TITLE: Examining the longitudinal structure, stability, and dimensional interrelationships of team identification

Author note

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Abstract

The propensity of strongly identified fans to contribute positive organizational outcomes for sport teams underpins why team identification maintains a central position in sport management. In the present study we examine the multidimensional structure, stability, and interrelationships between the dimensions of team identification, using longitudinal data (April 2011-April 2012) collected from fans of a new Australian Rules football team (N = 602). A Confirmatory Factor Analysis (CFA) of the team identification items included (measured using the Team*ID scale), supported a five-dimensional model structure. This model was subsequently computed as a longitudinal CFA to test the configural and metric invariance of the Team*ID scale. We used a cross-lagged panel model to examine the longitudinal stability of, and interrelationships between, the dimensions: affect, behavioral involvement, cognitive awareness, private evaluation, and public evaluation. Each dimension displayed relative stability over time. In addition, public evaluation and private evaluation in April 2011 displayed a positive relationship with behavioral involvement in April 2012. Similarly, cognitive awareness in April 2011 predicted increases in public evaluation in April 2012 two. We conclude with implications for theory and practice.

Examining the longitudinal structure, stability and dimensional interrelationships of team identification

Social identification has evolved into a core construct explaining consumer behavior in sport management, under the conceptual title of team identification. In the sport literature, team identification primarily refers to the extent that an individual maintains a psychological connection with a sporting team and the emotional value he or she attaches to team support (Wann, Melnick, Russell, & Pease, 2001). Due to the practically orientated terrain of sport management and marketing, prior research has focused on the positive manifestations of strong team identities for sport organizations. As a result, conclusions center on the need to understand how to leverage increases in team identification to reap organizational benefits (Boyle & Magnusson, 2007; Wann & Branscombe, 1993).

The extent that individuals identify with sporting teams has been shown to vary, with individuals ranging from disidentified detesters (Foster & Hyatt, 2007; Lock & Filo, 2012), to non-identified or 'casual' observers (Bermache-Assollant, Laurin, & Bodet, 2012), to highly identified, allegiant, and culturally contracted fanatics (Funk & James, 2001; Giulianotti, 2002). Acknowledging this range of identity strengths, researchers have sought to explain how fan-team bonds develop. This body of work includes conceptual (Funk & James, 2001, 2004), cross-sectional quantitative (Funk & James, 2006), longitudinal quantitative (Dietz-Uhler & Murrell, 1999; Gau, Wann, & James, 2010; Wann, 2006a), and qualitative designs (de Groot & Robinson, 2008; Lock, Taylor, Funk, & Darcy, 2012).

Researchers have explored the stability of team identification (Wann, 1996, 2006a), fan reactions to game outcomes over the course of one season (Dietz-Uhler & Murrell, 1999), and the longitudinal influence of social interaction and entertainment motives on team identification (Gau, et al., 2010). While contributing to extant understanding of how team

identification operates over time, each of the aforementioned studies examines the construct unidimensionally. Multidimensional team identification measures are available; however the authors of these studies have focused on construct dimensionality and structural composition (Dimmock, Grove, & Eklund, 2005; Dimmock & Grove, 2006; Heere & James, 2007). To extend on the longitudinal and multidimensional research perspectives outlined, we examine the multidimensional structure, stability, and dimensional interrelationships of team identification over time. To achieve this aim, we study fans of a new Australian professional sport team, thus capitalizing on a context where consumers are in the embryonic stages of the fan-team relationship (Grant, Heere, & Dickson, 2011; James, Kolbe, & Trail, 2002; Lock, et al., 2012).

Literature review and theoretical framework

The literature review is divided into four parts. First, social identity theory (Tajfel, 1972; Tajfel & Turner, 1979) is introduced to conceptualize the heritage of team identification (Wann & Branscombe, 1990, 1992). Second, a review of the dimensions of social identity provides a platform to discuss the multidimensionality of team identification. Third, literature covering the dynamism of team identification provides a theoretical backdrop to consider how team identification changes and develops. Fourth, an examination of the gaps in previous scholarship on team identification articulates the space into which this study contributes.

The overarching framework of this article draws on social identity theory, which originally provided a framework to understand intergroup conflict, and the processes that in-groups use to achieve distinctiveness from relevant out-groups (Tajfel & Turner, 1979). During this paper, identification refers to “that part of the individuals' self-concept which derives from their knowledge of their membership of a social group / s together with the value and emotional significance of that membership” (Tajfel, 1981, p. 255). Interest in social

identity theory emerged in sport following the seminal work of Wann and Branscombe (1990), which examined whether identity strength influenced the extent that fans of a sport team Basked in the Reflected Glory (BIRG) of a team or Cut Off Reflected Failure (CORF) following positive and negative game outcomes, respectively (cf. Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976; Snyder, Lassegard, & Ford, 1986). In doing so, Wann and Branscombe (1990) applied the central group status arguments from social identity theory into the sport context. In a series of further publications, Wann and colleagues sought to deepen understanding of team identification through studies utilizing the unidimensional Sport Spectator Identity Scale. Contributions from this body of work show that strongly identified fans display more favorable evaluations of fellow fans than rivals (Wann & Dolan, 1994; Wann & Grieve, 2005), increased team knowledge (Wann & Branscombe, 1995), belief in the trustworthiness of other ingroup fans (Wann & Polk, 2007), and increased social-psychological health (Wann, 2006a, 2006b; Wann, Dimmock, & Grove, 2003).

Although multidimensional measures have emerged, adding additional capacity to examine the complexities of team identification, researchers have continued to apply unidimensional construct measures. Though this approach is justifiable due to the proven parsimony, utility, and predictive qualities of such instruments (e.g., Fink, Parker, Brett, & Higgins, 2009; Trail & James, 2001; Wann & Branscombe, 1993), the development of multidimensional measures in sport has been underpinned by arguments that unidimensional measures do not capture sufficient detail (Heere & James, 2007).

Multidimensionality

Moves to explore social and team identification from a multidimensional standpoint drew from the three dimensions of group membership delineated within social identity theory, which are as follows (Tajfel, 1972; Tajfel & Turner, 1979). First, an individual must cognitively realize that he or she belongs to a definable social group. Second, that an

individual will compare the defined ingroup to a relevant out-group/s (Tajfel & Turner, 1979; Turner, 1975). Third, an individual will derive emotional significance and value (affect) from his or her group membership, resultant from the extent that the group membership reflects positively on his or her self-concept. Each of the three original dimensions of social identity relates to an individual-level need to achieve a satisfactory self-image through group memberships that are both positive and distinct (Tajfel, 1972; Tajfel & Turner, 1979).

The emergence of multidimensional team identification measures followed the development of tri-partite instruments in social psychology and management. The authors of key studies created multidimensional instruments to examine how ingroup characteristics (majority/minority group) influenced social identification in a sample of Dutch students (Ellemers, Kortekaas, & Ouwerkerk, 1999), and to assess the role of organizational identification as a mediator of staff citizenship behaviors in the U.S. (Bergami & Bagozzi, 2000). Adapting this line of theorization, Dimmock et al. (2005) contributed the first multidimensional measure of team identification, specific to sport fans. The scale drew heavily on the traditional tripartite conceptualization of social identity and its more recent extension, self-categorization theory (Turner, 1985; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Despite framing the study within Tajfel's (1982) tripartite dimensional structure, the authors found that the cognitive and affective dimensions were indistinguishable, thus contrasting other multidimensional model structures (Bergami & Bagozzi, 2000; Ellemers, et al., 1999). The cognitive/affective dimension presented by Dimmock et al. has since been supported by some researchers (Theodorakis, Dimmock, Wann, & Barlas, 2010) and noted as a weakness of the model by others (Heere & James, 2007).

Seeking to build on Dimmock et al's (2005) work, Heere and James (2007) developed the Team*ID scale using social identity theory (Tajfel & Turner, 1979), and Ashmore, Deaux

and McLaughlin-Volpe's (2004) conceptual work on collective identity. Ashmore et al. included social identity theory as part of their theoretical framework, alongside self-categorization theory (Turner, et al., 1987), identity theory (Stryker, 1980), and the stage-based theory of Nigrescence (Cross, 1971). As such, the Team*ID scale set out to measure a broader set of sociological and psychological concepts than those outlined in previous measurement tools. The final Team*ID scale included six dimensions measuring; cognitive awareness, behavioral involvement, public evaluation, private evaluation, sense of interdependence, and interconnection of self. To date, Heere and his colleagues have predominantly tested the Team*ID scale in samples of students and collegiate sport fans in the U.S. (Heere & James, 2007; Heere, James, Yoshida, & Scremin, 2011a; Heere, Walker, Yoshida, Ko, Jordan, & James, 2011b). However, testing of the structural composition of the scale has also utilized samples of professional netball fans in New Zealand and indoor soccer consumers in the U.S., indicating applicability across cultural contexts and beyond collegiate settings (Heere, et al., 2011a).

Due to its consideration of a broader range of identity dimensions, the Team*ID scale was applied in this study. While it allowed testing of a broader range of identity dimensions, it also provided a basis to examine the dimensional structure presented previously, with specific reference to the reported issues with discriminant validity between dimensions, and overall model fit (Heere & James, 2007; Heere, et al., 2011a), in the Australian context. As Heere et al. (2011a, p. 619) noted:

> The challenges that are presented to the structural validity of the six dimensional scales form another limitation to the study…. Future research should focus on modifying some of the constructs and develop items that are more robust to the high correlations that conceptually exist between the different identity constructs.

When considered in relation to social identity theory, the Team*ID scale contains dimensions that are inconsistent with original theorizations. For example, during the minimal group experiments, Tajfel and colleagues found that ingroup favoritism and intergroup discrimination occurred in experimental conditions designed to maximize the arbitrariness of the situation (Tajfel, 1972; Tajfel, Billig, Bundy, & Flament, 1971). This finding contradicted arguments stating that a shared fate (interdependence) was a necessary condition for intergroup behavior to occur (Rabbie, Schot, & Visser, 1989; Sherif, Harvey, White, Hood, & Sherif, 1961). As Turner and Bourhis (1996) lucidly argued, interdependence can lead to the formation of social groups, just as it can form as a by-product of the meanings shared between members, after group formation. Thus, they concluded that interdependence was neither necessary nor sufficient to explain group behavior. Ashmore et al. (2004) argued that interdependence becomes salient when an individual realizes that he or she is categorized as belonging to a social group and treated as an interchangeable part of that collective (e.g., gender inequality and racial discrimination). Following this argument, interdependence forms in group situations because of perceived discrimination.

Arguments relating to interdependence are of specific interest in emergent group contexts, such as the consumer bases of new sport teams. Organizing and creating identification within new teams presents nuanced issues due to the lack of tradition, history, and achievement maintained by emergent clubs, teams, and franchises (Lock, Darcy, & Taylor, 2009; Lock, Taylor, & Darcy, 2011). Grant et al. (2011) found, through a three-phased case study approach of new sport teams in New Zealand, that the promotion of key organizational values and the shaping of brand community lacked continuity, direction, and clarity. Thus, the new teams sampled projected weak organizational identities into the marketplace. Consequently, the position of this study in relation to a new sport team

represents a prime sampling frame to explore interdependence within an emergent sport organization.

A key conceptual argument for utilizing a multidimensional approach to examine team identification over time emerges from the notion that unidimensional measurements may not provide a sufficiently detailed perspective to capture the dynamic and complex nature of the construct (Dimmock, et al., 2005; Heere & James, 2007). Therefore, while acknowledging the merits of using a singular dimension in certain contexts for reasons of practicality and parsimony, the complexity of human behavior implies that deconstructing team identification into multiple structural dimensions can yield important new insights into the multidimensional structure, stability, and interrelationships between the different latent dimensions of the construct over time.

The development and change of team identification

The landscape of research canvassing how the multiple dimensions of team identification develop or change over time remains sparse, with little evidence to underpin how the multidimensional structure of the construct evolves. There are, however, important studies that have explored the intricacies of developing fan-team bonds qualitatively, or using unidimensional measurements. Dietz-Uhler (1999) employed a quantitative longitudinal research design to examine fan reactions to game outcomes using a U.S. collegiate sample. The authors found that highly identified fans reacted with more extreme emotions than weakly identified fans following expected and unexpected wins and losses. In more interpretive work, de Groot and Robinson (2008) used the Psychological Continuum Model (PCM) to frame an interpretive biography exploring the development of psychological attachment for one Australian Rules football supporter.

In relation to the present study, the most relevant studies to date emanate from the US collegiate context. Wann (1996) explored the stability of team identification across two

collegiate settings, finding that levels of team identification, involvement, and team evaluations reduced significantly during the course of one season. Consequently, Wann (1996) concluded that unsatisfied fan expectations explained the reduction in team identification, thus polarizing the importance of sport organizations communicating realistic expectations to fans. In another study, Wann (2006a) tested the influence of team identification on social-psychological health; finding that team identification in the initial study predicted increased social-psychological health in the second data collection. Building on this work, Gau, Wann, and James (2010) conducted a cross-lagged panel study examining the stability of team identification, social interaction, and entertainment at two points in time, and the relationships between each latent construct over time. In this study, the one-dimensional measurement of team identification displayed acceptable stability from the start to the end of a season. Moreover, entertainment motives predicted significant increases in team identification over time.

Other work has sought to integrate social identity theory within the PCM to develop on work exploring attitude formation and change (Funk & James, 2001, 2006). This unison was proposed conceptually by Funk and James (2004) in the Fan Attitude Network (FAN) model and then cultivated to understand the development of team identification in relation to a new soccer team in Australia (Lock, et al., 2012). In this study, Lock et al. corroborated Tajfel's (1982) earlier conceptual arguments, which specified that the emotional value (affect) of social identities develops as the categorization assumes a more central, internalized position in an individual's self-concept. Fan narratives described how affect activated as the result of direct team experiences, which fortified and developed the team identity. Furthermore, emotional value also resulted from increasingly positive evaluations of the team identity, which also played an important role in the process of identity development.

Limitations of previous research

In the current study, we seek to address two gaps in current understanding. First, we aim to extend on the cross-sectional examinations of team identification that have developed understanding of the construct previously (Heere & James, 2007; Wann & Branscombe, 1993). To date, researchers have explored longitudinal reactions to game outcomes (Dietz-Uhler & Murrell, 1999), the stability of team identification over time (Wann, 1996), cross-lagged models of team identification and social-psychological health (Wann, 2006a), and the influence of social interaction and entertainment on team identification in a cross-lagged panel study (Gau, et al., 2010). Such studies, in particular the cross-lagged panel models, provide important leaps forward methodologically and conceptually. However, there is an opportunity to elaborate on the understanding contributed by each of the aforementioned studies, through an examination of team identification using multidimensional conceptualizations and measurements. In doing so, we seek to digress from using team identification and an additional latent variable in a cross-lagged design; to examining the multidimensional structure and stability of multiple team identification dimensions over time.

Second, prior research utilizing multidimensional models of team identification has concentrated on establishing a functional factor structure, and in certain instances, assessing the influence of each dimension on external constructs (i.e., intergroup bias; Dimmock, et al., 2005; purchase intentions & word of mouth; Theodorakis, et al., 2010). As such, exploring the temporal stability of, and interrelationships between each dimension over time has been beyond the scope of previous studies exploring team identification's multidimensionality (Dimmock, et al., 2005; Heere & James, 2007; Heere, et al., 2011b; Theodorakis, et al., 2010). For example, Heere and his colleagues have focused on higher levels of abstraction, specifically investigating how multiple group identities (University, state etc.) combine to explain variability in team identification (Heere, et al., 2011a). Therefore, opportunities exist

to; (a) investigate the structural composition of team identification; (b) examine the stability of each team identification dimension over time; and (c) explore the temporal interrelationships between team identification dimensions.

Method

A quantitative longitudinal research design, comprising two online questionnaire instruments, was distributed in April 2011 (N = 1741) and April 2012 (N = 937). The tracked longitudinal sample included fans (N = 602) of the Gold Coast Suns (GCS), a new sport team situated on the Gold Coast in Australia.

Research Context

The GCS entered the Australian Football League (AFL) in 2011 as part of the competition's strategy to expand the league into non-traditional locations. While historically focused in Victoria, the AFL has aggressively sought to increase its nationwide appeal since the 1980s through the creation of new franchises in large Metropolitan centers across Australia (McDonald & Stavros, 2012). At the most recent census poll, the Gold Coast's population was 494,501, making it the sixth largest Metropolitan area in Australia, which underpinned why the AFL strategically targeted the region (Australian Bureau of Statistics, 2012).

In terms of on-field performances, the GCS experienced a mainly unsuccessful start to their history. At the time of the first data collection point (Time one, April 2011), GCS had played three matches and lost all by an average margin of 93 points (The average league-wide winning margin over the past 10 years has generally ranged from 35-40 points). By seasons end, the GCS were 3/22, and bottom of the competition ladder. This unsuccessful start continued into season two. At the time of the second data collection point (Time 2, April 2012); the GCS had played three matches, losing all. Converse to other research on the development of identification with a new sport team (Lock, et al., 2012), the GCS did not

boast a hugely successful record at, or during the period of data collection. In contrast, the GCS boasted a relatively unsuccessful record, which was widely expected due to the recruitment of a young squad that had potential to develop and become competitive in the future.

Participants and procedure

The sampling frame for the April 2011 and April 2012 survey distribution included all members of the official fan database managed by the GCS. The fan database included individuals that (at a minimum) had visited the GCS official website and entered a valid contact email address. An email invitation was included in the club's official newsletter and sent to members of the GCS fan database in April 2011 and April 2012. The email contained a hyperlink, which directed participants to the online questionnaire. To track participants, each respondent was asked to provide his or her unique fan number (generated by the GCS and included in the email invitation) and email address. This facilitated the tracking of respondents that had completed both surveys, and provided the basis to create a longitudinal panel. Six hundred and two individuals entered the same unique fan number and email address in both the April 2011 and April 2012 surveys. All matched cases were checked against demographic information (age and gender) to verify the integrity of the case-matching process.

The tracked longitudinal sample was predominantly male (n = 391, 65.0%), displayed a diverse range of ages (M = 47.0, SD = 13.41), and engaged in full-time work (n = 455, 75.6%). The majority of respondents had one or more child (n = 446, 74.1%), and culturally identified themselves as Australian (n = 455, 75.6%). In April 2011, the majority of respondents reported possessing GCS membership (n = 500, 83.1%), which reduced slightly in April 2012 (n = 471, 78.8%).

Materials

The online questionnaire included measures to capture demographics, behaviors, and team identification to test the stated research objectives. Team identification was measured with a revised version of the original Team*ID scale (Heere & James, 2007), published by Heere et al. (2011b). During the scale development process, Heere and James (2007) noted issues with discriminant validity for the sense of interdependence, interconnection of self, and cognitive awareness dimensions. In later work, Heere et al. (2011b) observed discriminant validity issues for the interconnection of self-dimension. Despite the noted issues with the discriminant validity of the six-factor solution, Heere and his colleagues have maintained all factors. Cronbach's Alpha for the six dimensions tested ranged from .78-.83 in original testing (Heere & James, 2007), which improved following amendments to the scale (Cronbach's Alpha .88-.92; Heere, et al., 2011a; Heere, et al., 2011b). All items were measured using 7-point Likert scales anchored with 1 – '*strongly disagree*' to 7 – '*strongly agree*'. For a full list of items tested, see Appendix 1.

Results

Analysis

We examined the structural composition of team identification (April 2011 and April 2012) using a series of first and second-order Confirmatory Factor Analyses (CFA) with Maximum Likelihood Estimation. The models were drawn and implemented in AMOS 21 as alternates under investigation. The purpose of each CFA was to examine the structural composition of the six Team*ID dimensions: cognitive awareness (COG, 3 items), behavioral involvement (BEH, 3 items), private evaluation (PRIV, 3 items), public evaluation (PUB, 3 items), sense of interdependence (SOI, 3 items), and interconnection of self (AFF, 3 items). The structural analysis was conducted initially using the April 2011 and 2012 samples separately, then as a single input matrix to examine the longitudinal structure of the Team*ID

items as a means to test the configural and metric invariance of the scale (e.g., McDonald, Karg, & Vocino, 2013; Vandenberg & Lance, 2000). The decision making process for item retention was based on attaining discriminant validity whereby the Average Variance Extracted (AVE) by each dimension exceeded the squared correlation between each pair of latent constructs. The convergent validity of the model was judged on whether the AVE for each latent construct exceeded .50 (Fornell & Larcker, 1981).

The model fit of the Team*ID scale was assessed using multiple indices in line with previous suggestions (Bagozzi & Yi, 2012; Bollen & Long, 1993). Comparing fit with previous testing of the Team*ID scale presented some problems (following item revisions after Heere & James, 2007). However, it was possible to compare the fit indices presented by Heere et al. (2011a) using first and second-order CFAs. To assess model fit we used the normed Chi Square statistic (χ^2/df < 3.0) and the Root Mean Standard Error Approximation (RMSEA). Prior research indicates that RMSEA values of ≤ .08 indicate 'reasonable' approximation error (Browne & Cudeck, 1992). In addition to the RMSEA, we used Pclose tests (> .05), which indicate whether the confidence interval range for the RMSEA contains .05. The residual fit of the model was tested using the Standardized Root Mean Square Residual, which is recommended to be ≤ .08 (SRMR; Hu & Bentler, 1999). The comparative fit of the model was examined utilizing the Comparative Fit Index (CFI > 0.95), Tucker Lewis Index (TLI) (> 0.95), and Normed Fit Index (NFI > 0.95; Hu & Bentler, 1999; Tabachnick & Fidell, 2012). Model parsimony was assessed using Akaike's Information Criterion (AIC), which does not have a recommended cut-off; however, reductions in the statistic approximate to improved model parsimony.

Cross-Lagged panel model

The second and third research objectives were examined using a cross-lagged panel model (e.g., Bagozzi & Yi, 2012; Bentler & Speckart, 1981; Gau, et al., 2010; Wann, 2006a).

The cross-lagged panel model allowed for a unique dissection of the team identification construct and provided two benefits in addressing the stated research objectives. First, the model allowed us to explore the relationships between each latent dimension of team identification from April 2011 and its corresponding measurement in April 2012 (dimensions tested resulting from the CFA described above). Second, such models provide the means to examine how each team identification dimension at April 2011 related to all other latent dimensions in April 2012 (e.g., behavioral involvement April 2011 → cognitive awareness April 2012). This reflected an exploratory element to the analysis as the relationships between the dimensions of team identification, over time, have received little attention. Cross-lagged panel models invoke a testing position, whereby the paths from all exogenous to all endogenous variables are of interest to the researcher (Burkholder & Harlow, 2003). Each exogenous dimension was set to regress on all latent team identification variables at time two, which followed other similar designs (e.g., Bagozzi & Yi, 2012; Bentler & Speckart, 1981; Gau, et al., 2010; Griffeth & Gaertner, 2006). Therefore, the cross-lagged panel model allowed us to examine the relationships between each team identification dimension over time.

The residual errors for each latent dimension in April 2012 were allowed to correlate (See the following for longitudinal examples of endogenous latent variables with correlated error terms; Bagozzi & Yi, 2012; Burkholder & Harlow, 2003; Farrell, 1994; Griffeth & Gaertner, 2006). The error terms (residuals) for each item captured in April 2011 and April 2012 were allowed to covary with one another as repeated measurements (i.e., [error term] behavioral involvement 1, Time one ↔ [error term] behavioral involvement 1, Time two; Gerbing & Anderson, 1984; Pitts, West, & Tein, 1996). While allowing error terms to correlate is potentially problematic in cross-sectional studies, the practice is justified on theoretical grounds in longitudinal designs as the residuals for repeated measurements should

covary (McDonald, et al., 2013; Pitts, et al., 1996). The fit criteria applied to the cross-lagged panel model drew on the same indices as described for the CFA.

Confirmatory Factor Analysis

The normality of the data derived from responses to the Team*ID scale was examined prior to the CFAs; Skewness (-1.60 – 0.09) and Kurtosis (-1.04 – 4.46) for each item fell within acceptable levels (Skewness ± 2 and Kurtosis ± 5; Kendall & Stuart, 1958). Private evaluation [item one] displayed the only Kurtosis > 4, which repeated in April 2011 and April 2012; however, this item related to the extent that respondents were glad to be fans of the GCS. As such, it is unsurprising that responses clustered toward total agreement, given that the sample included members of the GCS's fan group. All other items, in both years, displayed Kurtosis < 3.

We conducted four CFAs to assess the structure of team identification using the full Team*ID scale; the fit of each model is displayed in Table 1. With all six Team*ID dimensions included, the CFA displayed mixed evidence of fit in first and second-order models, replicating the issues presented in earlier work (Heere, et al., 2011a). In the CFA on April 2011 data, the issues observed by Heere and his colleagues with discriminant validity repeated in first and second-order analyses (Heere & James, 2007; Heere, et al., 2011a). Specifically, the squared correlations between interdependence and affect (interconnection of self, in previous work) exceeded the AVE for affect; the squared correlation between cognitive awareness and behavioral involvement exceeded the AVE for cognitive awareness; and, the AVE for cognitive awareness was < .50, violating suggested levels for model convergence (Fornell & Larcker, 1981).

Insert Table 1 about here

Retesting of the full Team*ID scale using April 2012 data displayed an improvement in model fit in the first and second-order models. Furthermore, the cognitive awareness dimension displayed acceptable convergent (AVE > .50) and discriminant validity. However, the squared correlation between interdependence and affect still violated the criterion for discriminant validity, replicating previous findings (Heere & James, 2007; Heere, et al., 2011a). The fit of the first-order model improved; however, the second-order model repeated the relatively poor fit to the data displayed in April 2011.

Due to the issues described, we made a twofold theoretical and statistical decision to delete the interdependence dimension. First, work on social identity theory strongly refutes that a common or shared fate (interdependence) is a necessary or sufficient condition required for group formation (Tajfel, 1972; Tajfel, et al., 1971; Turner, et al., 1987). Second, the between-factor correlation for sense of interdependence and affect (Interconnection of self; Heere & James, 2007) in April 2011 (r = .851) and April 2012 (r = .877) violated the AVE test for discriminant validity (Fornell & Larcker, 1981). Based on these theoretical and statistical grounds, we removed the interdependence dimension from the model. The removal of the interdependence factor followed the theoretical assumptions of social identity theory, and addressed an untenably high correlation between two latent dimensions.

With interdependence removed, the fit and parsimony of the first and second-order CFAs on the April 2011 data improved. Despite the improved model fit at both times, cognitive awareness still violated the discriminant and convergent validity criterion at time one. Using April 2012 data, the modified five-factor model displayed an acceptable fit across all indices in first and second-order analyses. The AVE for cognitive awareness increased in April 2012 data, thus satisfying the criteria for convergent and discriminant validity. Given GCS's embryonic status, we retained cognitive awareness in the final model, despite the noted issues with discriminant and convergent validity in the April 2011 data. In doing so, we

sought to avoid capitalizing on a potentially chance finding derived from the April 2011 data (e.g., MacCallum, Roznowski, & Necowitz, 1992). This also followed the comments of Heere et al (2011a) warning against data capitalization. While interdependence replicated its issues across time, cognitive awareness displayed problems in only one data collection, hence why we retained the dimension.

In the final solution, the five-factor, first-order solution was preferred to the original six-factor, first-order Team*ID model as it fitted the data significantly better using time one ($\Delta\chi^2 = 163.401_{(40),}\ p < .001$) and time two data ($\Delta\chi^2 = 177.584_{(40),}\ p < .001$). AIC also reduced from the six to five factor models using time one and two data, which indicated that the revised structure represented a more parsimonious model of team identification. In terms of the alternate first and second-order models under investigation, we retained the first-order solution for two reasons. First, while second-order models are expected to outperform first-order CFAs on parsimony related indexes, Table 1 indicates that the RMSEA improved in the first-order model at time one and was equal at time two (Hair, Black, Babin, & Anderson, 2010). Finally, second-order modeling is important when nomological validity is a focus of the study (i.e., the position of the higher-order construct in relation to other different higher-order constructs). We preferred the first-order solution as the focus of this study resides on the relationships between the dimensions of team identification. Item factor loadings, descriptive statistics, error terms, and *t*-values for the final model are presented in Table 2. Inter-factor correlations, Cronbach's alpha scores, and descriptive statistics for each of the five latent constructs (April 2011 and 2012) follow in Table 3.

Insert Table 2 about here

Insert Table 3 about here

Prior to testing the stability of, and interrelationships between the five team identification dimensions we tested the configural and metric invariance of the final model using a longitudinal CFA (Horn & McArdle, 1992; Steenkamp & Baumgartner, 1998). Computed as a single input matrix, the longitudinal CFA allowed for an examination of model fit (i.e., including all data), prior to constraining factor loadings to be equal as a test of metric invariance. As the CFA included two longitudinal measurements of each item, the residuals for like items in the model were allowed to correlate freely. The unconstrained longitudinal CFA displayed a good fit to the data ($\chi^2 = 734.868, \text{df} = 345, \chi 2/\text{df} = 2.130$; RMSEA = .043, PCLOSE = .994, SRMR = .040, NFI =.944, CFI =.969 TLI = .961, AIC = 974.868), which supported the configural invariance of the final model (Vandenberg & Lance, 2000). Configural invariance requires that the dimensional structure of a measurement model remains the same between-groups, or over time (Horn & McArdle, 1992; Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000). To further examine configural invariance, we examined the *t*-values from each latent to observed variable to ascertain whether each path was significantly different to zero at time one and time two. All *t*-values, at time one and two, were significantly different to zero, which further supported the configural invariance of the model (e.g., Horn & McArdle, 1992). However, given the noted issues with convergent and discriminant validity for cognitive awareness at time one we were only able to support partial configural invariance (Lastovicka, 1982; Steenkamp & Baumgartner, 1998).

We tested for metric invariance to establish whether the factor loading patterns for items within dimensions were statistically equivalent from time one to time two. Following Steenkamp and Baumgartner (1998) and Horn and McArdle (1992, p.126), we tested for metric invariance cognizant of the reality that "only the configuration of zero and nonzero pattern coefficients realistically can be expected to remain invariant. In actual research, the

salient loadings can be expected to change markedly from one condition to another". Two models were specified in the longitudinal CFA to test metric invariance; firstly an unconstrained model (i.e., freely estimated), and secondly a fully constrained model with the item loadings for each repeated measure set to be equal (i.e., λ Behave 1_1 = λ Behave 1_2; Steenkamp & Baumgartner, 1998). The constrained model did not satisfy the criteria for metric invariance using the traditional Chi Square difference test ($\Delta\chi^2 = 44.758_{(15)}$, $p < .001$). To examine which dimensions were noninvariant, we ran five constrained models in which factor loadings were set to be equal for only one dimension in each, whilst allowing the remaining four dimensions to be freely estimated. This analysis indicated that public evaluation ($\Delta\chi^2 = 1.980_{(3)}$, $p = .577$), and affect ($\Delta\chi^2 = 0.574_{(3)}$, $p = .902$) satisfied the Chi square test for invariance. Behavioral involvement ($\Delta\chi^2 = 12.592_{(3)}$, $p = .006$), cognitive awareness ($\Delta\chi^2 = 22.698_{(3)}$, $p < .001$), and private evaluation ($\Delta\chi^2 = 10.863_{(3)}$, $p = .012$) did not satisfy the criteria for invariance, which indicated that response patterns for these dimensions were less stable.

Although the longitudinal CFA did not support invariance at the metric level using the Chi square difference test, we followed Cheung and Rensvold's (2002) argument that like overall model fit, invariance should be tested using more than one metric; especially as the χ^2 tends toward over-rejection of invariance at factor and model level. Analysis of the CFI indicated that the change in comparative model fit (Unconstrained model, CFI = .969, AIC = 974.868; Constrained model, CFI = .967, AIC = 989.626) was on the -.002 CFI boundary whereby metric invariance should not be rejected (Cheung & Rensvold, 2002). Thus, the invariance testing applied to the five-factor model provided evidence of partial configural invariance and levels of metric invariance on the boundary of recommended comparative fit indices. Noting the cautionary recommendations of Horn and McArdle (1992) and

MacCallum et al. (1992) in relation to invariance and capitalization on chance findings, we retained the five-factor model for further testing.

Dimensional interrelationships

We tested objectives two and three using a cross-lagged panel model. The cross-lagged panel model contained 10 latent dimensions and 30 items. Figure 1 displays the model tested to examine the stability of each latent team identification dimension and the relationship between the five dimensions from April 2011 to April 2012.

Insert Figure 1 about here

The cross-lagged structural model displayed a good to fit to the observed data (χ^2 = 734.868, df = 345, χ^2/df = 2.130, RMSEA =.043, Pclose = .994, SRMR = .042, NFI = .944, CFI =.969, TLI = .961, AIC = 974.868). Furthermore, the five latent team identification dimensions displayed significant paths from time one to time two. Cognitive awareness displayed the strongest correlation from April 2011 to April 2012 (β = .782), followed by private evaluation (β = .743), behavioral involvement (β = .726), affect (β = .652), and public evaluation (β = .489). All paths between the April 2011 latent dimensions and the corresponding variables in 2012 were significant. Table 4 displays the standardized regression weights for each path tested in the cross-lagged model.

Insert Table 4 about here

In response to our third objective, the paths from each exogenous latent dimension at time one and all other dimensions at time two were examined. Table 4 displays significant positive paths from private evaluation to behavioral involvement (β = .118); public evaluation to behavioral involvement (β = .081); and cognitive awareness to public evaluation (β = .243). No other paths between dimensions were significantly different from zero.

Discussion

This study built on previous quantitative investigations of team identification, which have utilized cross-sectional, repeat cross-sectional designs (i.e., multiple studies with independent samples; Dimmock, et al., 2005; Heere & James, 2007; Heere, et al., 2011a), or unidimensional longitudinal designs (Gau, et al., 2010; Wann, 2006a). As such, this study sought to contribute understanding of the structure of team identification at two points in time; articulate the stability of each team identification dimension temporally; and decipher how each dimension of team identification in April 2011, related to the four other dimensions in April 2012. The discussion emanating from these study objectives follows three parts. First, we consider the structural composition of team identification and the acceptance of a five-dimension model structure. Second, the stability of the five-team identification dimensions from April 2011 to April 2012 is considered. Third, the interrelationships between team identification dimensions over time conclude the discussion.

Structure of team identification

This study represented the first testing of the Team*ID scale in an Australian context and to our knowledge, fans of a new sport team, anywhere. The results confirmed that a multidimensional approach to team identity does have merit, but draws into question the number, nature, and interrelationships of the dimensions examined. Previously, the Team*ID scale has been tested in a sample of netball supporters in New Zealand; indoor soccer fans in the U.S. (Heere, et al., 2011a); college students in the U.S. (Heere & James, 2007); and fans of collegiate teams more broadly (Heere, et al., 2011b). Furthermore, previous testing of the Team*ID scale has consistently highlighted issues with discriminant validity, and presented varying levels of fit in first and second-order CFA analyses. While arguments supporting the maintenance of all six dimensions comprising the Team*ID scale have been made (Heere &

James, 2007; Heere, et al., 2011a), prior theorizing and the statistical evidence presented supported the deletion of the interdependence dimension in this study.

The interdependence dimension is highly contentious, particularly in its root discipline of social psychology. Researchers advocating the necessity of a common or shared fate as a condition of group membership argue that without it, groups cannot exist (Rabbie, et al., 1989; Sherif, et al., 1961). Ashmore et al. (2004) argued that interdependence resulted from individuals realizing that they were categorized as belonging to a broader group and treated differently as a result. Yet, Ashmore et al. also argued that groups not experiencing external prejudice (art collectors in the example discussed), were unlikely to be interdependent. This resonates with the sport fan context studied as individuals may or may not share an awareness of a common fate with other group members. Furthermore, researchers in the social identity tradition argue that while a common fate is likely to be present in important group memberships, it is not a pre-requisite and in reality, group behavior can occur in the most arbitrary environments (Tajfel, 1972; Tajfel, et al., 1971; Tajfel & Turner, 1979; Turner, 1975; Turner, et al., 1987).

New sport teams provide a sharp test of the interdependence concept, as previous research informs that fans have little understanding of what defines new teams at their inception (Grant, et al., 2011; James, et al., 2002; Lock, et al., 2012). Other research provides insight into the problems that new sport teams experience in trying to create and promote a coherent brand community and organizational identity (Grant, et al., 2011). Thus for interdependence to occur, the shared fate, or purpose of a sporting team needs to be clear to members, and shared between members (Turner & Bourhis, 1996). Analogous with previous research on new sport teams, fans lack understanding about what new teams are, what will happen, and consequently what the shared purpose or fate is (Lock, et al., 2012). As such, a major facet of managing emergent or ‘new’ groups remains developing an identity which

members can become cohesive toward (cf. Turner, 1985; Turner & Bourhis, 1996). It should also be noted that – other arguments considered (Heere, et al., 2011a) – the statistical fit of the Team*ID scale minus the interdependence dimension improved to a satisfactory level in first-order testing. Given the significant intercorrelation between interdependence and affect, we sided with the retention of affect given the raft of previous research, which notes that the emotional value associated with group membership is the key dimension activating cohesive and positive ingroup behaviors (Bergami & Bagozzi, 2000; Ellemers, et al., 1999; Tajfel, 1972, 1982).

In the final model, we retained cognitive awareness. Yet in April 2011, the cognitive awareness factor did not explain sufficient variance to satisfy criteria for convergent or discriminant validity (Fornell & Larcker, 1981). This said, cognitive awareness was retained as it displayed acceptable convergent and discriminant validity in April 2012; thus to delete the dimension on a purely statistical basis without theoretical support would have been to capitalize on a potentially chance finding (Heere, et al., 2011a; MacCallum, et al., 1992). Wann and Branscombe (1995) found that objective and subjective knowledge (i.e., cognitive awareness) were important correlates of team identities, which provided a theoretical rationale for maintaining cognitive awareness in the final model. Furthermore, research on new sport teams indicates that, while unfamiliar with player and team characteristics, the process of learning about the organization and players is instrumental in the development of team identification (Lock, et al., 2012). Hence, there were sufficient theoretical grounds to retain cognitive awareness in the face of a potentially chance finding from the time one data.

Stability and interrelationships

The stability of the cognitive awareness dimension suggested that even after one year of matches, events, and history, the level of knowledge fans maintained in relation to an ingroup remained relatively stable. This provided further conceptual clarification of the

cognitive awareness dimension (for initial definition; see Heere and James, 2007), highlighting that it measures what an individual knows about a team, relative to the information, history, and tradition that exists in relation to the ingroup. As such, some rethinking of the terms history and tradition in relation to group contexts is required. The terms 'history' and 'tradition' conjure images of prior triumphs, black and white footage, and artifacts collated over time. Yet in situations lacking such long-term histories, the immediate past constitutes the club's only history. All clubs 'inherit' tradition through their associations with regions (Rooney, 1969), cities and the past of players and officials who join the team from elsewhere, which should be considered by managers.

The other dimensions tested (private evaluation, behavioral involvement, affect, and public evaluation) also displayed relative stability. This finding extended previous work, which has confined its scope to examining team identification one dimensionally (Gau, et al., 2010; Wann, 2006a), or structurally (Dimmock, et al., 2005; Heere & James, 2007). Public evaluation displayed the least stability, which reflected a large increase in the mean score for the dimension from April 2011 to April 2012, despite the series of losses the new team suffered. Since the seminal contribution of Cialdini et al. (1976), theorizing on sport consumers has adopted a perspective that successful on-field performances have beneficial outcomes for teams, which given the weight of evidence, is hard to dispute (Sloan, 1989). However, some studies have presented alternate perspectives, noting the propensity of fans to support losing or undesirable teams (Campbell, Aiken, & Kent, 2004; Jones, 2000). The lack of on-field success experienced by the team sampled in this study should conceivably have linked with a reduction in public evaluation. Yet the increase in public evaluations indicated that perceptions of sporting teams by others potentially included content from beyond unsuccessful on-field performances. In the present research context, the GCS' developed a community engagement program, which won awards for the quality of work conducted with

junior AFL clubs and charity causes (McDonald & Stavros, 2012). Such schemes may influence public evaluation positively, which extends prior work.

Previous studies, published in organizational behavior (Bergami & Bagozzi, 2000), social psychology (Ellemers, et al., 1999; Tajfel, 1982), and sport (Dimmock, et al., 2005; Funk & James, 2006; Lock, et al., 2012) have repeatedly presented data illustrating that the affective dimension of identification has the greatest influence on positive ingroup behaviors. Yet the cross-lagged panel model indicated three significant relationships between different team identification dimensions from April 2011 to April 2012 and affect did not display a significant relationship with any other team identification dimension.

Cognitive awareness predicted significant variation in public evaluation, which elaborated on previous research utilizing multidimensional scales (Dimmock, et al., 2005; Heere & James, 2007; Heere, et al., 2011a; Heere, et al., 2011b). This indicated that cognitive awareness of the new team related positively to positive public evaluations in season two. Previously researchers have argued that negative perceptions of in-groups are often associated with a lack of direct experience or understanding (Bhattacharya & Elsbach, 2002; Elsbach & Bhattacharya, 2001; Lock & Filo, 2012). Akin to this line of theorizing, we found that cognitive awareness of the ingroup at the start of season one influenced fans public evaluations in the second year. This extended the literature on multidimensional measures of team identification, and consumers' perceptual evaluation processes (cf. Elsbach & Bhattacharya, 2001; Bhattacharya & Elsbach, 2002). Furthermore, this finding also highlights the importance of developing cognitive awareness of team history and traditions in new team contexts (relative to the history and tradition available), which both supported and extended previous work (Lock et al., 2012).

The effect of private evaluation on behavioral involvement supported previous research and provided explicit support for the original tenets of social identity theory (Tajfel,

1982; Tajfel & Turner, 1979; Turner, 1975). Social identity researchers have long established that self-esteem benefits derived from group memberships emanate from positive intergroup comparisons (Turner, 1975). As such, for private evaluation to influence behavioral involvement in the face of ongoing losses, fans potentially needed to engage in social creativity strategies to improve private evaluations of group membership (i.e., shifting the dimension of intergroup comparison from on field success to 'we're a young team, building for the future'; Lalonde, 1992; Bermache-Assollant, et al., 2012). This extended Luhtanen and Crocker's (1992) finding that high levels of private self-esteem (private evaluation in the Team*ID scale) predicted more vociferous responses to ingroup status threats. As such, private evaluation processes emerged as a key facet activating increases in behavioral involvement over time.

While it may be difficult for sport organizations to change how an individual evaluates his or her team identification, it is possible for marketers to create, promote, and communicate realistic images of likely on field performances. This point continues Wann's (1996) argument that unmet expectations explained reductions in team identification over the course of one season. In this sense, the GCS acted wisely promoting a clear message that the purpose of player recruitment was to accrue a talented young squad that would be unsuccessful in the short-term, but successful in the future. As such, we found that private evaluations might remain stable during periods of on-field losses, in instances where fan expectations are managed suitably. Furthermore, this finding indicated that private evaluations of group membership still exerted a positive temporal influence on ingroup behaviors, even during poor on-field performances.

The public evaluation dimension related positively to behavioral involvement. This illustrated that fan evaluations of how others perceived the team in April 2011, predicted increases in behavioral involvement in April 2012. Essentially, this showed that a fan would

be more likely to take part in ingroup supportive behaviors if he or she perceived that others viewed the team identity favorably. In this sense, Heere and James' (2007) reapplication of Luhtanen and Crocker's (1992) public self-esteem measure to capture public evaluations yielded important new insights. Originally, Luhtanen and Crocker found that groups reporting low public evaluations and high private evaluations (racial minorities in Luhtanen & Crocker's initial study) maintained a greater propensity for activism. Here, the public evaluations of fans remained relatively high, which had implications for positive ingroup behaviors, extending prior work.

Limitations

There were five primary limitations to this study. First, while longitudinal, this study consisted of only two data collection points, which restricted the observation of the development of team identification to a data point at the start of a new sport team's inaugural season and at the start of its second season. Second, this study did not incorporate, or add understanding of how external factors such as star players, community support or other relevant team associations influenced the development of team identification. Third, the data presented relates to one specific team and the broader applications of the findings require retesting in alternate contexts. Fourth, the poor on-field performances of the GCS represented an additional limitation. Planning for team success or failure in a research study is impossible, but the lack of success during the data collection period may have influenced the findings of this study. This said; initial on-field success for newly formed teams in established leagues is a rarity. Fifth, although the reduced Team*ID scale displayed acceptable model fit and partial invariance at configural and metric levels, the differences in convergent and discriminant validity at time one and two for the cognitive awareness dimension may have potentially influenced the longitudinal model and are acknowledged as a limitation of this study.

Conclusion

Deciphering what leads to changes in consumer relationships represents a significant challenge for sport researchers, and practitioners. Through the process of this study, three new insights into the structure, stability, and interrelationships between the dimensions of team identification emerged. First, we have contributed a revised structural measure of team identification based on specific theoretical, statistical, and contextual considerations. As a result, we deleted interdependence given previous theoretical arguments presented in the social identity literature. In comparison to previous first-order testing of the Team*ID scale, the fit and parsimony of the model improved.

Second, the use of a cross-lagged panel model extended previous assessments of the multidimensionality of team identification, and longitudinal unidimensional work, by showing that team identification displayed stability across five of the original six dimensions. Furthermore, it was apparent that despite losing almost every match, private and public evaluations remained stable. This finding indicated that fans maintained a positive evaluation of group membership, despite numerous on-field losses. Furthermore, this indicated that team evaluations potentially occurred on a more diverse set of dimensions than just on-field performance (i.e., improvements in a young team and community development schemes).

Third, we provided the first longitudinal analysis examining how the dimensions of team identification interrelated over time. This highlighted that private and public evaluations both predicted increases in behavioral involvement in season two. As such, new sport teams need to realize the importance of setting realistic expectations for fans and the broader community in the early stage of an organization’s history. We have also contributed to knowledge concerning the positive influence of cognitive awareness on public evaluations.

Future research

Although this study provides contributes to longitudinal knowledge of team identification, further research is required to understand how the construct operates and develops. First, following this study, we echo the words of Heere et al. (2011a) by highlighting that future work should continue to refine the items and structure of the Team*ID scale. While invariance is a condition that should be strived for, yet not practically attainable (Horn & McArdle, 1992), we found that public evaluation and affect were invariant, while private evaluation, cognitive awareness, and behavioral involvement were not. In addition, cognitive awareness displayed issues with discriminant and convergent validity in the first data collection. Further work is required to reassess the structure of cognitive awareness in particular.

While the Team*ID scale captures public and private evaluative dimensions of team identification, the social comparative aspect of social identification, which underpinned social identity theory (e.g., Tajfel & Turner, 1979; Turner, 1975) and self-categorization theory (Turner, 1985; Turner, et al., 1987) is absent from existing measures. Future research should seek to measure the social comparison dimension and incorporate it into measures of team identification as the maintenance of positive social identity is grounded in the pursuit of a positive and distinct ingroup status relative to a clearly defined out-group.

Second, longitudinal qualitative work is required that adopts an interpretive and inductive approach to extrapolate explanations of how and why team identification changes, or remains stable over time. There is a cogent opportunity to conduct research that tracks fans from an early point in a team's lifecycle. Such research designs hold particular promise in contributing a depth of understanding, which is absent in quantitative measurement of such a dynamic construct. One notable area for research is if and how identification with sport teams manifests differently for fans during the season in comparison to the off-season.

Third, there is a future need to use theoretical and conceptual frameworks designed to explore the development of sport consumer relationships. Researchers have argued for the unison of the PCM and social identity theory to achieve this purpose (e.g., Lock, et al., 2012). Doing so would provide additional theoretical insights to elaborate how team identification changes at varying levels of psychological involvement (e.g., Doyle, Kunkel, & Funk, 2013).

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Table 1:

*Model fit for structural analysis of the Team*ID scale*

Scale content	Time	Order	χ^2	*df*	χ^2/df	RMSEA	SRMR	NFI	CFI	TLI	AIC
All items	1	1st	430.618	*120*	3.588	.066*	.043	.942	.957	.945	532.618
		2nd	690.158	129	5.350	.085*	.079	.907	.923	.908	774.158
	2	1st	406.812	*120*	3.390	.063*	.042	.952	.965	.956	508.812
		2nd	611.189	*129*	4.738	.079*	.077	.927	.941	.931	695.189
Interdependence removed	1	1st	267.217	80	3.340	.062*	.044	.948	.963	.951	347.217
		2nd	299.397	85	3.522	.065*	.050	.941	.963	.957	369.397
	2	1st	229.228	80	2.865	.056	.041	.963	.976	.968	309.228
		2nd	244.578	85	2.877	.056	.046	.961	.974	.968	314.578

*Indicates that the *p* of close fit (Pclose) < .05

Table 2:

Descriptive statistics, item factor loadings, error variances, and t-values

	Time 1		Time 2		Item loading		Error variance		*t*-value	
Item	M	SD	M	SD	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
BEH 1	4.47	1.41	4.02	1.51	0.84	0.91	0.57	0.38		
BEH 2	3.88	1.50	3.67	1.54	0.88	0.87	0.51	0.57	22.67*	28.23*
BEH 3	3.85	1.69	3.83	1.65	0.59	0.73	1.88	1.28	14.76*	21.05*
COG 1	5.31	1.28	5.58	1.13	0.72	0.71	0.80	0.62		
COG 2	4.31	1.47	4.80	1.37	0.77	0.84	0.89	0.54	15.43*	16.58*
COG 3	5.58	1.13	5.45	1.13	0.54	0.77	0.89	0.51	11.66*	16.45*
AFF 1	3.74	1.68	3.83	1.68	0.84	0.85	0.85	0.79		
AFF 2	3.48	1.46	3.43	1.54	0.75	0.75	0.94	1.02	20.00*	20.61*
AFF 3	3.83	1.57	3.87	1.57	0.89	0.89	0.52	0.53	23.71*	25.59*
PRIV 1	5.81	1.03	5.61	1.03	0.83	0.86	0.34	0.33		
PRIV 2	6.01	0.92	5.91	1.01	0.87	0.88	0.21	0.23	24.55*	28.40*
PRIV 3	5.56	1.17	5.54	1.23	0.87	0.90	0.32	0.28	24.80*	29.01*
PUB 1	4.68	1.35	5.10	1.35	0.82	0.83	0.59	0.58		
PUB 2	4.54	1.28	4.93	1.31	0.86	0.88	0.43	0.39	24.00*	26.12*
PUB 3	4.62	1.28	5.00	1.27	0.89	0.93	0.34	0.20	24.64*	27.80*

* indicates that the path is significantly different from zero.

Table 3:

Inter-factor correlations, AVE, descriptive statistics and Cronbach's Alpha

April 2011

AVE	BEH	AFF	PRIV	PUB	COG	M	SD	α
BEH	**.610**					4.064	1.300	.799
AFF	.571	**.681**				3.683	1.390	.859
PRIV	.522	.530	**.733**			5.794	0.942	.885
PUB	.295	.294	.400	**.734**		4.612	1.182	.892
COG	.726	.521	.657	.427	**.464**	5.065	1.036	.717

April 2012

AVE	BEH	AFF	PRIV	PUB	COG	M	SD	α
BEH	**.705**					3.840	1.393	.868
AFF	.636	**.691**				3.712	1.417	.866
PRIV	.557	.607	**.779**			5.688	1.035	.910
PUB	.441	.454	.527	**.774**		5.008	1.202	.909
COG	.590	.564	.616	.475	**.605**	5.276	1.036	.815

AVE displayed in **bold** text
α = Cronbach's Alpha for each latent factor

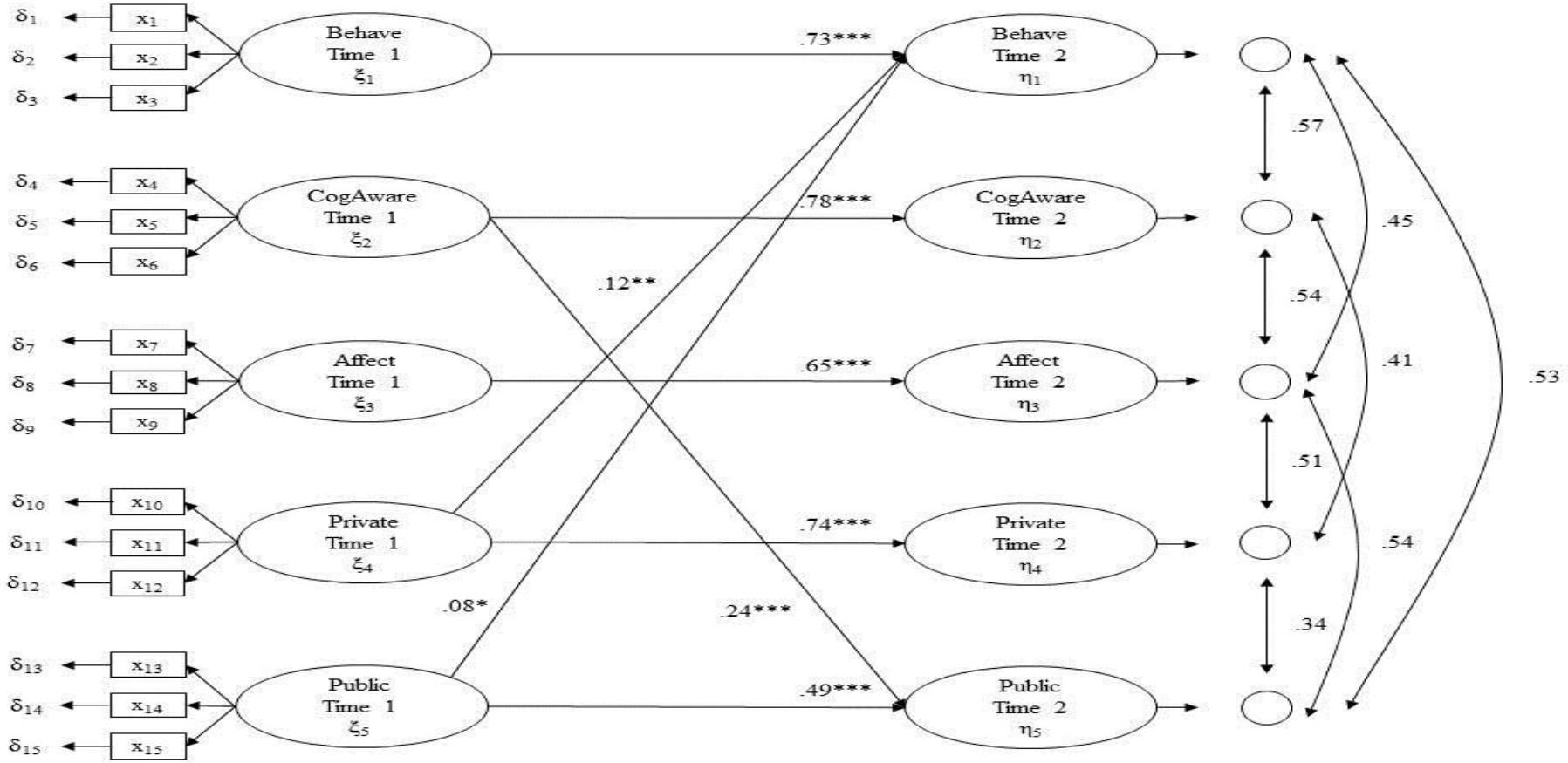

*Figure 1: Cross-lagged structural model of team identification, only significant paths displayed. Observed variables at Time 2 omitted for presentational purposes. Empty circles represent the residual error terms for each endogenous variable. Model displays correlations between endogenous error terms;*** denotes p* < .001, ** *denotes p* <.03, * *denotes p* < .05

Table 4: Path analysis of cross-lagged structural model

Dimension			Path and parameter significance			
Time 1		Time 2	β	S.E.	*t*-value	*p*
Behave1	→	Behave2	0.726	0.104	9.381	.000
Behave1	→	Affect2	-0.033	0.089	-0.514	.607
Behave1	→	Private2	0.038	0.059	0.619	.536
Behave1	→	Public2	-0.090	0.076	-1.284	.199
Behave1	→	Cogaware2	-0.126	0.059	-1.727	.084
Affect1	→	Affect2	0.652	0.054	12.457	.000
Affect1	→	Behave2	0.042	0.047	0.873	.383
Affect1	→	Private2	0.038	0.032	0.830	.406
Affect1	→	Public2	0.000	0.041	-0.009	.993
Affect1	→	Cogaware2	0.081	0.030	1.574	.116
Private1	→	Private2	0.743	0.054	13.044	.000
Private1	→	Behave2	0.118	0.073	2.190	.029
Private1	→	Affect2	0.058	0.074	1.095	.273
Private1	→	Public2	0.075	0.064	1.283	.199
Private1	→	Cogaware2	0.050	0.049	0.821	.412
Public1	→	Public2	0.489	0.046	10.364	.000
Public1	→	Behave2	0.081	0.048	2.032	.042
Public1	→	Affect2	0.020	0.049	0.503	.615
Public1	→	Private2	-0.044	0.033	-1.136	.256
Public1	→	Cogaware2	-0.052	0.032	-1.199	.230
Cogaware1	→	Cogaware2	0.782	0.144	7.069	.000
Cogaware1	→	Behave2	-0.134	0.178	-1.633	.103
Cogaware1	→	Affect2	0.120	0.178	1.519	.129
Cogaware1	→	Public2	0.243	0.155	2.756	.006
Cogaware1	→	Private2	-0.033	0.118	-0.430	.667

n.b., β represents standardized regression weights; S.E is the unstandardized standard error for each model path; *t*-values represent the unstandardized critical ratio for each path; and *p* represents the extent that each model parameter is significantly different to zero.

Appendix 1

Dimension	Item statements adapted from Heere et al. (2011b)
Behavioral involvement 1	I participate in activities supporting the Gold Coast SUNS
Behavioral involvement 2	I am actively involved in activities that relate to the Gold Coast SUNS
Behavioral involvement 3	I participate in activities with other fans of the Gold Coast SUNS
Cognitive awareness 1	I am aware of the tradition and history of the Gold Coast SUNS
Cognitive awareness 2	I know the ins and outs of the Gold Coast SUNS
Cognitive awareness 3	I have knowledge of the successes and failures of the Gold Coast SUNS
Interconnection of self (Affect) 1	When someone criticizes the Gold Coast SUNS, it feels like a personal insult
Interconnection of self (Affect) 2	Being associated with the Gold Coast SUNS is an important part of my self-image
Interconnection of self (Affect 3	When someone compliments the Gold Coast SUNS, it feels like a personal compliment
Sense of interdependence 1	What happens to the Gold Coast SUNS, will influence what happens in my life
Sense of interdependence 2	Changes that impact the Gold Coast SUNS will have an impact on my life
Sense of interdependence 3	What happens to the Gold Coast SUNS will have an impact on my life
Private evaluation 1	I feel good about being a Gold Coast SUNS fan
Private evaluation 2	I am glad to be a Gold Coast SUNS fan
Private evaluation 3	I am proud to think of myself as a fan of the Gold Coast SUNS
Public evaluation 1	Overall, the Gold Coast SUNS are viewed positively by others
Public evaluation 2	In general, others respect the Gold Coast SUNS
Public evaluation 3	Overall, people hold a favourable opinion of the Gold Coast SUNS