* significant, controlling for familywise error rate ($\alpha = .05$)

Materials

Hypothesized three-factor scale. We administered the 31 items constituting the final version of the DAQ that were obtained via confirmatory factor analysis in Phase 2 (see Table 2).

Anger and aggression. All four subscales of the Aggression Questionnaire were administered to assess individual differences in direct aggressive personality. Spielberger's (1998) measure of anger coping styles, the State-Trait Anger Expression Inventory, was administered as well. Its scales assess three distinct means of expressing angry feelings (Anger In, Anger Out, and Anger Control). The inventory has been evaluated factor analytically (Forgays, Forgays, & Spielberger, 1997) and has been used extensively in the anger literature.

Impulsivity. Because impulsivity has been studied extensively in relation to aggressive behavior and personality, the Barratt Impulsivity Scale

(Patton, Stanford, & Barratt, 1995) was administered to assess individual differences in impulsivity. The measure has good internal consistency and has been widely used in clinical and nonclinical samples. Because individuals who tend to be high in displaced aggression do not immediately “fly off the handle” when confronted with a provocation (although they may do so later), we did not expect that impulsivity would be highly correlated with our measure of displaced aggression.

Trait affect. To demonstrate the relationship between levels of trait affect and our displaced aggression measure, we included the Positive and Negative Affect Schedule (PANAS General; Watson et al., 1988). Because our construct contains a considerable negative affect component, it was hypothesized that our scale would be positively correlated with trait negative affect but negatively correlated with positive affect. The two affect factors have good internal consistency and good 8-week test–retest reliability ($r_s = .68$ and $.71$; Watson et al., 1988).

Big Five. One of the most robust findings in personality research is the existence of the Big Five personality dimensions (Macrae & Allik, 2002). Goldberg’s (1990, 1992) 50-item inventory was used for the current study. We hypothesized that neuroticism would be positively correlated with our scale whereas agreeableness and conscientiousness would be negatively correlated with it. Extroversion and openness were expected to be uncorrelated with our displaced aggression measure. We derived these expectations from previous research on the relationship between the factors of the Big Five and trait aggression (Ang et al., 2004; Tremblay & Ewart, 2005). Internal consistency is good for all of the five dimensions.

Self-esteem. We assessed self-esteem with Rosenberg’s (1965) 10-item measure. The scale has been in use for 40 years and has good psychometric properties. Previous research has demonstrated that high levels of self-esteem (e.g., narcissism) are associated with increased direct aggressiveness in response to personal insult (Baumeister, Bushman, & Campbell, 2000; Bushman & Baumeister, 1998; Bushman, Bonacci, van Dijk, & Baumeister, 2003). At the same time, however, Bushman and Baumeister (1998) found no relationship between laboratory displaced aggression and either the Rosenberg scale or a measure of narcissism (Bushman & Baumeister, 1998). Nevertheless, it was conceivable that our trait measure would be related to self-esteem. Therefore, we included the Rosenberg scale to determine the relationship of our trait measure to a standard measure of self-esteem.

Norms of reciprocity. Recently Eisenberger, Lynch, Aselage, and Rohdieck (2004) presented an individual-difference measure that discriminates between norms of positive reciprocity (e.g., helping) and negative reciprocity (e.g., retaliation). The scales have good internal consistency and good predictive validity. Because one of our factors is Revenge Planning, we hypothesized that the norm of negative reciprocity would be highly correlated with this subscale whereas the norm of positive reciprocity would be negatively correlated with our full measure of displaced aggression.

Behavioral approach and inhibition. We included the Behavioral Approach and Inhibition Scales (BIS/BAS; Carver & White, 1994) to assess individual differences in these behavioral orientations. The scales have good internal consistency and have demonstrated predictive validity. Recent research has demonstrated that anger is related to the behavioral approach system (Harmon-Jones, 2003; Harmon-Jones & Allen, 1998; Harmon-Jones & Sigelman, 2001). However, we expected individuals high in displaced aggression to be conflicted regarding approach and avoidance tendencies. Specifically, whereas revenge planning represents an approach orientation, the failure of those with high trait displaced aggression to respond immediately to provocations suggests a strong inhibition component. Therefore, we expected our scale to be more strongly associated with behavioral inhibition than behavioral approach.

Rumination–reflection. As discussed earlier, Trapnell and Campbell (1999) investigated the distinction between rumination and reflection. They defined rumination as negative inward focus, whereas reflection is a psychologically beneficial self-focus related to self-improvement and understanding. We included their Rumination–Reflection Questionnaire

(RRQ; Trapnell & Campbell, 1999), which has two subscales of the same names. Internal consistency is excellent for both scales. Because the Rumination subscale contains items concerned with negatively valenced, unwanted thoughts, we expected our displaced aggression measure to positively correlate with it. However, we did not expect our scale to correlate with the Reflection subscale, because these items are positively valenced and are concerned with volitional self-understanding.

Need for cognition. Cacioppo and Petty (1982) introduced a measure of individual differences in the tendency to enjoy thoughtful, cognitively demanding activities. The scale taps a unitary construct and has good internal consistency and demonstrated convergent and discriminant validity. We included their Need for Cognition Scale (Cacioppo & Petty, 1982) to provide evidence that angry rumination and revenge planning are distinct from a more general preference for thoughtful cognitive activity. Therefore, we expected no reliable relation between the Need for Cognition Scale and the DAQ.

Social desirability. Finally, we included a short form of the Marlowe–Crowne social desirability measure (Marlowe & Crowne, 1961) to assess our construct’s relationship to social desirability (Strahan & Gerbasi, 1972). The short form is highly correlated with the full version (with r_s in the .90s). Owing to the sensitive nature of data on aggressive personality, measures of social desirability and aggression tend to be moderately correlated (approximate $r = -.50$; see Harris, 1997; Lange, Dehghani, & de Beurs, 1995; Lange, Pahlich, et al., 1995; Morren & Meesters, 2002). We therefore expected a moderate correlation between social desirability and the DAQ.

Domestic abuse and road rage. We also included two indirect indicators of displaced aggression. Because it is hypothesized that individuals high in displaced aggression tend to take it out on individuals close to them, we included a measure of domestic abuse. The Abuse Within Intimate Relationships Scale (AWIRS; Borjesson, Aarons, & Dunn, 2003) is a 26-item self-report measure wherein participants indicate their abusive behaviors on a scale ranging from *never* to *more than once a day*. Items range from “criticized” and “belittled” to “physically attacked” and “used an object to hit.” The scale has a five-factor structure assessing Emotional Abuse (e.g., insulting, belittling), Deception (e.g., lying, keeping secrets), Verbal Abuse (e.g., using profanity, screaming), Overt Violence (e.g., using an object to hit, physically attacking), and Restrictive Violence (e.g., grabbing arm, forcefully squeezing), with good internal consistency for each of these subscales.

In addition, because it is believed that individuals high in displaced aggression may be aggressively primed owing to dwelling on angry feelings and thoughts of revenge, we hypothesized that these individuals would experience a high level of aggression during driving. To this end, we included the Driving Vengeance Questionnaire (Wiesenthal, Hennessy, & Gibson, 2000). This 15-item measure presents a series of commonly encountered yet potentially annoying driving situations (e.g., “The car in front of you doesn’t proceed on an advanced green signal”). Respondents were asked to indicate which among four behavioral options they would engage in when confronting each situation. Ordinal options range from nonaggressive (e.g., *do nothing*) to extremely aggressive (e.g., *bump into the other car*) responses. The scale has good internal consistency. We hypothesized that the DAQ would be a stronger predictor of these indirect indicators of displaced aggression than the Aggression Questionnaire.

We consider these self-report measures of domestic abuse and road rage to be indirect indicators of displaced aggression. However, because of the self-report nature of these measures, we are not privy to whether prior provocation or immediate circumstances instigated the aggressive act. We suspect that in many instances these individuals do aggress against their partners or fellow drivers in response to provoking or frustrating behaviors. However, we cannot decisively conclude this, and we recognize that we are making an assumption in considering these measures indicators of displaced aggression. Rather, such self-reported behavior may reflect habitual modes of responding, not actions that are initiated by specific antecedent

provocations. (We specifically address this consideration in Phase 5 by experimentally manipulating provocation.)

Procedure

Participants completed the study from a location of their choosing (e.g., home, work, school) as part of an Internet survey. All items were rated on bipolar 7-point Likert-type scales ranging from 1 (*extremely uncharacteristic of me*) to 7 (*extremely characteristic of me*). Participants were asked to complete the measures honestly and were informed that their responses would remain anonymous. Owing to concerns about participant fatigue, each participant completed (a) the items composing the hypothesized three-factor scale and (b) a subset of the validity scales such that each participant completed approximately 115 items. To control for order effects, with two exceptions, all items were randomized to create 10 versions of the questionnaire. The two exceptions were the Driving Vengeance Questionnaire and the AWIRS. Because these scales require unique response options, all of the items for these scales were presented consecutively (although the location of the scale placement remained random).

Results and Discussion

Items were reverse scored when necessary. Missing values were replaced with the mean for that item. Among participants who received any single item, missing data did not exceed 2.9%.

Confirmatory Factor Analysis

To gain further confidence in the factor structure of our measure, we wished to replicate the results of the confirmatory factor analysis from Phase 2. Therefore, an identical hierarchical model was specified. As in Phase 2, investigation of Mardia's (1970) coefficient suggested a significant deviation from multivariate normality, normalized estimate = 89.71. We therefore relied on robust statistical methods. Although the chi-square goodness-of-fit test (Yuan & Bentler, 1998) was significant (a common occurrence in large samples; see Ullman, 2001), $\chi^2(431, N = 1,103) = 656.15, p < .001$, other goodness-of-fit indices revealed good model fit, $\chi^2/df = 1.52$, CFI = .94, RMSEA = .05. In addition, all three subscales loaded significantly on the higher order displaced aggression factor (see Table 2). Thus, we successfully replicated the factor structure observed in Phase 2.

Normative Data

Age was weakly, albeit negatively, correlated with all three displaced aggression subscales as well as the total score (Angry Rumination, $r = -.11$; Behavioral Displaced Aggression, $r = -.23$; Revenge Planning, $r = -.13$; and total score, $r = -.17$; robust correlations, all $ps < .05$, controlling for familywise error rate). Comparisons of the youngest and oldest age groups for each of the three subscales revealed that Behavioral Displaced Aggression, $T_y^* = 5.65, p < .001$ (bootstrap Yuen's robust t test; Wilcox, 2005, p. 162), but not Angry Rumination or Revenge Planning, decreased with age.

Men and women did not differ on the Angry Rumination or Behavioral Displaced Aggression subscales but did differ on Revenge Planning, $T_y^* = 4.26, p < .001$. Men rated themselves higher in Revenge Planning than women ($Ms = 2.76$ vs. 2.29). Table 4 displays the means and standard deviations by age group.

Table 4
Age Norms for the Angry Rumination, Revenge Planning, and Displaced Aggression Subscales

Subscale	Age group	<i>M</i>	<i>SD</i>
Angry Rumination	18–24 ($n = 138$)	3.98	1.39
	25–34 ($n = 272$)	3.98	1.41
	35–44 ($n = 244$)	3.73	1.41
	45–54 ($n = 226$)	3.75	1.50
	55–64 ($n = 96$)	3.42	1.46
	65–83 ($n = 20$)	3.27	1.42
Revenge Planning	18–24 ($n = 138$)	2.56	1.19
	25–34 ($n = 272$)	2.51	1.22
	35–44 ($n = 244$)	2.28	1.15
	45–54 ($n = 226$)	2.33	1.23
	55–64 ($n = 96$)	2.04	1.01
	65–83 ($n = 20$)	2.23	1.18
Displaced Aggression	18–24 ($n = 138$)	3.03	1.24
	25–34 ($n = 272$)	2.97	1.24
	35–44 ($n = 244$)	2.57	1.22
	45–54 ($n = 226$)	2.47	1.16
	55–64 ($n = 96$)	2.27	1.06
	65–83 ($n = 20$)	2.16	1.34

Internal Consistency Reliability

Internal consistency reliability was high for the total scale (Cronbach's alpha = .95, Spearman–Brown split-half $r = .86$) and subscales (see Table 5).

Concurrent Convergent and Discriminant Construct Validity

Table 5 reports the correlations between each of the three subscales of our DAQ and each of the self-report measures. No gender differences were observed after controlling for familywise error rate ($\alpha = .05$). We briefly discuss some of the relationships among each of the three subscales of our DAQ and the other measures and provide further evidence of construct validity by demonstrating the DAQ's relationship to measures of domestic abuse and road rage.

Angry Rumination. In general, the Angry Rumination subscale of the DAQ correlated in the expected directions with the criterion measures. For example, the subscale was positively correlated with hostility, anger, negative affect, rumination, and neuroticism. Also, as expected, the correlation of this subscale with behavioral inhibition was moderately positive, which is opposite to its generally observed relationship with trait measures of anger and direct aggression (e.g., Harmon-Jones, 2003; Harmon-Jones & Allen, 1998; Hewig et al., 2004). Additionally, Angry Rumination was negatively correlated with positive affect and self-esteem, conscientiousness, agreeableness, and social desirability. The subscale was unrelated to extroversion, openness to experience, reflection, and behavioral approach.

Revenge Planning. This scale correlated positively with direct physical aggression, trait hostility, and, most strongly, with the norm of negative reciprocity, while being negatively related to anger control, agreeableness, conscientiousness, and social desirability. The scale was unrelated to openness to experience and reflection.

Behavioral Displaced Aggression. This behavioral subscale correlated positively with trait anger, anger out, negative affect,

Table 5
 Concurrent Construct Validity Data (Robust Correlations)

Construct	<i>n</i>	α	Angry Rumination ($\alpha = .927$)	Revenge Planning ($\alpha = .930$)	Displaced Aggression ($\alpha = .926$)
Physical Aggression	224	.81	.26*	.50*	.41*
Verbal Aggression	201	.70	.28*	.36*	.34*
Trait Anger	196	.78	.53*	.54*	.63*
Trait Hostility	182	.77	.58*	.59*	.49*
Anger In	196	.74	.57*	.42*	.32*
Anger Out	196	.80	.45*	.55*	.64*
Anger Control	196	.88	-.41*	-.45*	-.59*
Impulsivity	210	.85	.38*	.31*	.43*
Negative Affect	224	.92	.60*	.49*	.53*
Positive Affect	210	.92	-.40*	-.34*	-.28*
Neuroticism	224	.81	.62*	.42*	.54*
Extroversion	201	.89	-.24	-.17	-.13
Openness	182	.78	-.01	-.11	-.11
Agreeableness	196	.81	-.53*	-.71*	-.60*
Conscientiousness	210	.87	-.35*	-.27*	-.30*
Negative Reciprocity	210	.94	.47*	.81*	.50*
Positive Reciprocity	224	.84	.22	.26*	.17
Behavioral Inhibition	182	.79	.58*	.18	.38*
Behavioral Approach	182	.82	.11	.09	.10
Rumination	201	.86	.81*	.36*	.39*
Reflection	201	.93	.02	-.04	-.24
Need for Cognition	224	.91	-.33*	-.32*	-.29*
Social Desirability	182	.66	-.56*	-.58*	-.62*
Domestic Abuse	197	.92	.38*	.36*	.39*
Road Rage	170	.78	.28*	.56*	.36*

* significant, controlling for familywise error rate within each sample ($\alpha = .05$).

neuroticism, and behavioral inhibition, while being negatively correlated with anger control, agreeableness, conscientiousness, and social desirability. The subscale was unrelated to extroversion, openness to experience, and behavioral approach.

Road rage and domestic abuse. We suggested previously that the measures of road rage and domestic abuse could serve as indirect indicators of displaced aggression. If true, our displaced aggression measure (the DAQ) should predict these measures, whereas the measure of direct aggression (the Aggression Questionnaire) should be unrelated to domestic abuse and road rage. To test this hypothesis, we simultaneously regressed scores from the Driving Vengeance Questionnaire (Wiesenthal et al., 2000) and each of the five subscales from the AWIRS (Borjesson et al., 2003) on both the composite scores from the Aggression Questionnaire and our displaced aggression measure. This Aggression Questionnaire composite reflects a separate subset of the sample ($n = 182$) who received the Aggression Questionnaire Anger and Hostility subscales. The DAQ predicted scores on the Driving Vengeance Questionnaire ($\beta = .59, p < .001$), but the Aggression Questionnaire did not ($\beta = -.09, ns$). The DAQ also predicted scores on the Verbal Abuse subscale from the AWIRS ($\beta = .35, p < .001$), but the Aggression Questionnaire did not ($\beta = .09, ns$). Furthermore, the DAQ predicted emotional abuse ($\beta = .59, p < .001$) and deception ($\beta = .43, p < .001$), whereas scores on the Aggression Questionnaire were unrelated to emotional abuse ($\beta = .04, ns$) and were negatively related to deception (e.g., keeping secrets, lying; $\beta = -.24, p = .005$). Neither the DAQ nor the Aggression Questionnaire predicted scores on the Overt Violence (e.g., using an object to hit, physically attack) and Restrictive Violence (e.g., grabbing arm, forcefully squeezing) subscales; this lack of relation was likely due to restriction of range. Furthermore, inspection of

the variance inflation factors and tolerance (using the suggested formula: tolerance = $1 - R^2$; see Tabachnick & Fidell, 2001) revealed that these results could not be attributable to collinearity among the predictors.

Because much of domestic abuse can be considered verbal aggression, we also examined the effects of the Aggression Questionnaire Verbal Aggression subscale relative to the DAQ in predicting the three subscales of the AWIRS (Emotional Abuse, Deception, and Verbal Abuse; $n = 197$). Our hypotheses were supported in all three of these regression analyses. The DAQ predicted Emotional Abuse ($\beta = .40, p < .001$), but the Aggression Questionnaire Verbal Aggression subscale did not ($\beta = .04, p = .63$). The DAQ also predicted Deception ($\beta = .37, p < .001$), whereas the Aggression Questionnaire Verbal Aggression subscale was negatively related to Deception ($\beta = -.21, p = .005$). Finally, the DAQ predicted verbal abuse ($\beta = .43, p < .001$), whereas the Aggression Questionnaire Verbal Aggression subscale did not ($\beta = -.09, p = .23$).

Additional analyses controlling for theoretically relevant measures. As stated previously, not all participants received all of the measures. We were therefore unable to test the effects of the DAQ controlling for all possible theoretically relevant measures. However, we report on those that we were able to conduct. We examined the effects of the DAQ on road rage while controlling for social desirability ($n = 169$). As expected, the DAQ predicted road rage ($\beta = .38, p < .001$), whereas social desirability (i.e., the Marlowe-Crowne scale) was negatively related to road rage ($\beta = -.21, p = .02$). Moreover, these effects were not due to multicollinearity. We also analyzed the effects of the DAQ on road rage while controlling for openness, self-esteem, and BIS/BAS ($n = 170$). All of these tests supported the construct validity of the

DAQ. In a simultaneous regression, the DAQ was a strong and significant predictor of road rage ($\beta = .60, p < .001$), whereas neither openness ($\beta = -.03, p = .72$), self-esteem ($\beta = .06, p = .49$), BIS ($\beta = -.14, p < .08$), nor BAS ($\beta = .03, p = .70$) significantly predicted road rage.

In addition, we were able to assess the effects of the DAQ on the three domestic abuse subscales while controlling for extroversion and rumination–reflection ($n = 197$). Results from these three simultaneous regression analyses supported the discriminant construct validity of the DAQ. The DAQ significantly predicted emotional abuse ($\beta = .48, p < .001$), whereas neither extroversion ($\beta = .00, p = .95$), rumination ($\beta = -.10, p = .32$), nor reflection ($\beta = -.04, p = .54$) was a significant predictor. The DAQ also significantly predicted verbal abuse ($\beta = .48, p < .001$), whereas neither extroversion ($\beta = .03, p = .64$) nor rumination ($\beta = -.13, p = .19$) predicted verbal abuse. Reflection was negatively related to verbal abuse ($\beta = -.16, p = .03$). For the Deception subscale of the AWIRS, the DAQ was a marginally significant predictor ($\beta = .18, p < .07$). However, neither extroversion ($\beta = .03, p = .68$), rumination ($\beta = .17, p = .11$), nor reflection ($\beta = -.04, p = .57$) was a significant predictor of deception.

Reverse-Keyed Forms

Because all of the items in the DAQ are direct keyed, one may be concerned about the potential confounding effect of acquiescence bias. To address this issue, we created two forms of the DAQ with reverse-keyed items. We wrote reverse-keyed original items for each of the 31 DAQ items and administered them via the Internet to a community sample ($N = 205$; 88% female, 12% male) along with three validity measures (neuroticism, agreeableness, and behavioral inhibition). For example, the item “I reenact the anger episode in my mind after it has happened” was reversed to “I move on to other things after an anger episode has happened,” and the item “If someone made me angry, I would likely vent my anger on another person” was changed to “If someone made me angry, I would tell them how I feel.” Form 1 consisted of 15 randomly chosen reverse-keyed items and the 16 direct-keyed items. Form 2 consisted of the remaining 16 reverse-keyed items and 15 direct-keyed items. These reverse-keyed forms ($\alpha = .91$ and $.94$ for Forms 1 and 2, respectively) demonstrated good internal consistency, although these estimates were slightly lower than for the original direct-keyed form, especially for the subscales: Angry Rumination ($\alpha = .89$), Behavioral Displaced Aggression ($\alpha = .84$), and Revenge Planning ($\alpha = .87$). The direct-keyed items correlated highly with the reverse-keyed items for both Form 1 ($r = -.70, p < .001$) and Form 2 ($r = -.85, p < .001$) (robust correlations; Wilcox, 2005, p. 407). Using the three DAQ subscales as indicators of the trait displaced aggression factor, we constrained these factor loadings to those from the Phase 3 data. This conservative test of the reverse-keyed factor structure provided an excellent fit to the data, $\chi^2(3, N = 205) = 2.78, p = .25, \chi^2/df = 0.93, CFI = .96, RMSEA = .04$. The total scale also correlated in the expected directions with neuroticism ($r = .66$), agreeableness ($r = -.67$), and behavioral inhibition ($r = .40$) (robust correlations, all $ps < .05$, controlling for familywise error rate). These reverse-keyed forms are available upon request, although the remainder of our studies used the direct-keyed form because of its slightly higher reliability.

Phase 4: Test–Retest Reliability

Two studies were conducted to obtain evidence of test–retest reliability. In the first study, 133 USC and CSULB undergraduates participated in exchange for extra course credit. Participants were told that the study consisted of two sessions. At Time 1, they completed the 31 items from the DAQ via the Internet. Four weeks later, all participants were contacted via e-mail and asked to complete the second portion of the study. This 4-week test–retest reliability coefficient for the total scale was acceptable ($r = .77, p < .001$). The test–retest coefficients for the individual subscales were also acceptable: Angry Rumination ($r = .80, p < .01$), Revenge Planning ($r = .75, p < .01$), and Behavioral Displaced Aggression ($r = .78, p < .01$).

In the second study, 101 USC undergraduates completed the study on the Internet in exchange for extra course credit during a 3-week period at the beginning of the semester. During the last 3 weeks of the semester, the participants were contacted via e-mail and asked to complete the second questionnaire (mean days following completion of first questionnaire = 77.20, $SD = 8.57$). This 11-week test–retest reliability coefficient for the total scale was excellent ($r = .87, p < .001$). Again, these test–retest coefficients for the individual subscales were also acceptable: Angry Rumination ($r = .89, p < .01$), Revenge Planning ($r = .86, p < .01$), and Behavioral Displaced Aggression ($r = .78, p < .01$).

Phase 5: Behavioral Evidence of Construct Validity

We conducted two experiments to establish further construct validity of the DAQ. In Experiment 1, participants served in the four cells of the TDA paradigm (Pedersen et al., 2000). They were exposed or not exposed to a provocation from the experimenter. Then, half of each group received and half did not receive a mild triggering event from a bogus participant. Participants were then allowed to deliver a noxious physical stimulus to the bogus participant (i.e., displaced aggression). In Experiment 2, a situational rumination condition was introduced into the TDA paradigm. We induced participants to either ruminate about the provocation, ruminate about themselves, or distract themselves before engaging in displaced aggression. In both studies, it was expected that the DAQ would moderate the degree of laboratory displaced aggression but that other related personality variables of interest would not moderate actual displaced aggression. Specifically, we expected those high in trait displaced aggression to ruminate angrily and focus on thoughts of retaliation after being provoked by the experimenter, whereas those low in trait displaced aggression were not expected to ruminate angrily or plan revenge. Consistent with the GAM (C. A. Anderson & Bushman, 2002) and cognitive–affective models of personality (Mischel & Shoda, 1995), higher levels of trait displaced aggression should increase the accessibility of aggression-related affect, cognition, and arousal, which in turn should increase displaced aggression when one is given the opportunity to take it out on an undeserving other. In Experiment 2, we manipulated rumination and expected that this would have an especially strong effect on those high in trait rumination because both situation and person inputs are expected to produce increases in displaced aggression according to the GAM.

The goal of Experiment 1 was to obtain behavior-related construct validity evidence for our Behavioral Displaced Aggression subscale. In Phase 3, we obtained correlational evidence that the

full DAQ scale, as well as the individual subscales, were related to indirect indicators of displaced aggression (e.g., domestic abuse and road rage). If, in fact, our Behavioral Displaced Aggression subscale is a valid indicator of trait displaced aggression, we should expect it to predict laboratory displaced aggression as well. To this end, participants completed our Behavioral Displaced Aggression subscale and the Aggression Questionnaire. The Aggression Questionnaire is likely the most widely used instrument of aggressive personality in nonclinical populations. A Social Science Citation Index search revealed over 350 citations of the Buss and Perry (1992) article in which the questionnaire was introduced. It is an excellent predictor of laboratory and real-world aggression (Bushman, 1995; Bushman & Wells, 1998; Tremblay & Belchevski, 2004). For example, Bushman and Wells (1998) found the Aggression Questionnaire Physical Aggression subscale to be a good predictor of time spent by hockey players in the penalty box.

A second goal of Experiment 1 was to assess emotional reactivity to the source of a minor annoyance (i.e., the triggering agent). We believe that following a provocation, individuals high in trait displaced aggression maintain a negative affective state more intensely and for a longer duration than those low in trait displaced aggression. Therefore, we also expected that our measure should predict reactions to the bogus participant, such that the Behavioral Displaced Aggression subscale would predict negative emotional reactions to the other participant, whereas the Aggression Questionnaire Physical Aggression Subscale should not predict these reactions. In addition, because the Behavioral Displaced Aggression subscale assesses *post-provocation* trait differences, we did not expect scores on this measure to be related to reactions to the initial provocation.

Experiment 1: Method

Participants and Design

One hundred twenty CSULB undergraduates (79% female, 21% male) enrolled in introductory psychology courses completed the study in exchange for extra course credit. The design was a 2 (provocation: yes or no) \times 2 (trigger: yes or no) between-subjects factorial. Participants were randomly assigned to one of the four experimental conditions.

Procedures

Participants took part in a TDA study (Miller et al., 2003). Similar procedures have been described elsewhere (Pedersen et al., 2000; Vasquez et al., 2005) but are briefly presented here as well. As indicated, in the TDA paradigm, participants receive a Time 1 provocation (or not), followed by a mild Time 2 triggering event (or not) from another participant. In the absence of provocation, the triggering event does not increase aggression. However, when previously provoked and exposed to a mild triggering event, participants display disjunctively escalated aggression (Bushman et al., 2005; Pedersen et al., 2000; Vasquez et al., 2005). Upon arrival to the laboratory, participants were told that the study was investigating personality, cognitive ability, and social impression formation. Specifically, participants were told that they would complete personality measures and a test of general cognitive ability and then interact with another (bogus) participant in another room.

After providing informed consent, participants completed the Behavioral Displaced Aggression subscale of the DAQ and the Aggression Questionnaire (Buss & Perry, 1992). The experimenter then told the participants that the first part of the study involved a test of cognitive ability. Specifically, participants completed a sheet with 15 difficult anagrams (e.g., *elun-*

anteit = lieutenant). The experimenter informed the participant that he or she would have 3.5 min to complete all 15 anagrams and left the room. When the 3.5 min had elapsed, the experimenter reentered, took the anagram answer sheet, and left the room ostensibly to score the participant's performance.

Provocation manipulation. In the *provocation* condition, participants were told that their performance was far below average compared with a sample of engineering students. Furthermore, the experimenter insulted participants in an irritated and exasperated tone of voice: "You really got a lot of these wrong. I should really give you another anagram task to do over again. However, to be perfectly honest with you, I don't want to waste my time." In the *no provocation* condition, participants were told that their performance was average compared with a sample of engineering students and were not insulted.

Trigger manipulation. Participants were then asked to list desirable traits in an astronaut (Bettencourt, Brewer, Croak, & Miller, 1992; Vasquez et al., 2005). The experimenter then appeared and took the participant's astronaut task sheet, ostensibly to give it to the other participant. Two minutes later, the experimenter returned with the bogus astronaut task sheet and an evaluation form for the participant to fill out. Allegedly, it would be exchanged with the other participant. Similar to procedures used in prior research (Pedersen et al., 2000, Study 2; Vasquez et al., 2005), this exchange of evaluation forms served as the Time 2 trigger manipulation.

To implement the trigger conditions, participants received from the other participant an evaluation of the degree to which his or her performance on the astronaut task exhibited originality, quality, effort, and variety among traits listed and the degree to which it made sense. In addition, an overall evaluation was provided. In the *trigger* condition the individual ratings and overall evaluation were 3, 4, 3, 3, 4, and 4, respectively, on 7-point Likert-type scales (1 = *not good at all*, 7 = *extremely good*). In addition, space was available for participants to indicate additional comments. In this space, the following statement was written: "The performance was not great and I think a college student could do better." In the *no trigger* condition, participants received a neutral evaluation (6, 5, 6, 5, 5, and 5) and the following statement: "My partner did a decent job. I think the task was well done."

Displaced aggression. After returning to the room, the experimenter informed participants that the final task would examine how sensory distraction affects a person's decision-making and impression formation abilities. The experimenter then indicated that the participant and the other participant would receive different distraction tasks. Participants were told that they had been randomly assigned to the visual distraction condition (watching a pleasant nature video) and that the other participant had been assigned to the tactile distraction condition (placing their hand in painfully cold water). Participants were then required to place their own hand in a bucket of cold water (10 °C) for 5 s, ostensibly so that they could best decide the length of distraction for the other participant. The participant was also informed that the other participant was simultaneously previewing the nature video and would be making a similar decision. Next, participants were instructed to circle on a sheet of paper the amount of time for which the other participant should be distracted on a 9-point Likert-type scale starting at 1 (*no distraction at all*) and increasing by 10-s intervals to 9 (*80 seconds/very strong distraction*). This value served as the dependent measure. Participants were asked to slide the sheet under the door so that a second research assistant could administer the task to the bogus participant. Participants then completed the remaining dependent measures at their own pace.

Secondary dependent measures. To assess affect from the provocation, we had participants complete a modified version of Mood Adjective Checklist (Nowlis, 1965). Specifically, participants rated the degree to which they experienced each of 26 emotions in relation to the provocation (with these instructions: "Each of the following words describes feelings or moods. Please use the list to describe your feeling after finishing the anagram task you completed at the beginning of the study"). Each emo-

tional descriptor was rated on a 7-point Likert-type scale (1 = *not at all*, 7 = *extremely so*).

An additional five items assessed the emotional reaction to the bogus participant. Specifically, participants were asked to rate how *happy*, *pleased*, *annoyed*, *irritated*, and *angered or upset* they felt upon receiving the evaluation from the bogus participant. Each item was rated on a 7-point Likert-type scale (1 = *not at all*, 7 = *extremely so*).

Experiment 1: Results

Displaced Aggression

Data from 6 participants were removed owing to suspicion of the study hypotheses. We first attempted to replicate previous TDA findings, which show disjunctively escalated aggression among provoked participants exposed to a minor annoyance. Because several prior TDA studies have demonstrated disjunctively escalated displaced aggression only in the yes provocation/yes trigger conditions (Pedersen et al., 2000; Vasquez et al., 2005), we used a planned contrast to test this condition against the other three conditions (weights 3, -1, -1, -1). As expected, a bootstrap linear contrast on 20% trimmed means (Wilcox, 2005, p. 297) replicated the pattern of results found in previous research with the TDA paradigm ($\psi = 3.57$, $p < .001$; see Table 6).⁵

To provide a high power test of our primary hypotheses, we used regression analyses (vs. a dichotomous split) with the Behavioral Displaced Aggression subscale ($\alpha = .91$) and Aggression Questionnaire Physical Aggression subscale ($\alpha = .85$) entered as continuous variables and the provocation and trigger conditions entered as dummy-coded variables (0 = no; 1 = yes).⁶ A hierarchical regression analyses was conducted. At the first step, we entered the provocation and trigger conditions as well as the mean-centered Behavioral Displaced Aggression subscale and Aggression Questionnaire Physical Aggression subscales. As expected, the Behavioral Displaced Aggression subscale predicted laboratory displaced aggression ($\beta = .30$, $p = .001$), but the Aggression Questionnaire Physical Aggression subscale did not ($\beta = .03$, *ns*). At the second step, we entered interaction terms of the Behavioral Displaced Aggression and Aggression Questionnaire Physical Aggression subscales with the provocation and trigger conditions. Only a significant Behavioral Displaced Aggression \times Provocation interaction emerged ($\beta = .23$, $p < .05$). Post hoc analyses (Aiken & West, 1991) revealed that among provoked participants, the Behavioral Displaced Aggression subscale significantly predicted displaced aggression ($\beta = .39$, $p < .03$), but not among unprovoked participants ($\beta = .06$, *ns*). An alternative approach is to examine the effects of provocation at high and low levels of trait displaced aggression. Specifically, at

high levels of trait displaced aggression (one *SD* above the mean), provocation significantly predicted displaced aggression ($\beta = .30$, $p = .01$), but not at low levels of trait displaced aggression (one *SD* below the mean; $\beta = -.06$, $p = .60$). The Behavioral Displaced Aggression subscale did not interact with trigger condition (nor did the Aggression Questionnaire), suggesting that the subscale assesses individual differences in one's tendency to aggress against innocent others when provoked regardless of specific situational features (e.g., receiving a second minor annoyance from the trigger). Neither the DAQ \times Provocation \times Trigger interaction ($\beta = .05$, $p = .79$) nor the Aggression Questionnaire \times Provocation \times Trigger interaction ($\beta = -.06$, $p = .63$) was significant.

Secondary Dependent Measures

The mood adjectives intended to assess emotional reactions to the provocation formed acceptably reliable composites of positive ($\alpha = .88$) and negative affect ($\alpha = .72$). Relative to the no-provocation condition, participants in the provocation condition reported less positive affect ($M_s = 9.68$ vs. 15.63), $T^*_y = -3.79$, $p < .001$, and more negative affect ($M_s = 8.91$ vs. 4.07), $T^*_y = 8.27$, $p < .001$. Thus, it appears that the provocation manipulation was successful. Neither the Aggression Questionnaire Physical Aggression nor our Behavioral Displaced Aggression subscale predicted the reaction to the provocation. Because the DAQ is concerned with individual differences following a provocation, we expected that those high in trait displaced aggression would not immediately experience the provocation as more aversive than those low in trait displaced aggression. However, we expected that they would ruminate throughout the course of the experiment, which would lead to the increased displaced aggression toward the bogus participant that we observed in this experiment.

The items designed to assess the reaction to the trigger also formed a reliable composite ($\alpha = .94$). Participants in the trigger condition reported a more negative reaction toward the bogus participant than those in the no-trigger condition ($M_s = 23.67$ vs.

Table 6
Aggression 20% Trimmed Means, Winsorized Standard Deviations, and Sample Sizes for Experiment 1

Condition	Provocation			No provocation		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Trigger	46.00	13.25	25	35.71	16.45	33
No trigger	23.81	12.26	33	26.00	8.39	23

Note. The dependent measure is the length of time that the other (bogus) participant must immerse his or her hand in painfully cold ice water.

⁵ In the presence of even small violations of assumptions, traditional analysis of variance methods may poorly estimate mean differences between groups. Indeed, Wilcox and Keselman (2003) reviewed a substantial body of evidence suggesting that traditional methods of inferential statistics based on means perform poorly under most circumstances encountered in psychological research (e.g., heavy tails, slight skewness, heteroscedasticity). These authors demonstrated that bootstrap methods and analyses with trimmed means provide superior performance relative to traditional procedures. Specifically, modern methods accurately control Type I error rate, provide increased power, and tolerate violations of the homogeneity and normality assumptions. The bootstrap linear contrast computes 600 bootstrap means (sampling with replacement) and, for each bootstrap mean, a 20% trimmed mean whereby the upper and lower 20% of the data have been removed. All of the robust statistics were computed using functions written by Rand Wilcox for the computer program R. R is available for free at <http://www.r-project.org>, and the functions are also available for free at <http://www-rcf.usc.edu/~rwilcox/>.

⁶ Because our main dependent variable was a physical aggression measure, we focused our analyses on the Physical Aggression subscale of the Aggression Questionnaire. The same pattern of results was obtained for all three Aggression Questionnaire subscales as well as the Aggression Questionnaire total score (i.e., the Behavioral Displaced Aggression subscale predicted the outcome of interest, but the Aggression Questionnaire did not).

9.36), $T_y^* = 15.00, p < .001$. Moreover, trait displaced aggression marginally predicted the reaction to the trigger ($\beta = .24, p = .08$), but the Aggression Questionnaire Physical Aggression subscale did not ($\beta = .06, ns$). As expected, scores on the Behavioral Displaced Aggression subscale were unrelated to the reaction to the provocation but were associated with the emotional reaction to the bogus participant. We also conducted mediation analyses (Baron & Kenny, 1986; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) to determine the mediating role of the affective reaction to the bogus participant. The Behavioral Displaced Aggression subscale predicted the emotional reaction to the trigger ($\beta = .26, p < .01$), as well as displaced aggression ($\beta = .36, p < .001$). The reaction to the trigger predicted displaced aggression ($\beta = .51, p < .001$). Finally, when entered simultaneously with the Behavioral Displaced Aggression subscale, both this subscale ($\beta = .25, p < .01$) and reaction to the trigger remained significant predictors of displaced aggression ($\beta = .44, p < .001$). A Sobel (1982) test also revealed that the reaction to the trigger mediated the effects of the DAQ on laboratory displaced aggression ($z = 2.58, p < .01$), as did an additional test of indirect effect ($z = 2.61, p < .01$). These results suggest that participants high in trait displaced aggression perceived the other participant more negatively than those low in trait displaced aggression (likely owing to rumination about the provocation), which in turn increased the likelihood of aggressive behavior toward the “innocent” other participant. In other words, the reaction to the trigger partially mediated the effects of trait displaced aggression on actual displaced aggression. A three-step hierarchical regression for provocation, trigger, and the Behavioral Displaced Aggression subscale did not reveal any significant interactive effects.

Experiment 1: Discussion

Experiment 1 provided behavioral evidence for the construct validity of our Behavioral Displaced Aggression subscale. In a laboratory TDA paradigm, our measure moderated the degree of actual displaced aggression and predicted the affective reaction to a bogus participant. Individuals who reported the general tendency to aggress against undeserving others when in a negative affective state did indeed aggress against an undeserving participant to a greater extent than those who did not endorse such statements. At the same time, the Physical Aggression subscale of the Aggression Questionnaire (Buss & Perry, 1992), a reliable and valid measure of direct aggression, did not moderate displaced aggression or predict reactions to the trigger. Thus, even in the short 15–20-minute interval following the provocation and opportunity to aggress, it appears that individuals high in trait displaced aggression were likely to ruminate about the initial provocation, which in turn led to a more negative reaction to the bogus participant and subsequently increased displaced aggression. Because we did not directly manipulate rumination, we were not able to assess the unique situational effects of rumination directly. In the current study, participants were free to attempt to control their ruminative thoughts (although this did not appear to work). Therefore, we conducted a second experiment to directly examine the additive effects of person (trait displaced aggression) and situation variables (a rumination writing task) as conceptualized within the GAM on laboratory displaced aggression.

Although Experiment 1 provided solid evidence of construct validity for the Behavioral Displaced Aggression subscale, it was

limited because participants did not complete the full 31-item DAQ. We therefore conducted a second experiment to test the construct validity of our full measure of trait displaced aggression. A second weakness of Experiment 1 was that we did not directly manipulate rumination. In Experiment 2, we included situational manipulations of provocation-focused and self-focused rumination. We expected an interaction with the DAQ such that a particularly strong relationship would emerge between DAQ scores and displaced aggression in the rumination conditions. In this second experiment, participants completed the entire DAQ, the PANAS General (Watson et al., 1988), and the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). Participants were provoked and subsequently engaged in a situational rumination task prior to aggressing against a bogus participant. We predicted that scores on the DAQ would moderate the effects of situational rumination on displaced aggression but that scores on the remaining personality measures would not predict aggressive behavior.

Experiment 2: Method

Participants and Design

Eighty-seven CSULB undergraduates (89% female, 11% male) enrolled in introductory psychology courses completed the study in exchange for extra course credit. The design was a 3 (rumination type: provocation-focused, self-focused, or distraction) \times 2 (trigger: yes or no) between-subjects factorial. All participants were provoked by the experimenter in the same manner as in Experiment 1 (i.e., through negative feedback on the anagram task). Participants were randomly assigned to one of the six experimental conditions.

Materials and Procedures

In general the procedures for Experiment 2 were similar to those of Experiment 1. Participants took part in a modified TDA paradigm (Miller et al., 2003) with the following three differences: (a) Participants filled out all three subscales of the DAQ as well as additional individual-differences measures to obtain discriminant behavioral construct validity evidence, (b) all participants were provoked by the experimenter, and (c) participants completed one of two situational rumination manipulations or a distracting control task. Upon arrival to the laboratory, participants were told that the study was investigating the relationship between an individual's personality and his or her ability to complete academic tasks. As in Experiment 1, participants were told that they would interact with another (bogus) participant in an adjoining room. Participants completed a packet of personality measures, were provoked, engaged in a rumination or control task, were triggered by the bogus participant (or not), and were given the opportunity to aggress against the bogus participant.

Personality measures. After giving informed consent, participants completed the personality measures. Specifically, participants completed all 31 items on the DAQ, the PANAS General (Watson et al., 1988), and the RRQ (Trapnell & Campbell, 1999). We hypothesized that only the DAQ would moderate the effects of situational rumination on displaced aggression. To control for order effects, we administered six counterbalanced versions of the measures.

Provocation manipulation. After participants completed the personality measures, the experimenter provoked them in the same manner as in Experiment 1 (i.e., through negative feedback on the anagram task).

Rumination manipulation. After being provoked by the experimenter, participants were told that they would complete a 20-min writing task that purportedly assessed their ability to write effectively. Participants were told that there were several different writing topics and that one had been randomly chosen for them. Those individuals in the *provocation-focused*

rumination condition were asked to write about what had occurred in the experiment up to that point, including their actions, feelings, and interactions with other individuals. Similar to procedures used by Rusting and Nolen-Hoeksema (1998), participants in the *self-focused rumination* condition were given a packet with a phrase on each page. Each phrase in this packet was internally focused and contained no mention of affect (e.g., “what kind of person you are,” “how you interact with people”). In fact, judges had rated these phrases as affectively neutral (Rusting & Nolen-Hoeksema, 1998). Using the procedure employed in Bushman et al. (2005, Study 1), participants were told to think about each phrase, spend 1 or 2 minutes writing any thoughts that came to mind on a pad of paper, and then move on to the next page of the packet, continuing this same process for 20 minutes. Finally, in the *distraction* condition, participants were instructed to write about the layout of their college campus. Participants in all three conditions were instructed not to worry about either spelling or grammar.

Trigger manipulation and displaced aggression. These procedures were identical to those used in Experiment 1.

Because the additional personality measures and 20-min rumination manipulation greatly lengthened the experiment, secondary dependent measures were not included in Experiment 2.

Experiment 2: Results

Data from 5 participants were removed due to suspicion of the study hypotheses. As in Experiment 1, we used hierarchical regression analyses to test our hypotheses. At the first step, we regressed laboratory displaced aggression on the rumination conditions (referenced to the distraction control task) and the trigger conditions, as well as the mean-centered PANAS Positive Affect ($\alpha = .85$) and Negative Affect ($\alpha = .86$) subscales, the Rumination ($\alpha = .86$) and Reflection ($\alpha = .83$) subscales from the RRQ, and the DAQ ($\alpha = .93$). As expected, participants in the provocation-focused rumination ($T^*_Y = 2.45, p < .05, M_T = 32.50$ s) and self-focused rumination conditions ($T^*_Y = 2.46, p < .01, M_T = 28.42$ s) displayed significantly higher levels of displaced aggression than participants in the control condition ($M_T = 17.06$ s), irrespective of whether they were triggered. There was no main effect for trigger ($\beta = -.00, p = .99$). Most important, among the individual-differences measures, the DAQ was the only significant predictor of displaced aggression ($\beta = .52, p < .001$).

At the second step, we entered the interaction terms of the personality measures with the condition variables as well as the Trigger \times Rumination Condition interaction term. Although the regression coefficient for the Trigger \times Rumination interaction term was not significant ($\beta = .38, p = .12$), a more powerful bootstrap linear contrast (4, 3, 1, $-2.33, -2.33, -2.33$) on 20% trimmed means provided support for the expected pattern of results ($\psi = 2.53, p = .03$; see Table 7). We based this contrast on previous studies from our laboratories (Bushman et al., 2005; Pedersen et al., 2005). Two of the personality measures moderated the effects of rumination condition on displaced aggression: a DAQ \times Rumination interaction ($\beta = .44, p = .04$) and a significant PANAS Negative Affect \times Rumination interaction ($\beta = .37, p < .03$). Post hoc tests (Aiken & West, 1991) revealed that DAQ scores predicted displaced aggression in the provocation-focused ($\beta = .78, p < .001$) and self-focused ($\beta = .51, p < .001$) rumination conditions but not in the distraction condition ($\beta = .09, p = .61$). The PANAS Negative Affect subscale predicted displaced aggression only in the self-focused rumination condition ($\beta = .54, p < .02$), marginally negatively in the distraction condition ($\beta = -.32, p = .06$), and not at all in the provocation-

Table 7
Aggression 20% Trimmed Means, Winsorized Standard Deviations, and Sample Sizes for Experiment 2

Condition	Rumination condition								
	Provocation focused			Self-focused			Distraction		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Trigger	31.43	15.00	9	33.33	17.40	15	26.00	20.16	16
No trigger	30.00	8.45	15	15.56	11.26	13	19.00	12.69	14

focused condition ($\beta = .18, p = .30$). No three-way interactions emerged between trigger, rumination condition, and the personal-ity variables.

Finally, we conducted a series of parallel analyses to those reported above, in which we examined the effects of each of the three DAQ subscales. Because the Angry Rumination and Revenge Planning subscales explicitly describe ruminative tendencies, we hypothesized that these subscales would interact with the experimental rumination manipulations but not the Behavioral Displaced Aggression subscale. Overall, each subscale predicted actual displaced aggression: Angry Rumination ($\beta = .26, p < .02$), Revenge Planning ($\beta = .34, p < .005$), and Behavioral Displaced Aggression ($\beta = .29, p < .01$). In the regression analyses, we entered each subscale, the condition variables, and their interaction terms in predicting actual displaced aggression. The two ruminative subscales reliably interacted with the rumination conditions: Angry Rumination ($\beta = .36, p < .01$) and Revenge Planning ($\beta = .30, p < .02$). However, the Behavioral Displaced Aggression subscale did not ($\beta = .18, p = .20$), thus providing evidence of convergent and discriminant predictive validity of the three subscales. Post hoc probing (Aiken & West, 1991) of these interactions revealed that Angry Rumination predicted actual displaced aggression in the provocation-focused ($\beta = .59, p < .005$) and self-focused conditions ($\beta = .40, p < .02$) but not in the control condition ($\beta = -.09, p = .61$). Similarly, Revenge Planning predicted actual displaced aggression in the provocation-focused ($\beta = .77, p < .005$) and self-focused conditions ($\beta = .49, p < .005$) but not in the control condition ($\beta = .10, p = .54$). In general, the effects of these two ruminative subscales were larger in the provocation-focused conditions, consistent with the notion that individual differences on these two subscales are especially relevant to provocation-related rumination.

Experiment 2: Discussion

Experiment 2 provided further behavioral evidence of construct validity for the DAQ. Using the full 31-item scale, we replicated the predictive effect of the DAQ on displaced aggression in the laboratory. Discriminant validity evidence was also obtained such that the DAQ predicted displaced aggression in the provocation-focused and self-focused rumination conditions, whereas a measure of trait negative affect predicted aggression in the self-focused rumination condition. This latter finding is consistent with research demonstrating that situational manipulations of self-focused rumination increase anger (Rusting & Nolen-Hoeksema, 1998) and displaced aggression (Bushman et al., 2005). Therefore it is not surprising that individuals prone to experiencing negative affect

were strongly affected by the situational self-focused rumination manipulation. This applies to both those high in trait displaced aggression and those high in general negative affect (i.e., as measured by the PANAS Negative Affect subscale). However, discriminant validity was demonstrated to the extent that the DAQ predicted displaced aggression in the provocation-focused rumination condition but the other measures did not. The relationship between the DAQ and displaced aggression was particularly strong in this condition, suggesting an additive effect of person and situation variables. This demonstrates that high scorers on the DAQ are especially likely to be affected by manipulations that increase anger and negative affect following a provocation. These results appear consistent with our conceptualization of trait displaced aggression as being relevant to anger-inducing provocations, not simply general negative mood. In addition, as in Experiment 1, we observed that the DAQ predicted displaced aggression regardless of the trigger. Once provoked, these individuals simply take out their aggression on undeserving others even if these others have objectively done absolutely nothing to annoy them.

Further support for this is evident in the finding that a general measure of negative self-focus (i.e., the Rumination subscale of the RRQ) failed to predict displaced aggression. This is not surprising given that the Rumination subscale of the RRQ consists of a more general set of items that are related to the self and do not specify specific types of situations (e.g., "I often reflect on episodes in my life that I should no longer concern myself with" and "Often I'm playing back over in my mind how I acted in a past situation"). The DAQ, on the other hand, refers specifically to rumination about anger-inducing provocations and the general tendency to aggress against innocent others when provoked. Thus, the DAQ provided more information about displaced aggression under conditions of provocation-focused rumination than other theoretically relevant measures.

General Discussion

We have described the development of a self-report measure of trait displaced aggression. Prior research on aggressive personality has focused on direct responses to provocations. Thus, we presented the DAQ as the first attempt at measurement of the displaced aggression personality construct. We first developed a set of items based on prior rumination and aggression-related scales as well as original items designed to assess the general behavioral tendency to aggress against innocent others. Next, we identified a subset of these items, identified the hypothesized three factors (Angry Rumination, Revenge Planning, and Behavioral Displaced Aggression), and demonstrated that the DAQ has high levels of internal consistency and test-retest reliability. Moreover, the factor structure was confirmed in both a college student sample and a large ($N > 1,000$) national community sample of Internet respondents. We also demonstrated concurrent construct validity by correlating the DAQ with theoretically relevant measures such as neuroticism, conscientiousness, agreeableness, general trait aggressiveness, anger expression, social desirability, a general measure of self-focused rumination, road rage, and domestic abuse. Finally, we demonstrated that the DAQ is a good predictor of displaced aggression in two laboratory studies. Together, these findings provide support for the DAQ as a reliable and valid instrument for assessing individual differences in displaced aggression.

Limitations of the DAQ

There are several issues inherent in the current research that may limit the applicability of the DAQ. First, across the five phases of the current research, all of the samples contained primarily female respondents. Although no gender effects were found (except for the Revenge Planning subscale), gender differences with the DAQ may yet be discovered in future samples with larger numbers of men. A second major concern is the self-report nature of the DAQ. Particularly troubling is the moderate relationship between the DAQ and trait social desirability. Although this is a problem with self-report measures of aggressive personality in general (Harris, 1997; Lange, Dehghani, & de Beurs, 1995; Lange, Palich, et al., 1995; Morren & Meesters, 2002), future research could focus on implicit assessment of aggression-related personality dimensions. For example, Uhlmann and Swanson (2004) used the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998) to demonstrate increases in aggressive self-concept following exposure to violent video games. It is conceivable that individuals high in trait displaced aggression could more rapidly pair stimuli related to displaced aggression (e.g., scenes of domestic abuse) with positive adjectives than those low in trait displaced aggression.

A third limitation is related to the methodological details of our experimental validity studies. In both studies, the status of the experimenter was slightly higher than that of the participant, whereas the bogus participant and the actual participant were of equal status. Although both participant and experimenter were undergraduates at the same university, in the experimental situation, the experimenter was probably considered to be an expert on the experimental procedures and therefore of higher status in this particular setting. This design feature of our paradigm may have interacted with other unmeasured personality dimensions in which sensitivity to status is an essential feature. For example, individuals with passive-aggressive personality disorder display status sensitivity manifested as dislike and criticism of authority figures. This may have caused increased negative affect in these individuals when provoked by a high-status experimenter. However, passive-aggressive individuals are also characterized by high levels of impulsivity, which displayed only small to moderate correlations with the DAQ. Another personality dimension that may have interacted with our status confound is right-wing authoritarianism (Altemeyer, 1996). Right-wing authoritarians display deference to high-status individuals and thus may have been overly willing to "do their job" and aggress against the other participant. To our knowledge no data exist regarding passive-aggressive personality disorder or right-wing authoritarianism and displaced aggression. Thus, it remains an empirical question as to whether these individuals actually display more displaced aggression when provoked by a high-status individual and allowed to subsequently aggress against an equal status other. Future research should address the effects of additional personality dimensions on displaced aggression as well as reverse the status of the experimenter and bogus participant.

Relationship to Other Theoretical Models

Our data are consistent with the GAM (C. A. Anderson & Bushman, 2002). The GAM is the most recent comprehensive social psychological model of aggressive behavior. Within the GAM, when one is confronted with a social interaction, aggression

may be instigated by personality or situational factors, which in turn affect aggression-related cognition, affect, and arousal. These latter internal states then bias appraisal and decision-making processes, which in turn affect behavior (aggressive or otherwise). In this view, trait displaced aggression represents a personality input variable. Consistent with cognitive-affective perspectives on personality (Mischel & Shoda, 1995), through repeated use of aggressive schemas and knowledge structures, individuals who score high on the DAQ are likely to have acquired strong associations between provocations and aggressive cognition, affect, and arousal. The content of these internal processes is likely to be angry rumination and a focus on retaliation. Moreover, those who score high on the DAQ are likely to maintain a negative affective state for a long period of time. Evidence of this was obtained in our two experiments. In Experiment 1, 15–20 minutes following a provocation, participants high in trait displaced aggression responded more negatively to the bogus participant and aggressed more than those low in trait displaced aggression. In Experiment 2, the DAQ predicted displaced aggression when participants were induced to ruminate about a provocation or to focus on themselves for 20 minutes. This negative, ruminative state is likely to affect subsequent appraisal and decision-making processes, thus making aggression toward the bogus participant more likely. This is consistent with research demonstrating the effect of rumination on displaced aggression (Bushman et al., 2005).

Another interesting feature of the DAQ is its relation to behavioral inhibition (e.g., Gray, 1987). Previous research has linked anger and *direct* aggression to the behavioral approach system (Harmon-Jones, 2003; Harmon-Jones & Allen, 1998; Harmon-Jones & Sigelman, 2001). The current research supports the notion that *displaced* aggressive personality is related to behavioral inhibition. One key feature of behavioral inhibition that may account for this relationship is the finding that inhibited individuals are punishment averse (Carver & White, 1994). It appears that when confronted with provocations, individuals scoring high on the DAQ are likely to initially inhibit retaliatory responses while continuing to dwell angrily and plot revenge. Such data are consistent with research linking behavioral inhibition with other forms of rumination (Leen-Felder, Zvolensky, Feldner, & Lejuez, 2004) and negative affect (Gable, Reis, & Elliot, 2000). Our data linking trait displaced aggression with road rage, domestic abuse, and laboratory displaced aggression are consistent with the notion that individuals high in trait displaced aggression may initially inhibit aggressive behavior when provoked yet subsequently take it out on close others (in our case, spouses, fellow drivers, or fellow students). In fact, these individuals may strongly endorse the catharsis hypothesis: that aggressing toward others will make them feel better and less aggressive in the future. These research avenues remain to be explored.

How does the DAQ fit into recent empirical work on rumination? Part of our three-factor conceptualization of displaced aggression consists of two types of provocation-focused ruminative activity: angry rumination and revenge planning. In an attempt to characterize various forms of repetitive thought, Segerstrom, Stanton, Alden, and Shortridge (2003, Study 1) used multidimensional scaling on relevant trait measures to identify two dimensions: content valence and purpose. Content valence refers to whether the form of repetitive thought concerns positive or negative themes. Clearly, angry rumination and revenge planning are negatively valenced forms of repetitive thought. Scores at one end of the

purpose dimension reflect searching for new perspectives on the self (i.e., *searching*); scores at the other end indicate attempts to gain closure on current emotional experiences (i.e., *problem solving*). To the extent that angry rumination and revenge planning are attempts at restoring emotional balance and rectifying an injustice, these types of rumination appear to lie toward the problem-solving end of the dimension.

Future Research

Research on trait displaced aggression appears promising. One area of potential future research concerns health implications associated with trait displaced aggression. A large body of evidence has revealed a moderate association between aggression-related traits and negative health consequences. For instance, meta-analytic reviews have linked trait aggression, anger, and hostility to increased occurrence of coronary heart disease (Booth-Kewley & Friedman, 1987) and elevated blood pressure (Suls, Wan, & Costa, 1995). In addition, a small but growing body of research suggests that rumination may also negatively impact physical health (Hogan & Linden, 2004; Thomsen, Mehlsen, Hokland, et al., 2004; Thomsen, Mehlsen, Olesen, et al., 2004). These findings suggest that individuals high in trait displaced aggression may be especially prone to experiencing physical health problems.

Much remains to be done to identify moderating variables related to trait displaced aggression. Additional laboratory studies could allow opportunities for learning about direct aggression as well as displaced aggression. Moreover, when individuals high in trait displaced aggression are provoked publicly, they may be especially sensitive to inhibitory cues but become much angrier over time because of rumination than when they are provoked privately. This increased ruminative intensity would likely increase levels of displaced aggression. In addition, given the association of the DAQ with behavioral inhibition, it is likely that when provoked, individuals scoring high on the DAQ may experience heightened levels of withdrawal-related affect such as fear or anxiety. A future research agenda could incorporate recent findings from social and affective neuroscience.

A final yet highly important consideration for future research concerns potential interventions aimed at reducing displaced aggression among at-risk individuals. Given the relationship between the DAQ and domestic abuse and road rage observed in Phase 3, interventions are likely to prove beneficial to society at large. Future work could focus on the interventions aimed at preventing marital aggression and its associated harmful effects on children (e.g., Margolin & Gordis, 2000). Specific cognitive strategies aimed at reducing the priming effects of angry rumination and revenge planning might also prove helpful. In the distraction condition of Experiment 2, scores on the DAQ were unrelated to actual displaced aggression, suggesting that other forms of distraction or thought switching may prove beneficial when individuals high in trait displaced aggression are confronted with a provocation.

Establishing the DAQ as a mechanism to measure individual differences in displaced aggression provides an initial foundation for further exploration of this multifaceted personality dimension. It is hoped that additional research and effective intervention strategies will provide us with the tools necessary to reduce the harm associated with trait displaced aggression.

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