Payne, S. and Hudson, J. and Akehurst, S. and Ntoumanis, N. 2013. Development and Initial Validation of the Impression Motivation in Sport Questionnaire–Team. Journal of Sport and Exercise Psychology. 35: pp. 281-298.

Development and Initial Validation of the Impression Motivation in Sport Questionnaire – Team

Date of Submission: October 20, 2011

Abstract

Impression motivation is an important individual difference variable that has been under-researched in sport psychology. The purpose of this study was to design a measure of impression motivation for use with team-sport athletes. A variety of construct validity checks decreased the initial pool of items, exploratory analyses (n = 310) revealed the factor structure of the newly-developed scale, and confirmatory factor analytic procedures (n = 406) provided a modified version of the scale that retained theoretical integrity and psychometric parsimony. This process resulted in a 15-item, 4-factor model; the Impression Motivation in Sport Questionnaire-Team (IMSQ-T) is forwarded as a valid measure of the respondent's dispositional strength of motivation to use self-presentation in striving for four distinct interpersonal objectives: social identity development, avoidance of damaging impressions, avoidance of negative outcomes, and self development. The availability of such a measure has contributed to theoretical development, will facilitate further research, and offers a tool to be used in applied settings.

Keywords: self-presentation, impression management, scale development, measurement

Athletes are often concerned about the attributes others perceive they possess, or the characteristics an audience believes they *do not* possess (James & Collins, 1995, 1997). Indeed, they may believe that desired rewards are contingent on important others forming a particular impression of them (Leary, 1992). The outcomes that might be attained via the management of one's impressions, or the damage incurred when an undesirable impression is conveyed are both inter- (e.g., friendship) and intra-personal (e.g., development of a desired identity; Tetlock & Manstead, 1985). Given the role of high strength others (e.g., coaches, selectors, captain, teammates) in mediating an athlete's progress in and satisfaction with their sport, effective 'impression management' is clearly important (Leary, 1992).

Impression management includes cognitive and behavioral processes in our attempts to control how others perceive, evaluate, and subsequently act toward us (Schneider, 1981). In a given social encounter, impression motivation and impression construction are the key psychological constructs that interact to elicit self-presentation, the behavioral manifestation of impression management cognitions (Leary & Kowalski, 1990). Thus, self-presentation is: "...a goal-directed act designed, at least in part, to generate particular images of self and thereby influence how audiences perceive and treat the actor" (Schlenker & Leary, 1982, p. 643). Impression motivation is the driving force behind self-presentation, reflecting the degree to which the individual is motivated to manage the impressions that others form of them, in the pursuit of desired personal objectives (i.e., a '*goal-directed* act'). Impression construction refers to the factors that help one decide on the specific image to attempt to portray (i.e., the *design* of one's self-presentation). Impression construction is manifest through the interplay of five primary influences: two of which pertain to the individual's *private* image (self-concept, desired and undesired identity images), and three rely on continuously unfolding situational factors (constraints imposed by the role, the values of the target audience, one's current or potential social image; Leary & Kowalski, 1990).

Investigations have not explicitly examined impression construction in athlete populations, although there is existing literature that focuses on constructs implicated in the process (e.g., athletic identity, self-presentation concerns).

However, the motivation underpinning impression management is the focus of the current research. Impression motivation, like impression construction, has received little direct research attention in sport psychology. Primary motives for impression management include interpersonal influence (i.e., the attainment of desired social and/or material outcomes), development of 'self,' and emotion regulation (Leary, 1995). These motives are relevant in competitive sport; for example, one social outcome that is influenced by others is elevated status within a group, including nominated leadership duties; athletes often behave in ways which will improve their perceived social regard, and leader athletes in particular are keen to maintain their status (image) through demonstrating a strong work ethic (Wright & Côté, 2003). Material outcomes include, for example, sponsorship opportunities and more favorable contractual terms (Schlenker, 1980), which are likely to be desired by professional and sub-elite athletes alike (James & Collins, 1997). Such social and material outcomes can be considered interpersonal objectives of impression management.

The 'development of self' and emotion regulation motives for self-presentation are intrapersonal in function. Self-presentation can aid the development of self through two main mechanisms. First, an individual may seek esteem-enhancing reactions (praise, approval) from others based on the quality and appropriateness of their self-presentation (Schneider, 1969). Second, by displaying carefully selected aspects of one's self-concept, it is possible to convince others of a desired identity, and the target's subsequent reactions may then be identity-affirming (Gollwitzer, 1986). Athletes at all standards often place great emphasis on their sporting involvement (Lamont-Mills & Christensen, 2006), and may thus act on self-presentational opportunities to develop the athletic component of their identity.

In terms of emotion regulation, the individual may be motivated to convey impressions that elicit favorable reactions from others and improve their mental state (Baumgardner, Kaufman, & Levy, 1989). Athletes may also use emotion-presentation to align their felt and desired emotions, or develop an expressive and intimidating emotional climate within a team, illustrating both intra- and inter-personal functions of this process (Hackfort & Schlattmann, 1991, 2005). The three categories of self-presentation motive need not be entirely independent as satisfying one motive may lead to the fulfilment of another (Leary & Kowalski, 1990), whether intended or not (Schneider, 1981). Conversely, non-attainment of one motive may have negative transfer effects on the others (e.g., being passed over for team captaincy – a social outcome – may have adverse consequences for the athlete's self-esteem).

Transient situational factors alter the degree to which an individual perceives the salience of goal-directed self-presentation, heightening or depressing their strength of impression motivation (Leary, 1995). The goal-relevance of impressions, the value placed on one's interpersonal goals, and the discrepancy between one's desired and perceived current social image, are all determined by the particular characteristics of a social encounter (Leary & Kowalski, 1990). The team-sport context fulfils many of the preconditions for impression motivation, thus providing frequent opportunities to strive for self-presentational motives. For example, constant competition for desired rewards, through the risk of being substituted or dropped; dependency on a high-strength audience for these desired rewards; high likelihood of future interaction with this audience; and publicity of performance, whether to those present or those who will hear about it second hand. Further, undesirable consequences associated with 'self-presentational failures' (i.e., non-attainment of self-presentational goals) – lowered self-esteem, negative emotional reactions (e.g., embarrassment, anxiety) and their physiological concomitants, damaged identity and self-concept, task-avoidance and other

self-handicapping behaviors (Leary, 1995; Schlenker, 1980) – make impression motivation a pertinent avenue of investigation in sport psychology.

Strong impression motivation also elicits a self-presentational efficacy judgement, which is based on whether the individual is sure what behavior(s) will lead to their social goal for that situation, and whether they know how to *most effectively* go about constructing the desired impression; both factors are guided by experiences of past self-presentational successes and failures (Leary, 1983; Leary & Atherton, 1986; Maddux, Norton, & Leary, 1988). From an impression management perspective, research in non-sport contexts posits social anxiety as a negative emotional response to the interaction between high impression motivation and low self-presentational efficacy that can be experienced chronically and/or acutely (for a review see Schlenker & Leary, 1982). Further, sport competition anxiety is a domain-specific form of social anxiety stemming, in part, from the perceived threat of negative interpersonal evaluation (James & Collins, 1997). The associated construct, 'self-presentation concerns,' has also been proposed to represent the disposition to worry about impression-related threats to one's interpersonal-goal attainment (i.e., strong impression motivation and correspondingly weak self-presentational efficacy). Accordingly, the Competitive Self-Presentation Concerns Inventory (CSPCI; Williams, Hudson, & Lawson, 1999) and the Self-Presentation in Sport Questionnaire (SPSQ; Wilson & Eklund, 1998) were developed to assess self-presentation concerns in athletes. Research with these scales has shown that self-presentation concerns correlate positively with both trait and state competition anxiety (Eklund, Dugdale, & Gordon, 1999; Hudson & Williams, 2001; McGowan, Prapavessis, & Wesch, 2008; Payne & Greenlees, 2007).

To date, research has focused on self-presentation concerns and not the impression management constructs that precede them. Although self-presentation concerns are related to impression motivation, impression construction, and self-presentational efficacy, they are

conceptually distinct. Measures of self-presentation concerns – the CSPCI and SPSQ – stimulated inquiry into impression management in sport, but knowing that athletes are concerned or worried about facets of their public image does not tell us why they want to create these impressions and the strength of their motivation to do so. The advancement of knowledge past first-generation questions (i.e., descriptive and exploratory) requires further theory development (Zanna & Fazio, 1982), but there is currently no known scale that assesses impression motivation in sport contexts (Martin Ginis, Lindwall, & Prapavessis, 2007). Such a scale can be used to further knowledge of the sources of athletes' impression motivation, and the tenability in sport of the self-presentation motives consistently supported in other life domains. The scale may also illuminate theoretical reasons for athletes' behaviors as they interact with coaches and other support staff, potentially enhancing the quality of service provided and received (Martin Ginis *et al.*, 2007).

The dynamics of an interdependent group brought together for a common purpose contrasts with that of a collection of individuals (coactors, or a social aggregate), as do the different personalities that are attracted to sports with these alternative characteristics (Carron & Hausenblas, 1998). In turn, the self-presentational characteristics and opportunities associated with the team-sport environment – especially with regard to motives for behaviour, tactics used to impression-manage, and the social impact of these – are inherently different from the individual sport context (Carron, Burke, & Prapavessis, 2004; Sadalla, Linder, & Jenkins, 1988; Wong, Lox, & Clark, 1993). Accordingly, psychological measures may not be relevant to both sub-populations. Hence, the aim of this research was to develop and provide initial validation for a measure of the nature and dispositional strength of impression motivation in team-sport athletes.

Study 1: Development of Questionnaire Items and Format

The purposes of Study 1 were to develop a large pool of items designed to tap impression motivation; reduce the pool to a more manageable number via a content validity check that sought expert consensus on the theoretical distinctiveness of each item; initially develop the format of the questionnaire, and examine respondents' perceptions of the scale's format and its constituent items. Ethical clearance for the entire programme of research was granted by an institutional committee.

Creation of an initial item-pool

A thorough literature review helped develop an initial pool of items. This review included existing questionnaires, such as the CSPCI and SPSQ. For example, the self-presentation concern "During competition I worry that other people may perceive me as appearing nervous under pressure" (SPSQ item 23) influenced the new scale's item, "I am motivated to appear to be able to deal with pressure"; and the CSPCI item "When competing I am concerned with others seeing me make mistakes" (CSPCI item 2) influenced the item, "I am motivated to create a skilful impression on the opposition so that they lose confidence against me/us." James and Collins' (1997) interview data also helped in this undertaking: especially the quotes they provided to illustrate how their categories of stress could be self-presentational. For example: "All your players look at you and think, 'I can't believe you did that,'" and, "It's just embarrassing to be honest," were incorporated into items such as, "I am motivated to perform to the best of my ability because I don't want to be ridiculed at the next practice," and, "I am motivated to create a good impression to avoid embarrassment."

Leary's (1995) self-presentational motives and Leary and Kowalski's (1990) model component of impression motivation were also consulted. The self-presentational motives of interpersonal influence (social and material outcomes), development of self (desired identities and self-esteem maintenance), and emotion regulation (self-regulative and social-regulative

functions) were central in this process. Also, however, literature on the antecedents of heightened impression motivation – goal-relevance of impressions (publicity, dependence, expected future interaction), value placed on desired goals (availability, target characteristics, fear of disapproval), and discrepancy between desired and current public image – were adapted to reflect the types of motives that would activate such motivation (e.g., "I am motivated to always be fully prepared, as I don't want to be seen as less able than I am," and, "I am motivated to create a good impression when everything in the situation suggests that I will not be able to do so").

However, to supplement the limited literature base (in sport psychology) a survey was administered to 21 university student-athletes with an average age of 20.1 years (*SD* = 1.2), representing twelve different sports. Respondents provided open-ended answers to questions concerning the impressions they most want to convey to others, to whom they want to convey these impressions, and their reasons why.

The key impressions that participants wanted to convey centred on technical abilities (skills, athleticism, cognitive assets), intangible qualities (motivation, dispositional characteristics, 'team-building' capabilities), and physical attributes (physical fitness, power/strength, speed/quickness). Intended targets included team-mates, coaches, the team captain, knowledgeable other competitors, the opposition, selectors, parents/family, friends/peers, spectators, and the opposite sex. Reasons for impression management, or benefits associated with effective self-presentation, included personal satisfaction, feeling proud, to enhance one's mental state, achievement, career advancement, and to exert an influence over others. With re-phrasing and re-structuring, these were transformed into potential questionnaire items; when added to those already developed via literature review this produced 101 items.

Content validity of items

The global categories of motive for self-presentation and broad situational antecedents of impression motivation tend to overlap considerably; in interpersonal contexts the individual may be influenced by more than one simultaneously (Leary & Kowalski, 1990). Therefore, unless questionnaire items are semantically unambiguous, there is a possibility that respondents could interpret items as tapping multiple motives, or struggle to differentiate between what they perceive to be competing components of an item. Further, questionnaire developers must ensure that their items are adequate operationalizations of the variables they seek to measure; not doing so would diminish the theoretical validity of the measurement model (Cronbach & Meehl, 1955).

To rule out items with an indistinct conceptual basis, a consensus was first reached between the authors concerning to which of the self-presentation motives and antecedents of heightened impression motivation (see Introduction) each item was most strongly related. Next, a panel of four advisors external to the study were provided with a description of each of the impression motivation variables, including examples, and asked to match individual items to the six variables. Agreement between three of the five contributors was deemed acceptable to retain an item in the first version of the questionnaire. More rather than less items were included at this stage (cf. Velicer & Fava, 1998), and of the initial 101 items, 82 reached consensus and were retained for the next stage of questionnaire development.

Respondent perceptions of questionnaire items and format

Items on version 1 of the Impression Motivation in Sport Questionnaire-Team (IMSQ-T_1) were preceded by one of four statement stems (see Table 2). Each IMSQ-T_1 item assesses the respondent's strength of impression motivation using a 100mm visual analog scale (see Figure 1).

Readability, comprehensibility, ecological validity and face validity. Male (n = 4) and female (n = 5) athletes (mean age 25.7 years, SD = 6.8) from a variety of sports (boxing, field

hockey, horse riding/show jumping, trampolining, volleyball, rugby union, karate and soccer) scrutinized the IMSQ-T_1, and commented on its layout, item meaning, response scale relevance, and comprehensibility. These individuals, with an average of 11.6 years experience, were recruited specifically for their extent of sporting experience. Participants highlighted a number of potential changes in the questionnaire's wording, layout, and items, including the demographic section. This resulted in the re-phrasing or deletion of numerous items, and the 68-item IMSQ-T_2.

Study 2: Exploratory Factor Analysis of the IMSQ-T_2

The social psychology literature suggests a certain pattern of responses to, or factor structure of, the IMSQ-T_2, however, knowledge of impression motivation is limited in sports contexts. In such cases, where *a priori* factor hypotheses should not be made with conviction, exploratory factor analysis (EFA) is appropriate. Hence, the aim of Study 2 was to uncover the factors which underpin the IMSQ-T_2 and reduce the scale to a more manageable number of items.

Method

Participants

Participants were 310 athletes (209 male = 67.4%; 100 female = 32.3%; 1 undisclosed = 0.3%), with an average age of 21.4 years (*SD* = 4.6; range 18 - 63.3 years). A variety of team sports were represented, including soccer (*n* = 115), rugby union (*n* = 44), netball (*n* = 29), cricket (*n* = 29), field hockey (*n* = 25), rugby league (*n* = 23), ultimate frisbee (*n* = 20), basketball (*n* = 21), volleyball (*n* = 2), American Football and Gaelic Football (1 participant each). The majority of participants were currently competing at inter-university and/or semi-professional standard.

Measures

The Impression Motivation in Sport Questionnaire-Team. The 68-item IMSQ-T_2 (described above) was employed to assess strength of impression motivation.

The Marlowe-Crowne Social Desirability Scale (MCSDS) Short Form C (Reynolds, 1982). This is a 13-item shortened version of the original MCSDS (Crowne & Marlowe, 1960). Participants indicate whether each statement is *true* or *false* of them, for example, "It is sometimes hard for me to go on with my work if I am not encouraged," and receive 1 point for each socially desirable response, and 0 for each non-socially desirable response. Hence, scores on the MCSDS-C range from 0 (no social desirability) to 13 (all socially desirable responses). The MCSDS-C was included to ascertain if participants displayed a socially desirable response bias, to allow examination of whether or not the data collected in this study could be influenced by variations in this self-report tendency. Reynolds (1982) recommends the 13-item version as a viable measure based on a demonstrated normal distribution of scores, acceptable reliability (r = 0.76; Kuder-Richardson formula 20 reliability) and concurrent validity (r = 0.93 with the standard form).

Procedure

An exhaustive list of local sports clubs was compiled based on sports development databases and publicly available internet sources. Initial contact was made with team representatives via email, letter, or telephone, and permission to access the team was granted. Participants completed the IMSQ-T_2, usually at a training ground or clubhouse, following a standardized introductory statement by the lead author. This included the purposes of the study, assurance of confidentiality and anonymity, and a statement to counteract socially desirable responding. Participants provided written informed consent before completing the IMSQ-T_2 and the MCSDS-C. It took participants approximately 14 minutes to complete the questionnaires.

Data Analysis

Analyses were conducted using SPSS® version 15. To examine the tendency to provide socially desirable responses, MCSDS-C data were subjected to independent samples t-tests. If MCSDS-C scores at the higher versus lower end of the range were associated with significantly different impression motivation scores, the veracity of IMSQ-T_2 responses would be questioned. Participants with missing impression motivation data were deleted listwise in these analyses.

Next, the correlation matrix of the IMSQ-T_2 underwent an EFA with principal axis factor extraction, followed by oblique (direct oblimin; $\delta = 0$) rotation of the resultant factor loadings. With regards the latter, oblique rotation was chosen because the emergent factors were anticipated to be correlated rather than orthogonal. Principal axis factoring (PAF) was selected as a result of checks of the data's characteristics; specifically, the pattern of extreme and missing data, and multivariate normality. SPSS missing value analysis returned a non-significant Little's χ^2 statistic ($\chi^2_{(2385)} = 2440.738$, $p = .209$), denoting that missing values in the current dataset were "missing completely at random" (MCAR). A dataset with cases MCAR – in contrast to data *missing at random* or *missing not at random* – allows for either pairwise or listwise deletion of cases with missing data (Schafer & Graham, 2002). Data were lost when participants were removed based on the multivariate distribution of their scores (see below), so pairwise deletion of missing cases was preferred in order to minimise omitted data.

First, when Mahalanobis distances (D^2) were plotted against Chi square (χ^2) values, a multivariate normal distribution was displayed, i.e., the plots approximated a straight diagonal line; only four to six potential high outliers, and 8 low outliers, were evident. However, a significant Mardia statistic disagreed (both computed using DeCarlo's, 1997, SPSS macro). Mahalanobis distances were then calculated to identify the multivariate

outlying cases, and the score of 28 participants (9%) was higher than the 0.001 critical value of 108.54 (for 67 degrees of freedom). These participants were removed (additionally, multivariate outliers tended to be those participants who recorded extreme and/or missing scores, so eliminating them also removed a proportion of these undesired forms of response bias) but disagreement remained between different assessments of multivariate normality. Hence, principal axis factoring was chosen as the model-fitting procedure as it stipulates no distributional assumptions, and in any case tends to produce a similar solution to its stricter counterpart, maximum likelihood estimation, when the data are not severely non-normal (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Indeed, both PAF and maximum likelihood model fitting procedures were employed as a final check, and the two solutions were almost identical.

For the initial PAF EFA, SPSS was instructed to extract five factors. Various methods were used to determine this number including, principally, parallel analysis (PA; Horn, 1965) and the minimum average partial test (MAP; Velicer, 1976), using O'Connor's (2000) SPSS macro, which computes separate results for the original and his revised versions of each test; inspection of eigenvalues and the scree plot supplemented the information provided by PA and MAP. Reconciliation of slight discrepancies was achieved by testing the theoretical and statistical tenability of alternative factorial models. Ultimately – and with acknowledgement of the accepted superiority of parallel analysis (Velicer, Eaton, & Fava, 2000) – the use of complimentary methods to answer the number-of-factors-to-be-extracted question converged on five factors.

In the first EFA, items were free to load on any factor. The rotated pattern matrix was inspected as it is more conservative than the structure matrix in estimating factor loadings and the number of items that load on each factor, making the solution more distinct and thus easier to interpret (Rummel, 1970). Simultaneously considered criteria for item retention

included: theoretical 'fit' with its factor counterparts; a primary loading of ≥ .50; no cross-loading within .15 on the item's secondary factor; and communality (squared multiple correlations) of ≥ .40 (see Ford, MacCallum, & Tait, 1986, for the importance of multiple sources of information for the interpretation of factor solutions). Theoretically divergent and statistically weak items were identified and deleted in each EFA iteration, until the desired number of items per factor – in this case, four – remained. The total of 20 items (4 items x 5 factors) was targeted to provide an adequate representation of the underlying construct (i.e., 3 items per factor is the recommended minimum; Anderson & Rubin, 1956; Velicer & Fava, 1998) while ensuring the scale was quick to administer. An alpha level of .05 was used for all statistical tests.

Results

Socially desirable responding (SDR). Completion rate of the MCSDS-C was 97.1% (301 of the 310 participants completed the scale). Scores ranged from 0-13, with a mean of 6.93 (*SD* = 2.67). Participants were grouped according to their MCSDS-C score (low SDR = 0-4, moderate SDR = 5-9, high SDR = 10-13; see Table 1). An independent samples t-test revealed no significant differences between the extreme groups (low and high SDR groups) in impression motivation ($t_{(95)} = 1.90$, $p > .05$; based on overall IMSQ-T_2 score). These results therefore alleviate concern that SDR influenced participants' IMSQ-T_2 responses.

Exploratory factor analysis (EFA). Bartlett's test statistic was significant ($\chi^2_{(2278)} = 10556.48$, $p < .05$), the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .90, and the majority of off-diagonal elements on the anti-image covariance matrix were <.1, suggesting that the correlation matrix was suitable for factor analysis (Dziuban & Shirkey, 1974).

The initial five-factor EFA of the IMSQ-T_2 accounted for 47.5% of the observed variance in the 68 items. A total of 32 items satisfied the specified criteria for retention. It

was immediately apparent, however, that the cut-off criterion for loadings on the pattern matrix (≥ .50) was too strict for the latter factors (i.e., factors 4 and 5). Therefore, the cut-off point was lowered to ≥.40 for these factors to reflect an appreciation that they are inherently weaker contributors to the solution (cf. Tinsley & Tinsley, 1987). Despite this consideration, factor 5 still contained only two items: this factor was deemed trivial to the scale's continued refinement, and attributed to over-extraction in the presence of considerable obliqueness on the part of the preceding PA and MAP (Beauducel, 2001). A second decision was made concurrently: as the strongest contributor to the solution (i.e., largest eigenvalue, higher average factor loadings), factor 1 was now allotted eight instead of four items, to counter the four lost with the removal of factor 5. Hence, of the 32 items mentioned above, 30 were forwarded for a second EFA, and 4 factors were requested of SPSS.

The second EFA of the IMSQ-T_2 accounted for 56.3% of variance in the 30 items, and the scree plot definitively supported the loss of factor 5. Statistically, all items were satisfactory representations of their underlying factor. To bring the IMSQ-T_2 down to its intended size (20 items), the current authors independently undertook a theoretical review of the remaining 30 items. The authors then came together to discuss which items could be omitted before the next EFA was run. For example, on factor 1, item 25 ("I am motivated to create the impression of an athlete who is extremely motivated") was thought to be subsumed by the more tangible, specific qualities contained in the content of items 16 ("...has a good attitude"), 20 ("...is enthusiastic"), and 26 ("...is committed to the team"). Items on the other factors had to withstand similar scrutiny, and were deleted after a consensus was reached.

The third EFA justified the choices that were made – it produced a 20-item 4-factor solution that displayed 'simple structure' (i.e., strong primary loadings, no close cross-loaders), and accounted for 59.4% of the observed variance in the items (IMSQ-T_3; Table 2). Mean standardised loadings for the 4 factors ranged, in terms of magnitude of difference

from zero, from .59 (factor 4) to .68 (factor 1), suggesting that the manifest variables were good indicators of their latent variable (see Table 2). Cronbach's alpha coefficients (n = 272; factor 1: .88, factor 2: .80, factor 3: .78, factor 4: .70) suggested adequate-to-good internal consistency in the presence of at least moderately strong inter-item correlations (George & Mallery, 2003). Inter-factor correlations support the theoretical notion that self-presentation motives are related but largely independent (range, in terms of magnitude of difference from zero = .07 to .36; average difference from zero = .27; see Brief Discussion for their more detailed consideration).

Brief Discussion, Study 2

The purpose of Study 2 was to identify the latent factor structure of the IMSQ-T_2 and its most parsimonious factorial solution. EFA provided support for a 20-item, 4-factor measurement model (IMSQ-T_3) that has statistical and theoretical integrity. All items loaded substantially ($\geq .5$ on factors 1-3, $\geq .4$ on factor 4; see Table 2) and significantly on their primary factor and did not have secondary loadings within the pre-specified range (i.e., .15). The IMSQ-T_3 factors (social identity development, avoidance of damaging impressions, avoidance of negative outcomes, and self development) and its items share some commonality with the self-presentational motives summarised in Leary's (1995) review (desired social and/or material outcomes, development of desired identities and self-esteem, and emotion regulation), but at the same time retain uniqueness attributable to the sports context. These four factors are themselves theoretical hypotheses which warrant testing with data from an independent sample (see Stevens, 1996).

Interestingly, the avoidance of negative outcomes (factor 3) was negatively correlated with all other factors (with I = -.32, II = -.24, IV = -.36), whereas factor 2 (avoidance of damaging impressions), despite being similarly toned, was not (with I = .07, IV = .28). Further, factors 2 and 3 were negatively correlated despite their seemingly congruent

functions (using self-presentation to avoid undesired outcomes). If verified in subsequent samples, potential explanations can be sought; however, this was not within the scope of the current study. The development motives (factors 1 and 4) share the strongest positive relationship (.36), and the strongest negative relationship was seen between factors 3 and 4 (avoidance of negative outcomes and self development; -.36); in fact, three of the six factor correlations were negative, suggesting that the self-presentation motives are not mutually exclusive. Additionally, the use of self-presentation for self development had the most consistent and strongest relationship with other factors. Finally, although not significant, the difference in impression motivation scores between the high and low SDR groups did approach significance (p = .06). Therefore, a similar analysis was conducted with the next sample.

Study 3: Confirmatory Factor Analysis of the IMSQ-T_3

The aim of Study 3 was to determine whether data from a new sample of team-sport athletes fit the IMSQ-T_3 measurement model.

Method

Participants

Participants were 406 team-sport athletes (316 male = 77.8%; 88 female = 21.7%; 2 undisclosed = 0.5%), with an average age of 23.4 years (SD = 6.3; range 18 - 59.7 years). They represented 11 different team sports: rugby union (n = 156), soccer (n = 79), field hockey (n = 62), lacrosse (n = 33), basketball (n = 25), American Football (n = 24), cricket (n= 11), netball (n = 9), rugby league (n = 3), volleyball and canoe polo (1 participant each); 2 participants did not disclose their sport. Participants typically competed at semi-professional standard and/or in inter-university leagues.

Measures

The Impression Motivation in Sport Questionnaire-Team. The 20-item IMSQ-T_3 was employed to assess the respondents' impression motivation.

The Marlowe-Crowne Social Desirability Scale (MCSDS) Short Form C. The 13-item short form (Reynolds, 1982) of the original MCSDS (Crowne & Marlowe, 1960) was used in the current study, as described previously.

Procedure

Sampling and data collection procedures were the same as in Study 2. Completion of the IMSQ-T_3 and MCSDS took approximately 7 minutes.

Data Analysis

Data were analysed using SPSS® version 16, Microsoft Excel®, and version 17 of Analysis of Moment Structures (AMOS®; Arbuckle, 2008). To check whether IMSQ-T_3 responses were influenced by social desirability, MCSDS-C data were examined with independent samples (high versus low SDR groups) t-tests. Whereas EFA is data-driven, confirmatory factor analysis (CFA) is guided by the theoretical foundation on which the interpretation of the EFA model was based (Jöreskog & Sörbom, 1996). Hence, CFA was used to specify *a priori* which observed variables theoretically comprise each latent factor and to acknowledge the measurement error in the observed variables (the 'measurement model'). Specification was also made of the 'structural model': the variables which were hypothesized to be the causal predictors in the model, how both the items and factors were anticipated to covary, and to what extent these parameters were free to be estimated in the analysis (Kenny, 1998).

The initial model specified 4 correlated factors, each comprised of 4 (factors 2 through 4) to 8 (factor 1) items. Each factor had its measurement scale 'set' with the fixing of the loading of one indicator variable per factor (a 'reference variable') to equal 1 (Hoyle,

1991). Regression weights for the remaining 16 items were to be estimated in the analysis, as were item and factor variances, and finally, the strength of correlation between latent variables (i.e., 6 covariances between the 4 factors). Hence, the specified model was over-identified as required for CFA: the number of parameters to be estimated was less than the number of known parameters (Bollen, 1989). An alpha level of .05 was used for all statistical tests.

A significant Mardia coefficient (171.45, $p < .001$) of multivariate kurtosis again suggested multivariate non-normal distribution. Although it slightly improved the distributional characteristics of the dataset, deletion of outliers, i.e., those indicated by high Mahalanobis D^2 (DeCarlo, 1997), adversely affected subsequent parameter estimates and model fit; this may have been due to an inordinate loss of information for the CFA to function optimally. Hence, the full dataset ($n = 406$) was included in the analyses to produce Bollen Stine bootstrapped maximum likelihood parameter estimations (ML). Bootstrapping outputs less biased estimates than non-bootstrapped ML procedures when the assumption of multivariate normality is violated, and is particularly precise with large samples (Boomsma & Hoogland, 2001; Efron, 1982).

An 'omnibus' approach to evaluating model fit is considered desirable, and this is especially true for validation of the first known measurement device of a given psychological phenomenon (Schreiber, Stage, King, Nora, & Barlow, 2006). Indeed, when normative reference criteria do not exist to judge the fit of a model (i.e., previously published validation attempts), traditionally accepted cutoff values, such as those of Hu and Bentler (1998, 1999), can be "overly demanding" or even unobtainable in most measurement contexts (Marsh, Hau, & Wen, 2004). Furthermore, under these conditions, it is inappropriate to test for 'exact' fit – it is more realistic to seek evidence of 'approximate' fit (Li & Bentler, 2006). Therefore, to assess the current model's fit, various comparative (incremental) indices were inspected in

conjunction with the absolute test of fit – the chi-square (χ^2), and a criterion value less stringent than so-called "excellent" cutoff values was selected for each. These indices included: Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980), including its 90% confidence intervals (Campbell, Gillaspy, & Thompson, 1995); Comparative Fit Index (CFI; Bentler, 1990); Incremental Fit Index (IFI; Bollen, 1989); and Tucker-Lewis Index (TLI; Tucker & Lewis, 1973). A non-significant χ^2 value indicates a close fit between the observed and implied covariance matrices. The threshold of acceptable fit for the RMSEA, a second absolute index, is ≤ .08 ('excellent' fit = ≤ .06; Browne & Cudeck, 1993); and for the three comparative fit indices, > .90 indicates adequate fit ('excellent' fit = ≥ .95).

Results

Socially desirable responding (SDR). 397 participants (97.8%) completed the MCSDS-C, with scores ranging from 1-13 and a mean score of 6.82 (*SD* = 2.66). An independent samples t-test comparison of the low and high SDR groups (see Table 1) indicated a non-significant difference in impression motivation scores ($t_{(152)}$ = -.17, p> .05). Hence, despite significantly different MCSDS-C scores ($t_{(152)}$ = -49.23, p< .01), respondents in the two extreme SDR groups did not differ in strength of impression motivation. This result alleviates concern generated when the EFA sample displayed an *almost* significant difference in impression motivation between its low and high SDR groups.

Confirmatory factor analysis. An initial CFA revealed that, while overidentified as required, the hypothesised 4-factor model did not satisfy the chosen criteria for fit evaluation ($\chi^2_{(164)}$ = 550.024, p < .001; RMSEA = .076, 90% CI = .069 to .083; CFI = .849; IFI = .851; TLI = .825). Avenues to attain a better fitting model were sought via an assessment of each item for potential redundancy on its factor and/or other theoretical considerations. Diagnostic output specific to each item on all 4 factors was then inspected to ascertain whether the

theoretically problematic items matched those with relatively weaker statistical properties. With regards the latter, items were highlighted if they displayed: the lowest standardized regression weights and communalities; relatively more values ≥ ± 1.96 on the standardized residual covariance matrix; higher factor internal consistency values "if item deleted" (via SPSS' 'Reliability Analysis'); and higher estimated cross-loading regression weights on more than one factor (from modification indices; cf. Bentler, 2007; Markland & Oliver, 2008), compared to their factor counterparts. In addition, an EFA was run with the CFA sample data for corroboration of cross-loading items, i.e., from primary and secondary loadings on the structure and pattern matrices.

For example, the 'Self Development' item, "I am motivated to create a good impression because I wish to be respected by my teammates" (item 5 on the IMSQ-T_2), fit least well with items 3 ("...then other people's impressions of me will match how I'd like to be thought of"), 9 ("...the positive feedback I'll get makes me feel good"), and 11 ("...if others have confidence in me, so will I"), while concurrently having less robust statistical properties. In contrast, the 'Avoidance of Negative Outcomes' item, "I am motivated to create a good impression when I am competing for selection" (item 42 on the IMSQ-T_2), displayed weaker statistical properties than its factor counterparts *and* was toned in a very different way (item 31: "...on my coach, so that he/she doesn't demote me to a lower team"; item 40: "...so that my coach is less likely to sub me after making silly mistakes": and item 46: "...on my coach, so that he/she doesn't sub me out of the game in crucial situations"). Hence, the statistical benefit of deleting each item was evaluated in relation to its potential theoretical impact. Indeed, fit was improved with the deletion of items which were theoretically problematic. The aim of study 2 was to find the 4 best items for the new scale (and 8 for factor 1), and while CFA did not support that structure outright, losing two items from factor 1 and one item from each of factors 2 to 4 (because they are half the size of factor

1), provided theoretical parsimony and satisfactory fit (Anderson & Rubin, 1956; Velicer & Fava, 1998). Table 3 displays the fit indices associated with minor modifications to the original model (i.e., item deletion) made prior to each analysis.

Each iteration of the analysis was associated with improvements in model fit, resulting in a 15-item 4-factor solution that approximates a realistic and reasonable fit to the data ($\chi^2_{(84)} = 221.082$, $p < .001$; RMSEA = .063, 90% CI = .053 to .074; CFI = .926; IFI = .927; TLI = .908; Tables 3 and 4). Although χ^2 remained significant, it is known to be over-sensitive to slight multivariate non-normality in larger samples (Marsh, Balla, & McDonald, 1988). The majority of these comparative statistics also approach the stricter criteria indicative of 'excellent' fit ($\geq .95$ for the comparative fit indices, $\leq .06$ for RMSEA; Hu & Bentler, 1999). Standardized factor loadings ranged from .49 to .79 (all significant at $p < .05$), suggesting that each indicator was significantly explained by its factor. Inter-factor correlations ranged from .25 to .83 ($\bar{x} = .49$; Table 4). Cronbach's alpha for the four factors were all moderately high (see Table 4).

Brief Discussion, Study 3

The purpose of Study 3 was to further examine the factorial validity of the IMSQ-T_3, and confirm its structure with an independent sample. The final model displayed satisfactory fit between the observed and implied covariance matrices. In arriving at the 15-item version of the IMSQ-T_4 the 20-item model required minor re-specification. Items were considered for deletion based on theoretical reasoning, but decisions were statistically substantiated prior to item deletion, and a capitalisation on sample-specific suggestions from modification indices was minimized (Hooper, Coughlan, & Mullen, 2008). After initial development and validation procedures, the IMSQ-T_4 is forwarded as a sufficiently conceptually, theoretically, and statistically robust measurement device (now in its final iteration, hereafter the scale is titled the 'IMSQ-T'; Table 4).

General Discussion

The purpose of this research was: first, to develop a measure of impression motivation in team sports; next, determine its factor structure and composition; and finally, provide initial evidence of its construct validity. The three studies aimed at developing the IMSQ-T support a factorally sound 15-item, 4-factor inventory that measures impression motivation in team sports. The IMSQ-T can be used in future research investigating this important psychosocial variable. Therefore, the aims of the research were met in providing initial validation of the IMSQ-T, and confirm the notion that athletes are aware of the opportunity offered by their participation in a team-sport to fulfil self-presentational motives.

Athletes in the final sample, regardless of gender and sport type, reported a high mean strength of impression motivation on the IMSQ-T's response scale (EFA sample $\bar{x}$ = 71.31; CFA sample $\bar{x}$ = 72.15). Thus, in conjunction with the extant literature on impression management in sport (cf. Carron *et al*., 2004; Martin Ginis *et al*., 2007; Prapavessis, Grove, & Eklund, 2004), the high strength of impression motivation reported by athletes in the present studies confirm that the phenomenon exists in sport and it has associated consequences. For example, interesting qualitative data exists related to: self-presentational anxiety in sport (James & Collins, 1997), the impression motivation of soccer players recently having experienced 'demotion' to a substitute role (Woods & Thatcher, 2009), self-presentation and coaching (Jones, 2006), and impression management processes in female boxing (Halbert, 1997). However, gaining an appreciation of impression motivation and self-presentational constructs has not been the *primary* purpose of these studies (i.e., sport anxiety, substitutes' experiences, coaching effectiveness, and the struggles of female boxers in a male-dominated subculture, respectively), which the current study aimed to address.

Consequently, a primary finding of the current research is the resultant factor structure of the IMSQ-T, which provides direct insight into the construct of impression motivation. The first factor on the IMSQ-T contains 6 items that tap the athlete's 'Social identity development' via their self-presentation; for example, of an athlete who is enthusiastic, constantly willing to learn, and committed to the team. Factor 2, labeled 'Avoidance of damaging impressions,' contains 3 items that reflect a motive to impression-manage to avoid harmful evaluative reactions from important others. Factor 3 contains 3 items under the label 'Avoidance of negative outcomes,' and represents an acknowledgement that creating an undesirable impression may lead to adverse consequences in sport, for instance, demotion to a lower team (cf. James & Collins, 1995, 1997). Factor 4, labeled 'Self development' and including 3 items, reflects an awareness that other people's reactions to our self-presentations may impact how we view ourselves (Tice, 1992). Factor 4 was considered conceptually distinct from factor 1 because not all identities are other-focused (i.e., they can relate to one's team; Hogan & Briggs, 1986); developing aspects of one's private identity (self-concept) may involve less overt or perhaps controllable behaviors (Leary, 1995), and the outcomes are arguably less associated with what the layperson (or lay-athlete) knows as impression management. Team-sport athletes were most strongly motivated to use self-presentation to aid the development of a desired social identity (factor 1; see Table 4).

The structure of the IMSQ-T almost parallels Leary's (1995) social psychology research-driven categorization, suggesting that self-presentation motives are similar regardless of the social context under investigation. Thus, while the resultant self-presentational *behaviors* may differ between sport settings, romantic couplings, and the workplace, for example, it is proposed that theoretically they are activated by similar *motivational* processes (asserting interpersonal influence, constructing personal identity and maintaining self-esteem, and promoting positive emotions; Leary, 1995). The IMSQ-T

presents a method by which future research can now investigate what self-presentational behaviors the different motives are most strongly associated with, to what extent these are predicted by the IMSQ-T and indeed, whether the behaviors have the desired effect. It would also be interesting to examine if certain self-presentation motives are more strongly associated with positive emotional states than others.

Demographic data collected from the present samples provide insight into the strength of association between impression motivation and variables such as age, time with current team, amount of playing experience, and hours spent training each week. Although it was beyond the scope the present investigation to report these findings, future studies can offer answer to these first generation research questions. Furthermore, the IMSQ-T provides the means to test second and third generation questions (cf. Martin Ginis *et al*., 2007); for example, with the IMSQ-T as a basis, there is the potential to investigate whether the non-fulfilment of self-presentation motives is associated with undesirable outcomes (e.g., loss of motivation or a decline in global sport confidence).

At present, the IMSQ-T focuses on team-sports only; however, its addition to the literature and initial validation provides a basis upon which modifications can be made to tailor further bespoke forms of the measure. For example, and individual-sport version would be a worthy future development, as well as variations that consider other influential variables, such as standard of sport and sport type. In the current study the IMSQ-T was developed and validated with athletes from sports with the most widespread participation rates (www.sportengland.org). However, research suggests there are sociological, psychological, and psychosocial reasons why people take up certain sports and avoid others (e.g., Browne, 2004), so there may be an argument to test the validity of the IMSQ-T across divergent sample groups. Although, given the consistency between the IMSQ-T factors and impression

motivation factors identified previously, it is considered likely that a similar factor structure would emerge with different populations.

Future research is encouraged to explore the temporal (test-retest) stability of the IMSQ-T; for example, if one-month test-retest reliability is established, impression motivation could be examined at various times throughout a competitive season. This would test the hypothesis that certain impression management cognitions alter with time spent in a particular context or with a certain audience (i.e., impression motivation diminishes; Leary *et al.*, 1994). It would also allow a test of whether impression management cognitions add to the prediction of an athlete's successful (or otherwise) season (i.e., as judged by themselves, coaches, and objective measures), and potentially allow for tracking developmental changes in the importance youth athletes place on certain self-presentational motives and strength of impression motivation. If it could be mapped that these cognitions evolve with athletes' age and experience, they could be cross-referenced with long-term indicators of success and well-being and provide insight for applied practitioners working with young and adult sportspeople (R. Thelwell, personal communication, June 2, 2011). This is just one example of the applied implications that this scale validation may have by informing and initiating potential future research developments.

Modification index coefficients confirm that the majority of IMSQ-T items have no cross-loading potential. Further, average impression motivation for each factor did not correlate with socially desirable responding (r ranged from -.08 to .02; n = 397), suggesting that the IMSQ-T discriminates well between the two potentially related concepts, and offering initial support for the scale's construct and discriminant validity. However, it is recommended that future research aims to further validate these findings using concepts theoretically related to impression motivation including, for example, sport specific measures

of variables *associated* with impression management constructs, such as trait sport anxiety (cf. Campbell & Fiske, 1959; Cronbach & Meehl, 1955).

Nevertheless, the importance of effective impression management in sport is clear: the sheer amount of evidence that underpins Leary's (1995; Leary & Kowalski, 1990) review attests to the construct validity of the IMSQ-T, and its structure clearly reflects the theorising in social psychology. The current studies have provided support for the factorial validity of the IMSQ-T and it is forwarded as a psychometrically sound instrument for use in impression motivation research with team-sport athletes. As the first known measure of its kind – a shortcoming that has potentially hindered progression of the area past first-generation questions (Martin Ginis *et al*., 2007), it is anticipated that the scale will facilitate a surge in sport research aimed at filling the many theoretical gaps that still exist.

Acknowledgements

[Separate document]

References

Anderson, T.W., & Rubin, H. (1956). Statistical inference in factor analysis. In J. Neyman (Ed.), *Proceedings of the Third Berkeley Symposium on Mathematical Statistics and Probability* (pp. 111-150). Berkeley, CA: University of California Press.

Arbuckle, J.L. (2008). *AMOS™ 17.0 user's guide*. Crawfordville, FL: Amos Development Corporation.

Baumgardner, A.H., Kaufman, C.M., & Levy, P.E. (1989). Regulating affect interpersonally: When low esteem leads to greater enhancement. *Journal of Personality and Social Psychology*, *56*, 907-921.

Beauducel, A. (2001). Problems with parallel analysis in data sets with oblique simple

structure. *Methods of Psychological Research Online, 6,* available at http://www.dgps.de/fachgruppen/methoden/mpr-online/issue14/art2/article.html.

Bentler, P.M. (1990). Comparative fit indices in structural equation models. *Psychological Bulletin*, *107*, 238-246.

Bentler, P.M. (2007). On tests and indices for evaluating structural models. *Personality and Individual Differences*, **42**, 825-829.

Bollen, K.A. (1989). *Structural equations with latent variables*. New York, NY: John Wiley and Sons.

Boomsma, A., & Hoogland, J.J. (2001). The robustness of LISREL modeling revisited. In R. Cudeck, S. du Toit, & D. Sörbom (Eds.), *Structural equation models: Present and future. A Festschrift in honor of Karl Jöreskog* (pp. 139–168). Chicago, IL: Scientific Software International.

Browne, D. (2004). *Amped: How big air, big dollars, and a new generation took sports to the extreme*. London, England: Bloomsbury.

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J.S. Long (Eds.), *Testing Structural Equation Models* (pp. 136–162). Beverly Hills, CA: Sage.

Campbell, D.T., & Fiske, D.W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56,* 81-105.

Campbell, T.C., Gillaspy, J.A., & Thompson, B. (1995). The Factor structure of the Bem Sex-Role Inventory (BSRI): A confirmatory factor analysis. Paper presented at the annual meeting of the Southwest Educational Research Association, Dallas.

Carron, A., Burke, S., & Prapavessis, H. (2004). Self-presentation and group influence. *Journal of Applied Sport Psychology*, *16*, 41-58.

Carron, A.V., & Hausenblas, H.A. (1998). *Group dynamics in sport* (2nd edition).

Morgantown, WV: Fitness Information Technology.

Cronbach, L.J., & Meehl, P.E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52*, 281–302.

Crowne, D.P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*, 349-354.

DeCarlo, L.T. (1997). On the meaning and use of kurtosis. *Psychological Methods, 2*, 292-307.

Dziuban, C.D., & Shirkey, E.S. (1974). When is a correlation matrix appropriate for factor analysis? Some decision rules. *Psychological Bulletin*, *81*, 358-361.

Efron, B. (1982). *The jackknife, the bootstrap and other resampling plans*. Philadelphia, PA: SIAM.

Eklund, R.C., Dugdale, J.R., & Gordon, S. (1999). Self-presentation and the perception of threat at the 1998 Commonwealth Games. Paper presented at the IOC World Congress on Sport Sciences, Canberra, Australia; Sports Medicine Australia, No volume, p.68.

Fabrigar, L.R., Wegener, D.T., MacCallum, R.C., & Strahan, E.J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, *4*, 272-299.

Ford, J.K., MacCallum, R.C., & Tait, M. (1986). The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel Psychology*, *39*, 291-314.

George, D., & Mallery, P. (2003). SPSS for Windows step-by-step: A simple guide and reference (4th edition, 11.0 update). Boston, MA: Allyn & Bacon.

Gollwitzer, P.M. (1986). Striving for specific identities: The social reality of self-

symbolizing. In R. Baumeister (Ed.), *Public self and private self*. New York City, NY: Springer-Verlag.

Hackfort, D., & Schlattmann, A. (1991). Functions of emotion presentation in sport. In D. Hackfort (Ed.), *Research on emotions in sport*. Köln, Germany: Strauss.

Hackfort, D., & Schlattmann, A. (2005). Self-presentation with a special emphasis on emotion-presentation: Concept, methods, and intervention strategies. In D. Hackfort, J.L. Duda, & R. Lidor (Eds.), *Handbook of research in applied sport & exercise psychology: International perspectives*. Morgantown, WV: Fitness Information Technology.

Halbert, C. (1997). Tough enough and woman enough: Stereotypes, discrimination, and impression management among women professional boxers. *Journal of Sport and Social Issues*, **21**, 7-36.

Hogan, R., & Briggs, S.R. (1986). A socioanalytic interpretation of the public and private selves. In R.F. Baumeister (Ed.), *Public self and private self*. New York City, NY: Springer-Verlag.

Hooper, D., Coughlan, J., & Mullen, M.R. (2008). Structural equation modelling: Guidelines for determining model fit. *The Electronic Journal of Business Research Methods*, *6*, 53-60, available online at www.ejbrm.com, ISSN 1477-7029.

Horn, J.L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30,* 179-185.

Hoyle, R.H. (1991). Evaluating measurement models in clinical research: Covariance structure analysis of latent variable models of self-conception. *Journal of Consulting and Clinical Psychology*, *59*, 67-76.

Hu, L., & Bentler, P.M. (1998). Fit indices in covariance structure modeling: sensitivity to underparameterized model misspecification. *Psychological Methods*, **3**, 424-453.

Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional versus new alternatives. *Structural Equation Modeling*, **6**, 1-55.

Hudson, J., & Williams, M. (2001). Associations between self-presentation and competitive A-trait: A preliminary investigation. *Social Behavior and Personality*, *29*, 1-9.

James, B., & Collins, D. (1995). Creating an impression: The processes and importance of impression management in competitive sport. *Journal of Sport and Exercise Psychology*, *17*, S12.

James, B., & Collins, D. (1997). Self-presentational sources of competitive stress during performance. *Journal of Sport and Exercise Psychology*, *19*, 17-35.

Johansson, A. (2010). Selections to top-level sport teams. *Pedagogiska Rapporter, 83*, Pedagogiska institutionen, Umeå Universitet. ISBN: 978-91-7459-019-7; ISSN: 1403-6169.

Jones, R.L. (2006). Dilemmas, maintaining 'face' and paranoia: An average coaching life. *Qualitative Inquiry*, **12**, 1012-1021.

Jöreskog, K.G., & Sörbom, D. (1996). LISREL 8: Structural equation modeling with the SIMPLIS command language. Lincolnwood, IL: Scientific Software International.

Kenny, D.A. (1998). Structural models with latent variables. Retrieved from http://davidakenny.net/cm/sem.htm

Lamont-Mills, A., & Christensen, S.A. (2006). Athletic identity and its relationship to sport participation levels, *Journal of Science and Medicine in Sport*, *9*, 472-478.

Leary, M.R. (1983). *Understanding social anxiety: Social, personality, and clinical perspectives*. Beverly Hills, CA: Sage.

Leary, M.R. (1992). Self-presentational processes in exercise and sport. *Journal of Sport and Exercise Psychology*, *14*, 339-351.

Leary, M.R. (1995). *Self-presentation: Impression management and interpersonal behavior*.

Boulder, CO: Westview.

Leary, M.R., & Atherton, S.C. (1986). Self-efficacy, social anxiety, and inhibition in interpersonal encounters. *British Journal of Social and Clinical Psychology*, *4*, 256-267.

Leary, M.R., & Kowalski, R.M. (1990). Impression management: A literature review and two-component model. *Psychological Bulletin, 107,* 34-47.

Leary, M.R., Nezlek, J.B., Downs, D.L., Radford-Davenport, J., Martin, J., & McMullen, A. (1994). Self-presentation in everyday interactions. *Journal of Personality and Social Psychology*, *67,* 664-673.

Li, L., & Bentler, P.M. (2006). Robust statistical tests for evaluating the hypothesis of close fit of misspecified mean and covariance structural models. University of California at Los Angeles, Department of Statistics, *Pre-print # 494*.

Maddux, J.E., Norton, L.W., & Leary, M.R. (1988). Cognitive components of social anxiety: An investigation of the integration of self-presentation theory and self-efficacy theory. *Journal of Social and Clinical Psychology*, *6*, 180-190.

Markland, D., & Oliver. E.J. (2008). The Sociocultural Attitudes Towards Appearance Questionnaire-3: A confirmatory factor analysis. *Body Image: an International Journal of Research, 5,* 116-121.

Marsh, H.W., Balla, J.R., & McDonald, R.P. (1988). Goodness-of-fit indices in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin, 102,* 391-410.

Marsh, H.W., Hau, K-T., & Wen, Z. (2004). In search of Golden Rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling,* **11**, 320-341.

Martin Ginis, K.A., Lindwall, M., & Prapavessis, H. (2007). "Who cares what other people

think?": Self-presentation in exercise and sport. In G. Tenenbaum & R.C. Eklund (Eds.), *Handbook of sport psychology* (3rd edition). New Jersey: John Wiley and Sons, Inc.

McGowan, E., Prapavessis, H., & Welch, N. (2008). Self-presentational concerns and competitive anxiety. *Journal of Sport and Exercise Psychology, 30*, 383-401.

O'Connor, B. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments, and Computers, 32*, 396-402.

Payne, S.M. & Greenlees, I. (2007). Self-presentation and competitive state anxiety. Annual conference of the British Association of Sport and Exercise Sciences, *Journal of Sports Sciences, 25*, 322.

Prapavessis, H., Grove, J.R., & Eklund, R.C. (2004). Self-presentational issues in competition and sport. *Journal of Applied Sport Psychology, 16*, 19-40.

Reynolds, W.M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne social desirability scale. *Journal of Clinical Psychology, 38*, 119-125.

Rummel, R.J. (1970). *Applied factor analysis*. Evanston, IL: Northwestern University Press.

Sadalla, E.K., Linder, D.E., & Jenkins, B.A. (1988). Sport preference: A self-presentational analysis. *Journal of Sport & Exercise Psychology*, **10**, 214-222.

Schafer, J.L., & Graham, J.W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*, 147-177.

Schlenker, B.R. (1980). *Impression management: The self-concept, social identity, and interpersonal relations*. Monterey, CA: Brooks/Cole.

Schlenker, B.R., & Leary, M.R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin*, *92*, 641-669.

Schneider, D.J. (1969). Tactical self-presentation after success and failure. *Journal of*

Personality and Social Psychology, *13*, 262-268.

Schneider, D.J. (1981). Tactical self-presentations: Toward a broader conception. In J.T. Tedeschi (Ed.), *Impression management theory and social psychological research*. New York City, NY: Academic Press.

Schreiber, J.B., Stage, F.K., King, J., Nora, A., & Barlow, E.A. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *Journal of Educational Research, 99,* 323-337.

Steiger, J.H., & Lind, J.C. (1980). Statistically-based tests for the number of common factors. Paper presented at the annual spring meeting of the Psychometric Society in Iowa City, May 30, 1980.

Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd edition). Mahwah, NJ: Lawrence Erlbaum Associates.

Tetlock, P.E., & Manstead, A.S.R. (1985). Impression management versus intrapsychic explanations in social psychology: A useful dichotomy. *Psychological Review, 92,* 59-77.

Tice, D.M. (1992). Self-presentation and self-concept change: The looking-glass self is also a magnifying glass. *Journal of Personality and Social Psychology*, **63**, 435-451.

Tinsley, H.E.A., & Tinsley, D.J. (1987). Uses of factor analysis in counseling psychology research. *Journal of Counseling Psychology*, *34,* 414-424.

Tucker, L.R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38,* 1-10.

Velicer, W.F. (1976). Determining the number of components from the matrix of partial correlations. *Psychometrika, 41,* 321-327.

Velicer, W.F., Eaton, C.A., & Fava, J.L. (2000). Construct Explication through Factor or

Component Analysis: A Review and Evaluation of Alternative Procedures for Determining the Number of Factors or Components (pp. 41-71). In R.D. Goffin & E. Helmes (Eds.), *Problems and Solutions in Human Assessment: Honoring Douglas Jackson at Seventy*. Boston, MA: Kluwer.

Velicer, W.F., & Fava, J.L. (1998). Effects of variable and subject sampling on factor pattern recovery. *Psychological Methods, 3,* 231-251.

Williams, M., Hudson, J., & Lawson, R.J. (1999). Self-presentation in sport: Initial development of a scale measuring athletes' competitive self-presentation concerns. *Social Behavior and Personality*, *27*, 487-502.

Wilson, P., & Eklund, R.C. (1998). The relationship between competitive anxiety and self-presentational concerns. *Journal of Sport and Exercise Psychology, 20,* 81-97.

Wong, E.H., Lox, C.L., & Clark, S.E. (1993). Relation between sports context, competitive trait anxiety, perceived ability, and self-presentation confidence. *Perceptual and Motor Skills*, *76*, 847-850.

Woods, B., & Thatcher, J. (2009). A qualitative exploration of substitutes' experiences in soccer. *The Sport Psychologist, 23,* 451-469.

Wright, A. & Côté, J. (2003). A retrospective analysis of leadership development through sport. *The Sport Psychologist, 17,* 268-291.

Zanna, M.P., & Fazio, R.H. (1982). The attitude-behavior relation: Moving toward a third generation of research. In M.P. Zanna, E.T. Higgins, & C.P. Herman (Eds.), *Consistency in social behavior*. Hillsdale, NJ: Erlbaum.

Figure Captions

Figure 1. Example item from the IMSQ-T

Table 1

Impression motivation (IMO) scores in relation to socially desirable response score grouping (MCSDS-C)

	MCSDS-C score (0-13)		
	0-4	5-9	10-13
Study 2 (EFA)			
n	48	159	49
MCSDS-C mean (*SD*)	2.83 (1.19)	7.11 (1.36)	10.63 (0.81)
IMO mean (*SD*)	72.82 (10.28)	71.77 (11.78)	68.77 (10.66)
Study 3 (CFA)			
n	88	243	66
MCSDS-C mean (*SD*)	3.23 (0.94)	7.02 (1.34)	10.88 (0.97)
IMO mean (*SD*)	73.38 (11.94)	73.36 (12.02)	73.74 (13.32)

Table 2

IMSQ-T items, subscales and stems, means, standard deviations, standardized factor loadings and mean item loading for each primary factor

Subscale and item	Factor I	II	III	IV	M[#] (0-100)	SD[#]
I. Social identity development						
16. has a good attitude*	**.690**	-.083	.009	.147	83.4	15.9
20. is enthusiastic*	**.669**	-0.20	-.053	-.015	80.3	17.1
21. is constantly willing to learn*	**.691**	.077	.044	.050	81.4	17.4
26. is committed to the team*	**.630**	-.182	-.164	.100	86.3	14.0
28. is professional in their conduct*	**.744**	-.011	-0.70	-.158	75.0	21.0
29. is fair and a 'good sport'*	**.755**	.155	.271	.039	79.4	19.8
30. is professional in their play*	**.695**	.044	-0.55	.001	79.8	17.7
52. appear to be able to deal with pressure***	**.554**	.010	-.173	.009	80.1	14.9
Subscale item mean[#]					80.7	
Mean loading on primary factor	**.679**					
II. Avoidance of damaging impressions						
38. to avoid embarrassment**	.014	**.655**	.032	.081	60.9	30.7
50. avoid being criticised by coach as this will create a bad impression in the eyes of my team-mates***	.096	**.547**	-.228	.116	67.1	27.0
56. perform to the best of my ability, because I don't want to be ridiculed at the next practice***	.024	**.701**	-.142	.020	58.2	30.7
58. give reasonable excuses for *poor* performance, so that my team-mates don't view me negatively***	-.004	**.727**	.011	.013	52.2	28.7
Subscale item mean[#]					59.6	
Mean loading on primary factor		**.658**				
III. Avoidance of negative outcomes						
31. on my coach, so that he/she doesn't demote me to a lower team**	-.037	.085	**-.499**	.242	72.7	25.6
40. so that my coach is less likely to sub me after making silly mistakes **	.018	.284	**-.634**	-.040	68.6	26.7
42. when I am competing for selection**	.147	-.153	**-.585**	.197	83.8	17.2
46. on my coach so that he/she doesn't sub me out of the game in crucial situations**	.073	.103	**-.718**	-.063	72.1	25.7
Subscale item mean[#]					74.3	
Mean loading on primary factor			**-.609**			
IV. Self development						
3. then other people's impressions of me will match how I'd like to be thought of****	.002	.040	.051	**.581**	64.0	22.5
5. I wish to be respected by my team-mates****	.199	-.146	-.103	**.456**	77.2	17.4
9. the positive feedback I'll get makes me feel good ****	.007	.114	.020	**.652**	76.4	18.8
11. if others have confidence in me, so will I ****	-.065	.084	-.090	**.665**	70.4	24.7
Subscale item mean[#]					72.0	
Mean loading on primary factor				**.589**		

Note. Primary factor loadings are in bold font; all standardized factor loadings are significant at $p < .05$;
[#]Analyses start with $n = 282$ and with pairwise deletion of missing data, n ranges from 274 to 282 (item numbers correspond to the IMSQ-T_2

Item stems:

* "I am motivated to create a good impression of an athlete who…"
** "I am motivated to create a good impression…"
*** "I am motivated to…"
**** "I am motivated to create a good impression because…"

Table 3

Comparison of competing models

Change from original model	χ^2	RMSEA (90% CI)	CFI	IFI	TLI	# SRC ≥ ± 1.96	# XL
Original: 20-item IMSQ-T	550.024*	.076 (.069 to .083)	.849	.851	.825	27	11
Minus items 52 & 58	438.180*	.077 (.069 to .085)	.868	.869	.843	16	6
Minus item 11	468.661*	.074 (.066 to .081)	.866	.867	.843	28	11
Minus items 11, 29, 52, & 58	293.513*	.070 (.061 to .079)	.904	.905	.883	11	5
Minus items 11, 29, 42, 52, & 58	234.971*	.067 (.057 to .077)	.919	.920	.899	7	6
Final model: Deletion of 5 items (5, 29, 42, 52, & 58)	221.082*	.063 (.053 to .074)	.926	.927	.908	3	4

Note. RMSEA = root mean square error of approximation, CI = confidence interval for relevant point estimates, CFI = comparative fit index, IFI = incremental fit index, TLI = Tucker-Lewis index, SRC = standardized residual covariance, XL = number of relatively high cross-loading standardized regression weights; Item numbers correspond to the IMSQ-T_2.

* $p < 0.001$.

Table 4

Final model structure, descriptive statistics, factor correlations, and internal consistency following final CFA

Factor Item	SFL	Item uniqueness	$\bar{x}$ SFL	$\bar{x}$ SMC	Item $\bar{x}$ (SD)	$\bar{x}$ within-factor item correlations	I	II	III	IV
I. Social Identity Development			.644	.416	80.4	.415				
has a good attitude*	.684	.532			(17.8)		.805	.254	.367	.470
is enthusiastic*	.658	.567								
is constantly willing to learn*	.639	.592								
is committed to the team*	.635	.593								
is professional in their conduct*	.624	.610								
is professional in their play*	.626	.609								
II. Avoidance of Damaging Impressions			.703	.494	63.7	.494		.745	.826	.451
to avoid embarrassment**	.704	.520			(29.8)					
avoid being criticised by coach, as this will…***	.639	.494								
perform to the best of my ability…[avoid ridicule]***	.712	.504								
III. Avoidance of Negative Outcomes			.734	.541	70.6	.539			.778	.553
on my coach, so that he/she doesn't demote me…**	.661	.564			(28.4)					
so that my coach is less likely to sub me after…**	.793	.371								
on my coach, so that he/she doesn't sub me…crucial situations**	.747	.442								
IV. Self Development			.609	.378	69.9	.364				.622
then other people's impressions of me will match…****	.493	.757			(22.1)					
the positive feedback I'll get makes me feel good****	.685	.531								
if others have confidence in me, so will I****	.649	.579								

Note. Item uniqueness = 1 – estimated Squared Multiple Correlation (SMC) of the item: it represents the variance of an item not shared with other items on the measure; all Standardized Factor Loadings (SFL) are significant at $p < .05$; Cronbach's alpha coefficients on the principal diagonal of the factor correlation matrix

Item stems:

* "I am motivated to create a good impression of an athlete who…"

** "I am motivated to create a good impression…"

*** "I am motivated to…"

**** "I am motivated to create a good impression because…"

1