

1 Stevens, M., **Rees**, T., Coffee, P., Steffens, N., Haslam, S. A., & Polman, R. (accepted—18.2.19).
2 Leading 'us' to be active: A two-wave test of relationships between identity leadership, group
3 identification, and attendance. *Sport, Exercise, and Performance Psychology*.

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5

Running head: IDENTITY LEADERSHIP AND ATTENDANCE

Leading 'us' to be active: A two-wave test of relationships between identity leadership, group identification, and attendance

Abstract

6
7 Although physical activity participation has numerous physiological and psychological
8 benefits, inactivity rates remain high, and a greater understanding of the factors that drive
9 participation is needed. Growing evidence indicates that (1) the strength of individuals' social
10 identification as a member of a particular physical activity group (e.g., an exercise group or
11 sports team) is positively associated with their group-relevant participation, and (2) physical
12 activity leaders (e.g., exercise group leaders, coaches, and captains) can foster members'
13 identification, and thus their greater group-relevant participation. Extending previous cross-
14 sectional research, we examined relationships over time between sports group members'
15 perceptions of their leaders' engagement in identity leadership, their group identification, and
16 attendance. Participants ($N = 186$) from amateur sports teams completed measures of identity
17 leadership, group identification, and attendance on two occasions, eight weeks apart. Lagged
18 regressions indicated that perceptions of leaders' engagement in identity leadership at Time 1
19 predicted members' group identification at Time 2, controlling for their group identification
20 at Time 1; and members' group identification at Time 2 was associated with their attendance
21 at Time 2, controlling for their attendance at Time 1. Mediation analysis demonstrated a
22 significant indirect effect of perceptions of leaders' engagement in identity leadership on
23 group members' attendance through greater group identification. Findings provide evidence
24 of the participation-related benefits of forming, and maintaining, strong social identities in
25 physical activity settings, and point to the role leaders can play in fostering members'
26 sustained identification and participation.

27

28 Key words: Leadership; Social Identity; Group Identification; Attendance; Mediation

29

30 The physiological and psychological benefits of physical activity are well
31 documented and include reduced risk of contracting several non-communicable diseases
32 (e.g., heart disease, Type 2 diabetes, colon and breast cancers) and improved cognitive
33 functioning, self-esteem, and mood (Biddle, Mutrie, & Gorely, 2015). Despite these benefits,
34 and numerous public health campaigns to increase population awareness of physical activity
35 benefits and guidelines (e.g., ‘Change4Life’ and ‘Live Well’), physical *inactivity* levels
36 remain high. Recent global statistics indicate that over a quarter of adults (27.5%) worldwide
37 are insufficiently active (Guthold, Stevens, Riley, & Bull, 2018), while substantially higher
38 rates of insufficient activity (>90%) have been reported from objective accelerometer data
39 (Tucker, Welk, & Beyler, 2011).

40 Recent attempts to understand and promote physical activity have been characterized
41 by an increasingly broad approach, with various individual, environmental, policy, and social
42 factors considered (e.g., see Bauman et al., 2012; Garcia, Healy, & Rice, 2016). Within this
43 research, promising preliminary evidence has emerged for the benefits of individuals
44 developing strong social identities in physical activity settings (Stevens et al., 2017). More
45 specifically, a positive relationship has been observed between the strength of individuals’
46 sense of social identity (or *group identification*) as a member of a particular physical activity
47 group and their participation in group-relevant activities (e.g., their participation in group
48 training sessions and events; Stevens, Rees, & Polman, 2018; Strachan, Shields, Glassford, &
49 Beatty, 2012). Building on this, recent research further suggests that, by engaging in *identity*
50 *leadership* (Haslam, Reicher, & Platow, 2011), physical activity leaders can foster group
51 members’ group identification and thereby facilitate greater rates of attendance in group
52 sessions (Stevens, Rees, Coffee, et al., 2018). The present study sought to build on this
53 research—which, to date, has relied on cross-sectional designs—by examining relationships
54 between identity leadership, group identification, and attendance over time. In particular, the

55 study focused on these relationships in the context of a structured form of physical activity:
56 amateur sport. The most recent data suggest that over 15 million adults aged 16 and over in
57 the United Kingdom (34.2% of all adults) engage in physical activity through sport at least
58 twice a month (28 days; Sport England, 2018), and that over 3 million of those are aged 16-
59 24 (equivalent to 49.2% of this population). Given these statistics, gaining a greater
60 understanding of the factors that drive physical activity participation through sport
61 (particularly in young adults) represents an important avenue for research.

62 **Theoretical Framework**

63 According to the *social identity approach* (Tajfel & Turner, 1979; Turner, Hogg,
64 Oakes, Reicher, & Wetherell, 1987), individuals can categorize themselves, and behave, in
65 terms of both their personal identity (i.e., as ‘I’ and ‘me’) and their various social identities
66 (i.e., as ‘we’ and ‘us’). The consequences of individuals categorizing themselves in terms of
67 social identities (e.g., as a member of a particular sports team)—and, in particular, of
68 developing a strong sense of *group identification*—have been the focus of considerable
69 research. For example, this research has confirmed the importance of social identity and
70 social identification for a range of behaviors including individuals’ commitment to group
71 projects (Haslam et al., 2006), productivity (Worchel, Rothgerber, Day, Hart, & Butemeyer,
72 1998), and engagement in various health-related behaviors (including physical activity;
73 Falomir-Pichastor, Toscani, & Despointes, 2009; Stevens, Rees, & Polman, 2018; Strachan et
74 al., 2012; Terry & Hogg, 1996). Much of this work speaks to a key assertion of the social
75 identity approach that categorizing oneself in terms of a particular social identity is associated
76 with a desire to align personal behaviors with behaviors that are representative of in-group
77 members (i.e., group norms; Turner et al., 1987).

78 For example, and of particular relevance in the present context, research has indicated
79 that in physical activity groups—where regular participation is normative—individuals’

80 desire to engage in identity-congruent behaviors may promote greater levels of participation
81 in group-relevant activities. Specifically, Strachan et al. (2012) found that the strength of
82 runners' identification as members of a running group was positively associated with the
83 percentage of total runs that they conducted with the group, and negatively associated with
84 their confidence to continue running should their group disband. In a separate cross-sectional
85 study, Stevens, Rees and Polman (2018) also found a positive relationship between
86 individuals' running group identification and their objectively assessed participation.

87 Building on these promising findings, recent research has examined the role that
88 physical activity leaders can play in fostering members' group identification, and thus greater
89 rates of attendance in group sessions (Stevens, Rees, Coffee, et al., 2018). Extending growing
90 evidence from organizational (Steffens, Yang, Jetten, Haslam, & Lipponen, 2017), political
91 (Steffens & Haslam, 2013) and sports performance (Slater & Barker, 2018) domains, this
92 research points to the benefits of leaders engaging in *identity leadership* (Haslam et al.,
93 2011). That is, leaders acting to *represent, advance, create, and embed* an identity that is
94 shared by members of the particular group they lead (Haslam et al., 2011; Steffens et al.,
95 2014). Specifically, in addition to providing further evidence of a positive relationship
96 between individuals' sport or exercise group identification and their participation in group-
97 relevant activity, researchers have found (1) a positive association between group members'
98 perceptions of their leaders' engagement in identity leadership and their own group
99 identification, and (2) that the positive relationship between members' perceptions of their
100 leaders' engagement in identity leadership and members' attendance is mediated by their
101 group identification (Stevens, Rees, Coffee, et al., 2018). Moreover, these effects have been
102 observed for multiple facets of identity leadership, providing preliminary evidence that
103 physical activity leaders should strive (1) to represent and embody the particular qualities and
104 attributes that define the group and set it apart from other groups (i.e., be seen as a

105 *prototypical* group member), (2) to champion the group's identity and interests (i.e., to be
106 seen to engage in identity *advancement*), (3) to play an active role in creating and shaping the
107 group's identity and a collective sense of 'we' and 'us' (i.e., to act as *identity entrepreneurs*),
108 and (4) to devise activities that make the group matter, and allow its shared identity to be
109 lived out (i.e., to act as *identity impresarios*).

110 **The Present Research**

111 Given the promising findings summarized above, further tests of relationships
112 between identity leadership, group identification, and participation are warranted. In
113 particular, given the exclusively cross-sectional nature of previous research concerning these
114 relationships (Stevens, Rees, Coffee, et al., 2018; Stevens, Rees, & Polman, 2018; Strachan et
115 al., 2012), there is a clear need for research that sheds light on the way in which these
116 relationships unfold over time. The present study represented the first attempt to address this
117 issue. Specifically, by using a two-wave design (and assessing identity leadership, group
118 identification, and attendance at both time points), it extended previous cross-sectional
119 research in several important ways. For while cross-sectional studies are useful for
120 identifying associations and often provide a valuable foundation for further research (Mann,
121 2003), cross-sectional designs can produce biased estimates of effects in correlation (Lindell
122 & Whitney, 2001) and mediation (Maxwell, Cole, & Mitchell, 2011) analyses. Moreover,
123 cross-sectional designs fail to take into account the (often strong) relationship between past
124 and future behavior (e.g., past and future physical activity participation; Gollob & Reichardt,
125 1987). Two-wave designs provide a more rigorous analysis of causal relationships between
126 variables than cross-sectional designs (Ployhart & Ward, 2011), and a means of assessing the
127 directionality of relationships (Selig & Little, 2012). Indeed, given indications that
128 relationships between group identification and participation, in particular, may be reciprocal

129 (Stevens, Rees, & Polman, 2018), a two-wave study represents an important advancement on
130 current research in this area.

131 Building on the foregoing discussion, the research tested three hypotheses. First, in
132 line with the social identity approach to leadership (Haslam et al., 2011), and extending
133 previous research (Stevens, Rees, Coffee, et al., 2018), we hypothesized that group members'
134 perceptions of their leader's engagement in identity leadership at Time 1 would predict
135 members' subsequent greater group identification at Time 2, controlling for their initial group
136 identification at Time 1 (H1). To advance current understanding of the relative importance of
137 the four facets of identity leadership, we examined each separately. Second, in line with a key
138 assertion of the social identity approach that a strong sense of group identification is
139 positively associated with a desire to align personal behaviors with those of representative
140 group members (i.e., by participating in group sessions regularly; Turner et al., 1987), and
141 previous research indicative of this effect (Stevens, Rees, & Polman, 2018; Strachan et al.,
142 2012), we hypothesized that group members' group identification at Time 2 would be
143 associated with their greater group-relevant attendance at Time 2, controlling for their
144 attendance at Time 1 (H2)¹. Finally, extending previous research (Stevens, Rees, Coffee, et
145 al., 2018), we hypothesized an indirect effect of perceptions of leader engagement in each of
146 the four identity leadership facets at Time 1 on members' attendance at Time 2 through group
147 identification at Time 2, while controlling for initial levels of group identification and
148 attendance at Time 1 (H3). Figure 1 provides a schematic overview of the relationships that
149 we examined.

150

Methods

¹ We considered it most appropriate to test and report a model in which group identification and attendance were measured at the same time point because, from a theoretical perspective, we would expect individuals' attendance at any given time to be driven by their group identification at that same time (rather, or at least to a greater extent, than by their group identification at an earlier time).

151 Participants and Procedure

152 The sample consisted of 396 university students (252 males, 144 females; aged 16 to
153 41, $M_{\text{age}} = 18.83$, $SD = 2.40$; 83.3% White British) recruited from first year sports courses at
154 four universities in the United Kingdom. Participants were eligible for the study if they (1)
155 had joined at least one amateur sports team (either within or outside university) in the period
156 between starting university and the start of the study (Time 1 data collection), and (2) were
157 still a member of at least one team that they had joined when Time 1 data collection took
158 place. Time 1 data collection took place in the third week of each university's first semester
159 (giving participants time to engage in team activities beforehand) and Time 2 data collection
160 eight weeks later. This eight-week period represented the longest consistent time lag possible
161 before the end of students' first semester (at which time, in most cases, team activities were
162 suspended for approximately four weeks). In total, 209 participants completed the second set
163 of measures, yielding a response rate of 52.7%. Of the 209 participants who completed the
164 Time 2 measures, 23 indicated they were no longer a member of the sports team they had
165 answered the Time 1 measures in relation to, leaving a final sample of 186 participants (107
166 males, 79 females; aged 16 to 41, $M_{\text{age}} = 18.81$, $SD = 2.24$; 78.0% White British; from 27
167 different sports).

168 All Time 1 measures were distributed during university lectures in paper form. At
169 Time 1, participants were asked to identify a particular sports team they had joined and were
170 still part of, followed by an instruction to answer the remaining questions in relation to that
171 team. Time 2 measures were also distributed during university lectures in paper form (i.e.,
172 subsequent lectures for the same groups of students). At Time 2, a member of the research
173 team or a fully briefed course leader was present (1) to ask participants to complete the
174 measures in relation to the same team, and (2) to remind participants of their chosen team if
175 necessary (using a list of participants' precise Time 1 responses that was compiled after Time

176 1 data collection). Participants were also instructed to identify their sports team at Time 2,
177 and responses were subsequently checked to ensure the responses that participants gave on
178 the two sets of measures matched. Although all participants' responses gave confidence that
179 they had answered the measures in relation to the same team, responses such as: "Men's
180 Football 1sts" were common. It was therefore unclear whether different participants were
181 referring to the same team, precluding a detailed breakdown of how participants were nested
182 within teams. Participants were asked to provide their email address at Time 1 and those
183 participants not present during Time 2 data collection were emailed (having given consent to
184 be contacted for this purpose at Time 1) a request to complete the second set of measures
185 electronically (i.e., to insert or highlight their responses in a Word processed version of the
186 measures and return this via email)². Ethical approval for the study was obtained from the
187 first author's institutional human research ethics board on 7th September 2016 (project
188 reference ID 12699). Anonymity was assured and the decision of participants to complete the
189 measures represented their provision of informed consent.

190 **Measures**

191 *Identity leadership.* The 15-item Identity Leadership Inventory (ILI; Steffens et al.,
192 2014) was used to measure participants' perceptions of their sports team leaders' engagement
193 in identity leadership. Given inconsistencies regarding the presence of coaches in amateur
194 sports teams, and to ensure all participants responded in relation to an individual who held an
195 identical leadership role, participants were asked to respond with reference to their team's
196 captain³. The ILI items were adapted to reflect this by replacing 'leader' with 'captain' in all
197 question stems. The ILI includes four items measuring prototypicality (e.g., "This captain is a
198 model member of the group"), advancement (e.g., "This captain acts as a champion for the

² Only four participants completed the second set of measures electronically.

³ At Time 1, potential participants were verbally instructed to refrain from completing the measures in relation to a team for which they were the captain.

199 group”), and entrepreneurship (e.g., “This captain develops an understanding of what it
200 means to be a member of the group”), and three items measuring impresarioship (e.g., “This
201 captain arranges events that help the group function effectively”). Scales were anchored from
202 1 (not at all) to 7 (completely) and mean scores were obtained for each subscale.

203 **Group identification.** Participants’ identification as a member of their sports team
204 was measured using the Four Item Social Identification scale (FISI; Postmes, Haslam, &
205 Jans, 2013; e.g., “Being part of this sports team is an important part of how I see myself”).
206 Items were scored on a scale ranging from 1 (fully disagree) to 7 (fully agree).

207 **Attendance.** Having identified a particular sports team they had joined since starting
208 university, participants were asked: “In a typical week, how many times does the sports team
209 that you have identified meet?” and “In a typical week how many of these sessions do you
210 attend?” A measure of attendance was obtained by dividing the number of sessions attended
211 by the total number of sessions (Stevens, Rees, Coffee, et al., 2018).

212 **Analytic Strategy**

213 Cross-lagged panel analyses offer a means of (1) assessing whether effects occur in
214 both directions (i.e., X_1 to Y_2 and Y_1 to X_2), and (2) comparing the relative strength of cross-
215 lagged effects (Selig & Little, 2012). Lagged regression analyses are one form of cross-
216 lagged panel analysis and have been widely used in applied psychology (e.g., Baillien, De
217 Cuyper, & De Witte, 2011; Ganster, Fox, & Dwyer, 2001), including recently to study the
218 unfolding effects of identity leadership (Steffens et al., 2017). A minimum ratio of ten
219 participants per parameter to be estimated is recommended in structural models with latent
220 variables (Schreiber, Nora, Stage, Barlow, & King, 2006). Thus, given our final sample size
221 ($N = 186$), a latent variable testing approach would have been inappropriate for many of our
222 models (e.g., models in which either Time 1 prototypicality, advancement, or
223 entrepreneurship were proposed to predict Time 2 group identification, controlling for Time 1

224 group identification, where there were 31 parameters to be estimated). To maintain
225 consistency throughout our analyses, we therefore conducted a series of lagged linear
226 regression analyses (Cohen, Cohen, West, & Aiken, 2003) to test H1 and H2—that is, to
227 assess the extent to which (1) participants' perceptions of their leader's engagement in
228 identity leadership was related to their own subsequent group identification and, (2)
229 participants' group identification was related to their attendance⁴.

230 To test the indirect effect proposed in H3, we examined the extent to which the
231 impact of group members' perceptions of their leader's engagement in identity leadership at
232 Time 1 on group members' attendance at Time 2 was mediated by their greater group
233 identification at Time 2. For these analyses, we used the PROCESS macro for SPSS (Hayes,
234 2013; Preacher & Hayes, 2008; Model 4). This uses bootstrapping to calculate confidence
235 intervals (CIs) for the indirect effect of an independent variable on a dependent variable,
236 through a mediating variable, with a significant indirect effect indicated if the CI does not
237 cross zero (Zhao, Lynch, & Chen, 2010). In the present instance, we used bias-corrected
238 bootstrapping with 5000 resamples to calculate 95% CIs. We controlled for inter-individual
239 stability in our mediator and dependent variables by entering Time 1 group identification and
240 Time 1 attendance as covariates.

241 **Power Analyses**

242 Power analyses were conducted to determine appropriate sample sizes for regression
243 and mediation analyses. For regression, effect sizes (Cohen's f^2) were calculated using r -
244 values for the relationships between each identity leadership facet and group identification,

⁴ Because participants were nested within teams, a multilevel approach would have been the optimum framework for our analyses. However, in addition to the ambiguous responses regarding participants' teams that precluded this (see Participants and Procedure section), such analyses would not have been appropriate in the present instance given recommendations for a minimum of 50 groups and 30 people in each group for multilevel analyses (Maas & Hox, 2005).

245 and group identification and attendance reported by Stevens, Rees, Coffee, et al. (2018).
246 Taking the smallest r -value these researchers reported for any of these relationships in their
247 sports team sample (.23, which equates to an f^2 of .06), and using an alpha of .05, power of
248 .80, and two predictors sample size estimates (G*Power; Faul, Erdfelder, Buchner, & Lang,
249 2009) indicated that $N = 164$ would be required. For mediation, Monte Carlo power analyses
250 were conducted in the MARlab application (Schoeman et al., 2017) using the parameter
251 estimates between, and standard deviations of, identity leadership (measured as a global
252 concept), group identification, and attendance reported by Stevens, Rees, Coffee, et al.
253 (2018). With an alpha of .05 and 5000 replications, sample size estimates indicated $N = 138$
254 would be required to achieve power of .80⁵.

255 Results

256 Preliminary analysis

257 Cronbach's α internal consistency values (Cronbach, 1951) for each of the identity
258 leadership subscales and the group identification measure across the two time points were as
259 follows: Time 1 prototypicality = .90; advancement = .79; entrepreneurship = .84;
260 impresarioship = .83; group identification = .86; Time 2 prototypicality = .95; advancement =
261 .90; entrepreneurship = .94; impresarioship = .88; group identification = .92. Non-responders
262 at Time 2 did not differ significantly from those who completed both sets of measures on any
263 of the study variables at Time 1 (all $ps > .05$). For participants who completed both Time 1
264 and Time 2 measures, although Little's (1988) Missing Completely at Random test was
265 significant ($\chi^2[323] = 383.795, p = .011$), only 0.002% of all possible data points were
266 missing and a maximum of 1.1% of values (i.e., two participant responses) were missing for

⁵ Current software packages do not allow control variables to be included in mediation power analyses and this should therefore be considered an approximate estimate. Nevertheless, these results give confidence that our final sample size ($N = 186$) was sufficient for both the regression and mediation analyses.

267 any particular item. Given this small number of missing values, listwise deletion was used for
268 missing data (Schafer & Graham, 2002).

269 Assumptions of regression analyses were satisfied as follows. Across all models there
270 were never more than 12 standardized residuals greater than 2 in absolute value (6.5% of
271 participants who completed Time 1 and Time 2 measures) and never more than 4
272 standardized residuals greater than 3 in absolute value (2.2% of participants who completed
273 Time 1 and Time 2 measures). Moreover, across all models, only two cases had a Cook's
274 distance greater than 1, suggesting that outlier cases did not have a substantial influence on
275 our models (Field, 2017). The assumption of independent errors was satisfied, with values for
276 the Durbin-Watson statistic (1.843–2.062) all close to 2 (and well within the acceptable >1
277 and <3 range; Field, 2017). The assumption of no multicollinearity was also met with no
278 intercorrelations between independent variables greater than .404 (i.e., substantially less than
279 the typical .80 cut-off; Berry & Feldman, 1985), variance inflation factor values ≤ 1.119
280 (substantially below the recommended upper threshold of 10; Hair, Anderson, Tatham, &
281 Black, 1995), and tolerance values $\geq .834$ (substantially above the minimum threshold of .2;
282 Menard, 1995). The assumptions of homoscedasticity, normally distributed errors, and
283 linearity were satisfied with the residuals normally distributed, and randomly and evenly
284 distributed, for each of our models.

285 Means, standard deviations, and correlations between all variables across the two time
286 points are presented in Table 1. The inter-individual stability of variables was moderate to
287 high, with correlations between variables at Time 1 and Time 2 ranging from .344 (for
288 attendance) to .572 (for advancement). Correlations between identity leadership at Time 1
289 and group identification at Time 2 were significant for prototypicality ($r = .360, p < .001$),
290 advancement ($r = .303, p < .001$), and entrepreneurship ($r = .314, p < .001$), but marginally
291 non-significant for impresarioship ($r = .143, p = .069$). The correlation between group

292 identification at Time 2 and attendance at Time 2 was significant ($r = .482, p < .001$).

293 **Main Analyses**

294 ***Tests of H1: Relationship between identity leadership and group identification***

295 As shown in Table 2, across all models, participants' group identification at Time 2
296 was associated with their prior group identification at Time 1 (prototypicality $\beta = .467$,
297 advancement $\beta = .466$, entrepreneurship $\beta = .469$, impresarioship $\beta = .470$, all $ps < .001$),
298 with small differences due to slight variation in the sample (as a result of using listwise
299 deletion for missing data). Results from lagged linear regression models for each identity
300 leadership facet, controlling for Time 1 group identification, are presented in Table 2. As
301 Table 2 shows, supporting H1, perceptions of leaders' engagement in identity prototypicality,
302 advancement, and entrepreneurship at Time 1 significantly predicted members' greater group
303 identification at Time 2 ($ps = .004, .023$, and $.015$), and accounted for 3.5%, 2.2% and 2.6%
304 of additional variance above and beyond Time 1 group identification. Time 1 identity
305 impresarioship did not significantly predict Time 2 group identification over and above Time
306 1 group identification ($p = .566$), accounting for only 0.1% of additional variance.

307 ***Test of H2: Relationship between group identification and attendance***

308 As shown in Table 2, results indicated that participants' attendance at Time 2 was
309 associated with their prior attendance at Time 1 ($\beta = .344, p < .001$). Supporting H2,
310 participants' group identification at Time 2 was significantly associated with members'
311 attendance at Time 2, and accounted for an additional 18.7% of total variance above and
312 beyond Time 1 attendance ($\beta = .438, R^2 = .305, \Delta R^2 = .187, p < .001$).

313 ***Tests of H3: Indirect effect of identity leadership on attendance through group*** 314 ***identification***

315 Supporting H3, the CI around the indirect effect of identity leadership at Time 1 on
316 attendance at Time 2 through group identification at Time 2 did not include zero in the

317 prototypicality ($b = .021$, CI [.007, .046], SE = .009, $R^2 = .313$, $F = 20.127$), advancement ($b =$
318 $.018$, CI [.001, .046], SE = .011, $R^2 = .309$, $F = 19.825$), or entrepreneurship ($b = .018$, CI
319 [.002, .044], SE = .010, $R^2 = .311$, $F = 19.983$) models. A significant indirect effect was not
320 observed for the impresarioship model ($b = .004$, CI [-.010, .022], SE = .008, $R^2 = .313$, $F =$
321 20.284). In all cases, the direct effect of Time 1 identity leadership on Time 2 attendance was
322 non-significant (prototypicality: $b = -.011$, CI [-.040, .019], SE = .015, $p = .483$; advancement:
323 $b = -.009$, CI [-.041, .022], SE = .016, $p = .566$; entrepreneurship: $b = .002$, CI [-.028, .032],
324 SE = .015, $p = .896$; impresarioship: $b = -.006$, CI [-.030, .018], SE = .012, $p = .625$)⁶.

325 Sensitivity Analyses

326 To explore the possibility of reverse causality, we examined pathways from Time 1
327 group identification to Time 2 perceptions of identity leadership, and from Time 2 attendance
328 to Time 2 group identification. As shown in Table 3, results indicated inter-individual
329 stability for each of the identity leadership facets such that participants' perceptions of their
330 leader's engagement in identity leadership at Time 2 was associated with their prior
331 perceptions of their leader's engagement in identity leadership at Time 1 (prototypicality $\beta =$
332 $.499$, advancement $\beta = .572$, entrepreneurship $\beta = .479$, impresarioship $\beta = .427$, all $ps <$
333 $.001$). With the exception of the entrepreneurship facet, when we controlled for perceptions
334 of leaders' engagement in identity leadership at Time 1, members' group identification at
335 Time 1 did not significantly predict perceptions of leaders' engagement in identity leadership
336 at Time 2 (see Table 3). Thus, in general, despite some evidence of a reciprocal relationship
337 between group identification and perceptions of leaders' identity entrepreneurship, findings
338 suggest that relationships between perceptions of leaders' identity leadership and members'
339 group identification are predominantly in the hypothesized direction. Indeed, with regard to

⁶ Full details of relationships between all variables included in these analyses, but not reported in this section, are presented in the supplementary material (many of these relationships were tested within the preceding lagged regression analyses).

365 Supporting H2, analyses further indicated that members' group identification at Time 2 was
366 associated with their attendance at Time 2, while controlling for their initial attendance at
367 Time 1. Moreover, supporting H3, for the prototypicality, advancement, and entrepreneurship
368 facets, analyses indicated significant indirect effects for the relationship between perceptions
369 of leader engagement in identity leadership at Time 1 and members' subsequent attendance at
370 Time 2, through members' group identification at Time 2, while controlling for initial group
371 identification and attendance at Time 1. Finally, sensitivity analyses indicated (1) that
372 relationships between identity leadership and group identification predominantly occurred
373 and (with the exception of the impresarioship facet) were consistently stronger, in the
374 hypothesized direction, and (2) that the relationship between group identification and
375 attendance was reciprocal but stronger in the hypothesized direction.

376 Our findings have important theoretical and practical implications, and lay a
377 foundation for further research regarding identity leadership and group identification within
378 and outside physical activity settings. First, in line with the identity leadership approach
379 (Haslam et al., 2011), and building on previous research (Stevens, Rees, Coffee, et al., 2018),
380 findings further demonstrate the role that physical activity leaders can play in fostering
381 members' group identification. In particular, findings point to the benefits of sports team
382 leaders (in this case, captains) behaving in a way that is perceived to *create, represent,* and
383 *advance* a shared group identity, with leaders' perceived prototypicality emerging as the
384 strongest predictor of members' subsequent group identification in the present study (as
385 indicated by the largest standardized beta values in the second step of regression models and
386 ΔR^2 values from the first to the second step of regression models). Two things should be
387 noted in relation to these findings. First, correlations between the prototypicality,
388 advancement, and entrepreneurship facets of identity leadership, in particular, were high,
389 suggesting that the actions and behaviors of leaders that group members associate with these

390 separate facets of identity leadership may overlap. Second, mean scores for many of our
391 measures were toward the upper end of their scales. Ceiling effects (and associated range
392 restriction) may therefore have attenuated some of our parameter estimates (i.e., so that true
393 effects are actually larger than those observed; e.g., see Wang, Zhang, McArdle, & Salthouse,
394 2008). Nevertheless, results clearly indicate that the extent to which leaders are perceived to
395 initiate activities that embed the group's identity in reality is not associated with members'
396 greater subsequent group identification. This nuanced finding points to the need for further
397 research to ascertain the relative importance of leaders engaging in the individual identity
398 leadership facets across different contexts, with such research potentially informing the
399 development of more effective context-specific leadership training programmes. For
400 example, while the efficacy of the 5R programme—a leadership training programme based
401 on the key principles of the identity leadership approach—to improve organizational and
402 sporting leaders' capacity to engage in identity leadership has been demonstrated (Haslam et
403 al., 2017; Slater & Barker, 2018), the programme's effectiveness (in these and other settings)
404 may be improved by a greater understanding of the relative importance of the four identity
405 leadership facets in the particular context in which the programme is being delivered.
406 Specifically, the first 'Readying' phase of the 5R programme—in which leaders are informed
407 about the importance of social identity processes for leadership—could be adjusted to reflect
408 context-specific differences in the relative importance of the four facets, potentially resulting
409 in more favourable outcomes for group members (i.e., that stem from their greater group
410 identification).

411 Second, findings align with a large body of evidence indicating various benefits
412 associated with individuals developing strong social identities (e.g., see Haslam et al., 2006;
413 Worchel et al., 1998). Most notably, our findings extend indications of a positive relationship
414 between members' greater group identification and their engagement in health-related

415 behaviors (Falomir-Pichastor et al., 2009), including group-relevant physical activity
416 (Stevens, Rees, & Polman, 2018; Strachan et al., 2012). Indeed, by controlling for previous
417 group-relevant attendance, the present study provides the most robust evidence to date of a
418 positive relationship between group identification and group-relevant attendance. From a
419 theoretical perspective, the present findings therefore support suggestions that physical
420 activity behaviors are driven not only by a person's sense of themselves as an (isolated)
421 individual, but also by their sense of themselves as a *group member* (Stevens et al., 2017)—
422 not least as a result of their desire to align their personal behaviors with those of
423 representative members of the groups that are important to them (Turner et al., 1987). This
424 also has important practical implications. Specifically, findings support suggestions that the
425 power of groups may be harnessed to *promote* physical activity participation (e.g., Harden et
426 al., 2015; Stevens et al., 2017), and point to the potential benefits of physical activity
427 interventions that attend to individuals' identities (see also Beauchamp et al., 2018; Hunt et
428 al., 2014). Indeed, evidence of reciprocity in the relationship between group identification
429 and attendance further indicates the potential of such interventions, with greater attendance
430 seemingly acting to reinforce and strengthen members' group identification as part of a
431 virtuous upward spiral. Incorporating strategies to foster identity development within group-
432 based physical activity interventions would therefore appear one way to improve their
433 effectiveness. For example, structuring sessions so that participants exercise with others with
434 whom they share membership in a particular social category (e.g., as women or people of a
435 similar age) and encouraging participants to interact outside structured sessions (e.g., by
436 providing refreshments and a designated space for this) are both strategies that have been
437 used successfully (Beauchamp et al., 2018).

438 Along the same lines, results from our mediation analyses further emphasize the
439 benefits of group identification in physical activity settings, and the potential value of efforts

440 to increase members' group identification by targeting physical activity leaders as the point
441 of intervention. Growing evidence points to the potential impact of physical activity leaders
442 on group members' attendance. For example, Ntoumanis et al. (2017) found that fitness
443 instructors' use of a motivationally adaptive communication style was positively associated
444 with increases in group members' intentions to remain in fitness classes. Findings from our
445 mediation analyses build directly on evidence that physical activity leaders can promote
446 group members' greater attendance by engaging in identity leadership (Stevens, Rees,
447 Coffee, et al., 2018), and point to improved group identification as a key mechanism through
448 which this positive relationship operates (with significant indirect effects observed in three of
449 our four mediation models and no significant direct effects observed). Moreover, our
450 mediation analyses offer more nuanced guidance for physical activity leader training
451 programmes. In particular, supporting indications from our lagged regression analyses,
452 mediation analyses suggest that leaders' identity impresarioship has limited bearing on
453 members' group identification and subsequent attendance. For physical activity leader
454 training programmes based on social identity principles (e.g., following the 5R model;
455 Haslam et al., 2017), the present findings therefore suggest that particular attention should be
456 devoted to developing leaders' awareness of the importance of, and ability to engage in,
457 identity prototypicality, advancement, and entrepreneurship. Indeed, here there are several
458 strategies that physical activity leaders could deploy to demonstrate their identity leadership
459 and promote members' identification without extensive training. These include wearing, and
460 encouraging members to wear, group or team branded clothing (Slater, Coffee, Barker, &
461 Evans, 2014), developing group slogans with members (Høigaard, Boen, De Cuyper, &
462 Peters, 2013), and using collective (as opposed to personal) language (i.e., referencing 'we'
463 and 'us', rather than 'I' and 'me'; Steffens & Haslam, 2013).

464 Limitations and Future Research

465 Despite representing a clear advancement on previous physical activity research
466 related to both identity leadership and group identification, some potential limitations of this
467 study and avenues for further research should be noted. First, although the present study
468 provided the most rigorous test of relationships between identity leadership, group
469 identification, and attendance to date, further time-series analyses (including studies
470 conducted over longer periods), and research employing experimental and intervention
471 designs, are needed to fully understand, and establish, the causal effects of identity leadership
472 and group identification in physical activity settings. Indeed, although (certainly from an age
473 perspective) our sample was demographically representative of many typical sport
474 participants, its composition—(predominantly White British) university students from sports
475 teams—limits the generalizability of our findings. Further research in other physical activity
476 settings (e.g., exercise groups), and with more demographically diverse samples (e.g.,
477 participants of wide-ranging socio-economic status, clinical populations) is therefore needed.
478 This would shed light, for example, on whether the benefits of identity leadership vary as a
479 function of (1) context, and (2) the barriers to participation that different groups face (e.g., a
480 perceived lack of time versus major health problems). Addressing a limitation of the present
481 study, such research—focusing on attendance as an outcome variable—should also seek to
482 measure this objectively (e.g., by recording the precise amount, or percentage, of team or
483 group sessions participants attend over a designated period).

484 From a methodological perspective, future research could aim to conduct multilevel
485 modelling to account for the nested structure of data gathered from different sport or exercise
486 groups. This would allow the proportion of variance that can be accounted for at individual
487 and group levels to be calculated. However, given recommendations for a minimum of 30
488 participants per group for multilevel modelling (Maas & Hox, 2005), and the number of

489 players in typical sports teams (often much fewer than 30), such research would most likely
490 need to be conducted in the context of large exercise groups. We note too that, in the present
491 study, there was a relatively high ratio of different sports represented in our sample to our
492 sample size (approximately 1:6; i.e., 27 sports, 186 participants). This, coupled with the
493 variety of geographical locations from which participants were recruited, suggests that the
494 shared variance in leadership perceptions within the present sample would have been
495 minimal (i.e., very few participants would have completed our measures in relation to the
496 same team, and therefore captain).

497 Finally, it is important that future research examines the consequences of other formal
498 and informal physical activity leaders (besides sports team captains) engaging in identity
499 leadership. Although in the present instance ensuring all participants responded in relation to
500 their captain yielded specific insights regarding leaders who hold this particular role, it is
501 plausible that leaders in different roles (e.g., coaches, exercise group leaders, informal
502 leaders) will exert varying degrees of influence on members' group identification and health-
503 related outcomes. Indeed, further research is needed to examine the relative, and collective,
504 consequences of formal leaders, and individuals who are viewed as leaders by their fellow
505 members, engaging in identity leadership. This is especially the case in light of evidence
506 from sports teams that (1) leadership is often shared between members, and (2) informal
507 leaders within teams often fulfil important leadership roles (i.e., as a task, motivational,
508 social, or external leader; Fransen, Vanbeselaere, De Cuyper, Vande Broek, & Boen, 2014).

509 **Conclusion**

510 This study extends understanding regarding relationships between identity leadership,
511 group identification, and group-relevant participation in physical activity settings.
512 Specifically, the significant effects observed in our lagged regression analyses, and
513 significant indirect effects observed in our mediation analyses point to the potential for

514 leaders to promote increased group member attendance by fostering members' group
515 identification. Findings also extend understanding regarding the relative importance of the
516 individual facets of identity leadership for promoting members' greater group identification
517 (and thus group-relevant attendance) in physical activity settings. They point to the particular
518 importance of leaders' perceived prototypicality, advancement, and entrepreneurship. To
519 encourage group members to continue to take part in physical activity, it thus appears to be
520 important for the leaders of those groups not only to create 'a sense of us' but also to be seen
521 'as one of us' and as 'doing it for us'.

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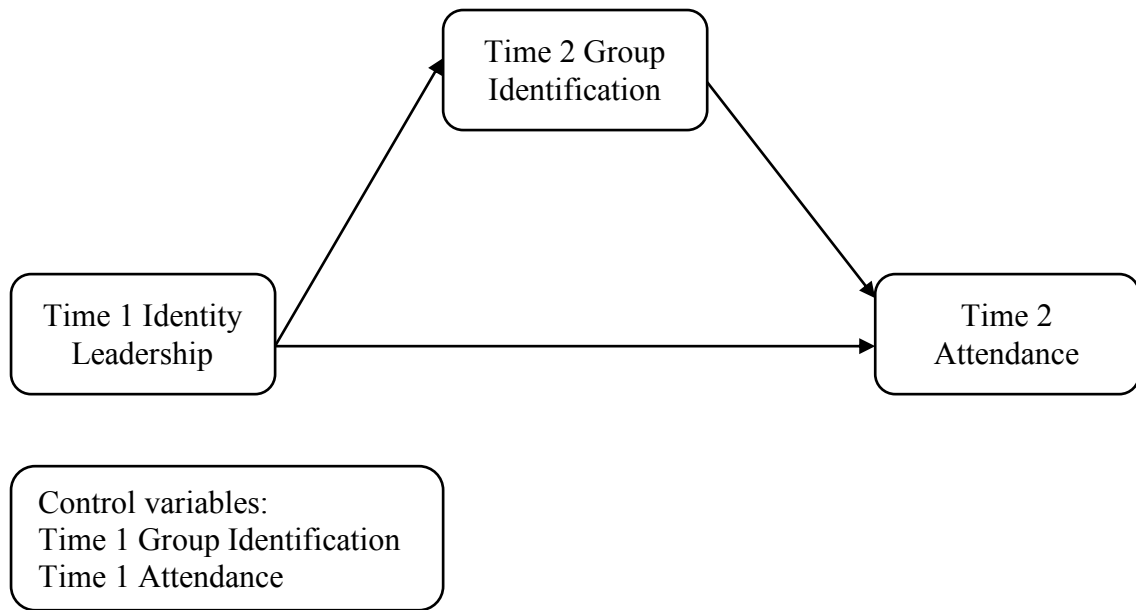
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691 Figure 1. Overview of the relationships between identity leadership, group identification, and
 692 attendance tested in the present study.

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710 Table 1. Means, standard deviations and correlations between variables at Time 1 and Time 2
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Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
<i>Time 1</i>														
1. Prototypicality	6.05	.91	-	.76**	.80**	.59**	.40**	.12	.50**	.52**	.47**	.38**	.36**	.13
2. Advancement	6.01	.83		-	.81**	.70**	.35**	.14	.47**	.57**	.51**	.38**	.30**	.12
3. Entrepreneurship	6.07	.87			-	.66**	.35**	.12	.42**	.50**	.48**	.37**	.31**	.15*
4. Impresarioship	5.89	1.02				-	.23**	-.05	.41**	.51**	.41**	.43**	.14	<.01
5. Identification	6.07	.96					-	.23**	.30**	.29**	.30**	.18**	.47**	.19**
6. Attendance	.91	.16						-	.03	<.01	<-.01	-.02	.16*	.34**
<i>Time 2</i>														
7. Prototypicality	5.79	1.10							-	.87**	.85**	.66**	.62**	.20**
8. Advancement	5.88	1.02								-	.84**	.72**	.58**	.16*
9. Entrepreneurship	5.86	1.09									-	.74**	.59**	.19*
10. Impresarioship	5.64	1.13										-	.39**	.07
11. Identification	5.96	1.10											-	.48**
12. Attendance	.88	.20												-

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 713 Notes: * $p < 0.05$, ** $p < 0.01$

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726 Table 2. Results of linear regression (cross-lagged) analyses testing Hypotheses 1 and 2.
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728	Relationship	R^2	β [95% CI's]	t	p
729	<i>Prototypicality</i> → <i>group identification</i>				
730	Step 1: Intra-individual stability (group identification T1)	.218	.467 [.322, .612]	7.124	<.001
731	Step 2: Predictor (T1 prototypicality)	.253	.203 [.058, .375]	2.894	.004
732	<i>Advancement</i> → <i>group identification</i>				
733	Step 1: Intra-individual stability (group identification T1)	.217	.466 [.321, .611]	7.106	<.001
734	Step 2: Predictor (T1 advancement)	.239	.159 [.014, .304]	2.300	.023
735	<i>Entrepreneurship</i> → <i>group identification</i>				
736	Step 1: Intra-individual stability (group identification T1)	.220	.469 [.325, .613]	7.173	<.001
737	Step 2: Predictor (T1 entrepreneurship)	.246	.170 [.026, .314]	2.467	.015
738	<i>Impresarioship</i> → <i>group identification</i>				
739	Step 1: Intra-individual stability (group identification T1)	.221	.470 [.326, .614]	7.195	<.001
740	Step 2: Predictor (T1 impresarioship)	.222	.039 [-.105, .183]	.575	.566
741	<i>Group Identification</i> → <i>attendance</i>				
742	Step 1: Intra-individual stability (attendance T1)	.118	.344 [.199, .489]	4.922	<.001
743	Step 2: Predictor (T2 group identification)	.305	.438 [.293, .583]	6.960	<.001

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745 Notes: $N = 183-185$; sample sizes—and therefore model statistics for step 1 intra-individual stability identity leadership models—vary slightly
746 due to missing data; β = standardized beta.
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758 Table 3. Results of linear regression (cross-lagged) analyses testing reverse causality.

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Relationship	R^2	β [95% CI's]	t	p
761 <i>Group identification</i> → <i>prototypicality</i>				
762 Step 1: Intra-individual stability (prototypicality T1)	.249	.499 [.354, .644]	7.755	<.001
763 Step 2: Predictor (T1 group identification)	.260	.112 [-.033, .257]	1.593	.113
764 <i>Group identification</i> → <i>advancement</i>				
765 Step 1: Intra-individual stability (advancement T1)	.327	.572 [.428, .716]	9.402	<.001
766 Step 2: Predictor (T1 group identification)	.335	.098 [-.046, .242]	1.516	.131
767 <i>Group identification</i> → <i>entrepreneurship</i>				
768 Step 1: Intra-individual stability (entrepreneurship T1)	.230	.479 [.335, .623]	7.366	<.001
769 Step 2: Predictor (T1 group identification)	.249	.147 [.003, .291]	2.141	.034
770 <i>Impresarioship</i> → <i>group identification</i>				
771 Step 1: Intra-individual stability (impresarioship T1)	.183	.427 [.283, .571]	6.378	<.001
772 Step 2: Predictor (T1 group identification)	.190	.090 [-.054, .234]	1.305	.194
773 <i>Attendance</i> → <i>group identification</i>				
774 Step 1: Intra-individual stability (group identification T1)	.221	.470 [.326, .614]	7.179	<.001
775 Step 2: Predictor (T2 attendance)	.379	.406 [.262, .550]	6.800	<.001

776

777 Notes: $N = 183-184$; sample sizes vary slightly due to missing data; β = standardized beta.

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779

780 Supplementary Table 1. Details of relationships in our mediation models.

	<i>b</i> [95% CI's]					
	T1 IL facet → T2 GI	T2 GI → T2 Att	T1 GI → T2 GI	T1 Att → T2 Att	T1 Att → T2 GI	T1 GI → T2 Att
Prototypicality	.244** [.075, .412]	.087*** [.062, .113]	.428*** [.266, .591]	.352*** [.197, .506]	.367 [-.533, 1.267]	-.017 [-.047, .013]
Advancement	.209* [.026, .393]	.087*** [.062, .112]	.459*** [.299, .619]	.351*** [.196, .507]	.326 [-.587, 1.240]	-.018 [-.047, .012]
Entrepreneurship	.216* [.041, .391]	.085*** [.060, .110]	.456*** [.297, .616]	.350*** [.195, .504]	.366 [-.541, 1.272]	-.020 [-.050, .010]
Impresarioship	.049 [-.096, .194]	.086*** [.061, .111]	.509*** [.351, .666]	.346*** [.191, .502]	.453 [-.469, 1.375]	-.018 [-.048, .011]

781

782 Notes: *N* = 182–183; sample sizes vary slightly due to missing data; * *p* < 0.05, ** *p* < 0.01; *** *p* < 0.001; *b* = unstandardized beta; IL= Identity

783 leadership; GI = Group identification; Att = Attendance; T1 = Time 1; T2 = Time 2

784