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The moderating effect of trigger intensity on triggered displaced aggression [☆]

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Abstract

Many instances of aggression result in excessive retaliation in response to a seemingly trivial triggering event. The triggered displaced aggression paradigm (TDA; Miller, Pedersen, Earleywine, & Pollock, 2003) provides an experimental vehicle for exploring such occurrences. Participants were either provoked or not and were subsequently exposed to a neutral, mild, or moderately strong triggering event from a second bogus participant. Consistent with TDA theory (Miller et al., 2003), disjunctively escalated aggressive behavior occurred only among previously provoked participants when responding to the mild triggering event, but not the moderately strong or neutral trigger. Independent of provocation, the neutral triggering event elicited very low levels of aggression, whereas the moderately strong trigger elicited moderate levels of aggression. Implications for instances of real world aggression are discussed.

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Introduction

Displaced aggression occurs when a person is provoked, is prevented from retaliating against the original provocateur, and subsequently aggresses against a seemingly innocent target (Dollard, Doob, Miller, Mowrer, & Sears, 1939; Hovland & Sears, 1940; Marcus-Newhall, Pedersen, Carlson, & Miller, 2000). For instance, a man insults his wife for no apparent reason after having been berated previously by his boss. In this case, the target has provided no justification or instigation to warrant a retaliatory response from the aggressor.

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Of greater theoretical and ecological interest is triggered displaced aggression (TDA; Miller et al., 2003; Pedersen, Gonzales, & Miller, 2000). In the TDA paradigm, participants are exposed to an initial Time 1 provocation under conditions that preclude retaliation against the provocateur. At Time 2, a second, usually trivial and ambiguous triggering event is presented as an instigation to aggress. Aggression directed toward the source of this Time 2 triggering event can disjunctively exceed the independent additive effects of the Time 1 provocation and Time 2 trigger (Pedersen et al., 2000). For instance, the same man who is berated by his boss and later severely physically abuses his wife in response to her query about why he did not mow the lawn anecdotally illustrates the disjunctive escalation of aggression that can be seen in triggered displaced aggression.

Recently, Miller et al. (2003) have suggested that the intensity of the Time 2 trigger is of theoretical importance. Specifically, compared to participants exposed to

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a moderately strong trigger or no trigger at all, only previously provoked participants exposed to a relatively mild triggering event should display disjunctively escalated displaced aggression. There are two reasons for this. First, consistent with the cognitive neoassociationistic model of aggression (CNA; Berkowitz, 1993) and the more recent general aggression model (GAM; Anderson & Bushman, 2002), provocation primes aggression related cognition, affect, and arousal, such that negative features of subsequent events are likely to be made highly salient to provoked individuals relative to unprovoked individuals. Indeed, participants simply primed with aggressive constructs interpret ambiguous situations in a more aggressive manner than control participants (for a review see Todorov & Bargh, 2002). Second, mild triggering events are susceptible to attributional distortion whereas strong triggers are always highly salient and unambiguously perceived as provocations in and of themselves. Thus, strong triggering events lend themselves to the tit-for-tat "matching rule" (Axelrod, 1984) and norms of reciprocity (Gouldner, 1960) whereas mild triggers are ambiguous and leave room for biased interpretation as a result of prior provocation.

To date, only five published aggression studies have orthogonally manipulated both a Time 1 provocation and Time 2 triggering event (Baron, 1972; Baron & Bell, 1975; Pedersen et al., 2000, Studies 1 & 2; Worchel, 1966). Although the three earlier studies failed to find disjunctive escalation (Baron, 1972; Baron & Bell, 1975; Worchel, 1966), two more recent studies did find the expected interaction (Pedersen et al., 2000; studies 1 and 2). In the first three studies the intensity of the Time 2 trigger matched or exceeded the intensity of the Time 1 provocation. For instance, in Worchel (1966) students in a psychology course were told by a graduate teaching assistant that the entire class would be subjected to a pop quiz (Time 1 provocation). Subsequently, they were interrupted and insulted by the course instructor as they completed a bogus intelligence test (Time 2 triggering event). Clearly, the Time 2 triggering event was not trivial. More likely is that it was of similar if not greater intensity than the Time 1 provocation. Although a slight increase in aggression did occur relative to the Time 1 provocation only condition, not even additive effects were obtained.

In two studies by Baron (1972) and Baron and Bell (1975) the Time 1 provocation entailed spending the experimental session in a very hot room (91.1–95.5 °F). In both studies, the Time 2 triggering events were neither mild nor ambiguous. In the Baron (1972) study, triggered participants received nine electric shocks and a negative task evaluation. In Baron and Bell (1975), participants were triggered by an experimental confederate who, in a written statement, insulted the participant. Interestingly, in both studies participants who

were in both the hot room and trigger conditions, reacted with decreased aggression compared to participants who received the trigger in a cooler $(74-75^{\circ})$ room.

Pedersen et al. (2000), however, employed a mild Time 2 triggering event. In these two studies, the predicted interaction between the Time 1 provocation and Time 2 trigger was observed such that previously provoked participants exposed to the mild trigger displayed greater disjunctively escalated displaced aggression than participants who were not provoked, exceeding the independent additive effects of the Time 1 provocation and Time 2 trigger. In Study 1, the experimenter insulted participants on their (poor) performance on a difficult anagram task (Time 1 provocation) or not (no provocation control condition). Participants then performed a second trivia game task that was presented to them by either an annoying and incompetent research assistant (Time 2 trigger) or a competent research assistant (no trigger control condition). Participants were then given the opportunity to evaluate the research assistant. Participants evaluated the research assistant negatively only when they had previously been provoked. In Study 2, an experimenter provoked participants by telling them to speak louder in a contemptuous and irritated tone of voice during the same difficult anagram task used in Study 1. A second (bogus) participant then informed the participants in writing that their performance on the anagram task could have been "somewhat stronger" (Time 2 trigger) or were given a neutral evaluation (no trigger control). Participants were then asked to evaluate the bogus participant for a coveted research position job. The same pattern of results as observed in Study 1 were obtained. Thus, despite the distinctly different experimental manipulations of triggering events in these two studies, participants exhibited disjunctively escalated aggression in the presence of a mild triggering event only when previously provoked. The mild trigger by itself did not affect displaced aggression.

The current research

The between-study differences in outcomes that we have described suggest that within the TDA paradigm, mild triggers are more likely to elicit disjunctive escalation of aggression than are strong triggering events. Thus, in the research we report herein, our primary purpose was to investigate the effects of differences in intensity of triggering events on displaced aggression within a single study. Half of the participants were exposed to a Time 1 provocation and half were not provoked. Participants were then exposed to either a moderately strong trigger, mild trigger, or neutral trigger. We expected differences in trigger intensity to moderate the interaction between the Time 1 provocation and Time 2 triggering event, yielding a disjunctive

escalation of aggression only among previously provoked participants who were exposed to the mild trigger, by contrast with those exposed to either a moderately strong or neutral trigger. Due to inconsistencies in previous studies with both strong Time 1 and Time 2 events (Baron, 1972; Baron & Bell, 1975; Worchel, 1966), no predictions were made regarding the strong trigger conditions, other than an expectation of no disjunctive escalation of aggression. Our secondary goal was to provide convergent validity for the TDA paradigm by using a measure of aggression that reflected an act of physical harm, rather than the verbal aggression measured in Pedersen et al. (2000). Previous reviews have concluded that verbal and physical laboratory aggression measures assess the same latent construct of aggression (Anderson & Bushman, 1997; Giancola & Chermack, 1998). Therefore, we anticipated our outcome with a physical measure of aggression to parallel that previously obtained with verbal measures (viz. Pedersen et al., 2000).

Method

Participants and design

Participants were 63 University of Southern California (USC) undergraduates, 44 women and 19 men. All participants were part of the psychology department subject pool and volunteered for extra course credit. The design was a 2 (provocation: yes or $no) \times 3$ (trigger: moderately strong, mild, neutral control) between subjects factorial. Participants were randomly assigned to one of the six experimental conditions within blocks such that one full replication of the design was completed before starting a new block.

Procedures

Participants were run individually. Upon arrival to the laboratory, participants were told that the study was investigating the effects of cognitive ability and physical distraction on social impression formation. Participants were told that they would complete a measure of general cognitive ability while being distracted and then interact with another (bogus) participant in another room on the floor. In order to reduce suspicion, the experimenter ostensibly checked to make sure the other participant was ready to begin the experiment while the actual participant completed a demographic information sheet.

Approximately 3 min later, the experimenter returned to the laboratory room and told the participant that the first part of the study involved a test of cognitive ability under conditions of auditory distraction. Specifically, participants listened to cacophonous music (Stravinsky's "Rites of Spring") at a moderately loud volume

(approximately 80 dB) while completing a sheet with 15 difficult anagrams (e.g., tophhapogr = photograph). The experimenter informed the participant that they would have 4 min to complete all 15 anagrams, started the music, and left the room. When the 4 min had elapsed, the experimenter re-entered, took the anagram answer sheet, and left the room to ostensibly score the participant's performance.

Provocation manipulation

Approximately 3 min later, the experimenter re-entered. In the provocation condition, participants were told that their performance was far below average compared to 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. This data is useless to me. We should probably just start all over, but 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 to a sample of engineering students and were not insulted.

Trigger manipulation

Participants then completed a trait-listing task. Specifically, they were asked to list six traits necessary to be a good astronaut (Bettencourt, Brewer, Croak, & Miller, 1992). The experimenter then appeared, ostensibly to take the participant's astronaut task performance to the other participant. Two minutes later, the experimenter returned with the bogus astronaut task 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), 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 their astronaut task exhibited originality, quality, effort, a variety among traits listed, and made sense. In addition, an overall evaluation was provided. In the mild trigger condition the individual ratings and overall evaluation were 3, 4, 3, 3, 4, and 4, respectively on 7-point Likert-type scales ($1 = no \ good \ at$ 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 USC student could do better." In the moderately strong trigger condition, the evaluation consisted of ratings of 3, 2, 1, 1, 3, and 2 and the statement: "Personally, I think the performance was bad. People who come to USC should be more aware of our space program. This needed more work." In the neutral trigger condition, the participant received a neutral evaluation (6, 5, 6, 5, and 5) and the following statement: "My partner did a decent job. I think the task was well done."

Physical aggression

Participants were given approximately 3 min to look over their evaluation. The experimenter returned with a cup containing four pieces of paper and explained that the next portion of the study would investigate the effects of physical distraction on impression formation. The participant then drew one of the four pieces of paper to determine which distraction condition they would be in (visual, auditory, tactile, or control). In reality, all four pieces of paper contained the no distraction control condition. The experimenter then left the room ostensibly to see which distraction condition the other (bogus) participant received.

Approximately 2 min later the experimenter returned with a bucket of cold water (10 °C) and the dependent measures. He informed the participant that the other participant had received the tactile distraction condition. The participant was told that s/he would determine how long the other (bogus) participant would submerge one hand in the bucket of cold water while performing an impression formation task. Participants were instructed to place one hand in the bucket of water for 5 s, ostensibly because such experience was necessary to make an informed decision about the length of time that their partner would be distracted. Pretesting had determined that 5s of exposure to the cold water was perceived as painful. Next, participants were instructed to circle the amount of time that the other participant should be distracted on a 9-point Likert-type scale starting at "1 = no distraction at all" which increased by 10 s intervals to "9 = 80 s/very strong distraction." Participants were asked to slide the aggression 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.

Manipulation checks

In order to assess affect from the provocation, participants completed a modified version of mood adjective checklist (MACL; Nowlis, 1965). After having been told how they did on the anagram task (i.e., the provocation), participants rated the degree to which they experienced each of 25 emotions. Each emotional descriptor was rated on a 7-point Likert-type scale (1 = not at all, 7 = extremely so).

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

Six additional questions assessed attributional distortion. Participants were asked to rate the degree to which their partner provided a good, unfair, useless, and unbiased evaluation. In addition participants also rated the degree to which their partner *meant* to provide a negative evaluation and a valuable evaluation. All items were rated on 9-point Likert-type scales (1 = strongly disagree, 9 = strongly agree).

All participants were thanked, probed for suspicion with a funnel debriefing, and dismissed.

Results

Statistical analyses

Data were analyzed with modern robust statistical methods. Even arbitrarily small violations of the assumptions of normality or homogeneity of variance may greatly decrease the sensitivity of traditional analysis of variance methods and produce biased results (Wilcox, 1998, 2003). In experimental research, truly normal distributions are rarely, if ever, observed in practice. Recently, 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, etc.). 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.

Four participants were removed due to suspicion of experimental procedures or guessing the study hypothesis. No significant gender effects were observed. Thus, males and females were combined into the final analyses.

Manipulation checks

Mood adjectives from the mood adjective checklist were formed into reliable composites for positive ($\alpha = .81$) and negative ($\alpha = .92$) affect in order to assess emotional reactions to the provocation. Yuen (1974) robust t test on 20% trimmed means demonstrated that participants in the provocation conditions reported experiencing more negative affect than participants in the no provocation conditions, $T_y = 2.74$, p < .001; $M_t s = 3.10$ and 2.32, respectively.² No differences

¹ All robust statistical analyses were completed using functions written by Rand Wilcox (available at http://www-rcf.usc.edu/~rwilcox) for the computer program R (available at http://www.r-project.org). All analyses were also conducted using traditional ANOVA methods on untrimmed means. Both sets of analyses revealed an identical pattern of results.

² Student's t test on untrimmed means also revealed a significant mean difference: t(56) = 2.88, p < .01.

emerged for positive affect. Thus, it appears that the provocation manipulation was successful.

To assess affective reaction to the trigger, composites were formed from the items assessing their emotional reaction to the evaluation they received. Both the positive items (happy, complimented, pleased) and negative items (annoyed, irritated, offended) formed reliable composites, $\alpha s = .96$ and .94, respectively. A one-way ANOVA on 20% trimmed means across trigger conditions revealed a main effect for negative affect, $F_t(2, 20.72) = 86.87, p < .001$. Percentile bootstrap linear contrasts on 20% trimmed means (Wilcox, 2003) revealed that participants in the mild trigger condition reported more negative affect as a result of the evaluation than participants in the neutral trigger condition, $\psi = 6.95$, p < .0001. In addition, participants in the moderately strong trigger condition reported more negative affect than participants in the neutral trigger and mild trigger conditions, $\psi = 3.80$ and $\psi = 12.60$, respectively, ps < .0001. There was also a main effect of trigger condition on positive affect, $F_t(2, 21.51) = 71.94$, p < .001. Percentile bootstrap linear contrasts on 20% trimmed means revealed that participants in the neutral trigger condition reported more positive affect that participants in the mild and moderately strong trigger conditions, $\psi = 9.54$ and $\psi = 12.15$, respectively, ps < .0001. These two latter conditions did not differ from each other in amount of reported positive affect, $\psi = 1.81$, ns.⁴

Physical aggression

A 2 (provocation: yes, no) \times 3 (trigger: mild, moderately strong, neutral) between subjects ANOVA with 20% trimmed means (Wilcox, 2003) revealed a main effect of Trigger, $F_t = 6.17$, p = .02. However, this main effect was qualified by a Trigger \times Provocation interaction, $F_t = 20.52$, p < .05. Planned percentile bootstrap linear contrasts with 20% trimmed means were conducted. As expected, the only differences between the provocation and no provocation conditions were in the mild trigger conditions such that previously provoked

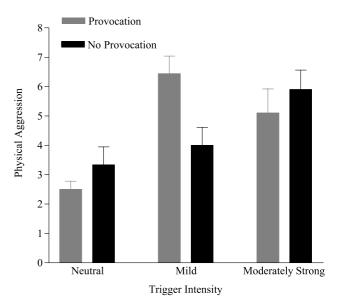


Fig. 1. Physical aggression means and standard errors as a function of Time 1 provocation and Time 2 trigger intensity.

participants ($M_t = 6.57$) displayed disjunctively higher levels of aggression than unprovoked participants ($M_t = 3.83$; $\psi = 3.79$, p = .005).⁵ Aggression did not reliably differ in the neutral trigger and moderately strong trigger conditions as a function of provocation. Fig. 1 displays the raw means and standard errors.

Attributional distortion

The six items designed to assess attributional distortion formed a reliable composite ($\alpha = .86$). A 2 (provocation: yes, no) \times 3 (trigger: mild, moderately strong, neutral) between subjects ANOVA with 20% trimmed means revealed a main effect for trigger condition, $F_t = 68.28$, p < .0001. Percentile bootstrap linear contrasts on 20% trimmed means revealed that participants in the mild trigger condition perceived the evaluation more negatively than participants in the neutral trigger condition, $\psi = 6.51$, p < .0001. In turn, participants in the moderately strong trigger condition perceived the evaluation more negatively than participants in both the mild, $\psi = 3.01$, p < .002, and neutral trigger conditions, $\psi = 12.03, p < .0001$. Although the expected interaction between the provocation and mild trigger did not occur, the attributional distortion composite did reliably

 $^{^3}$ A traditional one-way between subjects ANOVA and post hoc tests on untrimmed means of negative affect also revealed an identical pattern of results. There was a main effect for trigger, F(2,55)=39.71, p<.001. Participants in the mild trigger condition reported more negative affect than participants in the neutral trigger condition, p<.001, while participants in the moderately strong trigger condition reported more negative affect than the mild (p<.005) and neutral trigger (p<.001) conditions.

⁴ A traditional one-way between subjects ANOVA and post hoc tests on untrimmed means of positive affect also revealed an identical pattern of results. There was a main effect for trigger, F(2,55) = 60.66, p < .001. Participants in the neutral trigger condition reported more positive affect than participants in the mild and moderately strong trigger conditions, ps < .001. Means in the mild and moderately strong trigger conditions did not differ from each other, p = .40.

⁵ A traditional 2 (provocation: yes, no) × 3 (trigger: mild, moderately strong, neutral) between subjects ANOVA on untrimmed means also revealed a main effect of trigger condition, F(2,53) = 11.65, p < .001, and a trigger × provocation interaction, F(2,53) = 4.24, p < .05. Planned contrasts on untrimmed means revealed an identical pattern of results. Within each trigger condition, the only significant difference was between provoked and unprovoked participants in the mild trigger condition, t(53) = 2.76, p < .01.

predict aggression, Theil-Sen estimate (Wilcox, 2003) $b_{ts} = .37$, p < .0001.

Mediation analyses

To explore the hypothesis that negative affect resulting from the Time 2 triggering event (but not the Time 1 provocation) elicits aggression toward the target, mediation analyses (Baron & Kenny, 1986) were conducted. Trigger condition predicted physical aggression, Theil-Sen $b_{\rm ts} = 1.50$, p < .0001. Trigger condition also reliably predicted negative affect, such that increasing trigger intensity resulted in higher levels of negative affect, Theil-Sen $b_{ts} = 1.84$, p < .0001. Negative affect from the trigger predicted aggression, Theil-Sen $b_{ts} = .75$, p < .0001. Finally, when controlling for negative affect, trigger condition no longer predicted aggression, Theil-Sen $b_{\rm ts} = .40$, p = .46, but negative affect remained a significant predictor of aggression, Theil-Sen $b_{ts} = .60$, p < .0001. Thus, the four criteria suggested by Baron and Kenny (1986) for establishing mediation were fulfilled. Finally, although negative affect resulting from the trigger predicted physical aggression, negative affect resulting from the provocation did not predict aggression.7

Discussion

The current study provided support for Miller et al. (2003) prediction that relative to a no provocation condition, disjunctively escalated displaced aggression would only occur when the Time 2 triggering event is of mild intensity. Indeed, the only observed difference in aggression was in the mild trigger conditions, such that previously provoked participants displayed displaced aggression that exceeded the independent additive effects of the Time 1 provocation and Time 2 triggering event.

Participants in the neutral trigger and moderately strong trigger conditions did not significantly differ in levels of displaced aggression. Thus, the current study provides strong support for a central feature of the TDA paradigm. Specifically, among those previously provoked, aggressive responding should be greatest in response to a mild triggering event. When not previously provoked participants should not overreact to the mild triggering event. This was the pattern of results obtained in this and two previous studies (Pedersen et al., 2000). In addition, evidence of convergent construct validity was obtained by extending the TDA paradigm to measures of physical aggression. By contrast, only measures of verbal aggression have been used in our in two prior tests of disjunctive escalation of aggression within the TDA paradigm (Pedersen et al., 2000; studies 1 and 2).

Although irrefutably convincing evidence was not obtained for the attributional distortion hypothesis, limited aspects of the current results are consistent with TDA theory predictions (Miller et al., 2003). For example, negative affect resulting from the Time 2 trigger mediated aggression, but negative affect resulting from the provocation did not. A more convincing test of the attributional distortion hypothesis would have entailed a significantly greater mean score on the attributional distortion composite in the provocation condition than the no provocation condition only among participants in the mild trigger conditions. Future studies with more sensitive measures or different situational moderators may yet demonstrate this relationship.

One interesting, albeit minor, aspect of the current findings concerns the moderately strong trigger conditions. Specifically, aggression was nonsignificantly lower among participants who received both the Time 1 provocation and Time 2 strong trigger. These results are consistent with the two out of the three previous studies that manipulated strong Time 1 and Time 2 events (Baron, 1972; Baron & Bell, 1975). Researchers may wish to explore the intriguing possibility that high levels of provocation may actually decrease aggressive behavior over time. It is perfectly conceivable, and consistent with contemporary models of aggression (Anderson & Bushman, 2002; Berkowitz, 1993), that successive high levels of provocation over time may increase avoidance tendencies while lower levels may increase approach tendencies. Indeed, Baron and colleagues suggested that this may be the reason for their significant decrease in aggression observed in uncomfortably hot, by comparison with cool rooms (Baron, 1972; Baron & Bell, 1975).

Perhaps the most novel aspect of the TDA theory is its potential to explain seemingly puzzling real-world aggressive phenomena. One can easily think of instances in which the aggression observed in response to a minor triggering event seemed unwarranted. In such instances, the effects of two provocations over time disjunctively

⁶ The pattern of results for the attributional distortion composite with traditional statistics was identical to the results obtained with robust methods. The 2 (provocation: yes, no) × 3 (trigger: mild, moderately strong, neutral) between subjects ANOVA on untrimmed means also revealed a main effect of trigger condition, F(2,52) = 30.96, p < .001. Post hoc testing revealed that participants in the mild trigger condition perceived the evaluation more negatively than participants in the neutral trigger condition, p < .001. Participants in the moderately strong trigger condition perceived the evaluation more negatively than participants in both the mild (p < .01) and neutral trigger conditions (p < .001). Ordinary least squares (OLS) regression analyses demonstrated that the attributional distortion composite predicted aggression, β = .43, p < .01.

⁷ Mediation analyses with OLS revealed an identical pattern of results. Trigger condition predicted both physical aggression, $\beta = .48$, p < .001, and negative affect, $\beta = .76$, p < .001. In turn, negative affect from the trigger predicted aggression, $\beta = .55$, p < .001. Finally, when controlling for negative affect, trigger condition no longer predicted aggression, $\beta = .14$, p = .43, but negative affect remained a significant predictor of aggression, $\beta = .44$, p < .05.

exceed the independent additive combination of the effects of each provocation. For example, episodes of road rage or spousal abuse are frequently elicited by minor events. Thus, in many of these episodes, a prior provocation or frustration may have contributed to the aggression observed in response to a minor impoliteness on the highway or a wife's reminder about the uncut lawn. Moreover, aggressive individuals may not even be explicitly aware that their response to the person who provided the minor triggering event may be inordinately disproportionate. Although the process details presented here are incomplete, future research conducted within the TDA paradigm may eventually lead to a complete understanding of situational and individual moderators of aggressive responding among previously provoked participants in response to a mild triggering provocation. It is hoped that through understanding these moderators and process variables, efforts to limit aggressive responding may be developed.

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