Empathy Inhibits Aggression in Competition: The Role of Provocation, Emotion, and Gender

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Abstract

Although the empathy-aggression relationship has been well documented, research has yet to establish whether emotions mediate and gender moderates this relationship in athletes, under conditions of low and high provocation. In this experiment, we assigned team-sport athletes to either a high (n = 40) or a low (n = 40) empathy group, and asked them to compete in a reaction-time task against a (fictitious) opponent, under conditions of low and high provocation. Empathy reduced aggression (i.e., intensity of electrical shock administered to the opponent) at low provocation in men, and at both low and high provocation in women. Guilt mediated the effect of empathy on aggression at low provocation in men; anger did not mediate any effects of empathy on aggression. Our findings indicate that the inhibitory effect of empathy on aggression and the mediating role of guilt are moderated by provocation and gender.

Keywords: anger, experiment, guilt, morality, perspective taking.

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Aggression, defined as verbal or physical behavior intended to harm another individual, who is motivated to avoid such treatment (Baron & Richardson, 1994), can cause significant psychological and physical harm to its recipients. For example, a high tackle or sucker punch in soccer or rugby could seriously injure a player and end his or her participation in sport. Aggression could also negatively affect performance by distracting attention from the task or inviting sanction from the officials (e.g., being sent off). Given the potential adverse consequences of aggression, identifying factors that reduce this behavior in sport is a significant research endeavor. The main aim of this research was to investigate the effect of empathy on aggression in athletes and to examine whether provocation and gender moderate, and emotions mediate, this effect.

Empathy and Aggression

Empathy has been defined as an other-oriented emotional response that is congruent with another person's perceived welfare (Batson, Early, & Salvarani, 1997). Empathy can be elicited via perspective taking by imagining how the other person feels (Batson et al., 1997; Hoffman, 2000). Several theorists have suggested that empathy should inhibit aggression (e.g., Eisenberg, 2000; Feshbach, 1975; Hoffman, 2000). Specifically, when individuals adopt the perspective of others and imagine how others feel, they are less likely to engage in aggressive behavior that may elicit distress in another person (Eisenberg, 2000). Indeed, empathy has been negatively associated with aggression in numerous cross-sectional studies (e.g., Jolliffe & Farrington, 2004; Miller & Eisenberg, 1988; Vachon, Lynam, & Johnson, 2014) and some experiments (e.g., Phillips & Giancola, 2007). In the sport context, empathy has been inversely linked to antisocial behavior (Kavussanu & Boardley, 2009; Kavussanu, Stamp, Slade, & Ring, 2009; Kavussanu, Stanger, & Boardley, 2013). However, only one

experiment has been conducted in athletes. Although results showed that empathy reduced males' reported likelihood to aggress toward an opponent in sport (Stanger, Kavussanu, & Ring, 2012), researchers did not measure actual aggression. Therefore, there is still a need to experimentally investigate the effect of empathy on actual aggressive behavior in athletes.

Empathy has the potential to attenuate aggression in sport, a context in which individuals could be aggressive in their efforts to outperform others (see Bredemeier & Shields, 1986). Indeed, athletes report that aggressive and antisocial acts against competitors are more acceptable and frequent in sport than in other contexts (e.g., Kavussanu, Boardley, Sagar, & Ring, 2013; Kavussanu & Ring, 2015). Empathy could attenuate aggression in athletes by promoting consideration of others' feelings and welfare during competition. People can also behave impulsively and thereby act aggressively due to elevated arousal (Zillmann, 1988), which can be increased by competition (e.g., Cooke, Kavussanu, McIntye, & Ring, 2013). Perspective taking may strengthen one's cognitive ability to counteract the arousal that could lead to aggression (Richardson, Hammock, Smith, Gardner, & Signo, 1994; Zillmann, 1988), thereby attenuating aggression in athletes during competition.

Provocation and Gender

Provocation, which refers to any action judged to be aversive, eliciting negative affect such as anger (e.g., Berkowitz, 1989), can lead to reactive aggression in sport (Maxwell, 2004). Provocation has been positively associated with aggression in athletes (e.g., Maxwell, 2004) and has the potential to negate the inhibitory effects of empathy on aggression (e.g., Phillips & Giancola, 2007). Specifically, at low-to-moderate levels of provocation (e.g., low-moderate arousal or threat), perspective taking can reduce aggression, whereas at high provocation (e.g., high arousal or threat) the ability of perspective taking to reduce aggression can become greatly impaired (Richardson et al., 1994; cf. Zillman, 1988). Medium-to-high contact team sports, where interaction and physical contact among opponents are

unavoidable, provide ample opportunities for provocation. For example, players can use excessive physical force to win the ball (e.g., pushing, elbowing, or kicking) or mock opponents to get an edge over them during competition. Athletes, who compete in high contact team sports, tend to experience higher provocation while playing sport (Maxwell, Visek, & Moores, 2009). Thus, investigating aggression in athletes from a variety of team sports under different conditions of provocation is important.

A consistent research finding concerns gender differences in empathy and aggression: Women report higher empathy than men (Eisenberg & Lennon, 1983; Kavussanu et al., 2009), and men engage in more physical aggression than women, particularly when aggression is directed toward an individual of the same gender (Archer, 2004; Bettencourt & Miller, 1996). Gender could moderate the effect of empathy on aggression in competitive contexts. Based on the social roles theory (Eagly, 1987), men's desire for competence and superiority may increase their competitiveness and consequently their aggression in competitive contexts, compared to women, whose social role of being oriented around more communal traits (e.g., caring for others) is more congruent with empathy. Accordingly, men may be more likely to experience higher arousal and focus on their own needs in competitive contexts compared to women. Thus, the inhibitory effect of empathy on aggression may be weaker in men compared to women, during competition.

Past research has also shown that the gender difference in aggression is markedly attenuated by provocation (see Bettencourt & Miller, 1996). Provocation provides justification for aggression that liberates women from the usual constraints evoked by gender role norms (Bettencourt & Miller, 1996). In one experiment, empathy reduced aggression at low but not high provocation in men, and at high but not low provocation in women, during a competitive task (Phillips & Giancola, 2007). These findings indicate that the effect of empathy on aggression may vary depending on gender and levels of provocation.

Empathy and Emotion

Although empathy has been negatively associated with aggression in cross-sectional and experimental studies, the process through which this occurs has not been investigated. A variable that could explain this effect is the emotion of guilt, which can be experienced as a result of the empathic feelings for someone in distress following the realization of being personally responsible for their distress (Hoffman, 2000). Guilt is an adaptive emotion characterised by reparative action tendencies (i.e., making amends) following a transgression (Tangney, Stuewig, & Mashek, 2007) and is assumed to play a key role in regulating aggression. For instance, if one behaves aggressively and feels guilty as a response, they are less likely to engage in such acts in the future. Thus, people refrain from aggression because of anticipated affective sanctions if they were to engage in this or any other unethical behavior (Bandura, 1991). Studies have revealed an inverse relationship between proneness to experience guilt in social situations and aggression (e.g., Stuewig, Tangney, Heigel, Harty, & McCloskey, 2010).

Empathy has been consistently and positively linked with guilt (e.g., Leith & Baumeister, 1998; Stuewig et al., 2010). In past research, situational guilt mediated the negative relationship between perspective taking and interpersonal conflict (Leith & Baumeister, 1998), while anticipated guilt mediated the negative effect of empathy on male athletes' reported likelihood to aggress in sport (Stanger et al., 2012).

The negative relationship between empathy-based guilt and aggression may vary depending on provocation. When provoked, people may blame the provocateur and retaliate aggressively without feeling guilty about their actions (Bandura, 1991). Indeed, research has revealed that athletes report anticipate feeling less guilt if they had committed an aggressive act when they imagine themselves in a situation where they have been provoked (e.g., Stanger, Kavussanu, Boardley, & Ring, 2013). However, it is not known whether guilt

mediates the inhibitory effect of empathy on aggression, when provoked during competition. Provocation could differentially influence guilt, and this could explain why the effect of empathy on aggression is negated following provocation.

An emotion that has been positively associated with aggression is anger (e.g., Novaco, 1997), which is evoked by events that are interpreted as an offense. One of these events is provocation, which has been consistently linked to increased anger (Bond & Lader, 1986; Mohr, Howells, Gerace, Day, & Wharton, 2007; Parrott, Zeichner, & Stephens, 2003). Perspective taking may reduce anger following provocation by helping maintain a higher level of cognitive functioning; this, in turn, may reduce aggression (Mohr et al., 2007; cf. Zillmann, 1988). Research has reported an inverse relationship between perspective taking and likelihood to experience anger following an interpersonal provocation (Mohr et al., 2007). Given that empathy has been inversely associated with anger, and that anger has been positively linked to aggression, empathy may reduce aggression via its effect on anger.

The Present Research

In sum, empathy has been inversely associated with aggression (e.g., Miller & Eisenberg, 1988; Phillips & Giancola, 2007). However, to date, only one experiment has examined the effect of empathy on aggression in athletes; this experiment investigated reported likelihood to aggress in a hypothetical situation (Stanger et al., 2012) rather than *actual* aggression. Moreover, no study has examined the process through which empathy inhibits aggression; guilt and anger are likely mediators. Finally, we do not know whether the effect of empathy on aggression is consistent for male and female team-sport players when responding to provocation. The first purpose of this experiment was to examine whether empathy inhibits athletes' aggression during a competitive task under conditions of low and high provocation and whether these effects are moderated by gender. A second

purpose was to investigate whether guilt and anger mediate the effects of empathy on aggression and whether these effects are moderated by gender.

Method

Experimental Design

We used a mixed-factorial design, with empathy group (low, high) and gender as between-subjects factors and provocation (low, high) as a within-subjects factor. Each empathy group consisted of 20 men and 20 women.

Participants

Eighty undergraduate students (40 men and 40 women), who competed in a team sport at the time of data collection, with a mean age of 19.49 (*SD* = 1.13) years took part in the experiment. Participants competed in soccer (*n* = 30), field hockey (*n* = 16), rugby (*n* = 15), netball (*n* = 8), American football (*n* = 4), basketball (*n* = 3), korfball (*n* = 2) and lacrosse (*n* = 2); they had competed at international/ national (9%), regional/ county (50%) and club (41%) levels for an average of 7.69 (*SD* = 3.72) years.

Aggression Task

We used the Taylor Aggression Paradigm (TAP; Taylor, 1967), a well-established paradigm (e.g., Giancola & Parrott, 2008) that enables researchers to study provoked and unprovoked aggression in a competitive context. Participants were asked to compete against an opponent in a series of reaction time trials, where winning and losing were predetermined. Unbeknownst to participants, the opponent was fictitious. On winning trials, participants administered an electrical shock of their chosen intensity to their (fictitious) opponent, whereas on losing trials, they received an electrical shock by their opponent; the shock was administered to elicit provocation. The order of events on this task is described below.

First, participants were shown a signal on a light display box, cuing them to select the shock intensity that they wished to administer to their opponent, if they were to win the trial,

by pressing one of ten buttons, numbered between 1 (*low intensity*) and 10 (*high intensity*). Between 6 and 7 seconds after their shock selection, participants were presented with a light stimulus indicating that they should press the response button as fast as possible. Four seconds later, they were shown a "Feedback" signal, which indicated whether they had won or lost that trial. When they won, participants were reminded of the shock intensity they selected for their opponent; when they lost, they were informed of the shock intensity selected by their opponent that they were going to receive shortly. The shock was administered to the participant or (fictitious) opponent 10 seconds following feedback, and the next trial commenced 10 seconds later.

Participants performed two blocks of 16 trials, separated by a 5-minute interval: Block 1 was low provocation, and block 2 was high provocation. Participants received shock intensities between 1 and 4 (M = 2.5) during the low provocation block and between 7 and 10 (M = 8.5) during the high provocation block. In each block, participants "won" 8 trials and "lost" 8 trials. Two transition trials were included at the start of the second block (which were not analysed), where participants received shock intensities of 5 and 6 to smoothen the transition between low and high provocation (Giancola, 2003). Thus, the order of trials that were won and lost and the shock intensity administered by the "opponent" was fixed across all participants in each block. The low-high sequence of provocation was used to increase the external validity of the task by simulating the rise of interpersonal provocation in real-life contexts and is in line with previous research (e.g., Giancola, 2003). During the aggression task, shocks ranged from 1 to 10, corresponding to participants' pain threshold that ranged from 55% to 100% (see Giancola, 2003).

Measures

Aggression. We used two measures of aggression: unprovoked (or proactive) aggression, which was operationalized as the shock intensity chosen by the participant on the

first trial, that is, before receiving any shocks; and provoked (or reactive) aggression, which was operationalized as the shock intensity chosen on subsequent trials. We calculated separate scores for provoked aggression at low and high provocation by computing the mean shock intensity selected for each block.

Guilt. Guilt was measured after each block of trials on a Likert scale anchored by 1 (*not at all*) and 5 (*extremely*). Participants were asked the extent to which they felt guilt about shocking their opponent (on winning trials) using the 5-item subscale from the State Shame and Guilt Scale (SSGS; Marschall, Saftner, & Tangney, 1994). An example item is "I felt remorse". Marschall et al. (1994) provided psychometric support for this scale ($\alpha = .82$). Its internal consistency was good for the first ($\alpha = .77$) and second ($\alpha = .79$) block of trials.

Anger. We used both self-report and physiological measures of anger. Supplementing self-reports with concurrent physiological measures can provide corroborative evidence for the presence of specific emotions (Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000), because physiological measures can capture fleeting emotional experiences, are objective, and sensitive to changes in psychological states. Physiological responses were assessed around feedback, as this was when participants were reminded or informed of the shock level chosen by the "winner" of that trial, and, therefore, where we expected that emotional responses would be most pronounced. Two autonomic responses that index emotional arousal elicited by anger are skin conductance (i.e., moisture level of the skin reflective of sweat gland activity) and heart rate (e.g., Stemmler, 2010). As both responses increase along with reported anger in reaction to provocation (e.g., Bond & Lader, 1986; Hoaken, Campbell, Stewart, & Phil, 2003), they were interpreted as indices of anger.

Self reported anger. Self-reported anger was measured after each block of trials using the anger subscale of the Sport Emotion Questionnaire (Jones, Lane, Bray, Uphill, & Catlin, 2005). Participants indicated the degree to which they felt "angry", "annoyed", "irritated"

and "furious" about receiving shocks on losing trials after each block. They responded on a 5-point Likert scale anchored by 1 (*not at all*) and 5 (*extremely*). Jones et al. (2005) provided psychometric support for this scale ($\alpha = .84$). Its internal consistency for the first ($\alpha = .83$) and second ($\alpha = .92$) block was very good.

Heart rate. To assess heart rate, the electrocardiogram (ECG) was measured using silver/silver chloride electrodes (Cleartrace, ConMed) in a modified chest configuration. The electrocardiographic signal was amplified (× 5000) and filtered (1–100 Hz) using a Grass LP511 AC amplifier. Heart rate (beats per minute; bpm) was derived from the intervals between R-waves of the ECG and computed in half-second bins. We calculated the mean heart rate 2-4 seconds (peak response, see Figure 1) after receiving feedback about losing minus their instantaneous heart rate when feedback was given.

Skin conductance. Skin conductance was measured using silver / silver chloride reusable finger electrodes (Grass, F-EGSR) secured to the medial phalanx of the index and middle finger of the left hand. The skin conductance signal was amplified (× 1000) and filtered (1–100 Hz) using a Grass SCA1/T9 coupler and LP122 AC/DC amplifier. Skin conductance response (micro Siemens μS) to feedback was calculated as the peak skin conductance 1-9 s after receiving feedback minus peak skin conductance 1-4 s before feedback. Both physiological signals were digitized at 2500 Hz with 16-bit resolution (Power 1401, Cambridge Electronic Design) using Spike2 software (Cambridge Electronic Design).

Dispositional Empathy

Dispositional empathy was measured using the 7-item perspective taking and empathic concern subscales from the Interpersonal Reactivity Index (Davis, 1980). Participants were asked to rate how well the items described them, on a scale with anchors of 1 (*does not describe me well*) and 5 (*describes me very well*). Example items are "before criticizing somebody, I try to imagine how I would feel if I were in their place" for perspective taking,

and "I would describe myself as a pretty soft-hearted person" for empathic concern. In line with previous research (e.g., Kavussanu et al., 2009, 2013), a mean empathy score was calculated using all the items from the two-subscales and has shown very good internal consistency (α = .77 to .85). The internal consistency was good in the current study (α = .84).

Procedure and Empathy Manipulation

First, the protocol was approved by the university ethics committee. Participants were randomly assigned to one of the two empathy groups and were tested individually. Upon arrival at the laboratory, they were told that the study was concerned with the influence of competition on reaction time. Following consent, they completed a pre-experimental baseline measure of dispositional empathy to check that there were no group differences in this variable in case it had a confounding effect on the empathy manipulation or aggression during the task. After instrumentation, the participant's pain threshold was determined; we used an ascending method of limits, in which a series of 500 μs square wave electrocutaneous stimulations increased by 0.5 mA until participants reported the shock as painful, followed by an up-down staircase method around the reported painful stimulus (Edwards, Ring, McIntyre, & Carroll, 2001). The stimulus was delivered to the dorsal surface of the right forearm, 20 cm above the wrist-fold using a constant current stimulator (DS7A, Digitimer) and a nociception-specific electrode (Kaube, Katsavara, Käufer, Diener, & Ellrich, 2000).

Next, participants were familiarised with the aggression task by completing eight practice trials, and they were informed that they had to wait until their "opponent" was ready to start the task. During this time, they were administered one of two empathy manipulations, adapted from previous research (Batson et al., 1997). Participants in the high-empathy group were instructed: "*Imagine how your opponent feels about what you do to him/her and how the shocks affect him/her. Try to feel the full impact of what this person is going through and how he/she feels as a result.*" Participants in the low empathy group were instructed: "*Take*

an objective perspective toward what happens. Try not to get caught up in how your opponent might feel: just remain objective and detached." Participants confirmed that they understood the instructions before beginning the task. To reduce potential experimenter bias effects on participant responses, participants read the empathy manipulation, and the aggression task was run automatically by the computer with no experimenter involvement.

As the sex of the opponent may influence how aggressive participants are during the task (Archer, 2004), and athletes typically compete in same-sex teams, participants were told that they were competing against someone of the same sex, located in an adjacent room. During the 5-minute interval between blocks, and at the end of the second block of trials, they completed self-report measures of guilt (Marschall et al., 1994) and anger (Jones et al., 2005). We measured guilt with respect to winning trials (i.e., when participants shocked their opponent), and anger with respect to losing trials (i.e., when participants were shocked), because aggressive actions performed by us may elicit guilt, whereas those performed against us may elicit anger (Prinz, 2006). Finally, participants were interviewed to examine the effectiveness of the deception and debriefed.

Deception manipulation. A series of steps were taken to convince participants that they were competing against an opponent. Another experimenter entered the laboratory twice: (a) to confirm that the "other participant" had arrived and (b) to borrow some equipment and provide an update on the progress of the instrumentation of the "other participant". Participants were interviewed for suspicion about the aims of the study and the fictitious nature of the opponent. Six (4 men and 2 women) of the eighty-six participants suspected that they were not competing against a real opponent, and, therefore, their data were not analysed or reported here, leaving a sample of 80 participants.

Results

Effects of Empathy on Aggression

Prior to the main analyses, we examined whether participants in the two empathy groups differed in dispositional empathy (Davis, 1980). A 2 Group (low empathy, high empathy) Analysis of Variance (ANOVA) verified that there were no group differences in this variable, $F(1, 76) = 1.67$, $p = .20$, $\eta_p^2 = .02$. Below we have reported analyses that pertain to the effect of manipulated empathy on unprovoked and provoked aggression.

Unprovoked aggression. We examined the effect of empathy on unprovoked aggression, using a 2 Group (low empathy, high empathy) × 2 Gender (men, women) ANOVA. Gender was included in this and subsequent analyses to determine whether the effect of empathy was uniform across gender. This analysis revealed main effects for empathy group, $F(1, 76) = 4.70$, $p = .03$, $\eta_p^2 = .06$, and gender, $F(1, 76) = 10.09$, $p < .01$, $\eta_p^2 = .12$, on unprovoked aggression. The high empathy group ($M = 3.38$, $SD = 2.16$) was less aggressive than the low empathy group ($M = 4.45$, $SD = 2.49$), and men were more aggressive ($M = 4.70$, $SD = 2.47$) than women ($M = 3.13$, $SD = 2.02$). There was no group × gender interaction, $F(1, 76) = 0.02$, $p = .88$, $\eta_p^2 = .00$.

Provoked aggression. We examined the effect of empathy on aggression at different levels of provocation, using a 2 Group × 2 Gender × 2 Provocation (low, high) ANOVA. We found main effects for group, $F(1, 76) = 11.54$, $p < .001$, $\eta_p^2 = .13$, gender, $F(1, 76) = 19.54$, $p < .001$, $\eta_p^2 = .21$, and provocation, $F(1, 76) = 189.96$, $p < .001$, $\eta_p^2 = .71$, as well as a Group × Gender × Provocation interaction, $F(1, 76) = 4.02$, $p < .05$, $\eta_p^2 = .05$ (see Figure 2). Post-hoc planned contrasts showed that at *low provocation*, both men ($p < .02$) and women ($p < .02$) in the high empathy group were less aggressive than those in the low empathy group; men were also overall more aggressive than women ($p < .01$). However, at *high provocation*, men were equally aggressive in the two groups; thus, empathy had no effect on men at high provocation. In contrast, women in the high empathy group were less aggressive than women in the low empathy group ($p < .01$); men were more aggressive than women only in the high

($p < .001$) empathy group. Thus, at low provocation, empathy affected aggression in men and women similarly, but at high provocation empathy affected aggression only in women [1].

Effects of Empathy on Emotion

Guilt. A 2 Group × 2 Gender × 2 Provocation ANOVA on guilt revealed main effects for group, $F(1, 75) = 6.86$, $p = .01$, $\eta_p^2 = .08$, and provocation, $F(1, 75) = 22.83$, $p < .001$, $\eta_p^2 = .23$, but not gender. Specifically, the high empathy group ($M = 1.68$, $SD = 0.46$) experienced more guilt over shocking their opponent than the low empathy group ($M = 1.42$, $SD = 0.41$). In addition, feelings of guilt were higher during low provocation ($M = 1.67$, $SD = 0.56$) than high provocation ($M = 1.42$, $SD = 0.46$). There were no interaction effects.

Anger. A 2 Group × 2 Gender × 2 Provocation, Multivariate Analysis of Variance (MANOVA) on the three indices of anger revealed no effect of empathy. There was a main effect for provocation, $F(3, 73) = 16.51$, $p < .001$, $\eta_p^2 = .40$. Follow-up ANOVAs showed that provocation affected reported anger, $F(1, 75) = 18.88$, $p = .001$, $\eta_p^2 = .20$, which was more intense during high ($M = 2.23$, $SD = 1.11$) than low ($M = 1.85$, $SD = 0.79$) provocation; heart rate, $F(1, 75) = 10.63$, $p = .002$, $\eta_p^2 = .12$, which became faster following feedback during high ($M = 2.10$, $SD = 4.04$ *bpm*) than low provocation ($M = 0.99$, $SD = 3.63$ *bpm*); and skin conductance, $F(1, 75) = 12.74$, $p = .001$, $\eta_p^2 = .15$, which was greater following feedback during high ($M = 0.05$, $SD = 0.25$ µS) than low ($M = –0.04$, $SD = 0.17$ µS) provocation [2]. Thus, all indices of anger were greater at high than low provocation.

Mediation Analysis

Given that empathy did not influence anger, this emotion was not considered a mediator. As we found main effects for empathy and provocation on guilt and aggression, and an empathy × gender × provocation interaction on aggression, we conducted mediation analysis at low and high provocation, separately. To examine whether guilt mediated the effect of empathy on aggression, we performed bootstrapping, which is one of the most

powerful methods that best controls for Type I error, when testing for indirect effects (Hayes, 2009; Preacher & Hayes, 2004), using the PROCESS macro for the Statistical Package for the Social Sciences (SPSS) v2.1 (Hayes, 2013). When the confidence interval for an indirect effect does not contain zero, there is evidence of mediation. Each model was run with 5,000 bootstrapped samples of the indirect effect of guilt for which we report the 95% bias corrected bootstrap confidence intervals (CI).

In the total sample, the indirect effect of guilt was significant at low provocation (point estimate = –0.41, 95% CI = –0.95, –0.10), but not at high provocation (point estimate = –0.19, 95% CI = –0.68, 0.01). We examined whether the indirect effect of guilt was moderated by gender at low and high provocation, by calculating the index of moderated mediation (available in the PROCESS macro for SPSS; Hayes, 2013), which equates to the difference between the two conditional indirect effects of guilt for men versus women (Hayes, 2015). If the confidence interval of this index excludes zero, there is evidence of moderated mediation. At low provocation, a significant indirect effect for guilt was found in men as shown in Figure 3A (point estimate = –0.75, 95% CI = –1.71, –0.24), but not in women (Figure 3B) (point estimate = – 0.10, 95% CI = –0.73, 0.06); the index of moderated mediation for this model was significant (0.64, 95% CI = 0.01, 1.63). At high provocation, there was no significant indirect effect of guilt for men (point estimate = – 0.29, 95% CI = –1.33, 0.02) or women (point estimate = – 0.08, 95% CI = –0.79, 0.13); the index for moderated mediation was not significant (0.21, 95% CI = –0.39, 1.21).

Discussion

Previous research has shown that empathy inhibits aggression and that guilt and anger have been linked to both empathy and aggression (e.g., Miller & Eisenberg, 1988; Mohr et al., 2007; Stanger et al., 2012; Stuewig et al., 2010). However, the effect of empathy on athletes' *actual* aggression while engaging in competition has not been examined. In this

experiment, we investigated the effect of empathy on aggression in athletes during a competitive motor task. We also examined whether gender and provocation moderate this effect, and whether guilt and anger act as mediators in this process.

The Effects of Empathy on Aggression

In line with our hypothesis, empathy reduced participants' aggression (both unprovoked and provoked) during the reaction-time task. The effect was small-to-medium for unprovoked aggression and medium for provoked aggression. These findings are consistent with previous research investigating the relationship between trait empathy and antisocial behavior in sport (e.g., Kavussanu & Boardley, 2009; Kavussanu et al., 2009, 2013). Our findings also support and extend the results of another experiment that has found a link between empathy and athletes' reported likelihood to aggress (Stanger et al., 2012), by showing that empathy can attenuate *actual* aggression during competition.

Our findings support previous research showing that perspective taking can play an important role in reducing aggression towards out-group members in sport, such as opponents (see Decety & Cowell, 2014). Similar to Phillips & Giancola (2007), we found that empathy reduced aggression at low provocation, but not high provocation, in men. However, although Phillips and Giancola (2007) found that empathy reduced aggression in women only at high provocation, we found that empathy reduced aggression in women, at both low and high provocation. This slight discrepancy in the findings between the two studies may be due to the composition of the two samples, which may have led to variation in aggression. Specifically, Phillips and Giancola (2007) found that female university psychology students, who were presumably not all athletes, selected lower intensity shocks, at low provocation (M = 2.5), than our female participants (M = 3.7), who competed in team sports. Athletes have a tendency to perceive aggression as legitimate during competition (Bredemeier & Shields,

1986). Perhaps the higher aggression by athletic women in our sample provided more scope for empathy to reduce aggression at low provocation compared to previous research.

At high provocation, empathy reduced aggression only in women, in line with previous studies (Philips & Giancola, 2007; Richardson et al., 1994). Thus, the suppressing effect of empathy on aggression was over-ridden at high provocation in men, but not in women. Women may require higher provocation to neutralize the inhibitory role of empathy on aggression, particularly during same-sex interactions (e.g., Richardson et al., 1994). It has been suggested that female-female interactions may result in lower perceived threat in relation to aggressive responding than male-male interactions (e.g., Richardson et al., 1994). Accordingly, women may have interpreted high provocation as lower threat than men, thereby enabling perspective taking to suppress aggression as well as potentially prime them to conform to their social gender role. In contrast, men who were competing against other men, and whose social role is oriented around instrumental traits (e.g., superiority), may have interpreted high provocation as high threat, thereby behaving more impulsively and overriding the ability for perspective taking to mitigate aggression (Richardson et al., 1994; Zillmann, 1988). In sum, our findings indicate that empathy can reduce reactive aggression in team sport athletes in competition. However, the suppressing effect of empathy on aggression occurs only in women at high provocation.

The Mediating Role of Emotion

We examined two emotions as potential mediators of the effect of empathy on aggression: guilt and anger. Guilt explained the suppressive effect of empathy on aggression, but this effect was moderated by gender and provocation. Specifically, at low provocation, guilt mediated the effect of empathy on aggression in men but not in women. There was no mediation effect at high provocation. This could be attributed to the suppressing effect of empathy on aggression being over-ridden. Therefore, our findings suggest that empathy can

lead to guilt in sportsmen under low provocation, but the self-regulatory role of empathy and guilt on aggression is neutralized at high provocation.

These findings are in line with evidence that empathy is positively linked with guilt (Leith & Baumeister, 1998; Tangney et al., 2007), which has been associated with lower aggression (Stuewig et al., 2010; Tangney et al., 2007). Thus, in men, empathy increases feelings of guilt about potentially harming another, which in turn, should help them refrain from committing aggressive acts in the future. However, when provoked, men may blame the provocateur, and this may explain why the role of guilt as an empathic response in the regulation of aggressive conduct was neutralised at high provocation (cf. Bandura, 1991; Stanger et al., 2013). Future research should identify the factors that mediate the effect of empathy on aggression in sportswomen.

Contrary to our hypothesis, empathy did not influence anger, perhaps due to the experimental task and the perceived intentionality of aggression by the opponent. Specifically, participants were informed of the shock intensity that they received on losing trials, which they believed was chosen by their opponent. This was an intentional behavior by the "opponent", and participants may have felt that their opponent was trying to hurt them as only a small proportion of losing trials resulted in the lowest intensity shocks (i.e., shock level 1). Thus, participants "knew" that their opponent was intentionally selecting the higher intensity shocks. When aggression is perceived as intentional, individuals experience reduced empathic reactions as well as increased anger (Betancourt & Blair, 1992). Thus, empathy may not reduce anger during competition among individuals from team sports when they perceive that they are provoked intentionally by an opponent.

Practical Implications

Our findings have some practical implications. First, they suggest that empathy could reduce aggression under conditions of low provocation regardless of one's gender, and at

high provocation, in women. Several studies have shown that empathy can be enhanced using the appropriate training. For example, similar to previous research (e.g., Pecukonis, 1990), athletes could be presented with video-taped real-match situations involving aggressive behaviors, asked to try to take the other person's perspective, imagine how he or she feels, and think about the implications that these actions might have for others. Such experiences could enhance athletes' empathy, thereby reducing their frequency of aggressive behavior. Second, given that provocation increased anger for both genders and negated the suppressing effect of empathy on aggression in men, practitioners could teach strategies to reduce emotional arousal associated with perceived interpersonal provocation, such as cognitive restructuring and attribution training. Such strategies may need to be considered in conjunction with empathy training to reduce provoked aggression, particularly for men.

Limitations of the Study and Directions for Future Research

Although this research has revealed some novel findings, it also has some limitations, which should be considered when interpreting our findings. First, we measured aggression during the TAP, which is performed in the laboratory, has received extensive support for its validity (e.g., Giancola & Parrott, 2008), and involves a competitive motor task performed under different levels of provocation. Although our task contained some elements found in sport (movement, competition, provocation), and our findings have high internal validity, their generalizability to real-world contexts needs to be further investigated. Future research examining aggression should employ a more ecologically valid task in the laboratory, modify the TAP to simulate real world sport, and conduct a field experiment to determine whether the current findings are replicated in real sport contexts.

Second, our study investigated aggression in same-sex dyads, a feature that simulated competitive sport, where athletes typically compete against individuals of the same sex. Therefore, our results can only be generalized to same-sex dyads. We do not know how

participants would respond if they were told they were competing against someone of the opposite sex. Future research should examine this issue. It is also possible that the effects of empathy differ based on the relationship with the opponent (e.g., Archer & Latham, 2004), or other characteristics of the opponent, such as the opponents' perceived level of harmful intent (Archer, 2004). It would be interesting to determine the extent to which empathy mitigates aggression, when the relationship with the opponent, levels of perceived intentionality, and the importance of the event, vary.

Given the experimental design of the study, an inherent limitation is the potential for demand characteristics. For instance, completion of certain measures (e.g., assessing anger and guilt) may have led participants to try and guess the true nature of our study, which could have influenced their responses. However, this was minimised with the deception protocol, and in the post-task interview, where we checked that participants perceived that they were competing against an opponent. Finally, our findings could be extended by investigating the effects of empathy training in competitive sport.

Conclusion

Our experiment has shown that empathy reduces aggression in men and women and provided novel evidence that guilt plays a role in explaining some of these effects, especially in men. Provocation led to less guilt about aggressing and more anger, making aggressive conduct more likely. Our findings underscore the importance of emotion in regulating reactive aggression. They show that empathy could be beneficial in tackling aggression in athletes, although its effects differ depending on gender and level of provocation.

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Endnotes

[1] Due to the number of reported analyses, readers may wish to make statistical adjustments (e.g., Bonferroni corrections) to our findings. Partial eta-squared (η_p^2) is reported, which equals the adjusted R^2 obtained in regression analyses (Tabachnick & Fidell, 2007); values of .02, .13 and .26 for η_p^2 indicate small, medium and large effect sizes, respectively (Cohen, 1992).

[2] Heart rate and skin conductance have been associated with fear and anxiety – in addition to anger - in previous research (e.g., Stemmler, 2010). Therefore, we measured participants' self-reported fear and anxiety to check whether these physiological measures were more reflective of anger than fear and anxiety during the task. Fear was assessed using five adjectives (scared, afraid, frightened, fearful and panicked), while anxiety was measured with five adjectives (anxious, apprehensive, nervous, tense and uneasy) from the Sport Emotion Questionnaire (Jones et al., 2005). Results revealed that fear did not change from low (M = 1.53, SD = 0.67) to high (M = 1.54, SD = 0.73) provocation, $F(1, 76) = 0.052$, p = .82, $\eta_p^2 = .00$. Similarly, anxiety did not change from low (M = 2.27, SD = 0.88) to high (M = 2.24, SD = 093) provocation, $F(1, 79) = 0.325$, $p = .57$, $\eta_p^2 = .00$. Thus, in line with previous studies using the TAP, these measures were reflective of anger during this experimental task (e.g., Bond & Lader, 1986; Parrott et al., 2003).

Acknowledgements

[redacted]

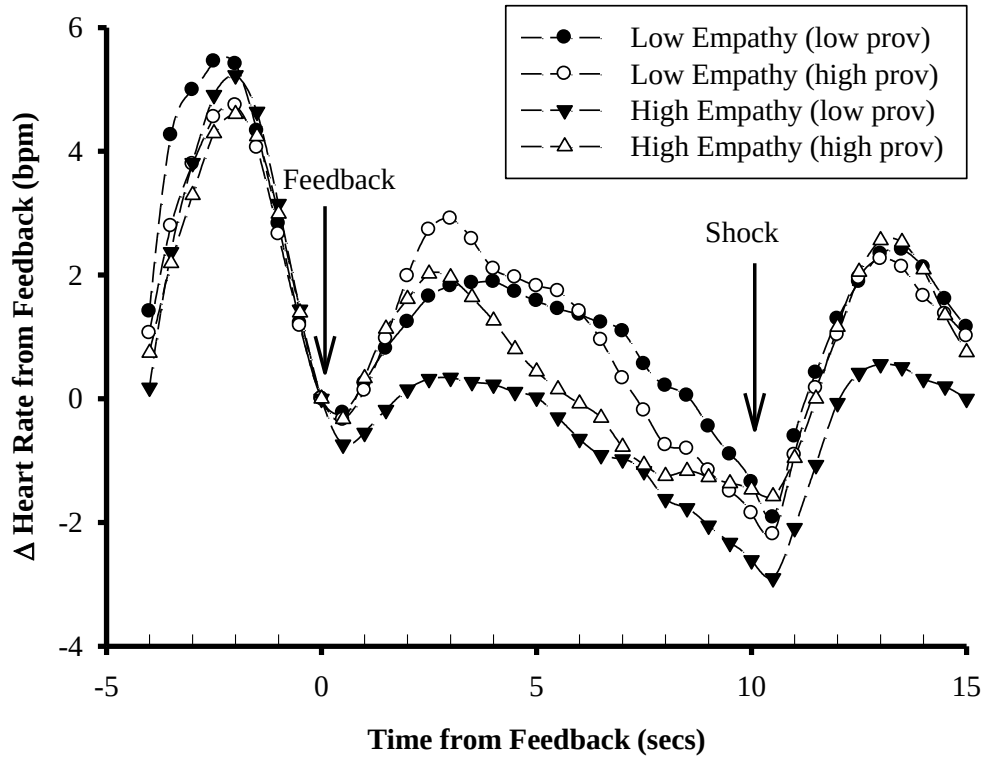

Figure 1. Heart rate change (bpm) as a function of time from feedback on losing trials for low and high empathy groups during low and high provocation.

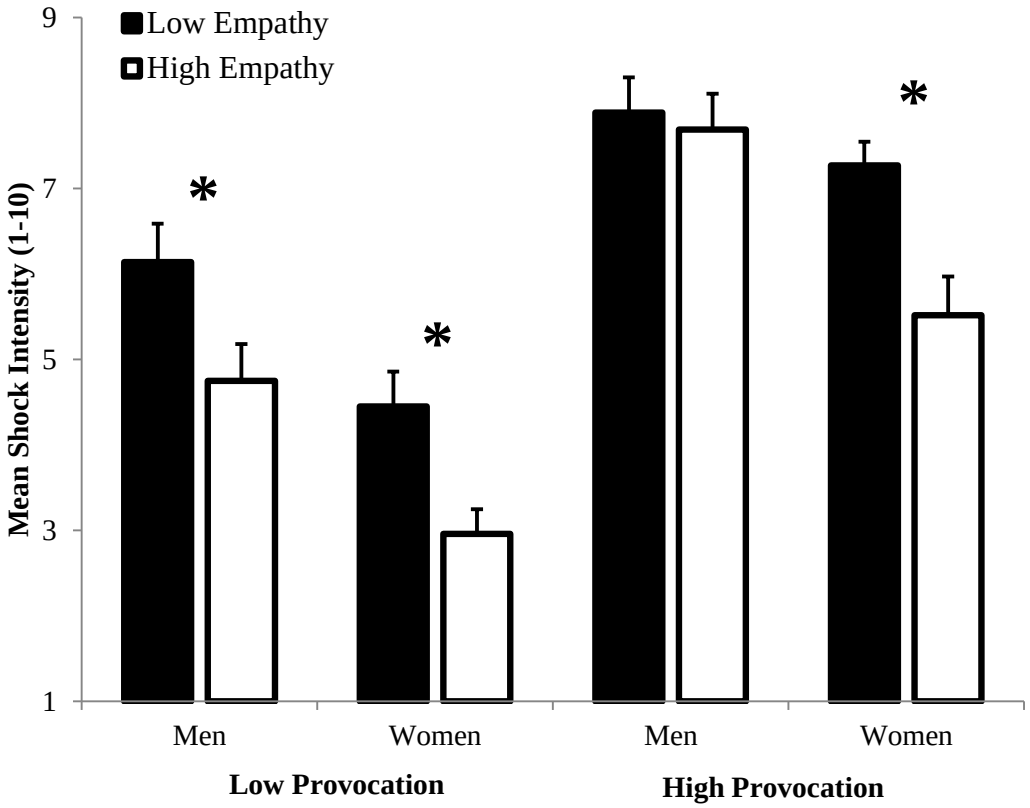

Figure 2. Mean (*SE*) intensity shock selection for men and women in the low and high empathy groups during low and high provocation.

* $p < .05$.

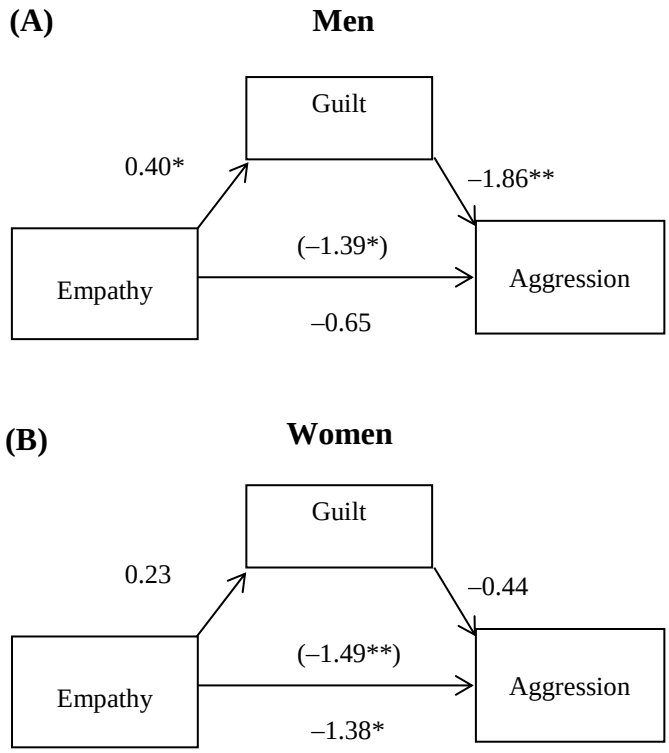

Figure 3. Guilt mediated the effect of empathy on aggression at low provocation in men (A), but not in women (B). Unstandardized regression coefficients are presented, and uncorrected coefficients are in brackets. Low empathy group was coded 0 and high empathy group was coded 1. * $p < .05$; ** $p < .01$.