

1 **The role of moral identity and regret on cheating in sport**

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10 **Abstract**

11 Cheating in sport can have adverse interpersonal consequences and violate the ideal of fair play,
12 which involves abiding by the rules when competing. To help develop effective methods to prevent
13 cheating in sport, research is needed that identifies the psychological factors underpinning an
14 athlete's decision to cheat. The purpose of this multi-study research was to examine the role of moral
15 identity and regret on cheating in sport. In Study 1, we used a cross-sectional design to examine
16 relationships between moral identity, regret, and cheating attitudes. In Study 2, we used a field design
17 to examine relationships between moral identity, regret, and cheating attitudes during competitive
18 running races to win prize money. After awarding the prize money to the winners, we asked
19 participants whether they would change their decision to cheat if given the opportunity. In Study 1,
20 moral identity was directly and indirectly (via regret) related to cheating attitudes. In Study 2,
21 participants who cheated reported lower moral identity, greater regret, and more favourable
22 cheating attitudes than those who did not cheat. After the prizes were awarded to winners, those
23 who did not cheat, but wanted to change their decision to cheat, reported greater feelings of regret
24 compared to those not wanting to change their decision. In conclusion, cheating in sport elicits regret,
25 which could modify future cheating behaviour. However, athletes may be more likely to cheat in
26 future if they had chosen not to cheat and foregone a benefit.

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28 **Key words:** anti-social behaviour; anticipated regret; counterfactual regret; emotion; unethical
29 behaviour

30 **Introduction**

31 In March 2018, the Australian cricketer, Cameron Bancroft, was banned for nine months after
32 being found to have cheated in a Test match against South Africa. After receiving the ban,
33 Bancroft reported that the incident “*clearly compromises my values, what I stand for as a*
34 *player and as a person*” and that “*I will regret my actions for the rest of my life*” (ICC, 2018).

35 Cheating is an unethical, deceptive behaviour intended to break the rules and make
36 illegitimate gains (Reddiford, 1998). It ranges from large-scale doping (e.g., Russian state-sponsored
37 doping scandal) and match-fixing (e.g., Calciopoli scandal) to individual diving in football and “boring
38 in” while scrummaging in rugby. Such examples can have negative interpersonal consequences and
39 violate the ideal of fair play (Kavussanu, 2019), which involves abiding by the rules when competing.
40 Sport organisations spend considerable resources to prevent cheating, with the Athletics Integrity
41 Unit (AIU) spending over \$8 million annually to manage cheating in athletics (e.g., age manipulation,
42 bribery, doping; AIU, 2019) and the Tennis Integrity Unit (TIU) spending over \$7 million annually to
43 prevent, investigate and prosecute cheating in professional tennis (TIU, 2020). To help sport
44 organisations develop effective methods to prevent cheating, research is needed that identifies the
45 psychological factors underpinning an athlete’s decision to cheat. Two theoretical frameworks that
46 could help understand decisions to cheat in sport are the social cognitive theory of moral thought and
47 action (Bandura, 1991) and socio-cognitive model of moral identity (Aquino & Reed, 2002). The aim of
48 the present research is to test a model of cheating based on these two frameworks and conduct a
49 field study to identify how these frameworks operate when participants are given the opportunity to
50 cheat during a competition to win prize money.

51 **Social cognitive theory and cheating**

52 Albert Bandura (1991) proposed that people develop moral standards from several sources,
53 such as instruction from others, observation, and punishment, which in turn, regulate behaviour via
54 affective self-sanction. That is, people feel positive emotions, such as pride and happiness when they

55 act in line with their moral standards and feel negative emotions, such as regret and guilt when they
56 violate them. These self-sanctions are suggested to regulate behaviour anticipatorily, whereby people
57 avoid behaviour that will induce self-condemnation (Bandura, 1991).

58 One emotion that is suggested to regulate behaviour is regret (Zeelenberg & Breugelmans,
59 2008), which is defined as a painful cognitive emotional state of feeling sorry for misfortunes,
60 limitations or losses (Landman, 1993). A precursor of regret is knowledge that something would or
61 might have been better had one acted differently. Regret can be influenced by a complex set of
62 cognitive processes, drawing on memory, causal inference, inductive reasoning, social and personal
63 norms and beliefs (Coricelli & Rustichini, 2010), and can operate both anticipatorily (i.e., what may
64 happen) and counterfactually (i.e., what might have happened).

65 Anticipated regret occurs before a decision or response has been made and represents the
66 expected negative affective response to undesirable behavioural outcomes. Whereas counterfactual
67 regret refers to a person reflecting on a decision (e.g., fouling an opponent and being sanctioned) and
68 believing that a different option would have resulted in a more favourable outcome (e.g., not fouling
69 an opponent and receiving no sanction). Research into regret has shown that anticipated regret is
70 negatively related to intention to use a prohibited substance (Barkoukis et al., 2015; Lazuras et al.,
71 2017). While this suggests athletes may be less likely to cheat by doping due to feelings of anticipated
72 regret, it is limited in that it has not considered counterfactual regret and whether this holds for other
73 forms of cheating.

74 Regret is often considered an emotion that plays a central role in inhibiting unethical
75 behaviours (Gotlib, 2019; Kavussanu, 2019; Pletti et al., 2016). However, there is some evidence
76 suggesting counterfactual regret may *encourage* cheating (Corcoran & Rotter, 1987; Ruedy et al.,
77 2013). Jamison et al. (2020) reported that when participants read a scenario where they were given
78 the option to harm an opponent during a tennis match and win \$20,000, those who chose *not* to
79 harm the opponent to win the money experienced greater counterfactual regret than those who did.

80 This suggests that the decision to not cheat and forego a benefit can increase counterfactual regret,
81 which may increase future cheating (Effron et al., 2015). Although these effects have been noted in
82 non-sport contexts, such as gambling (Chua et al., 2009) and interpersonal harm (Feldman et al.,
83 2020), it is unknown whether the effect generalises to athletes. Given this gap in our understanding,
84 there is a clear need to determine the impact of athletes' counterfactual regret on future cheating
85 behaviour in sport.

86 ***Moral identity and cheating***

87 Similar to social cognitive theory, Aquino and Reed (2002) described the psychological
88 construct, moral identity, within a socio-cognitive approach that stresses the importance of situation-
89 specific knowledge and experiences that guide behaviour and decision making. Moral identity,
90 defined as the degree to which a person's moral self is experienced as a central part of that person's
91 overall self-concept (Aquino et al., 2011), can help explain why people experience regret in sport.
92 Cheating violates moral values (e.g., fairness, honesty, respect) and can make people feel bad
93 (Kavussanu, 2019). Moral identity reflects the significance and salience of moral values in one's
94 identity and plays a key role in how people interpret and respond to situations involving moral
95 decisions (Aquino et al., 2011; Aquino & Reed, 2002). For people with a high moral identity, moral
96 decisions are salient in their everyday life choices, and they are likely to act morally.

97 From a trait-based perspective, moral identity is a trait-like personality attribute that is stable
98 across many contexts and time (Blasi, 1993). However, from a sociocognitive approach, moral identity
99 is situation-specific, that is malleable and flexible to change depending on the given situation (Aquino
100 et al., 2009). The latter approach therefore suggests that depending on the situation, moral identity
101 can be manipulated depending on personal experiences. In a recent study, Krettenauer et al. (2021)
102 asked participants to self-report the importance of moral identity once a day for 50-days and found
103 that scores for each person varied by 64%. This suggests that moral identity can fluctuate, which may
104 be activated by various schema that influence decision making and behaviour. While a body of

105 research has examined the state-like feature of moral identity in the broader field of psychology
106 (Hertz & Krettenauer, 2016; Krettenauer & Hertz, 2015), to our knowledge, no research has examined
107 whether moral identity changes after a person decides to cheat during a sport specific task. It is
108 therefore unknown whether the sociocognitive approach to moral identity holds true during
109 competitive situations involving cheating.

110 In sport, moral identity has shown to deter athletes from cheating. Moral identity is strongly
111 negatively associated with antisocial behaviours, such as injuring an opponent and breaking the rules
112 (e.g., Sage et al., 2006; Shields et al., 2018), and doping (Kavussanu & Ring, 2017; Stanger &
113 Backhouse, 2020). Moreover, moral identity is indirectly related to antisocial behaviour in sport via
114 anticipated guilt (Kavussanu et al., 2015). That is, moral identity can increase anticipated guilt, which
115 in turn, decreases antisocial behaviour (Kavussanu et al., 2015). Taken together, these findings
116 suggest that athletes with high moral identity may be less likely to cheat due to anticipated affective
117 self-sanctions. While several studies have shown relationships between moral identity, anticipated
118 guilt and cheating, no research has examined the role of anticipated regret in the moral identity-
119 cheating relationship. To help provide a better understanding of athletes' cheating decisions, research
120 is needed to examine whether moral identity thwarts cheating, both directly and indirectly via
121 anticipated regret.

122 ***Examining cheating in sport psychology research***

123 As it is unethical to ask athletes to purposefully cheat during a competition and risk being
124 sanctioned, researchers often rely on hypothetical scenarios or simulated field tests that offer
125 opportunities to cheat (see Kavussanu, 2019 for review). This approach often involves a moral
126 conflict, whereby participants are pulled in contrary directions both for and against the behaviour,
127 such as conflicts between personal interests (e.g., winning a medal by doping) and accepted moral
128 values (e.g., doping is against the rules and can result in being sanctioned). This in turn, allows

129 researchers to systematically explore how distinct psychological factors modulate moral judgement
130 and decision making.

131 In sport psychology, researchers have used hypothetical scenarios by asking participants to
132 read and respond to vignettes about deliberately injuring a competitor (Stanger et al., 2013), using a
133 prohibited substance to gain an advantage (Huybers & Mazanov, 2012), or intimidating an opponent
134 to help their team (Kavussanu & Ring, 2016). Similarly, other researchers have conducted field tests
135 and asked participants to cheat during simulated hypothetical scenarios, such as a matrix solving task
136 (Nicholls et al., 2020) and competitive sprint races (Ring & Kavussanu, 2018).

137 While hypothetical scenarios are limited in their ecological validity and ability to study “real-
138 life” cheating decisions, they do offer several advantages (c.f. Christensen & Gomila, 2012). First,
139 hypothetical scenarios offer the opportunity to include various variables in the cheating decision and
140 can offer a more holistic approach to understanding moral behaviour. Second, they provide a high
141 degree of control, whereby participants are given the exact same scenario for each person and are
142 thus, not subjected to the variability that may occur when other people may intervene within the
143 experiment. Third, hypothetical scenarios can elicit strong moral reactions in participants that allow
144 researchers to thoroughly examine the variables in question. In short, hypothetical scenarios offer an
145 opportunity to study moral decision making in a valid, controlled, and ethical manner.

146 ***Present Research***

147 Social cognitive theory and the socio-cognitive model of moral identity (Aquino & Reed, 2002)
148 provide useful frameworks to help understand cheating in sport. In this study we integrated elements
149 from both frameworks to examine cheating in sport. Specifically, we conducted two studies to
150 examine relationships between moral identity, regret (anticipated and counterfactual), and cheating
151 in sport. In the first study, we examined whether moral identity was related to cheating attitudes in
152 sport directly and indirectly via anticipated regret. In the second study, we examined differences in

153 moral identity and anticipated and counterfactual regret on the decision to cheat during simulated
154 sprint competition.

155 **Study 1**

156 In Study 1, we used a cross-sectional design to examine whether moral identity was related to
157 cheating attitudes in sport directly and indirectly via anticipated regret. We tested two hypotheses.
158 First, we hypothesised that moral identity and anticipated regret would be negatively associated with
159 cheating attitudes. Second, we hypothesised that the relationship between moral identity and
160 cheating attitudes would be indirectly related via anticipated regret.

161 **Material and methods**

162 *Participants*

163 We recruited 380 athletes (mean \pm SD: age = 20.13 \pm 2.88 years, training history = 8.00 \pm 4.65
164 years, training = 6.40 \pm 4.00 hours per week) from team (67%) and individual (33%) sports. Sample size
165 calculations based on Fritz MacKinnon's (2007) recommendations, suggest that this sample is powered at
166 80% power for detecting a medium effect size of the direct effect and a small effect of the indirect effect.
167 Participants were male (70%) and female (30%) and competed at club (43%), university (17%), county
168 (19%), regional (10%), national (6%) and international (5%) level. Inclusion criteria stipulated that
169 participants competed regularly in sport (i.e., trained twice or more a week) and were aged 16 or older.

170 *Measures*

171 *Moral identity.*

172 The internalization dimension of the Moral Identity Scale (Aquino & Reed, 2002) was used to
173 measure moral identity. Participants were presented with nine traits (e.g., fair, hardworking, honest)
174 considered common characteristics of moral people, and were asked to respond to five statements
175 concerning these traits (e.g., "It would make me feel good to be a person who has these characteristics", "I
176 strongly desire to have these characteristics") on a 7-point Likert-type scale, anchored by 1 (*strongly*

177 *disagree*) and 7 (*strongly agree*). The mean of the responses to the five items was calculated and used in all
178 analyses - with higher scores indicating high moral identity. Internal consistency has shown to be good ($\alpha =$
179 .83; Aquino & Reed, 2002).

180 *Anticipated regret.*

181 We measured anticipated regret about cheating in sport using a single item from the State
182 Shame and Guilt Scale (Marschall et al., 1994). Although multi-item scales are generally regarded as a
183 more reliable and valid measure (Diamantopoulos et al., 2012; Sarstedt & Wilczynski, 2009), given
184 that regret is a clear and unambiguous construct, the use of multi-item scales have been suggested to
185 be unnecessary and provide no more information than that of a single-item scale (Bergkvist &
186 Rossiter, 2009). Participants were therefore presented with the statement: "*Imagine that you cheated*
187 *to gain an advantage over your opponent during an important competition*", followed by one item "I
188 would feel remorse, regret". Participants responded on a 7-point Likert-type scale, anchored by 1 (*not*
189 *at all*) to 7 (*very strongly*), with higher scores indicating greater anticipated regret about cheating in
190 sport.

191 *Cheating attitudes.*

192 We measured attitudes towards cheating using the cheating subscale of the Attitudes to
193 Moral Decision-making in Youth Sport Questionnaire (Lee et al., 2007), which has shown strong
194 validity of cheating behaviour in sport (Lucidi et al., 2017). Using a 7-point Likert scale anchored by 1
195 (*strongly disagree*) and 7 (*strongly agree*), participants responded to three items ("I would cheat if I
196 thought it would help me win", "It's OK to cheat if nobody knows", and "If other people are cheating, I
197 think I can too"). The mean of the responses to the three items was calculated, with higher scores
198 indicating more favourable attitudes toward cheating. Cronbach alpha coefficients have been shown
199 to be acceptable ($\alpha = .73$; Lee et al., 2007).

200 *Procedure*

201 After obtaining approval from the lead author’s local institution, participants were recruited from
202 local sport clubs and university teams. Stakeholders of sports clubs and teams (e.g., coaches, managers,
203 secretaries) were contacted by telephone or email and informed about the study purposes. After gaining
204 permission, participants were recruited in person at the club/team’s training facility. Prior to providing
205 informed consent, eligible participants were informed about the study aims, that participation was
206 voluntary, and that all data would be kept anonymous and used for research purpose only. Participants
207 then completed the measures described above.

208 **Results**

209 *Preliminary analyses*

210 Variance inflation factor (VIF) was calculated and indicated that scores for all measures were
211 below 1.4, suggesting that the data were not affected by multicollinearity (Akinwande et al., 2015).
212 Cronbach’s alpha coefficients were computed for moral identity and cheating attitude measures,
213 which displayed good internal consistency (Table 1). Descriptive statistics were also calculated and
214 revealed that participants were characterised by high moral identity and high anticipated regret for
215 cheating, and unfavourable attitudes against cheating (Table 1). In support of our first study
216 hypothesis, zero-order correlations indicated that moral identity was negatively associated with
217 cheating attitudes, moral identity was positively associated with anticipated regret, and anticipated
218 regret was negatively associated with cheating attitudes (Table 1).

219 *Direct and indirect effects of moral identity on cheating attitudes via anticipated regret*

220 Our second study hypothesis was that moral identity would be related to cheating attitudes, both
221 directly and indirectly via anticipated regret. We used the PROCESS 4.0 (Hayes, 2013) SPSS macro (model
222 4), to test direct and indirect (via anticipated regret) effects of moral identity on cheating attitudes. Given
223 that sex and ability level are likely to affect the likelihood of cheating in sport, we included these as
224 covariates in the analyses. Bootstrapping was set at 10,000 samples and percentile 95% confidence
225 intervals (CI) were estimated for all effects. We report the partially standardized indirect effect (PSIE), with

226 values of .01, .09 and .25 indicating small, medium and large effects sizes, respectively (Preacher & Kelley,
227 2011). Both direct and indirect effects are shown in Figure 1 and provide support for our hypothesis. That
228 is, moral identity had a medium indirect relationship to cheating attitudes via anticipated regret (PSIE =
229 0.11, 95% *CI* = 0.06 to 0.17). There was also a direct effect of moral identity on cheating attitudes.

230 **Discussion**

231 In support of our first hypothesis, we found that both moral identity and anticipated regret
232 were negatively associated with cheating attitudes. This suggests that athletes who consider that
233 being a moral person is central to their self-concept and who anticipate feeling more regret, are more
234 likely to report unfavourable attitudes towards cheating. These findings support and extend previous
235 research, which reported relationships between moral identity, anticipated negative emotions (e.g.,
236 guilt), and antisocial behaviour in sport (Kavussanu et al., 2015; Stanger et al., 2013). In support of our
237 second hypothesis, moral identity was indirectly related to cheating attitudes via anticipated regret.
238 This suggests that athletes with a strong moral identity are more likely to report unfavourable
239 attitudes to cheating because they anticipate stronger negative self-sanction. These findings are in
240 line with past research reporting that anticipated negative affective self-sanctions, such as guilt,
241 mediate the relationship between moral identity and other forms of unethical behaviour in sport,
242 such as doping (Kavussanu & Ring, 2017; Ring et al., 2019) and harming an opponent (Kavussanu et
243 al., 2015; Stanger et al., 2013).

244 **Study 2**

245 Study 1 provided insights into the relationships between moral identity, anticipated regret,
246 and cheating attitudes. However, the findings are characterised by two limitations. First, we
247 measured attitudes towards cheating rather than cheating behaviour. There may be a difference
248 between attitudes and behaviour (Bohner & Dickel, 2011). Second, the design of the study precluded
249 a test of measuring counterfactual regret. Accordingly, in Study 2 we improved the study design by

250 measuring cheating behaviour during competition and measured anticipated regret before and
251 counterfactual regret following the decision whether to cheat to try and win prize money.

252 Recently, Ring and Kavussanu (2018) used an intervention whereby participants competed a
253 series of sprint races to win prize money. Authors also offered participants the opportunity to cheat
254 and increase their chances of winning the prize money; 33% of participants decided to cheat. In the
255 current study, we used a similar cheating intervention to Ring and Kavussanu (2018) and aimed to
256 replicate and extend the study twofold. First, we examined differences in scores for moral identity,
257 anticipated regret, and cheating attitudes between participants deciding to cheat (i.e., cheats) and
258 those that do not (i.e., non-cheats). Second, we measured moral identity, counterfactual regret,
259 cheating attitudes and whether participants would change their decision to cheat after the
260 intervention. We tested two hypotheses. First, we hypothesised that compared to non-cheats, cheats
261 would report lower moral identity, higher anticipated regret for cheating, and more favourable
262 attitudes towards cheating both before and after the cheating intervention. Second, we hypothesised
263 that cheats and non-cheats wanting to change their decision would experience greater counterfactual
264 regret than those who were happy to stick with their decision.

265 **Material and methods**

266 *Participants*

267 We recruited 68 participants (mean \pm SD: age = 19.23 \pm 2.62 years, training history = 8.68 \pm
268 4.50 years training, training = 6.31 \pm 4.30 hours per week) from university undergraduate classes at
269 the lead author's institution who were not involved in Study 1. Participants were male (50%) and
270 female (50%), competing in team (67%) and individual (33%) sports at club (51%), university (13%),
271 county (13%), regional (8%), national (8%) and international (7%) level. Inclusion criteria stipulated
272 that participants completed a physical activity readiness questionnaire (PAR-Q; Thomas et al., 1992),
273 reported no physical injury, and regularly participated in sport (i.e., trained twice or more per week).
274 Eligible participants were informed that participation was voluntary, and data were confidential,

275 before providing informed consent. The study was approved by the lead author's Institutional Ethics
276 Committee.

277 *Cheating intervention*

278 The cheating intervention consisted of participants running two 20-m sprints, separated by
279 10-minutes, and a public prize ceremony conducted one-week later. In the first sprint, participants
280 were informed that the objective was to determine the fastest person in the study and ran 20-m as
281 fast as possible. They were then given a 10-minute break and informed they would run a second 20-m
282 sprint with the opportunity to win one of ten cash prizes. Participants were told that the ten
283 participants from the entire study who improved their time by the greatest margin than the first
284 would receive a cash prize as follows: 1st place £50, 2nd place £30, 3rd place £20, and 4th to 10th place
285 £10 each. Running times would be standardised to create a fair competition, so that if someone who
286 ran 3.0 s in the first sprint, and ran 2.9 s in the second, would score 3.3% (i.e., $((3.0-2.9) / 3.0) * 100 =$
287 3.3%).

288 Before completing the second sprint, participants were told individually and in confidence
289 that they had the option to increase their chance of winning one of the prizes by cheating and
290 automatically improving their time by 3% without anyone knowing. Participants were also told that
291 there was a 10% chance of being caught and disqualified from the competition and prizes, which was
292 chosen based on previous research (Ring & Kavussanu, 2018) and to simulate real-life events,
293 whereby athletes who cheat can be disqualified from competing and honours. Participants were
294 handed a 4 x 5 cm card and indicated whether to cheat by writing yes (i.e., cheat) or no on the card.
295 Participants returned the card in a sealed envelope and performed the second 20-m sprint.

296 One-week after the sprints, participants attended a prize-ceremony and the top 10
297 participants who improved their times were awarded cash prizes. To mimic the receipt of rewards at
298 sport competitions, those who won a prize were asked to walk to the front of the room and collect
299 their reward in front of all participants. After prizes were awarded, participants were told the amount

300 of people who had cheated in the entire study and the number of people who cheated and won a
301 prize.

302 **Measures**

303 Participants completed measures immediately prior to the cheating intervention (i.e., pre-
304 measures) and immediately after the prize ceremony (i.e., post-measures).

305 *Pre-measures.*

306 Pre-measures were the same as described in Study 1: moral identity, anticipated regret, and
307 cheating attitudes.

308 *Post-measures.*

309 Post-measures included the same pre-measures of moral identity and cheating attitudes.

310 Participants also completed a measure of counterfactual regret and were provided with the following
311 statement: “Based upon your decision to cheat during the 20-m sprint, how do you feel about your
312 choice?”. They then responded to the item “I feel remorse, regret” on a 7-point Likert scale ranging
313 from 1 (*strongly disagree*) to 7 (*strongly agree*). Finally, participants indicated whether they would
314 change their decision to cheat after reading the statement “if you had the chance to perform the
315 second sprint once more, would you change your decision?”, with responses scored as 0 (*no*) and 1
316 (*yes*).

317 **Procedure**

318 An overview of the study procedure is shown in Figure 2. Participants arrived at the lead
319 authors University’s Sport Centre in small groups ($n = 13 \pm 3$) and completed pre-measures described
320 above. To encourage honesty in responses, participants returned completed questionnaires to the
321 lead author in a sealed envelope (Bowling & Ebrahim, 2005). They then completed a 10-minute
322 standardised warm-up, involving continuous jogging and light running drills, before completing the
323 first 20-minute sprint. To limit spectator effects (Edwards et al., 2018), participants completed sprints

324 individually, with all other participants in a separate room unable to hear or see participants
325 completing the sprints.

326 After completing the first sprint, participants were given a 10-minute break and informed that
327 they would run another 20-m sprint with the opportunity to win one of ten cash prizes. They then
328 regrouped in a separate room away from the sprint area and the lead researcher called participants
329 one by one to complete their second sprint. Upon approaching the 20-m sprint, participants were told
330 in confidence that they could cheat to improve their chances of winning the cash prize, but could be
331 disqualified for doing so. After deciding, they then completed the second sprint. To prevent
332 contamination with other group members, immediately after finishing the sprint, participants were
333 escorted away from those still waiting to complete their second sprint.

334 One week later, all participants attended the prize ceremony in a lecture theatre at the lead
335 authors university campus. The ten participants who improved their times to the greatest margin
336 from the first sprint were awarded their cash prizes, and all participants were informed of how many
337 cheated in the entire study (n = 9) and how many cheated and were awarded a cash prize (n = 6).
338 Participants then completed post-measures in the same manner as pre-measures.

339 **Results**

340 *Preliminary analyses*

341 Variance inflation factor scores (< 2.1) indicated that scores for all measures were not
342 affected by multicollinearity. Cronbach's alpha coefficients were computed for all multi-item scale
343 scores, are presented in Table 2, and indicate good-to-very good levels of internal consistency for
344 both pre- and post-measures. Table 2 also show means and standard deviations for pre- and post-
345 measures.

346 *Cheats versus non-cheats*

347 Overall, nine (13%) participants decided to cheat. Our first study hypothesis was that
348 compared to non-cheats, cheats would report lower moral identity, higher anticipated regret for
349 cheating, and more favourable attitudes towards cheating both before and after the cheating
350 intervention. Given the low number of participants who decided to cheat, we ran a series of Mann
351 Whitney U tests to examine differences in pre- and post-measure scores between cheats and non-
352 cheats.

353 For pre-measures, compared to non-cheats, cheats reported higher scores for cheating
354 attitudes ($U = 398.00, p = .02$). No differences in scores between cheats and non-cheats were found
355 for anticipated regret for cheating ($U = 204.50, p = .25$) and moral identity ($U = 210.00, p = .31$). For
356 post-measures, compared to non-cheats, cheats reported lower scores for moral identity ($U = 171.00,$
357 $p = .01$) and higher scores for counterfactual regret for cheating ($U = 414.50, p < .001$) and cheating
358 attitudes ($U = 410.00, p = .01$). This partially supports our hypothesis. That is, cheats reported more
359 favourable attitudes to cheat prior to and after the cheating intervention, and lower moral identity
360 and anticipated regret for cheating after the intervention. Whereas cheats and non-cheats reported
361 similar feelings of anticipated regret and moral identity before the intervention.

362 ***Changing decisions to cheat***

363 Our second study hypothesis was that cheats and non-cheats wanting to change their
364 decision would experience greater counterfactual regret than those who were happy to stick with
365 their decision. After the cheating intervention, 28% ($n = 13$) of non-cheats reported that they would
366 change their decision if they could and would now cheat. Mann Whitney U tests were computed and
367 identified that compared to those who would not change their decision, those who would
368 subsequently cheat reported greater counterfactual regret ($U = 556.00, p < .001$; Figure 3). Among
369 those who cheated, 66% ($n = 6$) wanted to change their decision after the public ceremony and
370 subsequently *not* cheat. Mann Whitney U tests indicated that compared to those that would change
371 their decision, those who would not cheat reported higher counterfactual regret ($U = 16.50, p = .04$;

372 Figure 3). These results support our second study hypothesis and indicate that those who regret their
373 decision to cheat are more likely to change their decision if given the opportunity.

374 Discussion

375 In Study 2, we examined differences between cheats and non-cheats in moral identity,
376 anticipated regret, counterfactual regret, and cheating attitudes. In line with our first hypothesis, we
377 found that cheats reported more favourable attitudes to cheating than non-cheats prior to the
378 cheating intervention. These results are in line with previous research reporting associations between
379 cheating attitudes and anti-social behaviours in sport (Lucidi et al., 2017; Ring & Kavussanu, 2018) and
380 indicate that athletes displaying favourable attitudes to cheating, may be more likely to cheat.

381 Contrary to our hypothesis, we found no differences in anticipated regret between cheats
382 and non-cheats prior to the cheating intervention. This is surprising given that anticipated regret was
383 strongly correlated to cheating attitudes in Study 1. Thus, while anticipated regret for cheating may
384 be associated with cheating attitudes, it may not thwart cheating behaviour. Those that cheated
385 however, reported feeling more counterfactual regret than those who did not cheat. Counterfactuals
386 reflect how the past might have been and can elicit feelings of regret when a person believes the
387 outcome could have been better (Epstude & Roese, 2008; Roese & Olson, 1995). Based on this
388 understanding, the greater counterfactual experienced by those that cheated is likely the result of
389 acting dishonestly and gaining an unfair advantage over their competitors.

390 For pre-measures, cheats and non-cheats did not differ in moral identity scores. This was not
391 in line with our hypothesis, where we reported in Study 1 that moral identity was negatively
392 associated with cheating attitudes in Study 1 and has been suggested to play an important role in the
393 decision to cheat (Kavussanu, 2019). However, while no differences were reported at pre-measures,
394 in post-measures, it was found that moral identity scores differed between cheats and non-cheats.
395 This suggests that by cheating, and acting immorally, participants changed how they perceived their
396 moral self (Aquino et al., 2011), which aligns with the suggestion that moral identity is state-like and

397 may fluctuate depending on situational inputs (Krettenauer et al., 2021). Based on the socio-cognitive
398 model of moral identity, during the experiment, participants actively construed the social context
399 according to anticipated affective mechanisms (e.g., regret) and their moral identity was influenced
400 by their decision to cheat (c.f., Walker, 2014). For those that cheated, they felt less regret, which
401 suppressed the importance of moral identity. Thus, while moral identity was not associated with
402 whether participants cheated before the study, it is likely that the decision to cheat affected, at least
403 temporarily, their moral identity.

404 We found that among non-cheats, over a quarter (28%) wanted to change their decision (i.e.,
405 would now cheat) after attending the prize ceremony. In support of our second study hypothesis,
406 non-cheats wanting to change their decision reported stronger feelings of counterfactual regret than
407 non-cheats who did not want to change their decision. Although regret typically inhibits unethical
408 behaviour (Gotlib, 2019; Kavussanu, 2019; Pletti et al., 2016), we found that athletes may be more
409 likely to cheat due to the counterfactual regret of *not* cheating. This is similar to research in other
410 contexts (Efron et al., 2015; Feldman et al., 2020; Jamison et al., 2020), and suggests that
411 counterfactual regret may motivate unethical behaviour. For an athlete who decides not to cheat,
412 feelings of counterfactual regret may therefore increase the likelihood of that athlete cheating,
413 especially when they see that cheats are rewarded.

414 Two thirds (66%) of cheats wanted to change their decision (i.e., opt to not cheat). These
415 participants reported stronger feelings of counterfactual regret than those who would not change
416 their decision to cheat. This suggests that negative self-conscious emotions experienced because of
417 cheating act as a strong motivator to change future cheating behaviour. The emotion of
418 counterfactual regret is elicited by thoughts that things could have been better, and it is assumed to
419 regulate behaviour because people strive to minimise affective dissonance caused by moral
420 transgression (Coricelli & Rustichini, 2010). Thus, cheats experienced stronger affective self-sanction
421 and, in turn, intended to reverse their decision to cheat.

422 General Discussion

423 In this multi-study research, we investigated relationships between moral identity and regret
424 (counterfactual and anticipated) on cheating in sport. In the first study, we used a cross-sectional
425 design to examine the relationship between moral identity and cheating in sport, and whether this
426 was indirectly related to anticipated regret. In the second study, we used a field test design to
427 examine differences in moral identity and anticipated and counterfactual regret between participants
428 who decided to cheat and participants who did not during a running competition.

429 We found strong negative relationships between cheating attitudes and anticipated regret
430 (Study 1), and that cheats experienced greater counterfactual regret than non-cheats (Study 2).
431 Although regret is suggested to act as a deterrent for cheating in sport (Kavussanu et al., 2020), we
432 also found that some participants experienced greater counterfactual regret for *not* cheating. Given
433 that some elite athletes have stated that they believe that they competed against competitors who
434 cheated, the implications of our findings are important.¹ Athletes who resist cheating, and witness
435 other athletes winning by breaking the rules, may counterfactually regret adhering to the rules and
436 cheat in the future. Thus, sport stakeholders (e.g., AIU, TIU, World Anti-Doping Agency) should be
437 aware that athletes may be more likely to cheat when they believe that other athletes break the
438 rules, and so they should target their interventions at athletes who have been disadvantaged by
439 cheating (e.g., match fixing, doping) to curb feelings of counterfactual regret and reduce the
440 likelihood of cheating.

441 Previous research has reported negative associations between cheating and unethical
442 behaviour in sport (Kavussanu, 2019; Kavussanu & Ring, 2017; Stanger & Backhouse, 2020) and non-

¹ Michael Phelps, 23 × Olympic Gold Medallist, acknowledged that he never competed on a level-playing field Guardian, T. (2017). *Michael Phelps wants to talk doping reform now. Will anybody listen?* <https://www.theguardian.com/sport/blog/2017/mar/01/michael-phelps-doping-congress-hearing-russia>, Wyn Jones, Welsh international Rugby Union player, reported that he expected competitors to cheat BBC. (2020). *Six Nations 2020: We expect France to 'cheat' at the scrum - Wyn Jones*. <https://www.bbc.co.uk/sport/rugby-union/51550491>, and Edwin Moses, 2 × Olympic Gold Medallist, recognised that he always competed against cheats Guardian, T. (2020). *Edwin Moses: 'We all knew doping was happening ... it was a dark period in athletics'*. <https://www.theguardian.com/sport/2020/feb/06/edwin-moses-interview-donald-mcrae-athletics>.

443 sport contexts (Barclay et al., 2014; Krettenauer & Casey, 2015; Thornton & Rupp, 2016). Our results
444 from Study 1 are in line with this, where we found that moral identity was negatively associated with
445 cheating attitudes. However, in Study 2, while moral identity did not differ between cheats and non-
446 cheats prior to the running competition, differences were reported afterwards. Moral identity may
447 therefore not regulate whether an athlete decides to cheat. Instead, it is likely that moral identity is
448 challenged after an athlete decides to cheat and may fluctuate depending on situational factors (e.g.,
449 deciding to cheat). These results have important implications for the design and interpretation of
450 future research, where researchers should consider the impact cheating has on athlete's moral
451 identity.

452 Attitudes towards cheating were found to be higher in participants that decided to cheat than
453 non-cheats. Attitudes are an evaluation of an object of thought and are suggested to influence
454 behaviour (Bohner & Dickel, 2011). Our results partially support this proposition and indicate that
455 participants who hold favourable attitudes to cheating are more likely to cheat than those who have
456 less favourable attitudes. For stakeholders and researchers interested in preventing cheating, our
457 results highlight the importance of targeting athletes' attitudes towards cheating in interventions,
458 which in turn may prevent future cheating behaviour.

459 Our findings should be interpreted in light of the following potential limitations. First, our
460 measures of cheating may not have fully captured the atmosphere, pressure and demands
461 experienced during competitive sport scenarios (e.g., national, and international championships). It is
462 possible that athletes may respond differently in our assessment compared to what may be
463 experienced during important competitions. Further research should aim to examine cheating during
464 real life competitions. Second, the proportion of participants cheating in Study 2 was small (n = 9;
465 13%), resulting in unbalanced sample sizes between groups and an underpowered study. This was
466 unexpected given that previous research using similar designs reported one third (n = 20; 33%) of
467 participants cheated (Ring & Kavussanu, 2018), and results should therefore be interpreted with
468 caution. Third, participants in Study 2 were university students and recruited by the lead author, who

469 conducted the cheating intervention and lectures at the same institution as participants. Given the
470 researcher's position of authority, participants decision to cheat may have been influenced by self-
471 presentation bias and not be a valid representation of cheating behaviour.

472 **Conclusion**

473 Our findings extend previous research by showing that anticipated regret, counterfactual
474 regret, and moral identity are important factors in decisions about cheating. We showed that the
475 relationship between moral identity and cheating attitudes was indirectly related to anticipated
476 regret. We also found that counterfactual regret may inhibit and encourage cheating. Counterfactual
477 regret experienced by those who cheat, were less likely to cheat in the future, however, those who do
478 not cheat, also experience counterfactual and were more likely to cheat. This suggests that
479 counterfactual regret may serve as both an important motivator and deterrent for future cheating
480 behaviour. Given that regret can guide future decision making, it is important that sport organisations
481 recognise that athletes who do not cheat, but are aware that other athletes cheat and get away with
482 it, may be more likely to cheat in the future.

483

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486

487 **Declaration of interest statement**

488 The data that support the findings of this study are available on request from the corresponding
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647 **Table captions**

648

649 **Table 1.** Possible range scores of all measures = 1 to 7. SD = standard deviation, * $p < .001$

650

651 **Table 2.** Possible range scores of all measures = 1 to 7. Data are means with standard error in
652 parentheses. * $p < .05$ and ** $p < .01$ vs. cheats

653 **Figure captions**

654 **Figure 1.** The direct (de) and indirect (ie) effect via anticipated regret of moral identity on cheating
655 attitudes, controlling for sex and ability. *Note.* Unstandardised coefficients are reported, with 95%
656 confidence intervals in brackets.

657

658 **Figure 2.** Illustration of Study 2 design

659

660 **Figure 3.** Differences in anticipated regret scores between those that would change their decision to
661 cheat and those that would not for cheaters and non-cheaters in Study 2. *Note:* * $p < .05$, ** $p < .01$.

662

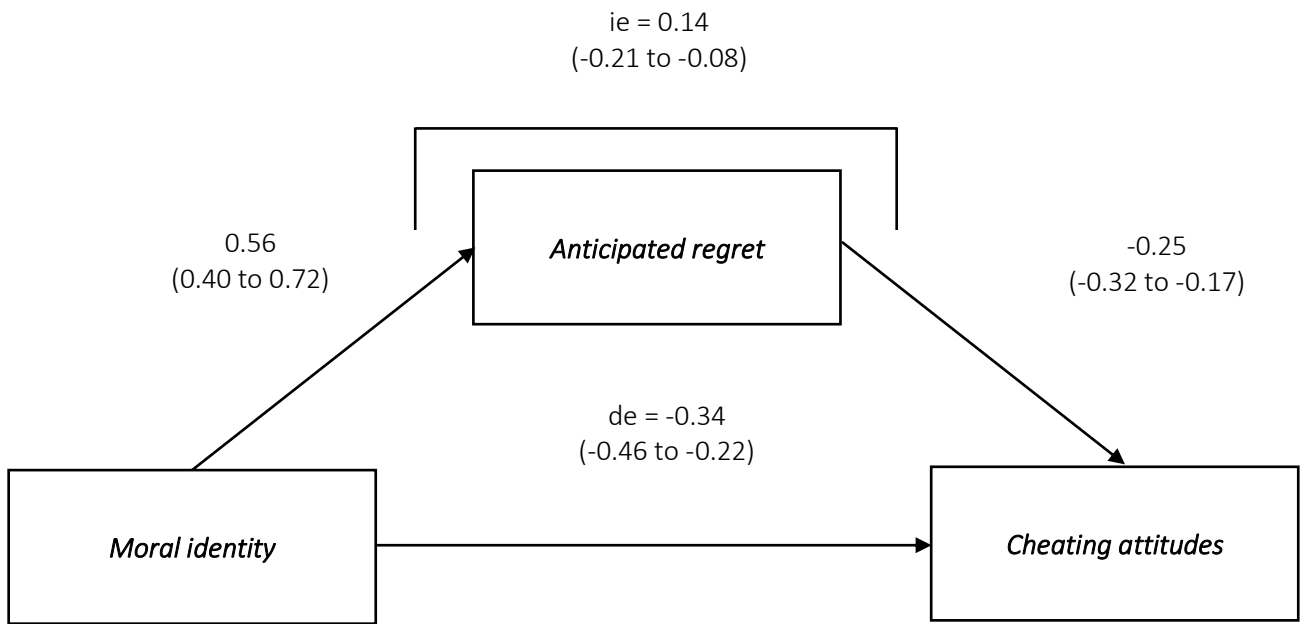
Table 1. Alpha coefficients, descriptive statistics, and zero-order correlations for measures in Study 1 (N = 380)

Measures	<i>a</i>	Mean (SD)	1	2
Moral identity	.84	5.80 (1.59)		
Anticipated regret	n/a	5.40 (0.95)	.36*	
Cheating attitudes	.83	2.04 (1.18)	-.40*	-.41*

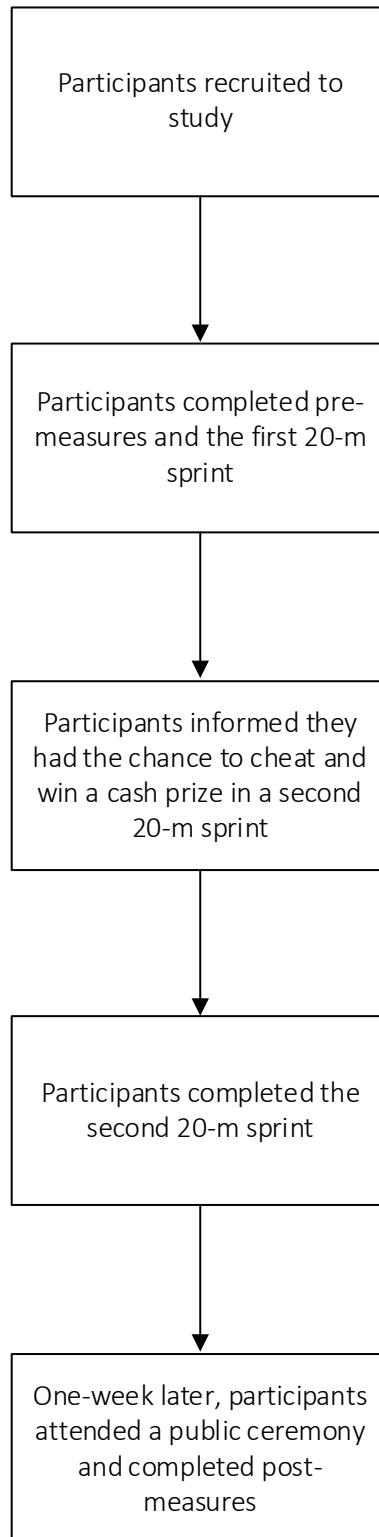
Table 2. Pre- and post-measure descriptive statistics for the overall sample (N = 68), cheats (n = 9) and non-cheats (n = 59) in Study 2

	α	Overall	Cheats	Non-cheats
<i>Pre-measures</i>				
Moral identity	.80	5.88 (0.10)	5.62 (0.32)	5.92 (0.11)
Anticipated regret	n/a	5.81 (0.15)	5.22 (0.52)	5.90 (0.15)
Cheating attitudes	.80	2.80 (0.14)	3.70 (0.35)	2.66 (0.15)*
<i>Post-measures</i>				
Moral identity	.78	5.65 (0.12)	4.93 (0.26)	5.76 (0.13)*
Counterfactual regret	n/a	2.34 (0.25)	4.00 (0.58)	2.08 (0.26)**
Cheating attitudes	.91	2.81 (0.14)	3.80 (0.42)	2.66 (0.15)**

665 Figure 1



666 Figure 2



667 Figure 3

