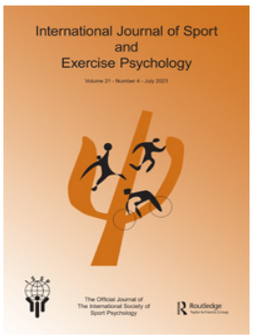

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The effects of social identity and social identity content on cohesion, efficacy, and performance across a competitive rugby league season

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ABSTRACT

Social identity (one's sense of belongingness to a group) and social identity content (what it means to belong to a group) are important psychological constructs for cognition and behaviour. Whilst some longitudinal social identity research exists, researchers have yet to explore the temporal effects of social identity content in sport. Across a competitive season, we therefore explored the main and interactive effects of social identity and two types of social identity content (results and friendships) on cohesion, self and team-level efficacy, and subjective team performance. Participants were 167 male rugby league athletes ($M_{age} = 18.16 \pm 0.44$ years) drawn from all eight teams competing in a single English Premier Rugby League Division. At the start, middle, and end of their nine-week season, participants completed a series of measures. Multilevel modelling analyses found that social identity significantly and positively predicted all study outcomes amongst athletes, and self and team-level efficacy across time. As athletes' social identity strengthened across the season, so too did self and team-level efficacy. Also at the time-level, the interaction between social identity and friendships content significantly and positively predicted team-level efficacy. In other words, social identity was important for team-level efficacy throughout the season when friendships content was high. Overall, our findings suggest that social identity is important for cohesion, efficacy, and team performance. The lack of interaction effects between social identity and results/friendships contents may be attributable to athletes adopting social creativity by altering the importance placed on results and friendships throughout the season.

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Social identity; togetherness; cohesion; efficacy; group dynamics

Athletes routinely participate in sport as members of social groups (Haslam, Fransen, et al., 2021). Thus, part of an athlete's self-concept can be defined through the group to which they belong (e.g., "I am a member of New Zealand Rugby League"). In psychological

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literature, this sense of belonging to a group is referred to as social identity. Social identity is defined as "the part of an individual's self-concept which derives from their knowledge of their membership of a social group, together with the value and emotional significance attached to that membership" (Tajfel, 1981, p. 255). According to Turner (1982), the values that underpin a social identity (e.g., "we value winning as a group") prescribe what a social identity means to group members (e.g., "we are winners"). The meaning attached to a group membership is known as the content of social identity. Taken together, social identity and social identity content have been proposed as being two important psychological constructs for cognition and behaviour in sport.

The social identity approach to sport (Haslam, Fransen, et al., 2021) encompasses social identity theory and self-categorisation theory to collectively explain how social identity and social identity content determine cognition and behaviour. Social identity theory was formulated following a series of minimal group studies (Tajfel, 1970). Within these studies, participants were assigned to groups with no meaning and were required to award points to an anonymous member of their group (the ingroup) and to a member of another group (the outgroup). Rather than adopt a strategy of fairness (by distributing points equally between the ingroup and outgroup), Tajfel found that participants favoured their ingroup by awarding more points to ingroup members. Ultimately, the simple act of categorising oneself as an ingroup member was sufficient enough to encourage participants to show ingroup favouritism. Tajfel and Turner (1979) later proposed that after being categorised as a member of a group, individuals depersonalise the perception of themselves by defining themselves through that group membership. Accordingly, group members seek to achieve or maintain their self-esteem by positively differentiating their group from a comparative outgroup on a valued dimension (e.g., results). Because a person's self-concept is defined through their social identity, Tajfel and Turner theorised that group members will be motivated to be different to and preferably better than other groups to feel good about themselves and their group life. Self-categorisation theory (Turner, 1982) adds to social identity theory by contending that group behaviour is underpinned by a process of self-stereotyping in which the self is perceived as categorically interchangeable with other ingroup members. Turner theorised that self-stereotyping causes those who define themselves through a particular social identity (New Zealand Rugby League) to strive to discover the meaning of their social identification ("the Kiwi Way"; "we" value diversity, being a family, innovation and courage, inclusivity, and togetherness) and then strive to behave in line with that meaning (as a member of New Zealand Rugby League, I strive to be innovative and courageous, inclusive, and together). Overall, the social identity approach to sport theorises that social identities make group cognition and behaviour possible. Furthermore, social identity content (e.g., "we are winners") leads group members to adopt associated forms of cognition and behaviour.

Research in sport exploring the importance of social identity has gained significant momentum in recent years (Haslam, Fransen, et al., 2021). For example, social identity has been found to positively influence prosocial behaviour (Bruner et al., 2014, 2017), self-worth, effort, and commitment (Martin et al., 2018) among youth sport athletes. Collegiate athletes with stronger social identities have also been found to be more susceptible to peer influence (Graupensperger et al., 2018), while maintained and gained social identities have been shown to counteract the negative effects of athletic identity loss on adjustment to retirement (Haslam, Lam, et al., 2021). In a sample of 188 university athletes

in England and 181 recreational sport team members in Italy, Thomas et al. (2019) found that team-level (but not individual-level) variance in social identification significantly predicted perceived and actual team performance. Such research findings confirm that social identity shapes the way athletes and teams think, feel, and behave.

Research conducted in a non-sport setting has confirmed that social identity content also influences cognition and behaviour. In a study by Livingstone and Haslam (2008), 117 Northern Irish students indicated their religious denomination (Protestant, Catholic, or non-Christian) and completed measures of social identification, intergroup antagonism, and behavioural intentions. Findings revealed that the association between social identification and behavioural intentions was moderated by antagonistic social identity content. Specifically, social identification became more predictive of negative behavioural intentions when social identity content emphasised a negative relationship with another religious group. Ultimately, findings showed that the association between social identification and intergroup relations depended on the meaning (content) of social identity. In an exercise setting, Beasley et al. (2021) conducted 31 observations of a CrossFit setting and 14 subsequent interviews. Thematic analysis revealed that being hardcore, achieving results, and camaraderie were critical forms of social identity content to members of CrossFit exercise groups. Thematic analysis also revealed that group members behaved in ways aligned to their social identity content. For example, group exercise members who valued being hardcore frequently completed difficult and high-intensity workouts and withheld pain reports. Conversely, group exercise members who valued camaraderie provided verbal encouragement. Beasley et al.'s research suggests that social identity content influences behaviour in physical, exercise contexts, which warrants further research in sport.

Traditionally, sport psychology researchers have focused their attention on cohesion and team-level efficacy as key group dynamic variables for performance. Despite a wealth of literature confirming the importance of cohesion (e.g., Carron et al., 2002) and efficacy (e.g., Fransen et al., 2015), Eys and Brawley (2018) outlined that researchers need to know a lot more about what it is that creates, supports, and sustains outcomes like cohesion. Drawing on the social identity approach to sport (Haslam, Fransen, et al., 2021), we propose that the strength of social identity is what contributes to individuals and groups behaving cohesively, feeling efficacious, and performing well.

According to Slater et al. (2021), athletes with stronger social identities will be more likely to behave cohesively because social identity motivates group members to achieve group aspirations. In contrast, athletes who do not internalise their group membership and focus on themselves are less likely to behave cohesively because personal identity motivates group members towards personal interests and gain. Furthermore, athletes with stronger social identities will be more likely to feel efficacious because social identity motivates group members to work cooperatively and express confidence in themselves and their group. Indeed, Fransen et al. (2015) demonstrated that when athlete leaders expressed high confidence in their team's abilities, the confidence of other team members as well as their performance increased. Intuitively, performance attainment would appear important in groups where results are valued. For example, in Beasley et al. (2021), a focus on performance improvements was a product of CrossFit members valuing the achievement of results whereas a focus on social interaction was a product of CrossFit members valuing camaraderie. Athletes who value results may

therefore be driven more towards overcoming obstacles, barriers, and demands to achieve and realise their performance aspirations.

Research has demonstrated that social identity is positively associated with higher cohesion (Fransen, Decroos, et al., 2016), higher efficacy (Fransen, Coffee, et al., 2014; Fransen, Kleinert, et al., 2014), and better performance on sport-specific tasks (Fransen et al., 2015; Fransen, Steffens, et al., 2016). Nevertheless, researchers have yet to explore whether (and to what extent) the strength of athletes' social identities predicts cohesion, efficacy, and performance across time. Such novel research would respond to Eys and Brawley's (2018) calls for researchers to explore season-long dynamics to provide a greater understanding of the processes underpinning outcomes such as cohesion and performance. In our research, we therefore sought to add to the paucity of longitudinal social identity research. Specifically, we sought to explore the predictive effects of the strength of athletes' social identities on cohesion, efficacy, and performance. In doing so, we hoped to further establish the importance of social identity for psychology and performance in sports teams.

According to group dynamics literature, there are two dimensions of cohesion in sport. Task cohesion refers to the motivation towards achieving collective goals and objectives whereas social cohesion refers to the motivation towards developing and maintaining social relationships (Carron et al., 1985). Results/tasks and friendships/socialising have therefore long-been established as critical components of sports teams. Aforementioned research by Beasley et al. (2021) highlighted that results and friendships are two valued and prevalent forms of social identity content in exercise groups. Applied research has also focused on exploring the effects of team-based interventions on the importance athletes place on results and friendships within their sports team (Barker et al., 2014; Evans et al., 2013). We acknowledge that other social identity contents may exist. As Slater et al. (2021) noted, it is plausible for an infinite number of social identity contents to exist within sport because the values that define sports teams are unique. Nevertheless, research is yet to explore the effects of social identity content on cohesion, efficacy, and performance within sports teams. Given the novel and exploratory nature of our research, we chose to focus on two principal forms of social identity content (results and friendships). Our research therefore seeks to explore the potential importance of identifying with a team because results are valued and identifying with a team because friendships are valued for cohesion, efficacy, and performance. Consequently, our research has the potential to open-up significant new areas of research investigating the importance and role of other social identity contents for psychology and performance in sport.

Social identity and social identity content can be conceptualised as multilevel constructs because both constructs can vary at an individual and team-level (Thomas et al., 2019). But whether (and to what extent) social identity and social identity content vary temporally has not been explored through multilevel analysis. We therefore aim to extend extant literature by using multilevel analysis to explore the temporal effects of social identity, an identity based around results, and an identity based around friendships on cohesion, efficacy, and performance. Furthermore, no research has tracked the effects of social identity and social identity content on outcome variables across all teams competing against one another within the same sporting context. In our research, we therefore captured study variables across all eight teams competing against each other across the duration of a season. Such an analysis of social identity and social identity content

provides a more complete understanding of the predictive effects of these variables on cohesion, efficacy, and performance over time.

Based on the social identity approach to sport, we hypothesised that social identity would significantly and positively predict cohesion, self-efficacy, team-level efficacy, and subjective team performance (H1). In other words, we expected that stronger social identity would lead to stronger perceptions of cohesion, self-efficacy, team-level efficacy, and team performance. We also hypothesised that the interaction between social identity and results content (a social identity based around results) and social identity and friendships content (a social identity based around friendships) would significantly and positively predict cohesion (H2). In other words, we expected that the more athletes identified with their team because they valued results or friendships, the more cohesive they would perceive their group to be. Finally, we hypothesised that the interaction between social identity and results content would significantly and positively predict self-efficacy, team-level efficacy and subjective team performance (H3). In other words, we expected that the more athletes identified with their team because they valued results, the more efficacious they would feel and the more positive they would perceive their performances.

Method

Participants, design, and procedure

Institutional ethical approval was granted prior to the study onset. The lead researcher contacted and then met with the Chairman of a rugby league organisation to provide information about the current study and gain organisational consent. Accordingly, the Chairman invited the lead researcher to attend a monthly general meeting to provide information about the study to the coaches of eight rugby league teams. All eight rugby league teams were to compete against one another in the same English Premier Rugby League Division across a nine-week season.

The lead researcher and coaches agreed on suitable dates and times where athletes could be approached to provide data at the beginning or end of training sessions. Athletes initially received information about the current study and provided informed consent. A longitudinal research design was adopted where athletes completed a questionnaire pack containing seven measures at the beginning (time-point 1: during the first three weeks), middle (time-point 2: during the middle three weeks), and end (time-point 3: during the final three weeks) of their season. The lead researcher travelled to the training ground facilities of each team in the same order so the time-lag between each team's data collection at each time-point was consistent (three weeks).

All 167 male rugby league athletes across the eight teams agreed to participate. Demographic data were provided by 129 athletes ($M_{age} = 18.16 \pm 0.44$ years), with White Caucasian ($n = 128$) and Asian ($n = 1$) ethnicities represented. The highest playing standard of these athletes ranged from club ($n = 69$), through to county ($n = 11$), regional ($n = 44$), national ($n = 3$) and international level ($n = 2$). At each time-point, athletes within all eight teams provided data. At time-point 1, 119 athletes provided data. At time-point 2, 118 athletes provided data. At time-point 3, 101 athletes provided data. Athletes who did not provide data at a particular time-point did not attend training due to

mitigating circumstances such as injury, being on holiday, or work/educational commitments. These athletes were given further opportunity to provide data in the days following a missed training session. Specifically, spare questionnaire packs were left with coaches to hand to athletes to complete. Athletes were asked to place their questionnaire pack in an envelope that was then sealed and posted to the lead researcher.

Measures

For all measures, participants were instructed to rate the extent to which they agreed with each item on a Likert scale ranging from 1 (*do not agree at all*) to 7 (*completely agree*). Higher scores indicated greater item agreement.

Social identity

We used the Single-Item Social Identification measure (SISI; "you strongly identify with your team") developed by Postmes et al. (2013) and widely used in social identity research (e.g., Bortolini et al., 2018; Slater & Barker, 2019). Multidimensional measures of social identity do exist and are recommended to be used by researchers attempting to explore associations between variables and specific dimensions of social identity (e.g., ingroup ties; Reysen et al., 2013). However, the goal of our research was to conduct an initial exploratory investigation into social identity and other variables across time in a sporting context. Using the SISI measure has therefore been advocated when researchers intend to explore participants' degree of psychological connection to a team. Pragmatically, using shorter measures was deemed appropriate given our research required participants to complete a battery of questionnaires at multiple time-points. Multiple items are also unnecessary to use when a construct is homogenous (Bergkvist & Rossiter, 2007). Postmes et al. found that social identity is sufficiently homogenous as a construct to be operationalised with a single item. Postmes et al. also found that the SISI measure possessed convergent and divergent validity and demonstrated test-retest reliability. Subsequently, across four studies, Reysen et al. found that the SISI measure possessed convergent, predictive, divergent, and external validity, and demonstrated reliability in assessing a range of identities across time. Findings from Postmes et al. and Reysen et al. converge to highlight that the SISI measure is a short, valid, and reliable social identity measure to use in research, which was particularly well matched to our research design.

Social identity content

In line with Evans et al. (2013), a single item was used to measure results content ("the most important thing to you are the results of your team") and a single item was used to measure friendships content ("the most important thing to you are the friendships within your team"). Items were originally developed in line with research that has generated social identity content measures for non-sporting groups. For example, Livingstone and Haslam's (2008) measure of antagonistic identity content asked participants to rate how important emphasising a negative relationship was regarding their outgroup. Results and friendships content items are in-keeping with such measures because they ask participants to rate the importance of two forms of social identity content that are prevalent in a sporting context.

Cohesion

Measures of cohesion such as the Group Environment Questionnaire (GEQ; Carron et al., 1985) are based on the 2 × 2 conceptual model of cohesion that incorporates four dimensions: group integration-task, group integration-social, individual attraction to group-task, and individual attraction to group-social. Although this is a common approach adopted in sport psychology research, we were interested in measuring cohesion generally in line with conceptualisations of cohesion according to the social identity approach (see Rees et al., 2015). The social identity approach emphasises that social identities form the basis for group-oriented behaviour. In this sense, cohesion is operationalised as behaving as a group. We therefore used a two-item measure of cohesion (item 1: rugby players on your team all stick together; item 2: rugby players on your team represent a single, clearly-defined group) developed from previous research by Reicher and Haslam (2006) within social identity literature.

Self-efficacy

An efficacy belief system represents a differentiated set of self-beliefs that are related to distinct realms of functioning (Bandura, 2006). For instance, an athlete may possess high self-efficacy regarding their sport but low self-efficacy regarding their education. We therefore developed a 4-item self-efficacy measure based on Bandura's guidelines for constructing self-efficacy scales (item 1: when you are in trouble you can think of a solution; item 2: you can achieve your goals/targets; item 3: throughout a match you can select the right solutions to problems; and item 4: during a match you can minimise your mistakes when under pressure). All items reflected self-efficacy as a construct because they were phrased in terms of "can do" (a judgement of a capability) rather than "will do" (a statement of intention). Cronbach alphas (α) for this measure were .69 (time-point 1), .70 (time-point 2), and .79 (time-point 3).

Team-level efficacy

A team's attainments are the result of shared knowledge and skills and the coordinative, synergistic, and interactive dynamics of team members' transactions (Bandura, 2006). Thus, team-level efficacy is an emergent team-level construct rather than an aggregation of the self-efficacy beliefs of athletes. Whilst other measures of team-level efficacy exist in sport settings (e.g., The Collective Efficacy Questionnaire for Sports; Short et al., 2005), we were cognizant of their length and did not want to overly burden participants over three time-points within our longitudinal study design. We therefore developed a 4-item team-level efficacy measure based on Bandura's guidelines for constructing team-level efficacy scales (item 1: your team can find a solution when confronted with a problem; item 2: your team is capable of achieving goals/targets that are set; item 3: throughout a match as a team you make correct decisions; and item 4: throughout a match your team can minimise errors when under pressure). All items were phrased in relation to athlete's appraisals of their team's capabilities to operate and function as a whole. Like self-efficacy items, all items reflected team-level efficacy as a construct by asking for judgements of team capabilities ("can do"). Cronbach alphas (α) for this measure were .66 (time-point 1), .82 (time-point 2), and .78 (time-point 3).

Subjective team performance

League position statistics were accessible through the organisation's website. However, this objective team performance data existed at the team-level only. Having objective performance data for just eight teams meant that league position statistics could not be analysed through multilevel modelling due to insufficient statistical power (Scherbaum & Ferreter, 2009). Additionally, objective team performance data is not always consistent with perceptions of how a team is performing. For example, research has found that fans of sports teams can possess positive subjective evaluations of their team's performance despite their team's poor win-loss records (Doyle et al., 2017; Mansfield et al., 2020). In simple terms, a team can win playing poorly and can lose playing well. In a sample of 790 American sports fans, Inoue et al. (2022) also revealed that the effect of team identification on subjective on-field performance is stronger as a team's objective on-field performance declines. This finding may be explained by fans with strong social identities (where supporting another team is not viable) engaging in social creativity (reinterpreting or redefining comparisons with other groups in a favourable way; van Bezouw et al., 2020) to cope with the threat created by their team's loss (e.g., "we may not be winning, but we are performing better than ever"). Thus, subjective and objective team performance can operate in opposing ways. In our research, we therefore sought to understand how athletes perceived their team's performances and how team performance ratings were influenced by social identity, a social identity based around results, and a social identity based around friendships.

To measure subjective team performance, we developed a five-item measure to capture insights into team-referent performance evaluation (item 1: as a team you are performing better than expected; item 2: as a team you are dedicated and committed to performing successfully; item 3: as a team you are currently in good form; item 4: as a team you are currently playing well; and item 5: as a team you are satisfied with your recent results). Cronbach alphas (α) for this measure were .79 (time-point 1), .85 (time-point 2), and .85 (time-point 3).

Pilot-testing of measures

Measures were gleaned from social identity literature or derived specifically for the present study. Pilot-testing of measures was therefore conducted prior to the study onset to confirm the wording and clarity of individual items within a sporting context. The pilot-testing procedure followed other research studies that have explored content validity of quantitative measures (e.g., Coffee & Rees, 2008; Freeman et al., 2011) and was conducted with participants detached from the main study.

Prior to data collection, 34 White Caucasian male Premier rugby league athletes (M_{age} = 19.91 ± 2.21 years) provided informed consent. Participants were presented with a questionnaire pack containing measures of social identity, results content, friendships content, cohesion, self-efficacy, team-level efficacy, and subjective team performance. Participants were asked to rate the extent to which they understood each item on a 7-point Likert scale ranging from 1 (*do not understand at all*) to 7 (*completely understand*). An Item-Content Validity Index (I-CVI) for the understanding of individual items was calculated as the proportion of participants who provided a rating of 5, 6, or 7 (dichotomising the scale into *understood* and *not understood*; Polit & Beck, 2006). At the end of the

questionnaire, participants were given space to disclose comments regarding the phraseology of each item.

Statistical analysis

Multilevel modelling was used to explore the predictive effects of social identity, a social identity based around results, and a social identity based around friendships on cohesion, self-efficacy, team-level efficacy, and subjective team performance. Residual variance in our dataset can be considered at the time-level (level one: within-athletes), the individual-level (level two: between-athletes), and the team-level (level three: between-teams). Thus, the contributions of social identity-related variables on cohesion, self-efficacy, team-level efficacy, and subjective team performance were explored using three-level regression models. All data were analysed using the software package MLwiN (version 3.05; Charlton et al., 2020) and variance estimates were calculated using the Iterative Generalised Least Squares (IGLS) algorithm. The current dataset had 501 data-points at level one (162–173 missing data-points per analysis), 167 data points at level two, and eight data points at level three. Multilevel modelling is an appropriate statistical technique to use when there are missing data which was the case in the current study (see Singer & Willett, 2003). The missing values were MCAR ($\chi^2 = 84.36$, $df = 376$, $p = 1.00$). Presently, limited information is available regarding the statistical power in three-level data structures. However, visual inspection of standard multilevel (two-level) power graphs (Scherbaum & Ferreter, 2009) suggested that the data had appropriate statistical power to detect small to medium effects at level one and level two.

Intraclass correlations were computed using standard techniques (Hedges et al., 2012) and show the percentage of variance expressed at each level (see Table 1). Given that predictor variables (social identity, results content, and friendships content) showed variance at level one and level two (but not level three), two discrete estimates for each predictor variable were created: one estimate that captured within-athlete change only and one estimate that captured between-athlete differences only (Raudenbush & Bryk, 2002). The within-athlete change estimate was calculated by group-mean centring the predictor variable whilst the between-athlete difference estimate was calculated by averaging predictor variables over time. Accordingly, the contribution of within-athlete changes and between-athlete differences in social identity, results content, and friendships content (in addition to the interactions between them) were explored for cohesion, self-efficacy, team-level efficacy, and subjective team performance. Interaction terms were computed from standardised data. Both fixed and random slopes were fitted to the models and compared using the log likelihood test statistic (Rasbash et al., 2020). In most cases, random slopes did not significantly improve model-fit. Accordingly, only the findings from the random intercepts are reported. Prior to each analysis, data were checked for normality and homoscedascity through visual inspection of standardised residual plots (against normal scores and fixed-part predictions). In each case, data were normal and homoscedastic with no obvious outliers. Correlations between all study variables at each time-point are presented in Table 2. An alpha value of 0.05 was retained for all analyses conducted through multilevel modelling due to the exploratory nature of the present investigation.

Results

Measure development statistics from pilot study

An I-CVI of ≥ 0.94 was found for each individual item. A Scale-Content Validity Index/Universal Agreement (S-CVI/UA) for the understanding of individual items for each measure was subsequently calculated as the proportion of items within each measure that

Table 1. Intraclass correlations and descriptive statistics for all study variables.

	Intraclass correlations		Time-point 1	Time-point 2	Time-point 3
Predictors	(ρ_2)	(ρ_3)	*M* ± *SD*	*M* ± *SD*	*M* ± *SD*
Social identity	.6083**	.0381	5.58 ± 1.08	5.37 ± 1.24	5.42 ± 1.03
Results content	.4097**	.0011	5.19 ± 1.37	5.08 ± 1.35	5.35 ± 1.24
Friendships content	.3389**	.0200	5.61 ± 1.17	5.25 ± 1.24	5.30 ± 1.27
Cohesion	.4163**	.1192†	5.51 ± 0.96	5.33 ± 1.12	5.38 ± 0.95
Self-efficacy	.4951**	.0264	5.31 ± 0.81	5.27 ± 0.80	5.23 ± 0.95
Team-level efficacy	.3896**	.1439†	5.22 ± 0.77	5.13 ± 1.02	5.20 ± 0.90
Subjective team performance	.00867†	.2532*	4.31 ± 0.73	4.84 ± 1.32	5.08 ± 1.24

$^{\dagger}p < 0.10$.
*$p < 0.05$.
**$p < 0.01$.
Note: Intraclass correlations and descriptive statistics are at the time-level ($n = 501$). Time-point 1 included 71.3% of the overall sample ($n = 119$), time-point 2 included 70.7% of the overall sample ($n = 118$), and time-point 3 included 60.5% of the overall sample ($n = 101$). In total, 32.9% of athletes from the overall sample participated at each time-point ($n = 42$).

Table 2. Bivariate correlations for all study variables at time-point 1, 2, and 3.

	1	2	3	4	5	6
Time-point 1						
1. Social identity						
2. Results content	.25					
3. Friendships content	.12	.13				
4. Cohesion	.33**	.32**	.15			
5. Self-efficacy	.31*	.22*	-.05	.37**		
6. Team-level efficacy	.39*	.23*	.13	.466**	.49*	
7. Subjective team performance	.20*	.19*	.12	.31*	.51*	.54*
Time-point 2						
1. Social identity						
2. Results content	.17					
3. Friendships content	.30*	.22*				
4. Cohesion	.48**	.18	.44*			
5. Self-efficacy	.46*	.11	.21*	.47**		
6. Team-level efficacy	.45*	.30*	.35**	.59**	.55*	
7. Subjective team performance	.33*	.15	.39**	.56*	.38*	.71*
Time-point 3						
1. Social identity						
2. Results content	.22*					
3. Friendships content	.56**	.15*				
4. Cohesion	.31**	.17	.36*			
5. Self-efficacy	.39*	.17	.41*	.56**		
6. Team-level efficacy	.35*	.24*	.31**	.62**	.76*	
7. Subjective team performance	.40*	.27**	.41**	.50*	.65*	.66*

Note: correlations are at the individual-level. Time-point 1 ($n = 119$); time-point 2 ($n = 118$), and time-point 3 ($n = 101$). *r*: 0–0.19 = no correlation; 0.20–0.39 = low correlation; 0.40–0.59 = moderate correlation; 0.60–0.79 = moderately high correlation; ≥0.80 = high correlation.
*$p < 0.05$.
**$p < 0.01$.

Table 3. Descriptive statistics for all study variables for each team at each time-point.

	Social identity $M \pm SD$	Results content $M \pm SD$	Friendships content $M \pm SD$	Cohesion $M \pm SD$	Self-efficacy $M \pm SD$	Team-level efficacy $M \pm SD$	Subjective team performance $M \pm SD$
				Time-point 1			
Team 1	5.57 ± 1.16	5.14 ± 1.03	5.71 ± 0.99	5.29 ± 0.89	5.07 ± 0.74	4.94 ± 0.61	4.21 ± 0.57
Team 2	5.69 ± 0.95	5.85 ± 0.99	5.77 ± 1.09	6.15 ± 0.66	5.50 ± 0.92	5.65 ± 0.76	4.50 ± 0.71
Team 3	4.93 ± 0.96	5.19 ± 0.75	5.56 ± 0.81	5.34 ± 0.83	5.18 ± 0.66	5.08 ± 0.82	3.97 ± 0.78
Team 4	5.56 ± 1.25	4.68 ± 1.86	5.05 ± 1.43	4.86 ± 1.08	5.30 ± 0.84	4.93 ± 1.00	4.30 ± 0.82
Team 5	5.53 ± 0.87	4.76 ± 1.15	5.53 ± 1.01	5.73 ± 0.87	5.31 ± 0.78	5.26 ± 0.53	4.55 ± 0.56
Team 6	5.31 ± 1.18	5.23 ± 1.59	5.08 ± 1.38	5.15 ± 1.05	5.38 ± 0.96	5.46 ± 0.57	4.55 ± 0.62
Team 7	6.15 ± 0.99	5.00 ± 1.35	5.85 ± 1.38	5.65 ± 0.72	5.35 ± 0.77	5.19 ± 0.77	4.17 ± 0.58
Team 8	6.00 ± 0.96	5.93 ± 1.54	6.50 ± 0.94	6.11 ± 0.79	5.39 ± 0.90	5.30 ± 0.82	4.23 ± 0.95
				Time-point 2			
Team 1	5.06 ± 1.43	4.82 ± 1.38	5.29 ± 1.40	5.03 ± 1.30	5.01 ± 0.71	4.32 ± 0.89	3.71 ± 0.91
Team 2	5.63 ± 1.36	5.12 ± 1.58	4.94 ± 1.39	5.41 ± 1.06	5.59 ± 0.79	5.59 ± 0.89	5.33 ± 0.76
Team 3	5.50 ± 1.05	4.67 ± 0.52	5.00 ± 0.63	4.92 ± 0.74	5.54 ± 0.66	5.17 ± 0.74	4.13 ± 1.07
Team 4	4.72 ± 1.32	4.94 ± 1.26	5.06 ± 1.16	4.33 ± 1.12	4.79 ± 0.99	4.40 ± 1.17	3.66 ± 1.14
Team 5	5.78 ± 0.94	5.00 ± 1.46	5.61 ± 1.04	6.00 ± 0.77	5.61 ± 0.66	6.00 ± 0.68	6.29 ± 0.59
Team 6	5.56 ± 1.13	5.44 ± 1.13	4.44 ± 1.24	5.44 ± 0.85	5.47 ± 0.91	5.08 ± 0.50	3.93 ± 0.89
Team 7	5.78 ± 0.94	5.28 ± 1.23	5.61 ± 1.14	5.50 ± 0.95	5.26 ± 0.62	5.19 ± 0.84	5.10 ± 1.07
Team 8	5.07 ± 1.33	5.29 ± 1.68	5.50 ± 1.34	5.96 ± 0.80	5.13 ± 0.70	5.30 ± 0.90	5.83 ± 0.70
				Time-point 3			
Team 1	5.29 ± 0.91	4.71 ± 1.33	5.29 ± 1.14	5.14 ± 0.89	4.80 ± 0.79	4.23 ± 0.72	3.93 ± 0.66
Team 2	5.40 ± 1.17	5.36 ± 1.21	5.18 ± 1.17	5.05 ± 1.14	4.84 ± 1.08	4.83 ± 0.93	4.08 ± 1.24
Team 3	5.00 ± -.76	5.00 ± 1.85	5.13 ± 0.99	5.31 ± 1.03	5.25 ± 0.85	5.25 ± 0.66	4.75 ± 1.34
Team 4	5.00 ± 1.15	5.40 ± 0.84	4.80 ± 1.62	4.85 ± 0.91	4.73 ± 0.96	5.03 ± 0.62	4.50 ± 0.88
Team 5	5.88 ± 0.96	5.53 ± 0.99	5.63 ± 1.26	6.00 ± 0.61	5.92 ± 0.80	6.09 ± 0.64	6.11 ± 0.75
Team 6	5.00 ± 1.07	5.25 ± 1.28	5.00 ± 0.93	4.88 ± 0.99	5.00 ± 0.78	5.25 ± 0.50	4.30 ± 1.41
Team 7	5.39 ± 1.09	5.24 ± 1.35	5.33 ± 1.37	5.33 ± 0.97	5.27 ± 1.04	5.18 ± 0.87	5.62 ± 0.78
Team 8	5.78 ± 0.94	5.94 ± 1.00	5.56 ± 1.42	5.81 ± 0.73	5.60 ± 0.73	5.39 ± 0.85	6.00 ± 0.69

achieved a rating of 5, 6, or 7 by all participants (Polit & Beck, 2006). Similarly, an S-CVI/UA of ≥ 0.94 was found for each measure. Qualitative comments revealed that participants had no concerns regarding the wording and clarity of items. Overall, pilot-testing suggested that the wording and clarity of all items were understandable and possessed high content validity.

Patterns of change in study variables

To explore general patterns of change over time, study variables were regressed on time of measurement in a two-level model (between-athletes and between-teams). Social identity ($b = -.10$, $s_{\bar{x}} = .08$, $p > 0.05$), results content ($b = -.07$, $s_{\bar{x}} = .09$, $p > 0.05$), self-efficacy ($b = -.04$, $s_{\bar{x}} = .06$, $p > 0.05$), and team-level efficacy ($b = -.03$, $s_{\bar{x}} = .06$, $p > 0.05$) did not change over time in any uniform manner. However, friendships content ($b = -.17$, $s_{\bar{x}} = .07$, $p < 0.05$) and cohesion ($b = -.11$, $s_{\bar{x}} = .06$, $p < 0.05$) showed a small and significant linear decrease over time, with time explaining 1.85% and 1.04% of the between-athlete variance, respectively. In contrast, subjective team performance ($b = .34$, $s_{\bar{x}} = .07$, $p < 0.01$) showed a large and significant linear increase over time, with time explaining 7.29% of the between-athlete variance and 7.37% of the between-team variance. A positive covariance between intercepts and slopes ($b = .20$, $s_{\bar{x}} = .11$, $p < 0.05$) also showed that teams with higher intercepts tended to have steeper slopes. These data patterns show that despite finding a small and significant decrease in friendships content and cohesion, subjective team performance improved significantly over the

course of the season (and the improvement was greater in higher ability teams). Descriptive statistics for all study variables at each time-point are presented in Table 1. Descriptive statistics for all study variables for each team at each time-point are displayed in Table 3.

Main and interactive effects of social identity, results content, and friendships content on outcome variables

Cohesion

For cohesion, 46.45% of the variance was at the time-level (within-athletes), 41.63% of the variance was at the individual-level (between-athletes), and 11.92% of the variance was at the team-level (between-teams). At the time-level, friendships content was the only significant predictor of variance estimates in cohesion ($b = .12$, $s_{\bar{x}} = .05$, $p < 0.05$). This finding indicates that strengthening the importance placed on friendships within a team strengthens perceptions of cohesion over time. Likewise, social identity was the only significant predictor of variance estimates in cohesion at the individual-level ($b = .30$, $s_{\bar{x}} = .08$, $p < 0.01$). This finding suggests that a stronger social identity leads to stronger cohesion amongst athletes. The final model explained 29.33% of the total residual variance in cohesion ($R_1^2 = .02$, $R_2^2 = .49$, $R_3^2 = .65$). The absence of any interaction effects implies that neither a social identity based around results nor a social identity based around friendships influences cohesion.

Self-efficacy

For self-efficacy, 47.85% of the variance was at the time-level (within-athletes), 49.51% of the variance was at the individual-level (between-athletes) and 2.64% of the variance was at the team-level (between-teams). Given that a three-level empty model did not improve on a two-level empty model ($\Delta\chi^2 = 1.45$, $df = 1$, $p > 0.05$), a two-level regression model (within-athletes and between-athletes) was fitted for self-efficacy. The main effects of social identity at the time-level ($b = .14$, $s_{\bar{x}} = .05$, $p < 0.01$) and the individual-level ($b = .23$, $s_{\bar{x}} = .07$, $p < 0.01$) were the only significant predictors of variance estimates in self-efficacy. These findings indicate that a stronger social identity leads to stronger self-efficacy amongst athletes. These findings also suggest that strengthening a social identity strengthens self-efficacy over time. The final model explained 18.17% of the total residual variance in self-efficacy ($R_1^2 = .09$, $R_2^2 = .27$). The absence of any interaction effects implies that neither a social identity based around results nor a social identity based around friendships influences self-efficacy.

Team-level efficacy

For team-level efficacy, 46.65% of the variance was at the time-level (within-athletes), 38.96% of the variance was at the individual-level (between-athletes), and 14.39% of the variance was at the team-level (between-teams). At the time-level, both the main effect of social identity ($b = .11$, $s_{\bar{x}} = .05$, $p < 0.05$) and the interaction effect of social identity and friendships content ($b = .11$, $s_{\bar{x}} = .05$, $p < 0.05$) significantly predicted variance estimates in team-level efficacy. The form of this interaction was such that social identity was important for team-level efficacy at high levels of friendships content. Specifically, social identity was non-significant between − 3.73 and 0.01 SDs in the level of friendships content. At the individual-level, the main effects of social identity ($b = .18$, $s_{\bar{x}} = .07$, $p <$

0.01) and results content ($b = .11$, $s_{\bar{x}} = .06$, $p < 0.05$) significantly predicted variance estimates in team-level efficacy. These findings indicate that a stronger social identity leads to stronger team-level efficacy amongst athletes. These findings also suggest that valuing the importance placed on the results of a team leads to stronger team-level efficacy amongst athletes. The final model explained 25.31% of the total residual variance in team-level efficacy ($R^2_1 = .04$, $R^2_2 = .47$, $R^2_3 = .34$).

Subjective team performance

For subjective team performance, 66.01% of the variance was at the time-level (within-athletes), 8.67% of the variance was at the individual-level (between-athletes), and 25.32% of the variance was at the team-level (between-teams). Only the main effects of social identity ($b = .16$, $s_{\bar{x}} = .09$, $p < 0.05$) and friendships content at the individual-level ($b = .28$, $s_{\bar{x}} = .09$, $p < 0.01$) significantly predicted variance estimates in subjective team performance. These findings indicate that a stronger social identity leads to greater perceived team performance amongst athletes. These findings also suggest that valuing the importance placed on the friendships within a team leads to greater perceived team performance amongst athletes. The final model explained 17.86% of the total residual variance in subjective team performance ($R^2_1 = .02$, $R^2_2 = 1.00$, $R^2_3 = .32$). The absence of any interaction effects implies that neither a social identity based around results or friendships influences perceived team performance.

All multilevel models that explored the main and interactive effects of social identity, results content, and friendships content on outcome variables are shown in Table 4.

Discussion

Across a competitive rugby league season, we explored the main and interactive effects of social identity, results content, and friendships content on cohesion, self-efficacy, team-

Table 4. Multilevel models exploring the contributions of social identity, results content, and friendships content to cohesion, self-efficacy, team-level efficacy, and subjective team performance.

Predictors	Cohesion b ($s_{\bar{x}}$)	Self-efficacy b ($s_{\bar{x}}$)	Team-level efficacy b ($s_{\bar{x}}$)	Subjective team performance b ($s_{\bar{x}}$)
Intercept[a]	5.38 (0.14)**	5.27 (0.08)**	5.17 (0.13)**	4.69 (0.21)**
Within-athlete changes				
Social Identity (SI)	0.02 (0.06)	0.14 (0.05)**	0.11 (0.05)*	0.02 (0.08)
Results Content (RIC)	0.04 (0.05)	0.02 (0.04)	0.01 (0.04)	−0.01 (0.06)
Friendships Content (FIC)	0.12 (0.05)*	0.05 (0.05)	0.08 (0.05)	−0.04 (0.07)
SI x RIC	0.04 (0.06)	0.05 (0.05)	0.04 (0.05)	−0.04 (0.08)
SI x FIC	0.02 (0.06)	0.04 (0.05)	0.11 (0.05)*	−0.01 (0.07)
Between-athlete differences				
SI	0.30 (0.08)**	0.23 (0.07)**	0.18 (0.07)**	0.16 (0.09)*
RIC	0.05 (0.07)	0.06 (0.06)	0.11 (0.06)*	0.10 (0.08)
FIC	0.05 (0.08)	0.00 (0.07)	0.07 (0.07)	0.28 (0.09)*
SI x RIC	−0.09 (0.06)	0.00 (0.05)	0.03 (0.06)	0.06 (0.07)
SI x FIC	−0.05 (0.06)	0.00 (0.05)	−0.08 (0.06)	−0.01 (0.07)

*$p < 0.05$.
**$p < 0.01$.
[a]Random at j and k.

level efficacy, and subjective team performance. In doing so, our research adds to the dearth of longitudinal social identity research in sport and is the first of its kind to quantitatively examine the effects of social identity content over time. Our research also extends extant research in sport by investigating social identity-related variables in all teams competing against each other within the same context. In doing so, we were able to fully analyse the complete context in which our study variables were operating. By monitoring study variables over a competitive season, we were able to use multilevel modelling to explore whether (and to what extent) social identity, a social identity based around results, and a social identity based around friendships affected outcome variables at athlete, team, and time-levels. Our research therefore provides insight into the importance of social identity and two principal forms of social identity content in sport for cohesion, self-efficacy, team-level efficacy, and subjective team performance at different levels of abstraction.

In support of H1, multilevel analysis revealed that social identity (at the athlete-level) significantly and positively predicted cohesion, self-efficacy, team-level efficacy, and subjective team performance. In other words, stronger social identity reported by athletes contributed to stronger perceptions of cohesion, self-efficacy, team-level efficacy, and team performance. These findings are in line with the social identity approach to sport in that a stronger social identity compels an athlete to contribute to collective processes. As a result, an athlete would be more likely to behave cohesively, feel competent about themselves and their team, and judge their performances more positively. Further, multilevel analysis revealed that social identity significantly and positively predicted self-efficacy team-level efficacy across the season (at the time-level). In other words, as social identity reported by athletes strengthened across the season, so too did their perceptions of self-efficacy and team-level efficacy. Findings suggest that strengthening social identities across time contribute to developing an athlete's self-efficacy and team-level efficacy expectations. From an applied perspective, it would therefore seem important for practitioners and coaches to work on strengthening an athlete's social identity throughout a season. Applied interventions such as Personal-Disclosure Mutual-Sharing (PDMS; Evans et al., 2013) and the 3Rs of social identity leadership program (Slater & Barker, 2019) have been found to enhance social identities in athlete populations and serve as methods of developing social identities in sport.

Against H2 and H3, multilevel analysis revealed that the only significant and positive interaction to occur was the interaction between social identity and friendships content on team-level efficacy (at the time-level). Specifically, friendships content was found to be important for team-level efficacy when social identity was high (and not when it was low). This finding makes sense based on self-categorisation theory which proposes that when a group membership has become internalised, group members will strive to discover and then behave in line with the meaning (content) of their social identity. Nevertheless, the absence of any other significant interaction effects means that our findings generally do not provide support for such theoretical propositions.

Tajfel and Turner (1979) postulated that individuals can use social mobility (dissociate from one group and move into another), social competition (engage in conflict with another group), and/or social creativity strategies to cope with a threatened social identity. As noted by Lalonde (1992), members of groups in competitive sports can be limited

in the strategies they can adopt. In our study context, social mobility was not viable because athletes could not quit their team and join another. Social competition was also not applicable because athletes were already involved in competition. So, the only remaining strategy for athletes to adopt was social creativity. Perhaps the lack of significant interaction effects can be explained by athletes adopting social creativity throughout the season. According to Tajfel and Turner, group members can adopt social creativity to maintain positive distinctiveness and protect their self-esteem by: (a) changing the meaning of their social identity, (b) changing comparison groups, and/or (c) changing comparative dimensions. Empirically, research (e.g., Jackson, Sullivan, Harnish, & Hodge, 1996) has supported such propositions. For example, Lalonde (1992) found that male ice hockey athletes who belonged to the last-placed team in a regional college league focused their attention on a comparative dimension not directly related to performance ("other teams may be more skilled but they do not play clean") in order to achieve positive distinctiveness. Perhaps athletes in our study adopted social creativity by altering the importance placed on particular forms of social identity content across the season. Indeed, multilevel analysis revealed that friendships content exhibited a small and significant linear decrease throughout the season. More specifically, athletes may have resorted to social creativity when circumstances (e.g., team members having disagreements) threatened an aspect of their social identity content (e.g., friendships). Moving forwards, researchers may wish to build on our research by exploring the effects and role of strategies such as social creativity on various forms of social identity content in sports teams.

The strengths of our study lie in our research design. Notably, we captured athletes' perceptions of social identity-related variables within all teams competing against their rivals in the same context over the course of a season. Our research design therefore enabled us to use multilevel modelling to explore the predictive effects of social identity-related variables within-athletes, between teams, and temporally. Our research is not without limitations and shortcomings though. We only obtained subjective team performance ratings from athletes. Further insight into subjective performance could have been provided by capturing ratings of individual performance. Further insight could have also been provided by acquiring coach-evaluations of subjective performance and performance ratings from other relevant observers such as support staff. We also did not obtain objective performance data. In the future, researchers could therefore explore the effects of social identity and social identity content on objective team performance in contexts where team-level objective performance data satisfies statistical power for multilevel modelling. Researchers could also measure individual objective performance markers (e.g., metres gained) across a season so that the effects of social identity and social identity content on objective performance can be explored at an individual-level. In-keeping with past research, we focused on two prevalent forms of social identity content (results and friendships) in sport. But as Slater et al. (2021) noted, many other social identity contents may exist in sports settings. Researchers could therefore explore the role and importance of other social identity contents. To assist such endeavours, researchers may benefit from the development of a social identity content in sport measure that captures a variety of social identity contents relevant to sporting contexts. Finally, to extend our investigations, researchers may wish to explore the effects of social identity and social identity content in other populations and on other psychological and behavioural outcomes.

In conclusion, our study provides unique evidence of the main and interactive effects of social identity, results content, and friendships content on cohesion, self-efficacy, team-level efficacy, and subjective team performance in a sporting context. Our research illustrates that social identity significantly and positively effects cohesion, efficacy, and performance, particularly at an athlete-level. However, our research generally failed to highlight significant interaction effects between social identity and results/friendships contents. At this stage, it would be premature to conclude that social identities based around particular forms of social identity content are not important for outcomes in sport, particularly given that other research has evidenced the importance of social identity content for behaviour (Beasley et al., 2021). In our study, athletes may have employed social creativity strategies over the course of their competitive season which may have prevented significant interaction effects from emerging. In the future, researchers should therefore consider the impact of such social identity-related strategies upon social identity content. We encourage researchers to explore the predictive effects of social identity and varied forms of social identity content on outcomes across sports, populations, cultures, and settings.

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No potential conflict of interest was reported by the author(s).

Data availability statement

Due to the nature of this research, participants did not agree for their data to be shared publicly, so supporting data is not available.

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