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# Perceptions, emotions, and behavioral decisions in conflicts that escalate to violence

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**Abstract** The present study tests the notion that cost-benefit considerations guide individuals' emotional and behavioral responses when confronting an aggressive male stranger. Data was derived from hypothetical situations, with varying levels of opponent dangerousness and aggression severity, presented to 212 male and female students. Results indicate that the less dangerous the opponent and/or the more severe his aggression, the more intense are the respondents' expected emotions of anger and fear and the higher the intended severity of respondents' counter-aggression. While the expected emotional experience for female participants is more intense than for males, the intended behavioral counter-aggression is more severe for male participants than for females. Finally, an association between emotional experience and behavioral response was found only among males and it was mediated by opponent levels of dangerousness and aggression severity. Findings support the cost-benefit notion and emphasize the importance of studying aggression from an event perspective.

**Keywords** Conflict · Escalation · Emotional regulation · Behavioral regulation · Anger · Fear · Aggression

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## Introduction

Theories from various disciplines (e.g., social learning, Bandura 1973; evolutionary psychology, Buss 1995; rational choice theory, Klepper and Nagin 1989; Piliavin et al. 1986) suggest that human behavior is regulated to a large extent by anticipated consequences of prospective actions, aiming to maximize desirable outcomes (benefits) and minimize undesirable ones (costs) (Bandura 1973). Consistent with this notion, studies in the field of aggression show that conflicts between non-intimates are, to a large extent, shaped by confluence of situational parties' perceptions of opportunities and risks (Felson 1993; Oliver 1994; Wilkinson 2003; Winstok 2006). The aim of the present study is to test the cost-benefit hypothesis as applied to the context of a violent encounter. It seeks to answer questions such as how individuals' perceptions of their opponent's potential and actual harmfulness affect their emotional experience (intensity of anger and fear) and behavioral response (severity of counter-aggression).

### Outcome expectation and aggressive behavior

The relationship between outcome expectation (anticipated cost and benefit) and behavior in the context of interpersonal aggression has been discussed theoretically and has found empirical support. Parker (1974) argued that escalation tendencies of interpersonal conflicts are inversely related to damage cost, meaning that the willingness to act more and more aggressively (i.e., escalating) decreases as the perceived negative consequences (e.g., psychological or physical pain and injury) of these behaviors increase. Perry et al. (1989) showed that the anticipated consequences for aggressive behavior vary not only as a function of personal variables predictive of aggressive response (e.g., sex) but

also as a function of situational factors that affect aggressive response (e.g., degree of provocation and the opponent's sex). Thus, it may be assumed that in conflict situations the perceived level of dangerousness (potential harmfulness) of an opponent, the perceived severity level of the opponent's aggressive actions (actual harmfulness), and the decision to respond to the opponent's aggression are interrelated with cost-benefit considerations. The behavioral decision (i.e., retreat or retaliate) is derived of cost-benefit evaluation. Yet, in many situations the conditions under which such evaluation is made are uncertain. Haselton and Nettle (2006) argued from an evolutionary perspective, using the error management theory (EMT; Haselton and Buss 2000), that if judgments are made under uncertainty, and the costs of false positive and false negative errors have been asymmetric over evolutionary history, selection should favor a bias toward making the least costly error. If this notion is applied to the context of interpersonal aggression, reducing costs (avoiding injury) becomes the most important consideration.

When identifying the level of dangerousness of an opponent, one also makes a statement about the expectation to be hurt: the more dangerous the opponent is perceived, the greater the risk of being hurt. This high-risk evaluation may act as a deterrent calling to avoid or minimize such conflictual encounters (i.e., Baron 1971, 1973; Donnerstein et al. 1972; Shortell et al. 1970). Behavioral decisions aimed at avoiding physical harm represent a dilemma in interpersonal conflicts that may escalate to violence. If one chooses to retreat, he/she may exit the conflict without substantial harm (low cost) but it could also call forth more severe aggression on the part of the opponent (high cost), who may perceive a person who retreats as an easy prey. If one decides to retaliate, the opponent may be deterred and the conflict may result in no significant harm (low cost); but it could also spawn harsher aggression on the part of an opponent trying to deter or save face (high cost). Dilemmas of this type have been discussed exhaustively in game theory (Camerer 2003). A solution to a retreat or retaliate dilemma may be moderate action as long as the opponent's aggressive actions are also moderate (low negative consequences), and increasingly severe actions when the opponent's aggressive actions become more severe (high negative consequences). In the first phase of moderate actions the message to the opponent is ''I don't wish to fight with you.'' As the opponent's actions grow in severity, the message is likely to change to: ''Don't mess with me,'' ''I won't let you hurt me,'' and finally ''You leave me no choice but to hurt you.'' In other words, when the retreat tactic fails, one adopts a deterrent or rather a ''counter-deterrent'' tactic. But counter-deterrence does not preclude intentions of self-defense (terminating the conflict by subduing the opponent or minimizing the opponent's ability to do harm), although the willingness to launch a relatively more severe counter-aggression is higher when the opponent is perceived to be less dangerous. In game theory this solution is known as ''tit for tat'' (equivalent retaliation). It is maintained that individuals should follow a policy of strict reciprocity, responding immediately to the other party's behavior (Axelrod 1980).

Two of the research variables discussed above are perception-related and are manipulated in the present study. The first is the perceived level of dangerousness (potential harmfulness) of a hypothetical opponent; the second is the perceived severity of the opponent's aggressive actions. A third variable is behavior related and represents the decision to respond to the hypothetical opponent's aggression. This decision is defined as relative counter-aggression, ranging from moderate through balanced or commensurate to more severe response. Consistent with the theoretical framework presented in this section, it is hypothesize that: (1) the more the opponent is perceived as dangerous, the less severe is the respondent's intended counter-aggression; and (2) the more severe the opponent's aggression is perceived, the more severe is the respondent's intended counter-aggression.

## The role of fear and anger

Emotions alert individuals to important features of the environment and provide directions for cognitive processes from which behavioral decisions are derived in adaptive ways (e.g., Campos et al. 1994; Damasio 1994; Gross and John 2003; Lazarus 1991). Anger and fear are two emotions, which received much attention in the study of aggressive behavior and had been found as highly relevant to the development of interpersonal conflicts (Campbell 2006). The central difference between these two emotions lies in the timing of the event that generates them. Fear is a future-oriented emotion. It arises due to a perception of a negative event that may happen in the future. Anger is past oriented and arises when a negative event has already occurred (Weiner 1995). But the two emotions are not mutually exclusive. The expectation of a negative event may generate fear but can also be experienced as a presently happening event, and as such it may generate anger. For example, faced with an opponent who threatens to attack, an aggression expected to take place in the future, a person worries about being injured; at the same time, this person is also angry for having been placed in this situation. Because the dangerousness of the opponent is a potential threat that may be realized in the future, its effect on fear is greater than on anger; whereas the aggression of the opponent is an event that has already happened and therefore its effect on anger may be stronger than on fear. Another difference between anger and fear is in the way they stimulate and

regulate behavior. Studies show that there is a positive association between anger and aggression (Potegal and Archer 2004) and a negative association between fear and aggression (Campbell 1999). Anger tends to promote fight; fear tends to promote flight (Berkowitz 1993).

The effect of situational perception on the intensity of anger and fear, and the effect of such experiences on behavior can lead to the conclusion that these emotional experiences are a means of effectively handling problematic situations. It is argued that perception of the situation affects the emotional experience and the behavioral response as well as the manner in which they are associated. It is hypothesized that the effect of the emotional experience varies with the opponent's perceived levels of dangerousness and severity of his aggression: (1) when the dangerousness and aggression are perceived as high, fear is expected to be relatively more pronounced (in a negative way) in the construction of aggressive response; (2) When the severity of harm is high and dangerousness low, anger is expected to be relatively more pronounced (in a positive way) in the construction of an aggressive response.

### Sex differences in the regulation of interpersonal conflicts

Many aspects of aggression, from attitudes to behavior, are sex related (Campbell 2006). In relation to aggressive behavior studies showed that males are more aggressive than females, a difference that was greater for physical than for verbal aggression (Bettencourt and Miller 1996; Eagly and Steffen 1986; Hyde 1984; Knight et al. 2002). In a meta-analytic review, Archer (2004) argued that most studies do not specify the sex of the opponent and speculated that because most aggression questionnaires show the pattern typical of same-sex aggression, it is likely that respondents answer with the same sex in mind unless explicitly asked about opposite-sex opponents or partners. In a meta-analytic review, Eagly and Steffen (1986) demonstrated that in studies, which specify opponent sex there is a consistent difference for same-sex opponents (males are more aggressive than female) and nearly always a difference for opposite-sex opponents (females are more aggressive than males). More recently, two studies demonstrated that males tend to respond more severely than females to the aggression by a male opponent (Winstok 2006, Winstok and Enosh in press). One of the reasons, if not the main one, is that in such a conflict the cost of physical injury is likely to be higher for women than for men, and the benefit (gain in status) is small if any (Campbell 1999). Thus it is hypothesized that: the intended severity level of counter-aggression of males to the aggression of a male opponent is more severe than that of females.

Studies show that there are sex differences in emotional experiences (Wintre et al. 1990), whereas females experience emotions more intensively than do males (Diener et al. 1985; Fujita et al. 1991), including negative ones (Stapley and Haviland 1989; Tangney 1990). As for fear Campbell (1999) suggested that this emotion regulates the mechanism by which humans weigh cost in an encounter, and given an equal degree of objective risk and harm, females experience greater fear than do men. As for anger, some studies showed that women experience anger more intensely than men (Biaggio 1989; Brody et al. 1995; Fehr et al. 1999; Kring and Gordon 1998; Strachan and Dutton 1992). Yet, sex differences in anger experience are less evident than those in fear. Thus, it is hypothesized that: females' expected intensity of anger and fear is higher than that of males. Yet, sex differences in the intensity of anger are smaller than in fear.

## Method

### Participants

The study was based on a sample of 212 undergraduate students from two universities in northern Israel, 55.2% male and 44.3% female. The average age of males was 30.35 (SD = 8.34) and of females 29.81 (SD = 9.30). The average age of students in this sample is relatively high because many students in Israel, due to compulsory military service begin their academic studies at an older age than in most western countries. In addition, one of the two universities sampled is an open university, which typically enrolls older students. The average education of participants' parents was 12.95 years (SD = 2.85). Twelve percent of participants reported the level of income in their family of origin to be lower than average, 62.6% reported it to be in the middle range, and 25.2% reported it to be higher than average. Among participants with a family of their own (45.3%), 8.3% reported a family income lower than average, 63.5% in the middle range, and 28.1% higher than average. Jewish students made up 92.9% of participants, the others being Moslem, Christian, and Druze. Seventy nine percent defined themselves as secular, 19.5% as traditional, and 1.5% as religious.

### Data collection procedure

Trained undergraduate students conducted the interviews. They were instructed to recruit an equal number of men and women for the study and to hand out an equal distribution of the questionnaire's four versions. This was performed in a structured manner: one version was circulated to one gender and then to the other, then another version

was used and so on. Data were collected on the campuses of two universities. Surveyors randomly approached students at campus main gathering areas, introduced themselves and asked the students to anonymously take part in a study on human perceptions, emotions and behaviors without giving any further details. Respondents (95%) were accompanied by surveyors to a nearby classroom where the study was explained to them and they were given one of four versions of the questionnaire to fill out. Most of those who refused to take part in the study (5%) explained that the time was not right for them. Participants were provided with oral and written instructions on how to complete the questionnaire. All interviews were conducted by means of self-administered questionnaires, which were completed while the surveyors waited for participants to finish. No identifying details were required in the questionnaire. The approach, screening, explanations, and completion of the questionnaire lasted approximately 15–20 min.

### Instrument

The instrument to collect data was limited *a priori* to specifically constructed situations in which a male stranger of the respondent's age attacks the respondent (male or female) in the street, without an audience present. Addressing a female stranger as well is important but doubles the size of the instrument. The decision regarding age of attacker, relationships between the parties, location and audience were made according to convenience. For instance if the attacker were not a stranger it could raise questions such as who is he? Was it possible for this person to be violent? Or if audience were included then questions such as number, sex, age, relationship to the parties had to be addressed and could extremely complicate data collection and reliability or to produce a more restricted study. Respondents were presented with hypothetical conflicts differentiated by the dangerousness of the opponent and the severity of aggressive actions.

Opponent types were described as follows:

- One whom you clearly think you could deter. It seems that if you react to his behavior more severely than he did, he will be scared off, will retreat, and not try to attack you again.
- One whom you clearly think you could not deter. It seems that if you react to his behavior more severely than he did, he will not be scared off, will not retreat, and could attack you again with possibly even more severe aggression.
- One whom you clearly think is crazy, ruthless, and unstoppable. It seems that if you react to his behavior more severely he could even try to kill you.

An additional type that would not be addressed in this study was described as follows: One whom you are not sure whether or not you could deter. You are not certain how your behavior could affect his.

The severity of the opponent's aggression was expressed in three forms of increasingly aggressive actions: verbal aggression (a mild form), threatening with physical aggression (a more severe form), and physical aggression (the most severe form). The levels of severity were defined based on a study (Winstok and Enosh in press) in which experts in the field of aggression were asked to rate various forms of aggression in order of severity. All expert judges specifically differentiated between verbal and physical forms of aggression, and there was almost complete agreement over the following rating of relative severity (from moderate to severe): (1) yelling; (2) cursing; (3) insulting; (4) threatening; (5) pushing; (6) slapping; (7) punching; and (8) kicking. These actions were grouped into three levels of aggression severity: (1) cursing (verbal aggression); (2) threatening to hurt (threatening with physical aggression); and (3) hitting (physical aggression). Respondents were asked to address nine situations: three levels of known dangerousness multiplied by three forms of aggression. Respondents were asked to report the level of fear and anger that each situation aroused on a 5-point Likert scale: 1 = not at all, 2 = a little, 3 = moderately, 4 = considerable and 5 = very much. They were also asked to evaluate their decision to respond commensurately to the opponent's aggression (counter-aggression) on a 5-point scale: 1 = not aggressively at all, 2 = less aggressively, 3 = with the same level of aggression, 4 = more aggressively, and 5 = much more aggressively. To neutralize the possible effect of the order of questionnaire items, four versions were prepared. In two of the versions the dangerousness of the opponent was listed in increasing order, in the other two in decreasing order; in half the versions severity of aggression was listed in increasing order and in the other half in decreasing order. No significant differences (method effects) were found between the four versions (one of the four versions of the instrument containing the items used in the present study is shown in Appendix A).

## Results

The study features three dependant measures: anticipated counter-aggression, anticipated anger, and anticipated fear. The statistics, including Means (M) and Standard Error of the Means (SE) for these dependant measures broken down by experimental condition, are shown separately for male and female participants on the top (counter-aggression), middle (anger) and bottom (fear) sections of Table 1.

Intended severity level of counter-aggression

To test the effect of opponent dangerousness and aggression on intended severity level of counter-aggression, a mixed repeated measure ANOVA (with Bonferoni pairwise comparison) was performed, with sex of the respondent as the between-subjects effect, and with level of opponent dangerousness (3 levels) and severity level of his aggression (3 levels) as the within-subjects effects. The multivariate and univariate test results show that the effects of opponent level of dangerousness and severity levels of his aggression, and the effects of their interaction were significant. The strongest effect was that of the opponent level of dangerousness: $F_{(2,189)} = 29.61$, $P < 0.001$, $\eta^2 = 0.24$; second was the effect of the severity level of his aggression: $F_{(2,189)} = 27.92$, $P < 0.001$, $\eta^2 = 0.23$; last was the interaction effect of opponent level dangerousness with severity levels of his aggression, which was also found to be significant: $F_{(4,187)} = 4.81$, $P < 0.001$, $\eta^2 = 0.09$. Findings show a significant difference ($P < 0.05$) between levels of opponent dangerousness: the highest was against aggression of the opponent characterized as lowest in dangerousness (M = 2.38, SE = 0.07); it was lower against the opponent with medium level of dangerousness (M = 2.02, SE = 0.07); the least was against the opponent characterized as highest in dangerousness (M = 1.65, SE = 0.07). Findings also show a significant difference ($P < 0.05$) between levels of severity of opponent aggression. Here the significant differences were between verbal forms of aggression (cursing and threatening to hurt) and the physical ones (beating): the highest was against physical aggression (M = 2.31, SE = 0.07); it was lower against verbal forms of aggression, ranging between means of 1.837 (SE = 0.06) for cursing and 1.90 (SE = 0.06) for threatening. When referring to the interaction effect of opponent level dangerousness with severity levels of his aggression, findings show that differences in respondents' intended severity level of counter-aggression across levels of opponent aggression decreased as opponent dangerousness increased.

The univariate test of respondent sex yielded significant results: $F_{(1,190)} = 8.50$, $P < 0.01$, $\eta^2 = 0.04$. Its interaction with the severity levels of opponent aggression was found to be significant: $F_{(2,189)} = 6.54$, $P < 0.01$, $\eta^2 = 0.07$, but its interaction with opponent levels of dangerousness was not. Furthermore, its interaction with opponent dangerousness and severity of opponent aggression was also found to be non-significant. In general, the intended severity level of counter-aggression among male respondents was higher (M = 2.17, SE = 0.07) than among fe-

**Table 1** Mean scores for counter-aggression, anger, and fear broken down by sex of respondents, level of opponent dangerousness and severity of opponent aggression

| | | | Level of opponent dangerousness | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Low | | Medium | | High | |
| | | | M | SE | M | SE | M | SE |
| *Counter-aggression* | | | | | | | | |
| Males | Severity of opponent aggression | Low | 2.20 | 0.12 | 1.91 | 0.10 | 1.63 | 0.10 |
| | | Medium | 2.31 | 0.12 | 1.99 | 0.10 | 1.69 | 0.10 |
| | | High | 3.18 | 0.12 | 2.59 | 0.12 | 2.02 | 0.12 |
| Females | Severity of Opponent Aggression | Low | 2.06 | 0.13 | 1.75 | 0.11 | 1.48 | 0.11 |
| | | Medium | 2.12 | 0.13 | 1.82 | 0.11 | 1.49 | 0.11 |
| | | High | 2.42 | 0.13 | 2.05 | 0.14 | 1.58 | 0.13 |
| *Anger* | | | | | | | | |
| Males | Severity of opponent aggression | Low | 2.54 | 0.13 | 2.91 | 0.12 | 2.70 | 0.13 |
| | | Medium | 2.85 | 0.13 | 3.19 | 0.11 | 3.03 | 0.13 |
| | | High | 3.47 | 0.12 | 3.65 | 0.12 | 3.52 | 0.12 |
| Females | Severity of opponent aggression | Low | 2.95 | 0.14 | 3.44 | 0.14 | 3.74 | 0.15 |
| | | Medium | 3.29 | 0.15 | 3.81 | 0.13 | 4.12 | 0.14 |
| | | High | 3.93 | 0.14 | 4.20 | 0.13 | 4.22 | 0.14 |
| *Fear* | | | | | | | | |
| Males | Severity of opponent aggression | Low | 1.50 | 0.09 | 2.29 | 0.12 | 3.11 | 0.13 |
| | | Medium | 1.93 | 0.11 | 2.83 | 0.11 | 3.25 | 0.12 |
| | | High | 2.25 | 0.12 | 3.17 | 0.12 | 3.54 | 0.12 |
| Females | Severity of opponent aggression | Low | 1.85 | 0.10 | 3.25 | 0.13 | 4.05 | 0.15 |
| | | Medium | 2.38 | 0.13 | 3.81 | 0.13 | 4.44 | 0.13 |
| | | High | 3.19 | 0.14 | 4.20 | 0.13 | 4.56 | 0.14 |

$N = 212$ (192 with no missing data in all research variables)

males (M = 1.86, SE = 0.08). Differences in Male respondents' intended severity level of counter-aggression across levels of opponent aggression were greater than for female respondents.

Expected intensity of anger

To test the effect of opponent dangerousness and of aggression on expected intensity of anger, a mixed repeated measure ANOVA was performed (with Bonferoni pair-wise comparison), with sex of the respondent as the between-subjects effect and with level of opponent dangerousness (3 levels) and severity level of his aggression (3 levels) as the within-subjects effects. The multivariate and univariate test results show that the effects of opponent level of dangerousness and of severity level of his aggression, and the effects of their interaction were significant. The strongest effect was that of the severity level of opponent aggression: $F_{(2,189)} = 64.93$, $P < 0.001$, $\eta^2 = 0.41$; second was that of his level of dangerousness: $F_{(2,189)} = 16.77$, $P < 0.001$, $\eta^2 = 0.15$; last was the interaction effect of opponent level of dangerousness with severity levels of his aggression which was also found to be significant: $F_{(4,187)} = 5.98$, $P < 0.001$, $\eta^2 = 0.11$. Findings show a significant difference ($P < 0.05$) between levels of severity of opponent aggression: the lowest expected intensity of anger was experienced in response to cursing (M = 3.05, SE = 0.08); higher expected intensity of anger was experienced in response to opponent threats (M = 3.381, SE = 0.082), and highest in response to physical attack (M = 3.83, SE = 0.078). Findings also show a significant difference ($P < 0.05$) in expected intensity of anger between the lowest level of opponent dangerousness and the two higher ones (medium and high). No significant difference was found between high and medium levels of opponent dangerousness. The lowest expected intensity of anger was experienced when confronting the aggression of an opponent whose dangerousness was lowest (M = 3.17, SE = 0.08). Expected intensity of anger was higher when confronting the aggression of an opponent with medium level of dangerousness (M = 3.53, SE = 0.08) and an opponent with the highest level of dangerousness (M = 3.56, SE = 0.09). When referring to the interaction effect of opponent level dangerousness with severity levels of his aggression, findings show that differences in respondents' expected intensity of anger across levels of opponent dangerousness decreased when the aggression of the opponent was relatively severe (physical attack) as compared to relatively moderate (cursing and threats).

The univariate test of respondent sex yielded significant results: $F_{(1,190)} = 20.23$, $P < 0.001$, $\eta^2 = 0.10$. Its interaction with opponent levels of dangerousness was found to be significant: $F_{(2,189)} = 6.03$, $P < 0.01$, $\eta^2 = 0.060$ but not its interaction with severity levels of opponent aggression. Furthermore, its interaction with opponent dangerousness and severity of opponent aggression was also found to be non-significant. In general, expected intensity of anger (M = 3.75, SE = 0.10) among female respondents was higher than that expected by male respondents (M = 3.09, SE = 0.10). Expected intensity of anger across opponent levels of dangerousness was different for male and female respondents: while for females an increase in opponent level of dangerousness resulted in an increase in the expected intensity of anger, for males the expected intensity of anger was the highest for opponents with medium levels of dangerousness.

Expected intensity of fear

To test the effects of opponent dangerousness and aggression on the expected intensity of fear, a mixed repeated measures ANOVA was performed (with Bonferoni pair-wise comparison), with the sex of the respondent as the between-subjects effect and with level of opponent dangerousness (3 levels) and severity level of his aggression (3 levels) as the within-subjects effect. The multivariate and univariate test results show that the effects of opponent level of dangerousness and of severity of aggression, and the effects of their interaction, were significant. The strongest effect was that of opponent level of dangerousness: $F_{(2,186)} = 148.058$, $P < 0.001$, $\eta^2 = 0.614$; second was severity level of his aggression: $F_{(2,186)} = 74.48$, $P < 0.001$, $\eta^2 = 0.45$; the interaction effect between opponent level of dangerousness and severity level of his aggression was also found to be significant: $F_{(4,184)} = 8.41$, $P < 0.001$, $\eta^2 = 0.16$. Findings show a significant difference ($P < 0.05$) between severity levels of opponent aggression: the lowest expected intensity of fear was experienced in response to cursing (M = 2.67, SE = 0.07); stronger expected intensity of fear was experienced in response to opponent threats (M = 3.107, SE = 0.07), and highest in response to physical attack (M = 3.49, SE = 0.07). Findings also show a significant difference ($P < 0.05$) between all levels of opponent dangerousness (low, medium and high). The lowest expected intensity of fear was measured when confronting the aggression of the opponent with the lowest level of dangerousness (M = 2.18, SE = 0.07). When confronting the aggression of the opponent with a medium level of dangerousness, expected intensity of fear was stronger (M = 3.26, SE = 0.07), and it was strongest vis-à-vis the opponent with the highest level of dangerousness (M = 3.83, SE = 0.08). When referring to the interaction effect of opponent level dangerousness with severity levels of his aggression, findings show that differences in respondents' expected intensity of fear across levels of

opponent aggression decreased as opponent dangerousness increased.

The univariate test of respondent sex yielded significant results: $F_{(1,187)} = 51.14$, $P < 0.001$, $\eta^2 = 0.22$. Its interaction with opponent level of dangerousness was found to be significant ($F_{(2,186)} = 3.85$, $P < 0.05$, $\eta^2 = 0.04$) but not so with severity level of opponent aggression. The three-way interaction (opponent dangerousness × severity of opponent aggression × respondent sex) was found to be significant: $F_{(4,184)} = 3.56$, $P < 0.05$, $\eta^2 = 0.040$. In general, expected intensity of fear among females was higher (M = 3.53, SE = 0.09) than that expected by male respondents (M = 2.65, SE = 0.08). Differences in female respondents' expected intensity of fear across levels of opponent aggression were greater than for male respondents. Furthermore, an increase in the level of opponent dangerousness and/or in the severity of opponent aggression decreases sex differences.

### Relationship between perceptions, expected emotional intensity, and intended response

A series of regressions were used for both respondent sexes to explore how the opponent's level of dangerousness and the severity level of his aggression regulate the effect of respondent's expected intensity of anger and fear on their intended severity level of counter-aggression. Each regression addressed a different social situation distinguished by opponent level of dangerousness (3 levels) and severity of his aggression (3 levels), for a total of 9 regressions, each one explored for both respondent sexes. The independent variables for each social situation examined were anger and fear; the dependent variable was the counter-aggression. Colinearity diagnostics indicated acceptable results in all regressions. Results show that for female respondents none of the social situation yielded a significant effect of emotion variables on the counter-aggression variable. That is, across all nine situations, neither the level of fear nor the level of anger explains the extent of counter-aggression for females.

The following results were found for male participants when facing *low* danger of harm:

When severity of harm was *low*, the overall effect on counter-aggression was significant: $F_{(2,106)} = 3.29$, $P < 0.05$, $R^2 = 0.06$ with a significant individual effect for anger: $t = 2.54$, $P < 0.01$, $\beta = 0.25$, but with a non-significant individual effect for fear.

When severity of harm was *medium*, the overall effect on counter-aggression was significant: $F_{(2,110)} = 6.60$, $P < 0.01$, $R^2 = 0.11$ with a significant individual effect for anger: $t = 4.61$, $P < 0.001$, $\beta = 0.34$, but with a non-significant individual effect for fear.

When severity of harm was *high*, the overall effect on counter-aggression was significant: $F_{(2,108)} = 17.1$, $P < 0.001$, $R^2 = 0.24$ with a significant individual effect for anger: $t = 5.83$, $P < 0.001$, $\beta = 0.51$, and for fear: $t = -2.13$, $P < 0.05$, $\beta = -0.19$.

The following results were found for male participants when facing *medium* danger of harm:

When severity of harm was *low*, the overall effect on counter-aggression was significant: $F_{(2,106)} = 6.99$, $P < 0.001$, $R^2 = 0.12$ with a significant individual effect for anger: $t = 3.72$, $P < 0.001$, $\beta = 0.38$, and for fear: $t = -2.03$, $P < 0.05$, $\beta = -0.21$.

When severity of harm was *medium*, the overall effect on counter-aggression was significant: $F_{(2,107)} = 3.10$, $P < 0.05$, $R^2 = 0.06$ with a significant individual effect for anger: $t = 2.21$, $P < 0.05$, $\beta = 0.24$, and for fear: $t = -2.15$, $P < 0.05$, $\beta = -0.24$.

When severity of harm was *high*, the overall effect on counter-aggression was significant: $F_{(2,106)} = 10.25$, $P < 0.001$, $R^2 = 0.16$ with a significant individual effect for anger: $t = 3.39$, $P < 0.001$, $\beta = 0.34$, and for fear: $t = -4.20$, $P < 0.001$, $\beta = -0.42$.

The following results were found for male participants when facing *high* danger of harm:

When severity of harm was *low*, the overall effect on counter-aggression was non-significant.

When severity of harm was *medium*, the overall effect on counter-aggression was significant: $F_{(2,108)} = 6.86$, $P < 0.01$, $R^2 = 0.11$ with a significant individual effect for anger: $t = 2.21$, $P < 0.05$, $\beta = 0.22$, and for fear: $t = -3.62$, $P < 0.001$, $\beta = -0.36$.

When severity of harm was *high*, the overall effect on counter-aggression was significant: $F_{(2,107)} = 12.30$, $P < 0.001$, $R^2 = 0.19$ with a significant individual effect for anger: $t = 2.84$, $P < 0.01$, $\beta = 0.26$, and for fear: $t = -4.74$, $P < 0.01$, $\beta = -0.43$.

In sum, it seems that anger functions as aggression facilitator whereas fear functions as aggression inhibitor. Yet as the opponent's aggression becomes more severe, the effect of respondents' emotion intensity on their decision to respond aggressively increases. Where anger is concerned, this tendency is more prominent when the opponent has a low level of dangerousness, and where fear is concerned, this tendency is stronger with the more dangerous opponents.

## Discussion

This study aimed at revealing some of the perceptual, emotional and behavioral rules (beliefs or attitudes) guiding normative adults in interpersonal conflicts that may escalate to violence. Because such rules are abstract rep-

resentations, whereas emotions and behaviors are episodic, they often correspond (Ajzen 1991; Robinson and Clore 2002). Therefore these rules can also be regarded as effective but partial predictors of emotional experiences and behavioral performance in real-life situations. In general, the findings of the present study support the cost benefit hypothesis (Bandura 1973) as actualized through an event perspective (Wilkinson and Hamerschlag 2005).

Findings show that the less dangerous the opponent and/or the more severe his aggression, the higher the intended severity of counter-aggression. Both of the perceptual variables, dangerousness of the opponent and severity of his aggression, contribute positively to the degree to which the situation is perceived as problematic (the more dangerous the opponent is perceived and the more severe his aggression, the more problematic the situation). Yet their contribution to constructing an intended response in terms of counter-aggression has opposite effects: the former suppresses aggressive response whereas the latter enhances it. It is suggested here that actions result of two contradicting tendencies: being deterred by the opponent and the need to deter the opponent. Both tendencies derive from the perception of dangerousness as deterring. The first results from how the opponent or his dangerousness is perceived; the second is an outcome of the attempt to construct a deterrence vis-à-vis the opponent. The result of the two tendencies ultimately determines the response. It seems that this result follows a tit-for-tat policy (strict reciprocity).

Another perspective of the association between these variables is that opponent dangerousness and harm are two facets of the same coin. Dangerousness means potential harm; actual harm is a (sometimes partial) realization of the potential of dangerousness. Therefore the relevance and effectiveness of dangerousness as a deterrent are high as long as it is not realized (or partially realized). The more it is realized, the lesser its relevance and effectiveness become. The more it is realized, the more severity of harm increases in importance and becomes more relevant to the construction of a response. The assumption tested in this study is that the emotional experiences of fear and anger serve as a motivation to shift the main factor affecting response construction from opponent dangerousness to severity of aggression. The idea that emotions motivate actions gains expression when someone facing a dangerous opponent says ''I am not afraid of you.'' This utterance, even if only tactical, signals a high level of cognitive and emotional readiness for coping with the situation.

Findings related to the expected intensity of emotions show that opponent level of dangerousness has a greater effect on the expected intensity of fear than severity of his/her aggression whereas opponent severity level of aggression has a greater effect on the expected intensity of anger than on his/her level of dangerousness. Furthermore, while the effect of opponent severity level of aggression on both expected emotions is similar, opponent level of dangerousness has a greater effect on the expected intensity of fear than on anger. Findings also show that expected emotional experience for females is more intense than for males; intended behavioral counter-aggression is more severe for males than for females, and only among males the association between emotional experience and behavioral response is maintained and mediated by opponents' levels of dangerousness and aggression severity. The effect of the emotional experience varies with the opponent's level of dangerousness and harm (severity of aggression): fear has a strong negative presence in the construction of aggressive response when dangerousness and harm are high. Anger is strongly and positively manifest in the construction of an aggressive response when the severity of harm is high and dangerousness low.

Taking a step back to interpret the findings based on study methodology, gender differences may not be so significant and the driving mechanism for males may not be so different from those of females. The comparison between men and women in this study was not performed on an equal basis: because men's ability to cause or sustain injury exceeds that of women, and because in all situations tested the opponents were unfamiliar men, the women in the study faced greater risk than the men. Therefore the differences between males and females are structured into the methodology, and the findings demonstrate these differences. Hence, the question that must be asked should not focus on differences but rather on similarities. Do both sexes share the same response mechanism despite the methodological differences? What is the role of this mechanism? Is it aimed at reducing costs, as suggested? Although these questions cannot be answered within the scope of the findings, we may assume that the answer is positive. In the given situations women refrained from expressing their emotions. Such expressions could cost them dearly. Expressions of anger and fear, each prompted by different reasons, may encourage their male opponents to attack them with more severity and cause greater physical damage. Expressions of fear may have empowered these men. Expressions of anger may have enraged them. The aim of women in both cases is to tone down the aggression of their opponents as much as possible. It is therefore better for women, despite the intensity of the emotions they experience, to put those aside and to respond based on their perception of the situation (dangerousness and severity). Moreover, from the women's viewpoint, the benefit of having a conflict with an unfamiliar man can be very small, if any. The social expectation of a woman having a conflict with a man is to be wise rather than right. For women, the only

benefit is to end such encounters unharmed (to minimize costs); for men, the cost-benefit equation in these situations may be more complex. On one hand, similarly to women, their actions may be driven by the attempt to reduce harm. On the other hand, a violent encounter with an unfamiliar man may serve as an opportunity to promote their social status (benefit) not only in the eyes of their significant environment but also (and mostly) for themselves, as the social expectation of a man having a conflict with another man is not to retreat. A man retreating from conflict harms his masculine reputation, which has certain implications. Such analysis shifts the focus of discussion from abstract cost and benefit to motivations and concrete goals from which the costs and benefits are derived. The body of knowledge on sex differences in violence and crime is based mostly on social role theory (Bettencourt and Kernahan 1997; Bettencourt and Miller 1996; Eagly and Steffen 1986) and sexual selection theory (Archer 1996; Daly and Wilson 1988). It is argued that status enhancement is more important for males than for females, and is more important for males than risk reduction is, whereas the opposite is true for females (Campbell 1999). Because the goal of minimizing risks may inhibit violence more strongly than the goal of status enhancement, it may be assumed that violence-inhibiting goals are more important for females than for males. Analyzing the findings based on motivations explains the sex differences in emotional intensity, counterattack severity, and their interrelations. Based on this approach it is suggested that if indeed there are differences between men and women, they are more evident when asking ''why'' rather than ''how'' action is taken.

In sum, it seems that in most cases among normative adults, the manner in which emotions are experienced and affect the decision to respond is consistent with cost-benefit and rational considerations. Findings in this study support Damasio's (1994) proposition that emotions must be engaged to some extent for individuals to make effective decisions, especially in the personal and social domains. He views emotion as vital for rationality because it allows effective filtering and processing of information. From this perspective, emotional reactions to environmental and internal stimuli operate to quickly place values, or attach preferences to those stimuli and possible responses. Damasio suggests that a rational consideration of all the options and consequences of a decision would make effective decision-making in daily life awkward and almost impossible.

This study has several limitations. First, the study design is correlative therefore it cannot be viewed as a causal model, explaining how reactions to aggression are constructed. Second, since the study is based on hypothetical situations, it is doubtful whether it reveals the ways in which individuals perceive, experience, and behave in real life situations (Parkinson and Manstead 1993; Roseman and Evdokas 2004). Thus, the findings of this study should be viewed as examining attitudes guiding interpersonal conflicts that escalate. Third, the model focused on the segment of social information processing (Dodge 1980; Crick and Dodge 1994) in which interpretation is already a given and ends with a decision as to the desired reaction. Moreover, the model representing this segment was tested in a fragmented rather than holistic manner. Fourth, the categories selected for each concept are not exhaustive. For example, perception focused only on the level of dangerousness, the severity of the attack, and the opponent's sex (restricted to males only). Emotions were limited to anger and fear. Response was phrased only as counter-aggression.

One link missing in the hypotheses tested in the present study has to do with the suggestion that women's emotions, including anger, are more intense than those of men, but men's counter-aggression is more severe than that of women. It has also been suggested that there is a positive association between the intensity of anger and the severity of counter-aggression. Sex differences found in this study regarding this suggestion provide the missing link. But they also raise new questions. First, what is the mechanism regulating the effect of emotions on behavior within the context of violence? The answer could be that it is a compensatory mechanism present among normative populations in high-risk situations: the more a person is emotionally charged, the less it is expressed in behavior. This is probably a survival mechanism preventing individuals from making irrational (i.e., emotion-driven) behavioral decisions in high-risk and emotion-charged situations. Yet, this issue requires further empirical examination and development. Second, these findings cast doubt on the widespread claim that women's aggression tends to be expressive (i.e., emotion-driven) and men's instrumental (i.e., goal-driven). The findings of the present study support other studies that found that in the context of violence women experience higher emotional intensity than do men, but also show that the relevance of the emotional experience for counter-aggression is higher for men than for women (at least when the opponent is a stranger). If this is the case, is the hypothesis about sex differences in aggression expressivity/instrumentality still valid? This issue also warrants further examination. This may be an interactional rather than personal issue, not dependent only on the respondent's sex but also on the opponent being faced. This possibility suggests that in follow-up studies the unit of reference and analysis should be interactional rather than individual, and identify not only the respondent's sex but also that of the opponent faced.

**Appendix A** Research instrument

| (1) | (2) | | | | | (3) | | | | | (4) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Imagine that in the street without the presence of others, a male stranger in your age: | How much would it frighten you? Mark: | | | | | How angry would it make you? Mark: | | | | | How would you respond: Mark: | | | | |
| | 1 = not at all | | | | | 1 = not at all | | | | | 1 = not aggressively at all | | | | |
| | 2 = a little | | | | | 2 = a little | | | | | 2 = less aggressively | | | | |
| | 3 = moderately | | | | | 3 = moderately | | | | | 3 = with the same level of aggression | | | | |
| | 4 = considerable | | | | | 4 = considerable | | | | | 4 = more aggressively | | | | |
| | 5 = very much | | | | | 5 = very much | | | | | 5 = much more aggressively | | | | |
| 1) *CURSED YOU.* You clearly think you could deter him. It seems that if you react to his behavior more severely than he did, he will be scared off, will retreat, and not try to attack you again. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 2) *CURSED YOU.* You clearly think you could not deter him. It seems that if you react to his behavior more severely than he did, he will not be scared off, will not retreat, and could again attack you with possibly even more severe aggression. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 3) *CURSED YOU.* You clearly think he is crazy, ruthless, and unstoppable. It seems that if you react to his behavior more severely he could even try to kill you. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 4) *THREATENED TO HIT YOU.* You clearly think you could deter him. It seems that if you react to his behavior more severely than he did, he will be scared off, will retreat, and not try to attack you again. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 5) *THREATENED TO HIT YOU.* You clearly think you could not deter him. It seems that if you react to his behavior more severely than he did, he will not be scared off, will not retreat, and could again attack you with possibly even more severe aggression. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 6) *THREATENED TO HIT YOU.* You clearly think he is crazy, ruthless, and unstoppable. It seems that if you react to his behavior more severely he could even try to kill you. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 7) *HIT YOU.* You clearly think you could deter him. It seems that if you react to his behavior more severely than he did, he will be scared off, will retreat, and not try to attack you again. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 8) *HIT YOU.* You clearly think you could not deter him. It seems that if you react to his behavior more severely than he did, he will not be scared off, will not retreat, and could again attack you with possibly even more severe aggression. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |
| 9) *HIT YOU.* You clearly think he is crazy, ruthless, and unstoppable. It seems that if you react to his behavior more severely he could even try to kill you. | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 |

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