

## Effects of antisocial behaviour on opponent's anger, attention, and performance

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JOURNAL OF SPORTS SCIENCES

Effects of Opponent Verbal Antisocial Behaviour on Anger, Attention, and Performance

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**Abstract**

Sledging, a form of verbal antisocial behaviour in sport, aims to impair an opponent's performance. Variations in performance have been attributed to changes in emotion and cognition. To improve our understanding of this phenomenon, the current experiment examined the effects of verbal antisocial behaviour on anger, attention and performance. Participants performed a competitive basketball free-throw shooting task under insult (verbal behaviour designed to offend and upset the performer), distraction (verbal behaviour designed to draw attention away from the task), or control (neutral verbal behaviour) conditions. Performance was assessed by the number of successful baskets and a points-based scoring system, while anger and attention were measured post-task. The insult condition provoked more anger than the control and distraction conditions, whereas the insult and distraction conditions increased distraction and reduced self-focus compared to the control condition. Although verbal antisocial behaviour had no overall direct effect on performance, mediation analysis revealed that anger indirectly impaired performance via distraction. Implications for the antisocial behaviour-performance relationship are discussed.

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### 1 Effects of Opponent Verbal Antisocial Behaviour on Anger, Attention and Performance

2 Sledging, a form of verbal antisocial behaviour, defined as behaviour intended to harm  
3 or disadvantage another (Kavussanu & Boardley, 2009; Sage, Kavussanu, & Duda, 2006), is  
4 commonplace in sport. For example, during the opening match of the 2017 International  
5 Cricket Council's Champions Trophy, England's bowler Ben Stokes sledged Bangladesh's  
6 batsman Tamim Iqbal, causing the batsman to complain to the umpires. The debate over the  
7 morality of such conduct in sport (Lee, 1998) has produced polarized views; some think it is  
8 acceptable (Summers, 2007) whereas others consider it cheating and/or gamesmanship  
9 (Dixon, 2007, 2008; Lee, Whitehead, & Ntoumanis, 2007; Potter, 1947). Surprisingly few  
10 studies have examined the impact of verbal antisocial behaviour on others. For instance,  
11 recent evidence has shown that verbal antisocial behaviour by teammates may influence the  
12 recipients' feelings, thoughts, and actions (Al-Yaaribi & Kavussanu, 2017; Al-Yaaribi,  
13 Kavussanu, & Ring, 2016).

14 Sledging shares similarities with the concept of trash talking, defined as "insulting or  
15 boastful speech intended to demoralise, intimidate or humiliate an opponent in athletic  
16 contest" (Rainey & Granito, 2010), which is believed to impair performance by many  
17 athletes (Conmy, 2005; Rainey & Granito, 2010). Thus, athletes could be motivated to use  
18 comments to try and gain an advantage over opponents and increase their own chances of  
19 winning (Tamborini, Chory, Lachlan, Westerman, & Skalski, 2008). However, it has yet to be  
20 established whether, and how, verbal antisocial behaviour influences performance. Trash  
21 talking can be classified based on intended outcome. First, one can try to insult opponents  
22 by demeaning their skills or calling them offensive names (Rainey & Granito, 2010). Second,  
23 one can attempt to distract opponents by making them think about or look at external  
24 stimuli, such as the weather (Conmy, 2005, 2008). Given that attention (Abernethy, 2001;

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1 Wilson, 2008) and emotion (Hanin, 2000; Lazarus, 2000) can influence sport performance,  
2 verbal antisocial behaviour could influence performance by distracting or annoying athletes.

3 Verbal antisocial behaviour could impair motor performance via attention in one of  
4 two ways: distraction and self-focus (for reviews see Abernethy, 2001; Gray, 2011; Masters  
5 & Maxwell, 2008; Vine, Moore, & Wilson et al., 2016; Wilson, 2008; Wulf, 2013). First,  
6 verbal comments might draw attentional resources away from the task. Although this  
7 hypothesis is supported by reports that 19% of athletes believe trash talking distracts  
8 opponents, other evidence suggests that verbal comments encourage the recipients to focus  
9 and play better (Conmy, 2005). Second, performance of a motor task can be disrupted by  
10 focusing attention on task execution and monitoring. Self-focus can be further increased if  
11 verbal comments are perceived as a source of pressure (Baumeister, 1984). In sum, changes  
12 in attention offer a plausible route through which verbal antisocial behaviour might affect  
13 performance.

14 Verbal antisocial behaviour has been associated with anger in some studies (Al-Yaaribi  
15 & Kavussanu, 2017; Al-Yaaribi et al., 2016) but not others (Conmy, 2008; Conmy,  
16 Tenenbaum, Eklund, Roehrig, & Filho, 2013). For instance, Conmy and colleagues asked  
17 competitors to report their affect before and after playing a computer game in silence or  
18 trash-talk conditions; the verbal comments did not change affect or performance. Anger has  
19 the capacity to impair sport performance (Beedie, Terry, & Lane, 2000; Uphill, Groom, &  
20 Jones, 2014), perhaps by switching attention to the provocateur (Lazarus, 2000) and/or  
21 impairing concentration (Silva, 1979; Vast, Young, & Thomas, 2010). However, it can  
22 improve performance on effortful tasks (Woodman et al., 2009). Finally, there is evidence  
23 consistent with the view that teammate verbal antisocial behaviour can impair (via reduced  
24 effort) and improve (via increased anger and effort) subjective performance in basketball and

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1 football players (Al-Yaaribi et al., 2016). In sum, verbal insults have the potential to influence  
2 the recipient's performance via changes in anger.

3 Our study had two purposes. Our first purpose was to experimentally examine the  
4 effects of verbal antisocial behaviour by an opponent on anger, attention, and performance.  
5 We hypothesised that verbal antisocial behaviour would reduce performance of a basketball  
6 free-throw shooting task, elicit anger, and impair attention. We also hypothesised that  
7 insult-based comments would lead to greater anger, and that distraction-based comments  
8 would disrupt attention, evidenced by increased distraction and self-focus. Our second  
9 purpose was to examine whether performance was related to attention and anger, and  
10 whether the effects of anger on performance were mediated by changes in attention. We  
11 hypothesised that performance would be negatively related to anger, distraction, and self-  
12 focus, and that anger would disrupt attention.

### 13 Method

#### 14 Participants

15 Participants were 60 (30 males, 30 females) undergraduate sport and exercise science  
16 students ( $M = 19.45$ ,  $SD = 1.25$  years old) recruited from a British university. We tested  
17 both males and females to increase the generalizability of the findings. Participants took part  
18 in the experiment in exchange for course credit. They had experience playing competitive  
19 sport ( $M = 7.60$ ,  $SD = 3.82$  years). None of the participants identified basketball as their  
20 main sport, and at the time of testing, they indicated that they had never (55%), rarely  
21 (37%), or sometimes (8%) played basketball. Thus, participants were experienced athletes  
22 but relative novices in basketball.

#### 23 Experimental Design

24 We employed an experimental design, with Group (insult, distraction, control) as the  
25 between-subjects factor and Condition (baseline, competition) as the within-subjects factor.

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1 Participants were randomly assigned to one of three groups: insult, distraction, or control.

2 There were 10 males and 10 females in each group.

### 3 **Task and Equipment**

4 The task involved shooting basketball free throws from a distance of 4.57 m using a  
5 size 7 (diameter = 0.23 m) basketball (Nike Baller) through a standard size hoop (diameter  
6 = 0.46 m), which was positioned 3.05 m from the ground. Similar tasks have been used in  
7 previous experimental research (e.g., Hardy & Parfitt, 1991; Kavussanu, Crews, & Gill, 1998;  
8 Tauer & Harakiewicz, 2004). The apparatus (Powerhoop) comprised a hoop, backboard (1.2  
9 × 0.9 m), pole, and base.

### 10 **Measures**

11 Participants were presented with the stem “During the last ten free throws, I felt ...”  
12 followed by the items measuring each variable. Responses to each item were made on a 7-  
13 point scale and ranged from 1 (not at all) to 7 (extremely). Each variable was measured by  
14 averaging responses to the respective items as described below. The item pool was designed  
15 to avoid overburdening participants.

16 **Anger.** Anger was measured using the anger scale of the Sport Emotion  
17 Questionnaire (Jones, Lane, Bray, Uphill, & Catlin, 2005). Participants responded to four  
18 items: “angry”, “annoyed”, “irritated”, and “furious”. Cronbach’s alpha coefficients for anger  
19 were .89 in both the baseline and competition conditions.

20 **Distraction.** Participants responded to two items: “distracted” and “focused”.  
21 Similar attention ratings have been used in past research (e.g., Vast et al., 2010). The latter  
22 item was reverse scored. Alpha coefficients for distraction were .76 and .69 in the baseline  
23 and competition conditions, respectively.

24 **Self-focus.** Self-focus was measured using an adapted version (Cooke, Kavussanu,  
25 McIntyre, Boardley, & Ring, 2011; Vine, Moore, Cooke, Ring, & Wilson, 2013) of the

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1 conscious motor processing scale of the Movement Specific Reinvestment Scale (Orrell,  
2 Masters, & Eves, 2009). Participants responded to three items: “I was conscious of my  
3 movements”, “I reflected about my technique”, and “I was aware of the way my body was  
4 working”. Alpha coefficients for self-focus were .66 and .86 in the baseline and competition  
5 conditions, respectively.

6 **Performance.** We collected two measures of performance. First, we recorded the  
7 number of successful baskets made out of 10 free-throw attempts, in line with previous  
8 research (e.g., Kavussanu, et al., 1998; Tauer & Harakiewicz, 2004). Second, we measured  
9 performance using a categorical points-based scoring system (Hardy & Parfitt, 1991): clean  
10 basket (5 points), rim and in (4 points), backboard and in (3 points), rim and out (2 points),  
11 backboard and out (1 point), complete miss (0 points). A total score was created by  
12 summing the points for the 10 free-throws; thus, the total score could range between 0 and  
13 50 points. By assessing performance over 10 trials, we attempted to strike a balance  
14 between ecological validity and measurement reliability.

### 15 **Manipulation Checks**

16 Participants rated the extent to which they “felt competitive during the task” on a  
17 scale, ranging from 1 (not at all) to 7 (extremely). This rating served as a manipulation check  
18 for the competition. Differences between conditions in anger and distraction/self focus were  
19 used to check that the verbal antisocial behaviour manipulation worked as intended.

### 20 **Selection of Comments**

21 The comments were selected based on a pilot study. They were generated by two  
22 academics (1 male, 1 female) with extensive experience teaching and researching in sport  
23 psychology together with three college athletes (1 male, 2 females) with many years of  
24 experience playing high level competitive sport. Twenty college athletes (10 males, 10  
25 females), who played competitive sport at high levels (club, country, or national), and who



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1 had many years of experience playing sport, were given definitions of an insult comment  
2 (i.e., a verbal comment aimed to impair performance by offending a person) and a  
3 distraction comment (i.e., a verbal comment aimed to impair performance by drawing  
4 attention away from the task). Then, they were asked to classify 18 comments as insult,  
5 distraction, or neither.

6 The six comments most frequently classified as insult and the six comments most  
7 frequently classified as distraction by the athletes were presented to a separate sample of 12  
8 college athletes (6 males, 6 females), who rated the extent to which they thought that each  
9 insult comment would insult a performer and each distraction comment would distract a  
10 performer during a basketball free throw task; responses were made on a Likert scale,  
11 anchored by -3 (strongly disagree) to +3 (strongly agree). Based on this process, we  
12 selected the five comments from each category which attracted the highest ratings, and used  
13 them in the experimental manipulations. The five insult comments ( $M = 0.68$ ) were: “Not  
14 sure those clothes suit you”; “Didn’t bother to do your hair today”; “A blind man would  
15 score better than you”; “I see you need some coaching”; “I think you need to get down the  
16 gym”. The five distraction comments ( $M = 0.48$ ) were: “Make sure your laces are done up”;  
17 “Look at that squirrel”; “The weather is a bit rubbish!”; “(Name of a popular television  
18 program, which varied depending on the schedule) was good last night”; “Can’t wait ‘til  
19 dinner tonight”.

### 20 **Procedure**

21 Upon approval of the study protocol by the local research ethics committee,  
22 participants were tested individually attending a single testing session run by two  
23 experimenters. Testing took place outdoors. One experimenter gave instructions to the  
24 participant and collected the data (and is referred to as the “experimenter”) and a second  
25 experimenter acted as the confederate pretending to be another participant (and is referred

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1 to as the “confederate”); the confederate was gender-matched to the participant in line with  
2 previous research (Cooke, Kavussanu, McIntyre, & Ring, 2011). Participants were pseudo-  
3 randomly assigned to one of the three groups (i.e., insult, distraction, or control), with the  
4 constraint that there were 10 males and 10 females in each group.

5 The protocol was the same for all three groups. First, the experimenter informed the  
6 participant that the study aimed to investigate the effects of competition on performance,  
7 outlined the protocol, and provided instructions on how to shoot a basketball free throw.  
8 Then, the participant performed five practice free throws in order to become familiar with  
9 the task, followed by 10 free throws, which constituted the pre-test (or baseline). Next, the  
10 participant responded to the items measuring anger and attention and the manipulation  
11 check. In the meantime, the confederate completed the practice and pre-test free-throws.  
12 Both the participant and the confederate performed the practice and pre-test free-throws  
13 alone in the presence of only the experimenter.

14 Upon completion of the pre-test, the competition took place. The experimenter  
15 explained to both the participant and confederate at the same time that the goal was to beat  
16 the other person, with the winner being entered into a draw to win a £30 prize, and  
17 informed the participant that he or she had been randomly selected to perform the free-  
18 throw task first. Then the manipulation was administered while the participant performed  
19 the ten free throws. In the two experimental groups, the confederate verbalized each of the  
20 five insult or distraction comments to the participant, just as he or she was about to  
21 attempt the first, third, fourth, seventh, and ninth free-throw. In the control group, the  
22 participant completed the competition while the confederate looked on silently. Both at  
23 pre-test and during the competition, the participant completed the free throws at their own  
24 pace. Upon completion of the 10 free throws, the participant responded to the items  
25 measuring anger and attention and the competition manipulation check. Finally, the

1 confederate completed the task (but no data were recorded). At the end of the experiment,  
2 the participant was thanked, debriefed, and asked not to disclose the protocol to anyone.

### 3 **Preliminary Data Analyses and Data Analytic Strategy**

4 A series of 3 Group (insult, distraction, control) x 2 Condition (baseline, competition)  
5 x 2 Gender (males, females) analyses of variance were conducted on the dependent  
6 measures to look for potential gender differences. These exploratory analyses indicated no  
7 gender main effects and no gender interaction effects for any variable. Therefore, gender  
8 was not included as a factor in the main analyses reported below.

9 Our analytic strategy was designed to address our two study purposes. Our first  
10 purpose was to determine the effects of verbal antisocial behaviour on anger, attention, and  
11 performance. This purpose was addressed by conducting analyses of covariance  
12 (ANCOVAs), with Group (insult, distraction, control) as a between-subjects factor and pre-  
13 test (baseline) score as a covariate, on our measures of anger, distraction, self-focus, and  
14 free throw shooting performance. Our second purpose was to examine whether  
15 performance was related to attention and anger, and whether any effects of anger on  
16 performance were mediated by changes in attention. This purpose was addressed by  
17 computing correlations between the process variables (anger, distraction, self-focus ratings)  
18 and outcome variables (number of baskets, shooting performance) to quantify the degree of  
19 association. Subsequently, we conducted multiple regressions using the predictor variable  
20 (anger), potential mediator variable (attention), and outcome variable (performance) to  
21 determine whether anger influenced performance directly and/or indirectly via attention.

22 We report effect size measures for each statistical test to quantify the importance of  
23 our findings, and provide values corresponding to small, medium, and large effects (Cohen,  
24 1992). For t tests, standardized mean difference,  $d$ , values are .20, .50, and .90. For analyses  
25 of covariance, partial eta-squared,  $\eta_p^2$ , values are .02, .13, and .25. For Pearson correlations,

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1 coefficient,  $r$ , values are .10, .30 and .50. For tests of mediation (Preacher & Kelley, 2011),  
2 completely standardised indirect effect, CSIE, values are .01, .09, and .25.

### 3 **Results**

#### 4 **Manipulation Check**

5 We performed a Student t-test to examine whether the basketball free-throw task  
6 was rated as more competitive in the competition condition compared to the baseline  
7 condition. This confirmed that the competition ( $M = 5.35$ ,  $SD = 1.34$ ) was judged to be  
8 more competitive than baseline ( $M = 4.43$ ,  $SD = 1.42$ ), with a large-to-medium effect,  $t(59) =$   
9  $5.49$ ,  $p < .001$ ,  $d = 0.77$ .

#### 10 **Baseline**

11 At baseline, participants scored one basket every three free throws ( $M = 3.32$ ,  $SD =$   
12  $1.74$ ), achieved a middling total points score ( $M = 22.50$ ,  $SD = 5.88$ ), and reported relatively  
13 low levels of anger ( $M = 2.06$ ,  $SD = 1.31$ ), moderate levels of distraction ( $M = 3.28$ ,  $SD =$   
14  $1.04$ ), and high levels of self-focus ( $M = 4.90$ ,  $SD = 0.95$ ).

#### 15 **Effects of Verbal Antisocial Behaviour: Study Purpose I**

16 Our first study purpose was to experimentally examine the effects of verbal antisocial  
17 behaviour by an opponent on the recipient's anger, attention, and performance. To this end,  
18 we performed Analyses of Covariance (ANCOVAs) separately on each variable, with Group  
19 (insult, distraction, control) as a between-subjects factor and pre-test score as a covariate.  
20 The results of these analyses are presented in Table 1. Significant group effects emerged for  
21 both anger and attention. Tukey post-hoc tests revealed that the insult group reported  
22 more anger than both the distraction ( $d = 0.93$ ) and control ( $d = 0.83$ ) groups, while the  
23 distraction and insult groups reported more distraction ( $d = 0.63$  &  $0.62$ , respectively) and  
24 less self-focus ( $d = 1.31$  &  $1.07$ , respectively) than the control group<sup>2</sup>. Importantly, the three  
25 groups did not differ in performance.

1 **Correlational and Mediation Analyses: Study Purpose 2**

2 The second study purpose was to examine whether performance was related to  
 3 attention and anger, and whether the effects of anger on performance were mediated by  
 4 changes in attention. These analyses were conducted separately for the baseline and  
 5 competition conditions.

6 **Baseline**

7 Pearson correlations indicated that baseline performance was negatively associated  
 8 with anger (baskets,  $r = -.35$ ,  $p < .006$ ; total points,  $r = -.30$ ,  $p < .02$ ) and distraction  
 9 (baskets,  $r = -.46$ ,  $p < .001$ ; total points,  $r = -.37$ ,  $p < .003$ ), but unrelated to self-focus  
 10 (baskets,  $r = .00$ ,  $p = .99$ ; total points,  $r = .09$ ,  $p = .51$ ). Mediation analyses using the  
 11 PROCESS macro for SPSS (Hayes, 2013) were conducted to examine the anger-attention-  
 12 performance relationship. We report the point estimate and 95% bias corrected confidence  
 13 intervals associated with bootstrapping using 10000 samples. With the number of baskets as  
 14 the outcome variable, anger as the predictor variable, and distraction or self-focus as the  
 15 potential mediator variable, only distraction mediated the effect of anger on performance  
 16 (indirect effect =  $-0.233$ , 95% CI =  $-0.493$ ,  $-0.089$ , CSIE =  $-.175$ ). Similarly, with the total  
 17 points score as the outcome variable, only distraction mediated the effect of anger on  
 18 performance (indirect effect =  $-0.626$ , 95% CI =  $-1.632$ ,  $-0.054$ , CSIE =  $-.139$ ).

19 **Competition.**

20 Pearson correlations indicated that performance was negatively associated with  
 21 distraction (baskets,  $r = -.36$ ,  $p < .005$ ; total points,  $r = -.30$ ,  $p < .02$ ), positively associated  
 22 with self-focus (baskets,  $r = .29$ ,  $p < .02$ ; total points,  $r = .36$ ,  $p < .004$ ), and negatively, albeit  
 23 not significantly, related to anger (baskets,  $r = -.18$ ,  $p = .16$ ; total points,  $r = -.19$ ,  $p = .15$ ).  
 24 Mediation analyses, with the number of baskets as the outcome variable, anger as the  
 25 predictor variable, distraction or self-focus as the mediator variable, and baseline

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1 performance as the covariate, indicated that the effect of anger on performance was  
2 mediated by both distraction (indirect effect =  $-0.320$ , 95% CI =  $-0.608$ ,  $-0.123$ , CSIE =  $-$   
3  $.231$ ) and self-focus (indirect effect =  $-0.100$ , 95% CI =  $-0.354$ ,  $-0.002$ , CSIE =  $-0.072$ ).

4 Similarly, with total points score as the outcome variable, the effect of anger on  
5 performance was again mediated by both distraction (indirect effect =  $-0.837$ , 95% CI =  $-$   
6  $1.693$ ,  $-0.237$ , CSIE =  $-0.211$ ) and self-focus (indirect effect =  $-0.339$ , 95% CI =  $-1.111$ ,  $-$   
7  $0.018$ , CSIE =  $-0.085$ ).

### 8 **Discussion**

9 Previous research has highlighted the prevalence and significance of verbal antisocial  
10 behaviour intended to (harm or) disadvantage an opponent in competitive sport (Kavussanu,  
11 2008; Lee, 1998; Lee et al., 2007). A number of emotions and cognitions have been  
12 implicated in the putative verbal antisocial behaviour-induced impairments in task  
13 performance. However, the amount of experimental evidence is extremely limited.  
14 Accordingly, the first purpose of our study was to examine the effects of verbal antisocial  
15 behaviour by an opponent on anger, attention, and basketball free throw performance. The  
16 second purpose of our study was to examine whether performance was related to attention  
17 and anger, and whether any effects of anger on performance were mediated by changes in  
18 attention. In this section, we discuss our findings.

### 19 **Effects of Antisocial Behaviour**

20 In support of our hypothesis, insult-based verbal antisocial behaviour induced anger  
21 (Al-Yarribi et al., 2016; Harmon-Jones & Sigelman, 2001; Kavanagh, 2014). Participants in the  
22 insult group responded to verbal comments with more anger than did those in both the  
23 distraction and control groups. Specifically, the insult group reported relatively low levels of  
24 anger, whereas the distraction and control groups reported very low levels of anger. It is  
25 possible that the relatively mild emotions evoked by the insults are due to the task being an

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1 experiment and not real-world setting, where the goal would have a stronger personal  
2 meaning. Our experimental evidence suggests that the negatively-valenced state that was  
3 induced by insult-based verbal antisocial behaviour may not have been sufficiently intense to  
4 directly impact performance during the competitive basketball free-throw shooting task.  
5 Past experimental research shows that anger-induction does not affect fine motor skills,  
6 such as reaction time tasks, and can even facilitate gross motor skills, such as force  
7 production tasks (Woodman et al., 2009). The effects of verbal antisocial behaviour in the  
8 anger-performance relationship may be moderated by the type of task involved; thus, future  
9 research employing different types of task could help paint a more detailed and nuanced  
10 picture of the relationship between anger and performance in sport (see also Al-Yarribi et  
11 al., 2016; Carver, 2001).

12 In line with previous research showing that anger can disrupt the execution of  
13 complex psychomotor tasks (Beedie et al., 2000), such as basketball free throw shooting  
14 (Uphill, et al., 2014), our second study purpose led us to expect that anger would be  
15 associated with impaired performance (Hanin, 2000; Lazarus, 2000). Our pre-test  
16 correlation analyses on the baseline measures supported the expected negative anger-  
17 performance relationship, with higher anger being linked with fewer successful baskets and  
18 lower total points scores.

19 In support of our hypothesis, distraction-based verbal antisocial behaviour increased  
20 distraction and decreased self-focus, such that attention was directed away from the  
21 execution of the task. We also found that our insult comments disrupted attentional focus  
22 to a similar degree as the distraction comments. Previous research has suggested that  
23 distraction can interfere with task execution and lead to less accurate movements (e.g.,  
24 Abernethy, 2001; Wilson, 2008). We also found that task performance was negatively  
25 associated with distraction and positively associated with self-focus, albeit to a lesser extent.

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1 However, although the distraction and insult comments elicited changes in attention, they  
2 did not affect motor performance. Motivation-related changes in effort (e.g., Cooke,  
3 Kavussanu, McIntyre, & Ring, 2010) may have compensated and masked the effects of  
4 disruptions to attention associated with verbal antisocial behaviour. Finally, the finding that  
5 both distraction and insult groups reported similar attention-related disruptions suggests  
6 that any type of verbal communication from an opponent may disrupt attentional focus  
7 during the performance of psychomotor skills.

### 8 **Performance**

9 Contrary to our hypothesis, verbal antisocial behaviour by an opponent had no direct  
10 effect on performance of the basketball free throw shooting task. Participants were able to  
11 successfully make one in every three attempts from the free throw line despite the verbal  
12 comments from their rival in the basketball shooting competition.<sup>1</sup> This finding is in line with  
13 the results of Conmy's (2008) experiment showing that trash talking had no effect on  
14 performance on a computer-based American football game. Conmy's manipulation  
15 incorporated a *mixture* of different types of comments, including ones that were distracting,  
16 funny, strategic, and self-aggrandizing. Thus, our finding, using manipulations based on  
17 comments from just one category, extends the previous research by showing that personal  
18 insults alone and general distracting comments alone do not directly impair performance of  
19 a motor skill.

20 The absence of any clear performance deterioration in either of the two  
21 experimental groups, who were the recipients of verbal antisocial behaviour, compared to  
22 the control group may be explained in other ways. Participants in the two verbal antisocial  
23 behaviour groups may have been more motivated than normal to beat their competitor, and  
24 therefore increased their effort to counteract the negative impact of the verbal antisocial  
25 behaviour and thereby maintain their basketball performance with reduced efficiency



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1 (Eysenck & Calvo, 1992; Wilson, 2008). This explanation is compatible with evidence that  
2 83% of college athletes reported that being a recipient of trash talk inspired them to try and  
3 improve their performance (Conmy, 2005; see also Al-Yarribi et al., 2016).

4         The null findings with respect to a direct effect of verbal comments on performance  
5 from our experiment and Conmy's (2008) experiment run counter to anecdotal evidence of  
6 impaired performance by athletes subjected to verbal antisocial behaviour by opponents.  
7 For instance, it is claimed that sledging, which can be considered a verbal form of  
8 gamesmanship (Lee et al., 2007), is used by the fielding side against the batsmen to cause  
9 'mental disintegration' at the crease in a game of cricket (Jeffreys & Newman, 2009; cf.  
10 Porter, 1950). Two key differences between the comments used in this experiment and  
11 sledges used in a game situation concern their frequency and intensity. We used five  
12 comments (on average, one comment every other throw) that were constrained by a  
13 research ethics code of practice, whereas during an actual competitive match there are  
14 fewer and less limiting constraints. Thus, while our comments increased anger and  
15 decreased attentional focus, they were not offensive enough to provoke violent reactions or  
16 distracting enough to prevent completion of the task. Future research could examine the  
17 effects of a greater number of comments on performance.

18         Our results suggest that sledging does not hinder performance of a motor skill. The  
19 extent to which verbal antisocial behaviour impairs performance may be moderated by the  
20 way athletes interpret comments from other athletes, with some athletes considering them  
21 as motivational and others as disruptive (e.g., Rainey & Granito, 2010). Thus, the appraisal of  
22 whether verbal antisocial behaviour is perceived as a challenge or a threat could contribute  
23 to this process (Meijen, Jones, McCarthy, & Sheffield, 2014). However, verbal antisocial  
24 behaviour appears to disrupt attentional focus and, depending on the content of the  
25 comments, may do so by influencing the emotions felt by the recipient. Specifically, our

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1 findings suggest that distraction-based verbal antisocial behaviour may directly hinder  
2 attention by directing resources to task-irrelevant cues whereas insult-based verbal  
3 antisocial behaviour may hinder focus by increasing anger and directing attention away from  
4 the task and on to the provoker (e.g., Lazarus, 2000). These speculations are supported by  
5 the mediation analyses, which revealed that the effects of anger on performance acted, at  
6 least in part, indirectly by distracting attention away from task.

7 It is also important to note that our power calculations showed that with the sample  
8 size we recruited, we could detect large differences among the groups. Clearly, such an  
9 effect was evident with our distraction and anger ratings, but not performance measures  
10 (see Table I). Verbal antisocial behaviour, particularly acts that involve more frequent and  
11 provocative comments, may have a small effect on performance, which we were unable to  
12 detect. Finally, it is important to point out that previous studies have indicated that novices  
13 may profit from a different focus of attention than experts (e.g., Perkins-Ceccato, Passmore,  
14 & Lee, 2003) and that they are also using a different focus (e.g., Beilock & Carr, 2001). It is  
15 therefore possible that verbal antisocial behaviour would have impaired the performance of  
16 expert basketball players. Choking implies an expert status, and therefore, it is possible that  
17 experts and novices might differ with respect to the effects of gamesmanship-like verbal  
18 antisocial behaviour by other athletes.

### 19 **Limitations and Research Directions**

20 The findings of the current study should be interpreted in light of some potential  
21 limitations. First, it is possible that the comments may have not been sufficiently distracting  
22 or insulting to impair performance. To address this issue, future research could increase the  
23 frequency and intensity of comments. Second, performance was assessed over the course  
24 of ten free throws. By doing this, we attempted to strike a balance between ecological  
25 validity and measurement reliability. Nevertheless, the effects of verbal antisocial behaviour

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1 may have been diluted by assessing performance over multiple trials because participants  
2 had chances to redeem bad throws. Third, the participants' perception of pressure and  
3 tension during the task was not measured. Verbal antisocial behaviour may only affect  
4 performance if the competitor feels increased levels of pressure and tension. Future studies  
5 could assess the role of a range of emotions, including anxiety, and their perceived impact,  
6 on the verbal antisocial behaviour-performance relationship. Finally, researchers could use  
7 other tasks which vary in difficulty, complexity, and duration, using participants with a wide  
8 range of abilities, from novices to experts, in settings from the laboratory to the field, in  
9 order to determine the impact of verbal antisocial behaviour on athletes' cognition, emotion  
10 and performance.

### 11 **Conclusion**

12         The current study showed that attentional processes and affective responses can be  
13 manipulated using verbal behaviour intended to disadvantage an opponent. Although anger  
14 and attentional states were related to task performance, with these relationships already  
15 manifested during baseline task performance, manipulating these states using verbal  
16 antisocial behaviour did not directly lead to changes in performance. Our findings suggest  
17 that sledging, which has potential costs for both the individual and team, such as player  
18 sanctions by the officials and injury caused by provoked opponents, may not impair  
19 performance (see Al-Yaaribi et al., 2016). Indeed, after being sledged by England bowler, Ben  
20 Stokes, during the opening match of the 2017 International Cricket Council's Champions  
21 Trophy, the Bangladesh batsman Tamim Iqbal, went on to score a century for his country.

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**Author Notes**

<sup>1</sup> Power calculations (Cohen, 1992) using G\*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that, with power ( $1-\beta = .80$ ) and significance ( $\alpha = .05$ ) at conventional levels, and given the effect sizes obtained, the study would have required 267,630 participants to detect significant between-group differences in the number of baskets and 42,820 participants to detect between-group differences in the total points score. Accordingly, the non-significant direct effects for task performance were evidently true null effects and not marginal effects in need of a few more participants to become significant.

<sup>2</sup> The fact that, compared to the control group, the insult comments elicited greater anger and both the insult and distraction comments elicited greater distraction confirm that our verbal antisocial behaviour manipulations were effective.

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Table 1

*Effects of the Verbal Antisocial Behaviour Manipulation on Anger, Attention and Performance*

Variable (Range)	Group						<i>F</i> (2, 56)	<i>p</i>	$\eta_p^2$
	Insult		Distraction		Control				
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>			
Anger (1-7)	2.57 <sub>b</sub>	0.16	1.92 <sub>a</sub>	0.16	1.99 <sub>a</sub>	0.16	4.87	.01	.148
Distraction (1-7)	3.78 <sub>a</sub>	0.24	4.02 <sub>a</sub>	0.24	2.68 <sub>b</sub>	0.23	9.27	.01	.249
Self-Focus (1-7)	4.53 <sub>a</sub>	0.22	4.52 <sub>a</sub>	0.22	5.14 <sub>b</sub>	0.23	2.70	.07	.088
Baskets (0-10)	3.69	0.41	3.36	0.40	3.50	0.40	0.17	.84	.006
Total Points (0-50)	25.26	1.15	23.76	1.13	24.43	1.14	0.43	.65	.015

Note: Groups with different subscripts are significantly different from each other. The covariate-adjusted means were calculated using the grand mean value of the covariate (i.e., pre-test value). Performance was assessed by the number of successful basketball free throws and the total points scored.