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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

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

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

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

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

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

Theoretical Framework

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

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

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

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

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

The Present Research

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

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

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

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).

Participants and Procedure

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

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

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

Measures

Identity leadership. The 15-item Identity Leadership Inventory (ILI; Steffens et al., 2014) was used to measure participants' perceptions of their sports team leaders' engagement in identity leadership. Given inconsistencies regarding the presence of coaches in amateur sports teams, and to ensure all participants responded in relation to an individual who held an identical leadership role, participants were asked to respond with reference to their team's captain[3]. The ILI items were adapted to reflect this by replacing 'leader' with 'captain' in all question stems. The ILI includes four items measuring prototypicality (e.g., "This captain is a 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.

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

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

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

Analytic Strategy

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

group identification, where there were 31 parameters to be estimated). To maintain consistency throughout our analyses, we therefore conducted a series of lagged linear regression analyses (Cohen, Cohen, West, & Aiken, 2003) to test H1 and H2—that is, to assess the extent to which (1) participants' perceptions of their leader's engagement in identity leadership was related to their own subsequent group identification and, (2) participants' group identification was related to their attendance[4].

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

Power Analyses

Power analyses were conducted to determine appropriate sample sizes for regression and mediation analyses. For regression, effect sizes (Cohen's f^2) were calculated using *r*-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).

and group identification and attendance reported by Stevens, Rees, Coffee, et al. (2018). Taking the smallest *r*-value these researchers reported for any of these relationships in their sports team sample (.23, which equates to an f^2 of .06), and using an alpha of .05, power of .80, and two predictors sample size estimates (G*Power; Faul, Erdfelder, Buchner, & Lang, 2009) indicated that $N = 164$ would be required. For mediation, Monte Carlo power analyses were conducted in the MARlab application (Schoeman et al., 2017) using the parameter estimates between, and standard deviations of, identity leadership (measured as a global concept), group identification, and attendance reported by Stevens, Rees, Coffee, et al. (2018). With an alpha of .05 and 5000 replications, sample size estimates indicated $N = 138$ would be required to achieve power of .80[5].

Results

Preliminary analysis

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

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

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

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

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

Main Analyses

Tests of H1: Relationship between identity leadership and group identification

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

Test of H2: Relationship between group identification and attendance

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

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

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

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

Sensitivity Analyses

To explore the possibility of reverse causality, we examined pathways from Time 1 group identification to Time 2 perceptions of identity leadership, and from Time 2 attendance to Time 2 group identification. As shown in Table 3, results indicated inter-individual stability for each of the identity leadership facets such that participants' perceptions of their leader's engagement in identity leadership at Time 2 was associated with their prior perceptions of their leader's engagement in identity leadership at Time 1 (prototypicality β = .499, advancement β = .572, entrepreneurship β = .479, impresarioship β = .427, all *ps* < .001). With the exception of the entrepreneurship facet, when we controlled for perceptions of leaders' engagement in identity leadership at Time 1, members' group identification at Time 1 did not significantly predict perceptions of leaders' engagement in identity leadership at Time 2 (see Table 3). Thus, in general, despite some evidence of a reciprocal relationship between group identification and perceptions of leaders' identity entrepreneurship, findings suggest that relationships between perceptions of leaders' identity leadership and members' 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).

the relative strength of the hypothesized and reverse relationships, results showed that, with the exception of the impresarioship models (where effects were non-significant in both directions), standardized beta values in the second step of regression models, and ΔR^2 values from the first to the second step of the regression models, were greater in hypothesized (than alternative reverse) models.

Regarding the relationship between Time 2 attendance and Time 2 group identification, as Table 3 shows, results indicated that participants' group identification at Time 2 was associated with their prior group identification at Time 1 ($\beta = .470$, $p < .001$). Controlling for members' group identification at Time 1, members' attendance at Time 2 was significantly associated with members' group identification at Time 2, and accounted for an additional 15.9% of total variance above and beyond Time 1 group identification ($\beta = .406$, $R^2 = .379$, $\Delta R^2 = .159$, $p < .001$). Thus, both the hypothesized and reverse relationships were significant. Results indicated, however, that effects in the hypothesized direction were stronger, with the standardized beta values in the second step of regression models, and ΔR^2 values from the first to the second step of regression models, greater when effects were specified in the hypothesized direction.

Discussion

This study represented the first attempt to examine lagged relationships between (1) sports team members' perceptions of their leader's engagement in identity leadership and their subsequent group identification, and (2) members' group identification and their attendance (i.e., extending previous cross-sectional research; Stevens, Rees, Coffee, et al., 2018). Supporting H1, analyses indicated that, for the prototypicality, advancement, and entrepreneurship facets of identity leadership, sports team members' perceptions of their leaders' identity leadership at Time 1 predicted members' own subsequent greater group identification at Time 2, while controlling for their initial group identification at Time 1.

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

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

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

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

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

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

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

Limitations and Future Research

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

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

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

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

Conclusion

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

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

References

Baillien, E., De Cuyper, N., & De Witte, H. (2011). Job autonomy and workload as antecedents of workplace bullying: A two-wave test of Karasek's Job Demand Control Model for targets and perpetrators. *Journal of Occupational and Organizational Psychology, 84*(1), 191-208. doi:10.1348/096317910X508371

Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J. F., & Martin, B. W. (2012). Correlates of physical activity: Why are some people physically active and others not? *Lancet, 380*(9838), 258-271. doi:10.1016/S0140-6736(12)60735-1

Beauchamp, M. R., Ruissen, G. R., Dunlop, W. L., Estabrooks, P. A., Harden, S. M., Wolf, S. A., . . . Rhodes, R. E. (2018). Group-based physical activity for older adults (GOAL) randomized controlled trial: Exercise adherence outcomes. *Health Psychology, 37*(5), 451-461. doi:10.1037/hea0000615

Berry, W. D., & Feldman, S. (1985). *Multiple Regression in Practice*. Thousand Oaks, CA: Sage Publications.

Biddle, S. J. H., Mutrie, N., & Gorely, T. (2015). *Psychology of Physical Activity: Determinants, Well-being and Interventions (3rd edition)*. London: Routledge.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences (2nd edition)*. Hillsdale, NJ: Erlbaum.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334.

Falomir-Pichastor, J. M., Toscani, L., & Despointes, S. H. (2009). Determinants of flu vaccination among nurses: The effects of group identification and professional responsibility. *Applied Psychology: An International Review, 58*(1), 42-58. doi:10.1111/j.1464-0597.2008.00381.x

548 Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using
549 G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research*
550 *Methods*, *41*(4), 1149-1160. doi: 10.3758/BRM.41.4.1149.
551 Field, A. (2017). *Discovering statistics using IBM SPSS Statistics (5th edition)*. London:
552 SAGE Publications Ltd.
553 Fransen, K., Vanbeselaere, N., De Cuyper, B., Vande Broek, G., & Boen, F. (2014). The
554 myth of the team captain as principal leader: Extending the athlete leadership
555 classification within sport teams. *Journal of Sports Sciences, 32*(14), 1389-1397.
556 doi:10.1080/02640414.2014.891291
557 Ganster, D. C., Fox, M. L., & Dwyer, D. J. (2001). Explaining employees' health care costs:
558 A prospective examination of stressful job demands, personal control, and
559 physiological reactivity. *Journal of Applied Psychology, 86*(5), 954-964.
560 doi:10.1037/0021-9010.86.5.954
561 Garcia, J. M., Healy, S., & Rice, D. (2016). The individual, social, and environmental
562 correlates of physical activity and screen time in Irish children: Growing up in Ireland
563 study. *Journal of Physical Activity & Health, 13*(12), 1285-1293.
564 doi:10.1123/jpah.2015-0659
565 Gollob, H. F., & Reichardt, C. S. (1987). Taking account of time lags in causal models. *Child*
566 *Development, 58*(1), 80-92. doi:10.2307/1130293
567 Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2018). Worldwide trends in
568 insufficient physical activity from 2001 to 2016: A pooled analysis of 358 population-
569 based surveys with 1·9 million participants. *The Lancet Global Health, 6*, e1077-
570 e1086. doi:10.1016/S2214-109X(18)30357-7
571 Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate Data*
572 *Analysis (3rd edition)*. New York: Macmillan.

573 Harden, S. M., McEwan, D., Sylvester, B. D., Kaulius, M., Ruissen, G., Beauchamp, M. R., .
574 . . Estabrooks, P. A. (2015). Understanding for whom, under what conditions, and
575 how group-based physical activity interventions are successful: A realist review. *BMC*
576 *Public Health, 15*(1), 958. doi:10.1186/s12889-015-2270-8
577 Haslam, S. A., Reicher, S. D., & Platow, M. J. (2011). *The New Psychology of Leadership:*
578 *Identity, Influence, and Power*. Hove: Psychology Press.
579 Haslam, S. A., Ryan, M. K., Postmes, T., Spears, R., Jetten, J., & Webley, P. (2006). Sticking
580 to our guns: Social identity as a basis for the maintenance of commitment to faltering
581 organizational projects. *Journal of Organizational Behaviour, 27*, 607-628.
582 doi:10.1002/job.370
583 Haslam, S. A., Steffens, N. K., Peters, K., Boyce, R. A., Mallett, C. J., & Fransen, K. (2017).
584 A social identity approach to leadership development: The 5R program. *Journal of*
585 *Personnel Psychology, 16*, 113-124. doi:10.1027/1866-5888/a000176
586 Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process*
587 *Analysis: A Regression-based Approach*. New York: The Guilford Press.
588 Hunt, K., Wyke, S., Gray, C. M., Anderson, A. S., Brady, A., Bunn, C., . . . Treweek, S.
589 (2014). A gender-sensitised weight loss and healthy living programme for overweight
590 and obese men delivered by Scottish Premier League football clubs (FFIT): A
591 pragmatic randomised controlled trial. *Lancet, 383*(9924), 1211-1221.
592 doi:10.1016/S0140-6736(13)62420-4
593 Høigaard, R., Boen, F., De Cuyper, B., & Peters, D. M. (2013). Team identification reduces
594 social loafing and promotes social laboring in cycling. *International Journal of*
595 *Applied Sports Sciences, 25*(1), 33-40. doi:10.24985/ijass.2013.25.1.33

596 Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-
597 sectional research designs. *Journal of Applied Psychology, 86*(1), 114-121.
598 doi:10.1037//0021-9010.86.1.114
599 Little, R. J. (1988). A test of missing completely at random for multivariate data with missing
600 values. *Journal of the American Statistical Association, 83*(404), 1198-1202.
601 doi:10.2307/2290157
602 Maas, C. J., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling.
603 *Methodology: European Journal of Research Methods for the Behavioral and Social*
604 *Sciences, 1*(3), 86-92. doi:10.1027/1614-2241.1.3.86
605 Mann, C. J. (2003). Observational research methods. Research design II: Cohort, cross
606 sectional, and case-control studies. *Emergency Medicine Journal, 20*(1), 54-60.
607 doi:10.1136/emj.20.1.54
608 Maxwell, S. E., Cole, D. A., & Mitchell, M. A. (2011). Bias in cross-sectional analyses of
609 longitudinal mediation: Partial and complete mediation under an autoregressive
610 model. *Multivariate Behavioral Research, 46*(5), 816-841.
611 doi:10.1080/00273171.2011.606716
612 Menard, S. (1995). *Applied Logistic Regression Analysis: Sage University Series on*
613 *Quantitative Applications in the Social Sciences*. Thousand Oaks, CA: Sage.
614 Ntoumanis, N., Thøgersen-Ntoumani, C., Quested, E., & Hancox, J. (2017). The effects of
615 training group exercise class instructors to adopt a motivationally adaptive
616 communication style. *Scandinavian Journal of Medicine & Science in Sports, 27*(9),
617 1026-1034. doi:10.1111/sms.12713
618 Ployhart, R. E., & Ward, A. K. (2011). The "quick start guide" for conducting and publishing
619 longitudinal research. *Journal of Business and Psychology, 26*(4), 413-422.
620 doi:10.1007/s10869-011-9209-6

Postmes, T., Haslam, S. A., & Jans, L. (2013). A single-item measure of social identification: Reliability, validity, and utility. *British Journal of Social Psychology, 52*(4), 597-617. doi:10.1111/bjso.12006

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891. doi:10.3758/BRM.40.3.879

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*(2), 147-177. doi:10.1037//1082-989X.7.2.147

Schoemann, A. M., Boulton, A. J., & Short, S. D. (2017). Determining power and sample size for simple and complex mediation models. *Social Psychological and Personality Science*, *8*(4), 379-386. doi: 10.1177/1948550617715068

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research, 99*(6), 323-338. doi:10.3200/JOER.99.6.323-338

Selig, J. P., & Little, T. D. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of Developmental Research Methods.* (pp. 265-278). New York: Guilford Press.

Slater, M. J., & Barker, J. B. (2018). Doing social identity leadership: Exploring the efficacy of an identity leadership intervention on perceived leadership and mobilization in elite disability soccer. *Journal of Applied Sport Psychology*. doi:10.1080/10413200.2017.1410255

Slater, M. J., Coffee, P., Barker, J. B., & Evans, A. L. (2014). Promoting shared meanings in group memberships: A social identity approach to leadership in sport. *Reflective Practice, 15*(5), 672-685. doi:10.1080/14623943.2014.944126

Sport England. (2018). Active Lives Adult Survey: May 17/18 Report. Retrieved from https://www.sportengland.org/media/13563/active-lives-adult-may-17-18-report.pdf

Steffens, N. K., & Haslam, S. A. (2013). Power through 'us': Leaders' use of we-referencing language predicts election victory. *Plos One, 8*(10), e77952. doi:10.1371/journal.pone.0077952

Steffens, N. K., Haslam, S. A., Reicher, S. D., Platow, M. J., Fransen, K., Yang, J., . . . Boen, F. (2014). Leadership as social identity management: Introducing the Identity Leadership Inventory (ILI) to assess and validate a four-dimensional model. *The Leadership Quarterly, 25*, 1001-1024. doi:10.1016/j.leaqua.2014.05.002

Steffens, N. K., Yang, J., Jetten, J., Haslam, S. A., & Lipponen, J. (2017). The unfolding impact of leader identity entrepreneurship on burnout, work engagement, and turnover intentions. *Journal of Occupational Health Psychology*. doi:10.1037/ocp0000090

Stevens, M., Rees, T., Coffee, P., Haslam, S. A., Steffens, N. K., & Polman, R. (2018). Leaders promote attendance in sport and exercise sessions by fostering social identity. *Scandinavian Journal of Medicine & Science in Sports, 28*(9), 2100-2108. doi:10.1111/sms.13217

Stevens, M., Rees, T., Coffee, P., Steffens, N. K., Haslam, S. A., & Polman, R. (2017). A social identity approach to understanding and promoting physical activity. *Sports Medicine, 47*(10), 1911-1918. doi:10.1007/s40279-017-0720-4

Stevens, M., Rees, T., & Polman, R. (2018). Social identification, exercise participation, and positive exercise experiences: Evidence from parkrun. *Journal of Sports Sciences, 37*(2), 221-228. doi:10.1080/02640414.2018.1489360

668 Strachan, S. M., Shields, C. A., Glassford, A., & Beatty, J. (2012). Role and group identity
669 and adjustment to the possibility of running group disbandment. *Psychology of Sport*
670 *and Exercise, 13*(4), 436-443. doi:10.1016/j.psychsport.2012.01.007
671 Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G.
672 Austin & S. Worchel (Eds.), *The Social Psychology of Intergroup Relations* (pp. 33-
673 47). Monterey, CA: Brooks/Cole.
674 Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude-behavior relationship: A
675 role for group identification. *Personality and Social Psychology Bulletin, 22*(8), 776-
676 793. doi:10.1177/0146167296228002
677 Tucker, J. M., Welk, G. J., & Beyler, N. K. (2011). Physical activity in U.S. adults:
678 Compliance with physical activity guidelines for Americans. *American Journal of*
679 *Preventive Medicine, 40*(4), 454-461. doi:10.1016/j.amepre.2010.12.016
680 Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherell, M. S. (1987).
681 *Rediscovering the Social Group: A Self-Categorization Theory*. Oxford: Blackwell.
682 Wang, L., Zhang, Z., McArdle, J. J., & Salthouse, T. A. (2008). Investigating ceiling effects
683 in longitudinal data analysis. *Multivariate Behavioral Research, 43*(3), 476-496.
684 doi:10.1080/00273170802285941
685 Worchel, S., Rothgerber, H., Day, E. A., Hart, D., & Butemeyer, J. (1998). Social identity
686 and individual productivity within groups. *British Journal of Social Psychology,*
687 *37*(4), 389-413. doi:10.1111/j.2044-8309.1998.tb01181.x
688 Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and
689 truths about mediation analysis. *Journal of Consumer Research, 37*(2), 197-206.
690 doi:10.1086/651257

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

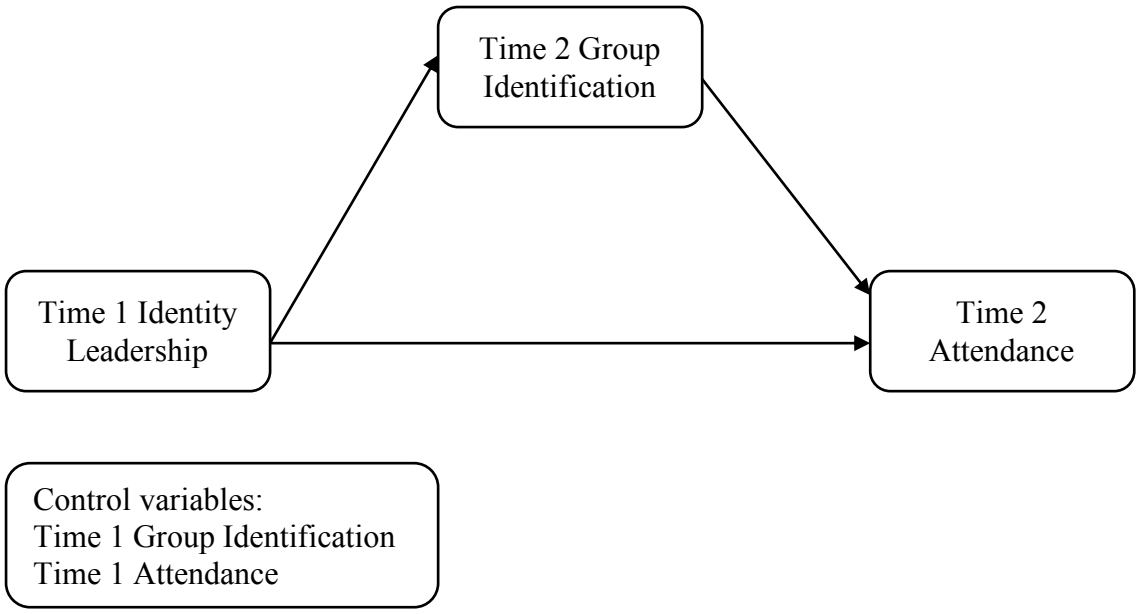

Table 1. Means, standard deviations and correlations between variables at Time 1 and Time 2

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
Time 1														
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**
Time 2														
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												-

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

Table 2. Results of linear regression (cross-lagged) analyses testing Hypotheses 1 and 2.

Relationship	R^2	β [95% CI's]	*t*	*p*
Prototypicality → group identification				
Step 1: Intra-individual stability (group identification T1)	.218	.467 [.322, .612]	7.124	<.001
Step 2: Predictor (T1 prototypicality)	.253	.203 [.058, .375]	2.894	.004
Advancement → group identification				
Step 1: Intra-individual stability (group identification T1)	.217	.466 [.321, .611]	7.106	<.001
Step 2: Predictor (T1 advancement)	.239	.159 [.014, .304]	2.300	.023
Entrepreneurship → group identification				
Step 1: Intra-individual stability (group identification T1)	.220	.469 [.325, .613]	7.173	<.001
Step 2: Predictor (T1 entrepreneurship)	.246	.170 [.026, .314]	2.467	.015
Impresarioship → group identification				
Step 1: Intra-individual stability (group identification T1)	.221	.470 [.326, .614]	7.195	<.001
Step 2: Predictor (T1 impresarioship)	.222	.039 [-.105, .183]	.575	.566
Group Identification → attendance				
Step 1: Intra-individual stability (attendance T1)	.118	.344 [.199, .489]	4.922	<.001
Step 2: Predictor (T2 group identification)	.305	.438 [.293, .583]	6.960	<.001

Notes: N = 183–185; sample sizes—and therefore model statistics for step 1 intra-individual stability identity leadership models—vary slightly due to missing data; β = standardized beta.

Table 3. Results of linear regression (cross-lagged) analyses testing reverse causality.

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

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

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

	b [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]

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