"I *think* they believe in me": The predictive effects of teammate- and classmate-focused relation-inferred self-efficacy in sport and physical activity settings

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Abstract

Despite the prevalence of group-/team-based enactment within sport and physical activity settings, to this point the study of relation-inferred self-efficacy (RISE) has been focused upon estimations regarding a single target individual (e.g., one's coach). Accordingly, researchers have not yet considered whether individuals may also form RISE estimations regarding the extent to which the others in their group/team as a whole are confident in their ability. We applied structural equation modeling analyses with cross-sectional and prospective data collected from members of interdependent sport teams (studies 1 and 2) and undergraduate physical activity classes (studies 3 and 4), with the purpose of exploring these group-focused RISE inferences. Analyses showed that group-focused RISE perceptions (a) predicted individuals' confidence in their own ability, (b) were empirically distinct from conceptually-related constructs, and (c) directly and/or indirectly predicted a range of downstream outcomes over and above the effects of other efficacy perceptions. Taken together, these findings provide preliminary evidence that individuals' group-focused RISE appraisals may be important to consider when investigating the network of efficacy perceptions that develops in group-based physical activity contexts.

Key words: Intentions; participation; relational efficacy; RISE; tripartite efficacy

"I *think* they believe in me": The predictive effects of teammate- and classmate-focused relation-inferred self-efficacy in sport and physical activity settings

Grounded in the agentic perspective that underpins social cognitive theory, Bandura (1997) theorized that one's confidence in one's ability within a given domain (i.e., self-efficacy) acts as a primary determinant of achievement outcomes. Empirical support for this notion spans multiple goal-pursuit contexts; individuals who believe strongly in their capabilities have been shown to display elevated performance accomplishments relative to their inefficacious counterparts in settings that include, but are not limited to, sport (see Feltz, Short, & Sullivan, 2008), education (e.g., Pajares, 1996), and the workplace (e.g., Judge, Jackson, Shaw, Scott, & Rich, 2007). Aside from performance- and achievement-related implications, individuals who hold strong self-efficacy perceptions also tend to display a range of cognitive, emotional, and effortful responses that further facilitate effective goal-directed behavior. For example, a strong belief in one's ability has been shown to align with greater effort and persistence in athletic (e.g., Hutchinson, Sherman, Martinovic, & Tenenbaum, 2008) and educational (see Zimmerman, 2000) pursuits, as well as reduced occupational turnover intentions (e.g., Schaubroeck, Lam, & Xie, 2000). Favorable self-efficacy beliefs also coincide with desirable affective states within those same contexts (e.g., greater satisfaction, and reduced, or more favorable interpretations of, anxiety; Hanton, Mellalieu, & Hall, 2004; Judge & Bono, 2001; Putwain, Sander, & Larkin, 2013), and have been shown to accompany heightened perceptions regarding the value of the activity in question (e.g., Bong, 2001).

Although extensive empirical evidence has accumulated regarding the implications associated with individuals' beliefs about their own ability, less attention has been directed toward the nature and consequences of the other efficacy perceptions that develop specifically within interpersonal and/or instructional interactions. Group- and/or team-based enactment is prevalent in sport and physical activity settings, and in such cases, effective functioning relies not only on individuals' beliefs in their own ability, but also in part upon on the extent to which they believe the others with whom they interact are confident in their ability in that domain. Based on this premise,

Lent and Lopez (2002) presented a *relational efficacy* framework, in which they contended that, in situations where individuals work alongside or relinquish control to others, they develop salient interpersonal efficacy perceptions that complement their confidence in their own ability.

Lent and Lopez (2002) articulated specifically that, within didactic (e.g., coach-athlete, teacher-student) and coactive (e.g., relationships with teammates, classmates) settings, as individuals internalize the behavioral cues provided by those with whom they interact, they develop inferences regarding the degree to which those others are confident in their ability. In sport partnerships, for instance, alongside an athlete's confidence in his/her own ability, that person might also gauge the opportunities, feedback, and non-verbal cues that his/her teammate provides, in order to estimate the partner's confidence in his/her (i.e., the focal athlete's) ability. Lent and Lopez referred to this construct as *relation-inferred self-efficacy* (RISE), and drew from extant metaperception literature (see Kenny & DePaulo, 1993) to posit that favorable RISE inferences (whether accurate or not) should bolster individuals' confidence in their own ability, and also be independently responsible for promoting adaptive outcomes. In particular, when individuals infer that another (or others) believe/s strongly in their ability, Lent and Lopez contended that this inference might alleviate stress levels, promote adaptive coping efforts, and encourage perceptions of support and positive affective responses. Moreover, by instilling a sense of appreciation, fostering strengthened relational ties, and providing affirmation for one's actions (at least in the mind of the perceiver), favorable RISE appraisals are proposed to be responsible for greater feelings of satisfaction and strengthened persistence intentions.

The earliest empirical support for these effects was provided by Lopez and Lent (1991), who demonstrated that members of college dating couples reported greater expected persistence for their relationship when they felt that their partner believed strongly in their relationship management skills. More recently, work with athlete doubles partnerships has shown that favorable RISE perceptions about one's playing partner align with more adaptive relationship perceptions (e.g., relationship commitment, satisfaction), as well as positive affective and motivational responses for

the holder of the appraisal (Jackson, Knapp, & Beauchamp, 2008). In addition, investigations utilizing structural equation modeling have provided some evidence supporting the theorized dual-role of individuals' RISE inferences. For instance, high school students' RISE estimations regarding their physical education teacher's confidence in their ability not only align directly with greater leisure-time physical activity, but also *indirectly* by promoting more positive perceptions regarding their confidence in their own ability in physical education (Bourne et al., in press; Jackson, Whipp, Chua, Dimmock, & Hagger, 2013).

Taken together, these investigations have provided some support for the proposed nature of RISE inferences. Empirical attention to this point, however, has been directed exclusively toward RISE estimations regarding a *single* target individual (e.g., one's coach, teacher, therapist, playing partner), and researchers have not yet considered whether, in group and team environments, individuals may also form RISE estimations regarding the extent to which the others in their group/team *as a whole* are confident in their ability (e.g., "do my teammates, as a whole, believe me to be capable?"). With that in mind, our overarching aim within this multi-study investigation was to examine whether individuals' group-/team-focused RISE appraisals may directly and/or indirectly (via self-efficacy) predict a range of cognitive, affective, and behavioral outcomes. Additionally, we sought to determine whether this 'group-focused' metaperception was empirically distinguishable from the 'single-target' RISE appraisals that individuals hold in these settings (e.g., to what extent are RISE estimations about one's physical activity classmates and one's instructor empirically distinct from one another?). In doing so, we also aimed to examine the extent to which predictive effects for group-focused RISE inferences would be observed when controlling for the effects associated with relevant single-target RISE appraisals that have been shown to be salient in these contexts (e.g., to what extent do individuals' estimation about their teammates' confidence in their ability predict self-efficacy and downstream outcomes when controlling for the RISE beliefs they hold in relation to their coach?).

Theoretical and Empirical Support for Group-focused Inferences

Although the study of group-/team-focused RISE inferences is not well established, the social psychology literature provides substantial support for the notion that individuals may form a global appraisal regarding the thoughts, values, and/or perceptions of groups of others with whom they interact. For example, in relation to inferential processes in general, the notion of the 'generalized other' (Mead, 1934) indicates that individuals may estimate how others as a whole view some aspect of their person. In addition, in their review of metaperceptions within work contexts, King, Kaplan, and Zaccaro (2008) contended that, through the interpretation of the behaviors of those within their work group, individuals might form appraisals regarding their colleagues' collective thoughts about them (e.g., 'what do they think of me?'), which might account for important personal (e.g., self-esteem, affective responses) and relational (e.g., feelings of connection to the group) outcomes (see also Wallace & Tice, 2012). The prevalence of group-wide inferences regarding others' thoughts and values are also acknowledged in well-established models of behavior and identity formation. For example, sociometer theorists (Leary & Baumeister, 2000) recognize that self-esteem develops, in part, out of the extent to which individuals feel socially accepted by others (as a collective), and research on the notion of peer acceptance within sport (e.g., Moran & Weiss, 2006) and education (e.g., Cox, Ullrich-French, Madonia, & Witty, 2011) settings has demonstrated that individuals make appraisals regarding the extent to which they are accepted (or excluded) by the rest of their team/classmates as a whole. Moreover, within the theory of planned behavior, Ajzen (1991) specified that behavior is distally underpinned by individuals' impressions regarding the degree to which they believe significant others value or encourage one's engagement in a behavior (i.e., subjective norms); this aspect of Ajzen's framework is often operationalized in terms of one's perceptions regarding the generalized views/thoughts of a group of significant others (e.g., inferring the views of one's classmates as a whole; Martin et al., 2005).

Alongside the evidence described above, the most compelling support for group-focused RISE appraisals exists within the literature on the reflected appraisal process (Felson, 1993). Rooted in the symbolic interactionist tradition (Mead, 1934), the reflected appraisal process

emphasizes that our self-concept develops as a result of the way in which we think we are viewed by others, and that we may make overarching inferences regarding the thoughts/appraisals of groups of others (e.g., our classmates, teammates, parents, or peers). Although reflected appraisals encompass inferences about diverse self-concept dimensions (e.g., popularity, appearance, competence), research has been conducted into reflected appraisals relating to how one's competence is viewed by others within sport and education. In particular, it has been demonstrated that individuals report greater perceptions of self-competence when they believe that their teammates (e.g., Amorose, 2002, 2003; Trouilloud & Amiel, 2011) or classmates (e.g., Bouchey & Harter, 2005) as a whole hold positive views regarding their competence.

The symbolic interactionist literature, therefore, provides further support for the existence of an overarching group-focused RISE estimation. That said, there are important substantive differences between the reflected appraisal process and the nature of RISE that warrant the examination of group-focused RISE estimations in their own right (see Lent & Lopez, 2002). First, reflected appraisals are much broader in scope than RISE estimations. Whereas reflected appraisals may develop in relation to multiple aspects of one's self-concept (Wallace & Tice, 2012), RISE inferences are rooted within self-efficacy theory (Bandura, 1997), and as such, develop with an explicit (and sole) emphasis on one's capabilities that is both domain- and temporally-specific. Second, the symbolic interactionist perspective focuses primarily on the formation of self-concept (on the basis of reflected appraisals), and as such, investigators in this area have not traditionally considered the potential for reflected appraisals to display effects upon downstream (e.g., behavioral, affective, interpersonal) outcomes. RISE, on the other hand, in addition to shaping one's self-efficacy, is theorized to also display a range of direct and indirect predictive effects in relation to an array of important outcomes (Lent & Lopez, 2002). These substantive distinctions between RISE and reflected appraisals also result in marked differences in the way in which these constructs are operationalized; most notably, given their broader nature, reflected appraisals are assessed in a manner that is inconsistent with the measurement of efficacy perceptions. For

example, reflected appraisals regarding one's competence are assessed with generic phrases such as, "my classmates believe that I am smart for my age" (Bouchey & Harter, 2005), and, "how skilled do your teammates think you are at your sport?" (Amorose, 2003). In contrast, and in line with Bandura's (2006) emphasis on domain and temporal specificity, the measurement of RISE requires a conceptual analysis of the sub-skills that exist within relevant activity/domain, in order to tap much more specifically into "task demands that represent gradations of challenges or impediments to successful performance" (Bandura, 2006, p.311).

The Present Studies

In summary, although RISE perceptions may complement self-efficacy and independently predict important outcomes within interpersonal contexts, research on this construct to date has focused solely on the inferences individuals hold with respect to single target (and often superordinate) individuals (e.g., one's coach). Within group-based scenarios, however, individuals may also develop RISE inferences regarding the extent to which those in their team/class, as a whole, believe them to be capable (or not). Despite supporting evidence within the symbolic interactionist literature (and other social psychology frameworks), the unique substantive and methodological features associated with RISE underscore the value of examining the predictive properties associated with group-focused RISE perceptions. In this investigation, we applied structural equation modeling analyses with data collected from members of interdependent sport teams (studies 1 and 2) and undergraduate physical activity classes (studies 3 and 4), with the purpose of exploring individuals' group-focused RISE inferences. The specific purpose and hypotheses associated with each study are presented in the respective sections; however, the overarching aims of this work were to explore whether group-focused RISE perceptions (a) predicted individuals' confidence in their own ability (while accounting for 'established' RISE perceptions that exist within each context), (b) were empirically distinct from other RISE appraisals that exist within each context, and from task self-efficacy and other related constructs (e.g., self-

presentational efficacy), and (c) directly and/or indirectly predicted cognitive, affective, and behavioral outcomes.

Study 1

Study 1 data were collected with members of interdependent sport teams, and as such, the group-focused RISE appraisal in this instance represented athletes' estimations regarding how confident their teammates (as a whole) were in their ability. Alongside this 'teammate-focused' perception, we also assessed athletes' estimations regarding their head coach's confidence in their ability (i.e., 'coach-focused RISE'), and their confidence in their own ability to perform effectively within their team. These data were designed to serve as a proof-of-principle test, in order to examine the predictive relationship between group-focused RISE perceptions and self-efficacy, while enabling us to also model the association between teammate- and coach-focused RISE, and to control for the role of coach-focused RISE in relation to self-efficacy (as well as gender; see Figure 1). Athletic teams are highly interdependent and are characterized by overt goal-directed behavior in the pursuit of a single collective outcome; we believed that these considerations would make group-focused RISE estimations particularly salient in this context. In line with theory (Lent & Lopez, 2002) and research (e.g., Jackson et al., 2013), we hypothesized that athletes' RISE perceptions would be positively related to one another, and would both be positively related to self-efficacy.

Method

Participants and procedure. Participants were 224 adolescent water polo players (M_{age} = 14.20 years, *SD* = 1.57 years, *n* = 146 males, 76 females; 2 did not report gender) recruited from 48 separate teams. Ethical approval was obtained prior to commencing the study, and during data collection all players completed a questionnaire at a time and place most convenient to them prior to the commencement of four targeted water polo competitions (i.e., Club National Championships for 14 & Under, 16 & Under, and 18 & Under, as well as the 16 & Under Queensland State Championships). Four weeks prior to each tournament, all team managers were provided with an

overview of the study and were asked to respond if they were interested in having their athletes participate in the research. Participating teams were mailed questionnaire packages via the team manager; each individual package included a questionnaire, reply-paid envelope, information sheet, consent form, and parental consent form. Prior to completing the questionnaire, all participants were assured of confidentiality, informed of their right to withdraw their participation at any time, and notified that they should seek parental approval/consent before they responded to any questions (participants were also notified that they should discard the questionnaire should their parents be unwilling to provide consent for their participation).

Measures.

Self-efficacy. An instrument was developed in order to measure athletes' self-efficacy beliefs. In line with recommendations for constructing self-efficacy scales (Bandura, 2006), we conducted a conceptual analysis in order to devise a domain-specific instrument that assessed a range of relevant behavioral, cognitive, and emotional sub-skills. First, a group of recreational (n = 6), regional (n = 8), state (n = 12), and national (n = 5) water polo athletes and coaches (n = 9) completed an open-ended questionnaire, in which they were asked to list "the main skills and tasks that you feel are required of an athlete in order to perform extremely well in your sport." Participants were instructed that their answers might reflect behavioral (e.g., perform well), self-regulatory (e.g., maintain concentration), emotional (e.g., stay calm), and interpersonal (e.g., communicate effectively) issues, and respondents were asked to "consider things that are really important for performance, but are not always easy to do" in order to ensure a sufficiently challenging range of items could be developed (cf. Bandura, 2006). All responses were coded by the first author, and were inspected to identify recurring themes. Ten distinct themes were identified, encompassing a range of intra-personal (e.g., technical factors, swimming speed) and interpersonal (e.g., effective communication with teammates) factors necessary for high performance. To operationalize athlete self-efficacy, the list of 10 items was presented following the instruction "at this point in time, please rate your confidence in your ability to…" Athletes were

asked to respond on a 5-point scale ranging from 1 (*no confidence at all*) to 5 (*complete confidence*), and example items included, "make correct decisions in pressure situations in competition," and, "communicate effectively with your teammates during competition" (a full list of items for this instrument and all other efficacy instruments is available from the first author on request). The composite reliability estimate (Raykov, 1997) for the measure derived from this instrument was .82.

RISE. To assess participants' RISE beliefs about their head coach, athletes were presented with the same 10 items that were used to measure self-efficacy, but were instructed, "at this point in time, please estimate how confident your head coach is in your ability to…" The conceptual separation between self-efficacy and RISE was also emphasized with the statement, "so, we're not focusing here on how confident you are in your own ability; we're focusing on whether you think your coach is confident in you or not. For example, you might not be all that confident yourself, but you might think that your coach has lots of confidence in you." Finally, in order to measure athletes' RISE beliefs about their teammates, participants were instructed, "at this point in time, please estimate how confident you think your teammates as a whole are in your ability to…" Again, athletes were reminded, "this estimation may or may not match your confidence in your own ability, or the confidence that you feel your coach has in you." The response scales for RISE instruments were identical to that which was employed for self-efficacy, and acceptable composite reliability estimates were obtained for measures derived from the teammate-focused (ρ = .88) and coach-focused (ρ = .89) RISE instruments.

Data analysis. As illustrated in Figure 1, a structural equation model was estimated using M*plus* Version 7.11 (Muthén & Muthén, 1998-2013). In light of athletes being nested within teams, we implemented a standard error correction for non-independence of observations (i.e., a 'Type = Complex' statement; Asparouhov & Muthén, 2006; Muthén & Muthén, 1998-2013), and missing data (which represented 0.03% of the entire data file) were handled using a full information maximum likelihood (FIML) method of estimation under the assumption that they were missing at

random. This assumption was tested using missing value analysis within SPSS Version 21 (cf. Little, 1988), which indicated that missing data were missing completely at random ($\chi^2(30) = 43.15$, $p = .06$). We specified a single model that included all measurement (i.e., indicators) and structural (i.e., predictive pathways) parameters. We used a maximum likelihood estimator with robust standard errors (MLR) that accounts for the biasing effects of non-normality and is appropriate for use with response scales that comprise five or more categories (Bandalos, 2014; Rhemtulla, Brosseau-Laird, & Savalei, 2012). Latent efficacy variables were each represented by 10 indicators, and we specified gender as a covariate in the model in order to estimate predictive pathways for RISE perceptions on self-efficacy while controlling for the potential effect of gender (cf. Lirgg, 1991). In addition, we specified a covariance pathway between latent teammate- and coach-focused RISE variables, and modeled residual covariances between respective self-efficacy and RISE items (e.g., residual covariance pathways between item one in each instrument) given the consistency in terms of item wording across measures (Byrne, 2012).

Given that there remains debate regarding the suitability of fit indices in making firm conclusions regarding model fit (e.g., Marsh, 2007), across all studies we implemented a multi-faceted approach in seeking to optimize (and gauge) model fit. Specifically, in addition to generating models that were consistent with theory, and utilizing modification indices to address potential misfit, we followed recommendations (Byrne, 2012; Hu & Bentler, 1999) by considering a range of indices when assessing overall (i.e., combined measurement and structural) model fit, namely the χ^2 goodness-of-fit index, comparative fit index (CFI), Tucker-Lewis index (TLI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA). For the CFI and TLI, values <0.90 were considered to indicate poor fit, values between 0.90 and 0.95 were considered to indicate acceptable fit, and values >0.95 were considered to indicate excellent fit. For the SRMR and RMSEA, values >0.08 were deemed to indicate poor fit, values between 0.05 and 0.08 were indicative of acceptable fit, and values <0.05 were indicative of excellent fit.

Results

Item-level skewness (range = -.21 to -.89) and kurtosis (range = -.61 to 1.32) estimates for all latent variable indicators identified no problematic distributional properties. Examination of the fit indices indicated that the data appeared to be an adequate fit for an initial model that included all measurement parameters and structural pathways, χ^2 (401) = 530.22, $p < .001$, CFI = .96, TLI = .95, SRMR = .064, and RMSEA = .038 (90% confidence interval .029 to .047). In this initial model, one self-efficacy item (i.e., "remain calm and control your emotions at all times") displayed a 'poor' factor loading (i.e., < .45; Comrey & Lee, 1992). In light of this poorly-fitting item and the significant chi-square value, we attempted to optimize model fit by removing this self-efficacy item and accounting for overly strict error covariance estimation (i.e., those that were incorrectly fixed to zero). We implemented this approach in line with Meehl's (1990) assertion that, at some level, all variables are related to all others, which is consistent with the theorized generality relations that exist between efficacy beliefs (Bandura, 1997).

Accordingly, we utilized the modification indices that were provided in our initial analysis in order to specify a number of measurement-based model improvements. Having dropped the poorly-fitting item and incorporated two feasible modifications to the measurement portion of the model (i.e., specifying error covariances between efficacy indicators), we observed a slight improvement in overall fit indices, χ^2 (372) = 463.42, $p < .01$, CFI = .97, TLI = .96, SRMR = .062, and RMSEA = .033 (90% confidence interval .022 to .043), which, with the exception of the significant chi-square value, were indicative of a relatively good-fitting model. For comparison purposes, the fit of a corresponding measurement-only model (in which all parameters were as described but without any structural pathways or covariates specified) was χ^2 (344) = 424.57, $p <$ .01, CFI = .97, TLI = .97, SRMR = .056, and RMSEA = .032 (90% confidence interval .020 to .042). Standardized factor loadings for the combined measurement and structural (plus gender covariate) model were in the range .47 to .70, .51 to .77, and .50 to .77 for self-efficacy, teammate-focused RISE, and coach-focused RISE, respectively. Controlling for gender, analyses revealed

significant predictive effects for both RISE variables in relation to self-efficacy; that is, athletes reported greater confidence in their own ability when they felt that their head coach and/or their teammates believed strongly in their ability (see Figure 1 for unstandardized/standardized coefficients and explained variance, and see Table 1 for 95% confidence intervals as an indication of the precision of all significant direct pathways). Teammate- and coach-focused RISE perceptions were positively related to one another (with a shared variance of approximately 55%), and alongside gender, accounted for 53% of the variance in self-efficacy scores.

Study 2

The results of study 1 provided preliminary evidence that teammate-focused RISE perceptions may predict individuals' confidence in their own ability (over and above the established role of coach-focused RISE estimations), and that teammate- and coach-focused RISE perceptions may be empirically distinguishable from one another (and from self-efficacy). That said, these data did not enable us to (a) examine whether the predictive effect for teammate-focused RISE upon self-efficacy remained when considering a more comprehensive network of covariates, or (b) investigate whether this peer-focused metaperception may display direct and/or indirect effects in relation to downstream outcomes other than self-efficacy. The data in study 2 were collected with the aim of addressing these limitations. Specifically, we included gender, participants' years of experience in their sport, and the length of time that they had been playing on their team as covariates in the model. As illustrated in Figure 2, we examined predictive pathways for RISE perceptions in relation to self-efficacy while controlling for all three relevant covariates (for support on the inclusion of these covariates when predicting self-efficacy, see Bandura, 1997; Feltz, Short, & Sullivan, 2008; Jackson, Knapp, & Beauchamp, 2009). In addition, we also controlled for (a) the potential effect of sport experience when modeling predictive effects for efficacy perceptions on all outcome variables, and (b) the potential effect of team tenure when modeling predictive effects specifically in relation to team-related outcomes (i.e., enjoyment and team-related intentions). Finally, we also accounted for the potential that participants' teammate- and coach-focused RISE

perceptions may have been predicted by the length of time that they had been a member of their team and their level of experience in their sport (cf. Jackson et al., 2009; Lent & Lopez, 2002). In line with the findings from study 1, and the existing relational efficacy literature (e.g., Jackson et al., 2008; Lopez & Lent, 1991), we anticipated that the structural pathways between variables that were of substantive interest (i.e., excluding covariates) would be positive in nature.

Method

Participants and procedure. Participants were 233 interdependent team sport athletes (M_{age} = 17.94, *SD* = 1.03, *males* = 138, *females* = 95) recruited from 24 recreational teams. Participants were recruited from soccer (*n* = 91), rugby (*n* = 61), basketball (*n* = 22), netball (*n* = 29), and volleyball (*n* = 30), and reported an average of 5.80 years experience in their sport (*SD* = 4.01), along with 2.33 years experience with their team (*SD* = 1.95). Having obtained ethical approval, an advertisement was mailed electronically to local sport teams to outline the details of the study (along with ethical assurances consistent with those described in study 1). Upon registering their interest to participate, a convenient time was arranged to visit each team in order to administer questionnaires at the start of a practice session. Prior to completing the questionnaire, all athletes were provided with procedural information and ethical assurances relating to the study, and gave their informed consent to participate in the investigation. Upon completing the questionnaire, all athletes aged 17 and under were given a parent information sheet providing information about the study, as well as a stamped addressed envelope in order for parents/guardians to retrospectively withdraw their son/daughter should they wish. Given the confidential, low-risk nature of the project, and the comprehension level of intended participants, the use of this 'passive' parental consent process was approved by the institutional review board (National Health and Medical Research Council, 2007).

Measures.

Self-efficacy and RISE. For self-efficacy, consistent with the item generation process outlined in study 1, we asked a group of recreational interdependent team sport athletes (*n* = 18) to

list "the main skills and tasks that you feel are required of an athlete in order to perform extremely well in your team sport." Athletes were again encouraged to reflect on behavioral, self-regulatory, emotional, and interpersonal factors, and were instructed to "consider things that are really important for effective performance in your team sport, but are not always easy to do." A list of 10 items was subsequently devised that was reflective of the primary/recurring themes that were present in the open-ended responses, and these 10 items were operationalized with the instruction, "at this point in time, please rate your confidence in your ability to…" Example items included, "perform the difficult technical skills involved in your sport," "communicate effectively with others at all times," and "make the correct decision at all times in competition." Having modified the instructions in line with the procedures outlined in study 1, the 10 items that were used in the self-efficacy instrument were also used to measure teammate- and coach-focused RISE. Statements were also included in the instructions to the RISE instruments that were consistent with those used in study 1. The response scale for self-efficacy and RISE instruments in this study was identical to that which was employed in study 1, and acceptable composite reliability estimates were obtained for measures derived from the self-efficacy ($\rho = .91$), teammate-focused RISE ($\rho = .90$), and coach-focused RISE ($\rho = .94$) instruments.

Enjoyment. Athletes reported the extent to which they enjoyed being on their team using the four enjoyment items (e.g., "I enjoy playing with this team very much") from the interest/enjoyment subscale of the Intrinsic Motivation Inventory (IMI; Ryan, 1982). The four enjoyment items were isolated on the basis of recommendations regarding the conceptual separation of interest and enjoyment (e.g., Dimmock, Jackson, Podlog, & Magaraggia, 2013). Responses were made on a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). Measures derived from the enjoyment subscale of the IMI have been shown to display adequate factorial and reliability properties in sporting contexts (e.g., McAuley, Duncan, & Tammen, 1989), and we observed an acceptable composite reliability estimate ($\rho = .95$) for the enjoyment measure in this investigation.

Intentions. We assessed athletes' intention to continue playing their *sport* the following season with the statement, "at this moment in time, I intend to play this sport next season." We also separately assessed athletes' intentions to remain with their *team*, using the statement, "at this moment in time, I intend to stay with this team next season." Athletes rated their intentions using a 9-point response scale ranging from 1 (*completely uncertain*) to 9 (*completely certain*). Single-item intention measures such as these have been widely used in sport and exercise contexts (e.g., Eys, Carron, Bray, & Beauchamp, 2005; Spink, 1995), and Eys et al. (2005) provided support for the predictive utility of single-item intention measures similar to those used in this study.

Data analysis. A structural equation model (see Figure 2) incorporating latent (i.e., RISE beliefs, self-efficacy, enjoyment) and observed (i.e., intention) variables was estimated using M*plus* Version 7.11. In line with the analysis procedures outlined in study 1, we implemented a correction for non-independence of observations, and there were no missing data in this study (given that a researcher was present to check for missing data during questionnaire completion). We specified a single model that included all measurement and structural parameters, and again used MLR estimation. RISE and self-efficacy variables were each represented by 10 indicators, with the latent enjoyment variable represented by four indicators. In addition to estimating direct pathways between variables of interest, we also requested all specific indirect pathways to be modeled between RISE perceptions and outcome variables (i.e., through self-efficacy). In gauging overall model fit, we considered the same fit indices and criteria that were described in study 1. As was the case in study 1, we sought to optimize model fit and account for non-zero covariances that may be expected in light of theorized relations between efficacy perceptions and these outcome variables (Bandura, 1997; Meehl, 1990); for the sake of brevity, we report only the final model fit indices below (i.e., those that we obtained following modifications to the measurement model).

Results

Skewness (range = -.93 to .17) and kurtosis (range = -.79 to .44) estimates for all items revealed no problematic distributional properties, and with the exception of the significant chi-

square value, the data were a relatively good overall fit for a measurement and structural model that incorporated modifications (to error covariances) based on initial modification indices, χ^2 (632) = 778.20, $p < .001$, CFI = .98, TLI = .97, SRMR = .047, and RMSEA = .032 (90% confidence interval .023 to .039). For comparison purposes, the fit of a corresponding measurement-only model (in which all parameters were as described but without any structural pathways or covariates specified) was χ^2 (536) = 669.10, $p < .001$, CFI = .98, TLI = .97, SRMR = .045, and RMSEA = .033 (90% confidence interval .024 to .040). Standardized factor loadings for the combined measurement and structural (plus covariates) model were in the range .68 to .76, .66 to .73, and .72 to .84 for self-efficacy, teammate-focused RISE, and coach-focused RISE, respectively. Controlling for gender, sport experience, and team tenure, analyses revealed significant predictive effects for both RISE variables in relation to self-efficacy (see Figure 2). Teammate- and coach-focused RISE perceptions were also positively related to one another (with a shared variance of approximately 32%), and alongside the covariates, collectively accounted for 70% of the variance in self-efficacy. Self-efficacy emerged as a significant predictor of both intention outcomes; specifically, athletes reported stronger intentions to remain with their team and to continue their sport participation when they were highly confident in their own ability. In addition, when athletes felt that their teammates believed strongly in their ability, they reported elevated enjoyment and stronger intentions to remain with their team (see Table 1 for 95% confidence intervals as an indication of the precision of all significant direct pathways). Alongside these direct effects, both RISE inferences displayed significant indirect effects in relation to both intention-based outcomes, through self-efficacy (see Table 2 for coverage of all specific indirect pathways).

Study 3

The results from study 2 demonstrated that, in team sport contexts, when controlling for coach-focused RISE as well as gender and relevant experiential variables, teammate-focused RISE perceptions align positively (and significantly) with self-efficacy. We also observed support for the notion that teammate-focused RISE estimations may align directly and indirectly with desirable

outcomes beyond individuals' confidence in their own ability (i.e., enjoyment, team-related intentions). Finally, the association between athletes' estimations regarding their head coach's and teammates' confidence in their ability provided further evidence that these perceptions represent empirically distinguishable (albeit related) constructs.

Our aim in study 3 was to extend this evidence by broadening our conceptual and contextual scope, and to implement a more robust methodological approach that would allow insight into prospective (rather than solely cross-sectional) relationships. Specifically, we transitioned from competitive sport teams to an examination of RISE perceptions held by undergraduate students within a physical activity class setting. In doing so, we shifted our focus of attention in order to explore RISE perceptions relating to one's instructor and one's classmates, and aimed to investigate the extent to which the previous findings generalized into a different sport-based context. We also aimed to broaden our understanding of potential outcomes by incorporating anxiety-related and attitudinal variables. Moreover, in study 3 we included an assessment of self-presentational efficacy alongside our task self-efficacy measure. Self-presentational efficacy reflects one's confidence in one's ability to portray a specific impression to others (see Leary, 1992), and in light of the nature of RISE appraisals (i.e., an estimation about another's or others' judgment/s of oneself), we included this construct for two reasons. First, we aimed to demonstrate that classmate-focused RISE perceptions were predictive of task self-efficacy over and above the generality relationship (i.e., positive association) that exists between task self-efficacy and self-presentational efficacy (see Fleming & Martin Ginis, 2004). Second, we sought to clarify the extent to which classmate-focused RISE and self-presentational efficacy represented empirically distinguishable constructs by modeling a covariance pathway between these variables. Finally, from a methodological perspective, our aim in study 3 was to utilize a three-wave design (split over three weeks) in order to (a) explore direct and indirect *prospective* effects for classmate-focused RISE with respect to outcome variables, and (b) separate the measurement of RISE and self-efficacy, in order to address concerns in studies 1 and 2 that the relationship between classmate-focused RISE

and self-efficacy may have been artificially inflated due to cross-sectional method effects (Podsakoff, MacKenzie, & Podsakoff, 2012). In line with the teammate-focused RISE effects that were observed in study 2, we hypothesized that students' classmate-focused RISE perceptions would align positively with affective and attitudinal outcomes both directly and indirectly (via significant predictive effects in relation to self-efficacy; see Figure 3).

Method

Participants and procedure. Participants were 340 undergraduates (M_{age} = 18.54, *SD* = .56, *males* = 176, *females* = 164) recruited from compulsory, graded tennis (8 classes) or swimming (8 classes) classes embedded within a kinesiology major. The 13-week (90 min/wk) classes were provided at the lead author's institution, and were designed to introduce students to (and allow them to practice) a series of technical and instructional skills relating to the focal activity. At the close of the course, undergraduates were graded in the form of a practical assessment, in which they undertook a series of technical and instructional tasks specific to their activity.

Upon receiving ethical approval to conduct the investigation, course coordinators for each activity class were contacted and were provided with an explanation of the study. Both coordinators agreed to allow their students to participate, and the first stage of data collection was scheduled for week 8 of the 13-week teaching period. This point in the semester was selected so as to ensure that (a) all students had an adequate frame of reference upon which to base their responses, and (b) all data were collected prior to the end-of-semester assessments in order to ensure that feedback received during the assessment did not induce discordance between predictor and outcome variables (e.g., the potential for efficacy beliefs and enjoyment/attitudes/anxiety to be modified by assessment feedback, and for this to disrupt relations between constructs had they been measured pre- and post-assessment). Having received an information sheet and provided their informed consent, participants reported demographic information along with their RISE perceptions regarding their class instructor and classmates at time 1. One week later at time 2, we assessed task self-efficacy and self-presentational efficacy beliefs, and the following week, at time 3, participants

reported their social physique anxiety and enjoyment regarding their classes, along with their instrumental attitudes relating to the focal activity (i.e., tennis or swimming).

Measures.

Self-efficacy and RISE. Students' confidence in their own ability was measured using seven items from an existing nine-item instrument that has been utilized previously to assess self-efficacy in undergraduate physical activity class contexts (Jackson, Myers, Taylor, & Beauchamp, 2012). Using a 5-point response scale consistent with previous studies, students were instructed to rate their confidence in their own ability on a number of key class requirements, including, "perform well in your swimming/tennis assessments," "be able to teach the skills you cover effectively to others," and, "learn all the skills and strokes you are taught, even the most difficult ones." We excluded two of the original items used by Jackson et al. (2012) in light of the factor loadings that these items (i.e., "be physically fit enough to perform well in this class," "follow instructions effectively at all times") displayed in their investigation; that is, these items displayed only 'fair' fit according to Comrey and Lee's (1992) recommendations. In line with the procedures outlined previously for the assessment of RISE beliefs, these seven items were used to measure undergraduates' estimations of their instructor's confidence in their ability ("at this moment in time, how confident do you think your swimming/tennis instructor is in your ability to..."), and to assess the extent to which they felt that their classmates' as a whole were confident in their ability ("at this moment in time, how confident do you think your classmates as a whole are in your ability to…"), and the standard instructions regarding conceptual separation between self-efficacy and RISE (and between each distinct form of RISE) were included. Acceptable composite reliability estimates were obtained for measures derived from the self-efficacy ($\rho = .90$), classmate-focused RISE ($\rho = .93$), and instructor-focused RISE ($\rho = .93$) instruments.

Self-presentational efficacy. We used Gammage and colleagues' (Gammage, Hall, & Martin Ginis, 2004) five-item self-presentation efficacy expectancy subscale to measure students' self-presentational efficacy beliefs. This instrument was developed for use specifically within

physical activity class settings, and utilizing the same 1 to 5 response format that was employed for all other efficacy measurements, participants were instructed, "right at this moment, how confident are you in your ability to present yourself to others so that…", followed by items including, "other people who see you in this swimming/tennis class think that you are in good shape," and, "other people who see you in this swimming/tennis class think that your body looks fit and toned." We used the 1 to 5 response format (as opposed to the 0 to 100 format that is often employed with this instrument) on the basis of research in sport contexts that has demonstrated support for condensed efficacy response formats (e.g., Myers, Wolfe, & Feltz, 2005). Extensive support for the internal consistency of this instrument has been reported previously (e.g., Lamarche & Gammage, 2010; Gammage et al., 2004), and we also observed an acceptable composite reliability estimate for the measure derived in this study ($\rho = .93$).

Social physique anxiety. Students' feelings of stress and apprehension about others evaluating their physical appearance were measured using the nine-item version of the Social Physical Anxiety Scale (SPAS; Martin, Rejeski, Leary, McAuley, & Bane, 1997). Participants were instructed to rate each statement according to how characteristic it was for them in their swimming or tennis class, using a response scale anchored at 1 (*not at all true*) and 5 (*extremely true*). Using the stem, "In my swimming/tennis classes," example items included, "I am uptight about my physique/figure," and, "I feel apprehensive about my physique/figure." Psychometric support has been documented regarding the unidimensional factor structure and internal consistency of the nine-item SPAS (e.g., Kruisselbrink, Dodge, Swanburg, & MacLeod, 2004; Martin et al., 1997), and in the present study we observed acceptable composite reliability estimate for this measure (i.e., $\rho = .97$).

Class enjoyment. Enjoyment was measured using the four-item IMI subscale as described in study 2, with contextual modifications made to ensure item representativeness (e.g., "I enjoy my swimming/tennis classes very much," "my swimming/tennis classes are fun to do"). Responses

were made on a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). We observed an acceptable composite reliability estimate (ρ = .92) for the enjoyment measure in this study.

Instrumental attitude. Three items were used to measure participants' instrumental attitudes toward their focal activity (i.e., swimming or tennis). Using a bipolar scale ranging from 1 to 7, participants were asked to respond to the statement, "Continuing my participation in swimming/tennis outside this class in the future would be...," followed by the anchors 'useless – useful', 'worthless – valuable', and 'harmful – beneficial'. An acceptable composite reliability estimate was obtained for this measure (ρ = .88).

Data analysis. A structural equation model (see Figure 3) incorporating all measurement and structural parameters was estimated using M*plus* Version 7.11; we again corrected for non-independence and used MLR estimation. Again, there were no missing data in this study (for those who provided data across all time points) as a research assistant was present to check for missing data during questionnaire completion. As illustrated in Figure 3, we examined predictive pathways for RISE perceptions in relation to self-efficacy while controlling for self-presentational efficacy, gender, and students' years of experience in their focal sport (i.e., formal involvement in swimming/tennis outside class). In addition, we also controlled for the potential effect of self-presentational efficacy and sport experience when modeling predictive effects for efficacy variables on anxiety, enjoyment, and attitudes. Finally, in line with the findings from study 2, we accounted for the potential that participants' classmate- and instructor-focused RISE perceptions may have been predicted by their experience in the focal activity. Again, we specified direct pathways alongside indirect pathways for RISE in relation to outcome variables (through self-efficacy). Consistent with our approach in study 2, the fit indices reported below refer to those that we observed following modifications that were made to the measurement portion of the model.

Results

Item-level skewness (range = -.84 to .77) and kurtosis (range = -.89 to .58) estimates revealed no problematic distributional properties, and with the exception of the significant chi-

square value, the data were a relatively good overall fit for a measurement and structural model that incorporated modifications (to error covariances) based on initial modification indices, χ^2 (825) = 1022.57, $p < .001$, CFI = .98, TLI = .98, SRMR = .045, and RMSEA = .027 (90% confidence interval .021 to .032). For comparison purposes, the fit of a corresponding measurement-only model (in which all parameters were as described but without any structural pathways or covariates specified) was χ^2 (576) = 738.03, $p < .001$, CFI = .98, TLI = .98, SRMR = .045, and RMSEA = .029 (90% confidence interval .022 to .035). Standardized factor loadings for the combined measurement and structural (plus covariates) model were in the range .43 to .90, .63 to .89, and .57 to .88 for self-efficacy, classmate-focused RISE, and instructor-focused RISE, respectively. Accounting for covariates, undergraduates' RISE estimations both displayed significant predictive effects in relation to their confidence in their own ability (see Figure 3, and Table 1 for 95% confidence intervals as an indication of the precision of all significant direct pathways), and classmate- and instructor-focused RISE appraisals were positively related to one another (shared variance approximately 46%). A significant correlation also emerged between both RISE inferences and self-presentational efficacy, although the degree of shared variance (i.e., 15% for instructor-focused RISE and 27% for classmate-focused RISE) supported an empirical distinction between these constructs.

When controlling for all other efficacy constructs, students' instructor-focused RISE beliefs did not display direct effects in relation to any downstream outcomes. Significant effects did emerge, however, for the other efficacy predictors in the model. Students' confidence in their own ability (i.e., task self-efficacy) aligned positively with self-presentational efficacy, and also predicted greater class enjoyment and more positive attitudes toward the focal activity. Moreover, when students estimated that their classmates were highly confident in their ability (i.e., classmate-focused RISE), this perception predicted greater class enjoyment and more favorable attitudinal responses (we also observed a *p* value of .052, 95% confidence interval -.279 to .001, for the pathway between classmate-focused RISE and social physique anxiety). Finally, although not a

pathway of substantive interest, we also observed an additional direct (and negative) pathway between self-presentational efficacy and social physique anxiety. As indicated in Table 2, both RISE constructs aligned indirectly with enhanced enjoyment and adaptive attitudes (through self-efficacy).

Study 4

Our analyses within study 3 served to replicate as well as extend the findings documented within team sport contexts. In particular, our design enabled us to identify support for direct and indirect *prospective* effects associated with peer-focused RISE in a novel context, and broadened our understanding of the variables with which this metaperception may align (i.e., attitudinal and anxiety-based responses). These findings also provided preliminary evidence that (a) peer- (and instructor-) focused RISE beliefs predicted self-efficacy despite being measured at different time points, (b) peer- and instructor-focused RISE estimations appeared to be empirically distinguishable from self-presentational efficacy, and (c) the predictive effects of peer-focused RISE beliefs remained even when controlling for self-presentational efficacy. To this point, however, our examination of potential outcomes relied solely on self-report methods. Our aim in study 4, therefore, was to explore whether peer-focused RISE beliefs – alongside instructor-focused RISE, self-efficacy, and relevant covariates – predicted students' in-class achievement (i.e., their performance on end-of-semester assessment) within undergraduate physical activity classes (see Figure 4). In line with previous relational efficacy research that has examined undergraduate achievement outcomes (Jackson et al., 2012), we anticipated that students' classmate-focused RISE would display significant indirect effects upon in-class achievement.

We also included participants' in-class enjoyment perceptions within our study 4 model on empirical grounds. Most notably, Jackson et al. (2012) reported a significant predictive effect for enjoyment upon in-class achievement in undergraduate physical activity classes; accordingly, we sought to control for this effect when exploring the potential direct relationship between RISE appraisals and achievement. Moreover, given that classmate-focused RISE and self-efficacy

emerged as significant predictors of enjoyment in study 3, we included predictive pathways from these efficacy variables to enjoyment to ensure concordance between studies 3 and 4, and to enable us to model potential indirect effects (via enjoyment) for these constructs upon achievement. In line with the findings for enjoyment that were reported by Jackson et al., and those that were observed in study 3, we hypothesized that a significant indirect pathway would emerge between classmate-focused RISE and achievement, via in-class enjoyment.

Method

Participants and procedure. We recruited 269 undergraduates (M_{age} = 19.69, *SD* = 1.75, *males* = 149, *females* = 120), separate from those that participated in study 3, but again drawn from 10 compulsory, graded classes (six tennis and four swimming classes) embedded within a kinesiology major. Ethical approval was obtained, and the procedures for study 4 were consistent with those outlined for study 3, with the exception that the first stage of data collection was scheduled for week 10 (rather than week 8 as in study 3) of the 13-week teaching period. Having received an information sheet and provided their informed consent, participants reported demographic information along with their RISE perceptions regarding their class instructor and classmates at time 1. One week later at time 2, we assessed task self-efficacy, class enjoyment, and self-presentational efficacy beliefs, and the following week, at time 3, participants took part in their end-of-semester assessment. Specifically, students in both activities completed a 20-minute practical exam, during which they undertook a series of technical and instructional tasks specific to their focal activity (see Jackson et al., 2012). Within their assessment, students were required to execute a series of technical skills (i.e., tennis or swimming strokes), and to provide instruction and diagnostic feedback to another student on that person's technical tennis/swimming skill execution.

Measures.

Self-efficacy, RISE, and self-presentational efficacy. Students' self-efficacy and RISE perceptions were measured using the same seven-item instrument (and 5-point response format) that was employed in study 3, and self-presentational efficacy was again measured using the same five-

item instrument. Acceptable composite reliability estimates were obtained for self-efficacy (ρ = .92), classmate-focused RISE (ρ = .93), instructor-focused RISE (ρ = .93), and self-presentational efficacy (ρ = .92).

Class enjoyment. Enjoyment was again measured using the four-item IMI subscale (with the same 7-point response format) as employed in study 3, and we observed an acceptable composite reliability estimate (ρ = .95) for the enjoyment measure in this study.

Student achievement. Student achievement (i.e., technical proficiency and instructional/diagnostic ability) in each activity setting was rated by an expert male observer (i.e., two observers across the entire sample). Both observers were unaware of the specific purpose of the investigation, and both had at least 10 years experience assessing student achievement in undergraduate tennis or swimming classes. An aggregate percentage score was calculated for each student following the completion of each of the assessment components, and a single standardized index (i.e., z-scored relative to those in the same activity) was used for further analyses.

Data analysis. We specified a structural equation model with direct and indirect effects in M*plus* Version 7.11 consistent with Figure 4; we again corrected for non-independence, treated missing data (which represented 0.06% of the entire data file) using FIML, and used MLR estimation. Our missing data assumption was tested using missing value analysis within SPSS Version 21 (cf. Little, 1988), which indicated that missing data were missing completely at random ($\chi^2(35) = 39.22$, $p = .29$). We included several covariates in light of our previous findings. First, we modeled the predictive effects for RISE on self-efficacy while controlling for relationships with gender, participants' experience in tennis/swimming, and self-presentational efficacy. Second, we specified covariance pathways between both RISE variables and self-presentational efficacy, as well as accounting for the predictive effect of sport experience on both RISE perceptions (see significant coefficients observed in study 3). As in the previous studies, below we report the fit indices that were observed following data-driven modifications to the measurement portion of the model.

Results

Item-level skewness (range = -.52 to .26) and kurtosis (range = -.88 to .08) estimates revealed no problematic distributional properties, and with the exception of the significant chi-square value, the data were a relatively good overall fit for a measurement and structural model that incorporated modifications (to error covariances) based on initial modification indices, χ^2 (407) = 561.96, $p < .001$, CFI = .98, TLI = .98, SRMR = .051, and RMSEA = .038 (90% confidence interval .030 to .045). For comparison purposes, the fit of a corresponding measurement-only model (in which all parameters were as described but without any structural pathways or covariates specified) was χ^2 (172) = 222.21, $p < .01$, CFI = .99, TLI = .99, SRMR = .034, and RMSEA = .033 (90% confidence interval .018 to .045). Standardized factor loadings for the combined measurement and structural (plus covariates) model were in the range .53 to .90, .60 to .93, and .50 to .92 for self-efficacy, classmate-focused RISE, and instructor-focused RISE, respectively. Undergraduates' RISE estimations both displayed significant predictive effects in relation to their confidence in their own ability (see Figure 4, and Table 1 for 95% confidence intervals as an indication of the precision of all significant direct pathways), and classmate- and instructor-focused RISE appraisals were positively related to one another (shared variance approximately 34%). In this study, self-presentational efficacy perceptions shared approximately 32% and 13% of variance with classmate- and instructor-focused RISE, respectively. Neither RISE variable emerged as a direct predictor of in-class achievement; however, when controlling for potential covariate effects on both self-efficacy and achievement scores, both RISE metaperceptions were linked with greater end-of-semester assessment performance (relative to others in one's activity) via indirect pathways that operated through enhanced self-efficacy (see Table 2, as well as direct pathways from RISE beliefs to self-efficacy, and self-efficacy to achievement in Figure 4).

Aside from achievement-related pathways, and consistent with the findings reported in study 3, we observed significant predictive effects for self-efficacy and classmate-focused RISE perceptions in relation to in-class enjoyment (see Figure 4). With that in mind, it is also worth

noting that the indirect pathway from classmate-focused RISE to achievement, which excluded self-efficacy, also approached significance (i.e., classmate-focused RISE → enjoyment → achievement; standardized estimate = .053, unstandardized estimate = .083, SE = .029, 95% CI = -.004, .109, p = .06). Collectively, the primary variables and covariates accounted for approximately 35% of the variance in in-class achievement. These findings demonstrated the potential indirect behavioral implications of classmate-focused RISE, even when modeled alongside a network of demographic and psycho-social covariates drawn from theory, previous research, and the conclusions of studies 1 to 3.

General Discussion

The functional significance of individuals' estimations about the thoughts of significant others (i.e., metaperceptions) is well documented (Kenny & DePaulo, 1993; King et al., 2008); however, the study of metaperceptions from an efficacy-based (Bandura, 1997) perspective has been relatively sparse. Addressing this issue, Lent and Lopez (2002) proposed that when individuals work alongside others within relational and group-based settings, the formation of one such metaperception (namely, their RISE appraisals) not only facilitates individuals' confidence in their own ability, but is also important in predicting personal performance and well-being in that domain. To date, researchers have focused their efforts on exploring the extent to which people estimate that individual figures (e.g., a coach, teacher) believe them to be capable (or not), while overlooking the unique implications associated with the group-wide inferences that also develop in team-/class-based scenarios. Our aim was to explore the nature of this interpersonal perception relative to the network of efficacy beliefs that exists in interpersonal settings (e.g., task self-efficacy, other forms of RISE, self-presentational efficacy), and to provide preliminary evidence for the direct and indirect predictive properties of group-focused RISE perceptions across sport contexts.

There were a number of noteworthy consistencies in the findings that emerged across the four studies. First, analyses demonstrated that, despite displaying consistently strong, positive

associations with target constructs, group-focused RISE appraisals did appear to be empirically distinguishable from other socially-derived efficacy perceptions (i.e., other RISE estimations, self-presentational efficacy). RISE appraisals regarding one's group members (i.e., sport teammates, classmates) and the relevant authority figure (i.e., coach, instructor) in each context displayed a shared variance that ranged between approximately 32% and 55% (with a mean approximately 42%). It is worth noting that this degree of overlap may have been methodologically inflated given that ratings on these RISE perceptions were provided contemporaneously in all studies, and in future it would be worthwhile to explore the conditions under which the strength of association between these variables may be disrupted. For example, researchers might consider the relations that exist between these different RISE appraisals when a new leader joins an already-established group, when discrepancies exist regarding perceptions about the credibility of one's leader in relation to one's peers, and/or when marked differences on perceived similarity exist with respect to one's peers and one's leader (e.g., Kristof-Brown, Zimmerman, & Johnson, 2005). Aside from associations with other forms of RISE, group-focused RISE perceptions were also empirically distinct from individuals' self-presentational efficacy beliefs (see covariance pathways in studies 3 and 4; average shared variance approximately 30%), and in sum, these findings supported the notion that group-focused RISE may represent an empirically unique construct that aligns with, but is not redundant with respect to, related efficacy perceptions.

In terms of other consistent findings, we also observed significant predictive effects across all studies for group-focused RISE perceptions in relation to individuals' confidence in their own ability. This relationship was consistent with Lent and Lopez's (2002) proposals, and it is worth emphasizing that these predictive effects emerged while controlling for individuals' RISE perceptions regarding the primary instructional figure in each setting. Both of these supervisory figures occupied a position of authority relative to our focal participants, with the potential to shape influential outcomes for those under their guidance (e.g., team de-/selection). Lent and Lopez theorized that the implications of RISE beliefs may be most pronounced when the target of the

inference occupies a position of high-status relative to the perceiver, and that being the case, it was particularly noteworthy that appraisals regarding one's teammates and classmates accounted for unique variance in self-efficacy over and above the effects associated with RISE regarding the high-status individual.

On a related note, given the consistency of these effects in relation to self-efficacy, and that as theorized (Bandura, 1997), self-efficacy aligned significantly with downstream outcomes in all studies, we observed a range of significant indirect pathways for group-focused RISE (e.g., enjoyment, continuance intentions, attitudes, achievement). Taken together, these findings not only hold conceptual relevance in terms of providing support for Lent and Lopez's (2002) proposals regarding the predictive properties of RISE beliefs, but also offer mechanistic insight (albeit observational only) into the perceptual processes through which group-focused RISE beliefs might align with functional outcomes. With that in mind, future research might be warranted in which a more comprehensive range of indirect pathways – beyond those rooted solely in self-efficacy – for the relationship between group-focused RISE and behavioral outcomes is considered (e.g., via adaptive motivational, anxiety-related, attitudinal, and intention-based perceptions).

Finally, and perhaps most significantly, we observed relatively consistent evidence within both contexts for a range of direct predictive effects associated with group-focused RISE appraisals. When individuals believed that their teammates or classmates, as a group, were confident in their ability, this perception aligned directly with more favorable continuance intentions, enjoyment levels, and attitudinal ratings. It is worth highlighting that these effects emerged while controlling for other relevant efficacy perceptions as well as important demographic characteristics; taking all studies into consideration, we observed a greater number of significant predictive effects for group-focused in comparison to leader-focused RISE perceptions. These findings provide support for Lent and Lopez's (2002) assertion regarding the predictive utility of RISE appraisals, and, in particular, the potential implications of the generalized inferences that individuals make regarding those whom they perform alongside. In addition, unlike the sequential process that is emphasized

within the symbolic interactionist literature (whereby reflected appraisals underpin self-appraisals, which in turn may predict outcomes), RISE displayed *direct* predictive effects on affective, value-related, and persistence indices that were not mediated by one's confidence in one's own ability.

Having reflected upon the consistent findings that we observed, and prior to considering design limitations and future research directions, it is important to highlight that group-focused RISE did not display theorized or hypothesized effects in all instances. In particular, despite the cross-sectional and prospective effects that were apparent in relation to self-report variables, group-focused RISE perceptions did not directly predict the behavioral marker (i.e., in-class achievement) that was measured in study 4. Lent and Lopez (2002) contended that RISE might underpin behavior patterns, and although we observed an indirect effect in relation to achievement (via self-efficacy), it is possible that a direct effect did not emerge given that in-class achievement was dependent upon an *individual* (rather than group-based) assessment protocol. Accordingly, this method may have resulted in the salience attributed to individuals' feelings about their classmates being minimized during their assessment procedure. On reflection, given that interaction between classmates was most prevalent during regular class time (and not during the assessment session), it may have been worthwhile to have also measured the ongoing interpersonal behavior that occurred between classmates during regular instructional periods, to determine if, and how, classmate-focused RISE perceptions shaped interaction behavior within the class (e.g., responsiveness, warmth, communication, engagement).

In gauging the collective contribution of these studies, it is important to balance their strengths (e.g., multiple contexts, diverse outcomes, inclusion of multiple covariates, use of prospective methods) against design limitations, and to consider related avenues for future work. Most notably, our cross-sectional and prospective observational designs did not allow for any causal (or unequivocal directional) conclusions to be drawn from our data. This consideration is particularly relevant for the directional relationships that we modeled between RISE beliefs and self-efficacy (i.e., with RISE as exogenous and self-efficacy as endogenous variables). It is

important to acknowledge that the relationship between these variables may in fact be bi-directional in nature, and researchers have previously demonstrated evidence for projection effects, whereby individuals base their metaperceptions upon their self-perceptions (see Frey & Tropp, 2006; Kenny & DePaulo, 1993). It was for this reason that we modeled experience variables (i.e., one's experience with the team and/or in the context of interest) as predictors of RISE beliefs (and self-efficacy). In doing so, we sought to control for the potential that individuals might simply base their RISE inferences (and self-efficacy) on their underlying level of experience, and to partial out this potential confounding effect when modeling the RISE – self-efficacy relationship.

In addition, given that our data did not enable us to specifically address this reciprocity issue, we specified RISE as a predictor of self-efficacy in our models in light of a number of considerations. First, this approach was conceptually defensible in accordance with Lent and Lopez's (2002) assertion that "RISE may offer an important, relationship-specific source of self-efficacy information... augmenting the four primary sources of information from which people typically derive their self-efficacy judgments" (p. 268-269). Moreover, there is evidence to believe that when individuals are familiar with those in their interaction network, and have access to information regarding others' views (e.g., through their behaviour and feedback), then projection is less likely to occur (e.g., Jussim, Soffin, Brown, Ley, & Kohlhepp, 1992). Available data indicated that participants in our studies had, on average, been a member of their sport team for over 2 years, and those in the class-based studies had practiced with their classmates on a weekly basis for at least two months. As a result, individuals were likely to have accumulated sufficient interaction information, thus supporting the directional relationship that we specified. Indeed, previous cross-lagged designs with sport cohorts have also demonstrated support for this directional (as opposed to a projection-based) pathway (Bois, Sarrazin, Brustad, Chanal, & Trouilloud, 2005). Notwithstanding our rationale for model specification, it is important that these directional conclusions are evaluated using time series analyses and controlled experimental methods prior to establishing causal claims regarding the implications of group-focused RISE perceptions.

Aside from causal relations, there are also a number of conceptual, methodological, and analytical considerations that warrant empirical attention. From a conceptual perspective, although we considered how group-focused RISE appraisals differed from (and complemented) a number of other efficacy beliefs, it would be worthwhile in sporting contexts to also consider potential relations between individuals' estimations of their teammates' confidence in their ability (i.e., group-focused RISE) and their confidence in their team's capabilities (i.e., collective efficacy). Indeed, although collective efficacy and group-focused RISE differ in terms of agentic referent (i.e., one's team's versus one's own capabilities), it would be interesting to explore whether individuals report greater confidence in their team's capabilities when they believe their teammates believe strongly in their ability.

Second, given that we devised a number of new efficacy instruments within this program of work, future work is encouraged that explores in detail the psychometric properties of measures derived from these instruments (all efficacy instruments are available from the first author on request). We purposefully focused our analytic attention on addressing substantive (rather than methodological/measurement) issues within each of these studies, and although we followed existing recommendations (Bandura, 2006) when developing these instruments, future validation work is important in order to document support for (and necessary refinements to) these instruments. Indeed, should researchers in future wish to examine individuals' efficacy perceptions within specific sports, it may also be worthwhile to conduct a conceptual analysis to determine sport-specific refinements that may be necessary in amending our general instruments. Also, with reference to measurement considerations, although researchers often caution about the stringency of the chi-square fit statistic (see Byrne, 2012), it is important to note that a limitation of our study was the rejection of the null hypothesis for exact fit. In all studies, we attempted to address this inexact fit by relaxing some of our measurement-based parameters (e.g., error covariances). Although modification indices identified that changes to some structural parts of our models may have aided further in addressing inexact fit, we instead opted to accept our close (but inexact) fitting models in

light of recommendations that model optimization decisions are based on theoretical as well as statistical considerations (Byrne, 2012). That is, we developed our substantive hypotheses (i.e., structural pathways) in line with extant theory and research, and a number of suggested structural modifications were not defensible from a conceptual viewpoint. Nevertheless, future research is warranted that explores improvements in the measurement portion of our model.

In addition, although our aim was to explore the effects associated with RISE appraisals at a personal level (while accounting for the nested nature of the data), researchers are encouraged to implement hierarchical modeling techniques that enable the investigation of important person- and team-level hypotheses. For example, such techniques would be useful for examining relations with group-level outcomes (e.g., team performance), and might also be utilized to explore the degree of within-team/class consensus (or dispersion) on group-focused RISE perceptions, alongside the extent to which consensus levels might contribute to effective intra-team processes (e.g., cohesion, communication). Similarly, although we accounted for one theorized individual-level predictor of individuals' group-focused RISE perceptions (i.e., experience), multilevel models would enable researchers to determine how group-level antecedents might also be important in bolstering this kind of metaperception. For example, identifying team-level predictors, such as cultural/team norms, interaction frequency (i.e., the amount of time that teams spend together, or that classmates are allowed to spend interacting with one another), leader behavior (e.g., mastery/performance climate endorsement, transformational leadership qualities), and leader attributes (e.g., leader self-efficacy) might be valuable in providing practical insight into the methods through which team members' group-focused RISE beliefs (and subsequently, downstream outcomes) may be augmented. In summary, these findings extend efficacy-based metaperception research, by demonstrating preliminary support for a unique inference that exists within group-based interactions (i.e., group-focused RISE), which is empirically distinct from related efficacy constructs, and may accompany adaptive behavioral, perceptual, and persistence-related outcomes.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50,* 179-211. Doi: 10.1016/0749-5978(91)90020-T

Amorose, A. J. (2002). The influence of reflected appraisals on middle school and high school athletes' self-perceptions of sport competence. *Pediatric Exercise Science, 14,* 377-390.

Amorose, A. J. (2003). Reflected appraisals and perceived importance of significant others' appraisals as predictors of college athletes' self-perceptions of competence. *Research Quarterly for Exercise & Sport, 74,* 60-70.

Asparouhov, T., & Muthén, B. O. (2006). *Multilevel modeling of complex survey data*. In Proceedings of the Joint Statistical Meeting, USA, American Statistical Association Section on Survey Research Methods (pp. 2718-2726), Seattle, WA.

Bandalos, D.L. (2014). Relative performance of categorical diagonally weighted least squares and robust maximum likelihood estimation. *Structural Equation Modeling, 21,* 102-116. doi: 10.1080/10705511.2014.859510

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman & Company.

Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307-337). Greenwich, CT: Information Age Publishing.

Bois, J. E., Sarrazin, P. E., Brustad, R. J., Chanal, J. P., & Trouilloud, D. O. (2005). Parents' appraisals, reflected appraisals, and children's self-appraisals of sport competence: A yearlong study. *Journal of Applied Sport Psychology. 6,* 381-397. doi: 10.1080/10413200500313552

Bong, M. (2001). Between- and within-domain relations of academic motivation among middle and high school students: Self-efficacy, task-value, and achievement goals. *Journal of Educational Psychology, 93,* 23-34. doi: 10.1037//0022-0663.93.1.23

Bouchey, H. A., & Harter, S. (2005). Reflected appraisals, academic self-perceptions, and math / science performance during early adolescence. *Journal of Educational Psychology, 97,* 673-686. doi: 10.1037/0022-0663.97.4.673. doi: 10.1037/0022-0663.97.4.673

Bourne, J., Liu, Y., Shields, C. A., Jackson, B., Zumbo, B. D., & Beauchamp, M. R. (in press). The relationship between transformational teaching and adolescent physical activity: The mediating roles of personal and relational efficacy beliefs. *Journal of Health Psychology.*

Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. New York, NY: Routledge.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159.

Cox, A. E., Ullrich-French, S., Madonia, J., & Witty, K. (2011). Social physique anxiety in physical education: Social contextual factors and links to motivation and behavior. *Psychology of Sport and Exercise, 12*, 555-562. doi: 10.1016/j.psychsport.2011.05.001

Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis.* Hillsdale, NJ: Erlbaum.

Dimmock, J. A., Jackson, B., Podlog, L., & Magaraggia, C. (2013). The effect of variety expectations on interest, enjoyment, and locus of causality in exercise. *Motivation and Emotion, 37,* 146-153. doi: 10.1007/s11031-012-9294-5

Eys, M. A., Carron, A. V., Bray, S. R., & Beauchamp, M. R. (2005). The relationship between role ambiguity and intention to return the following season. *Journal of Applied Sport Psychology, 17,* 255-261. doi: 10.1080/10413200591010148

Felson, R. B. (1993). The (somewhat) social self: How others affect self-appraisals. In J. Suls (Ed.), *Psychological perspectives on the self: Vol 4. The self in social perspective* (pp.1-26). Hillsdale, NJ: Lawrence Erlbaum Associates.

Feltz, D. L., Short, S. E., & Sullivan P. J. (2008). *Self-efficacy in sport*. Champaign, IL: Human Kinetics.

Fleming, J. C., & Martin Ginis, K. A. (2004). The effects of commercial exercise video models on women's self-presentational efficacy and exercise task self-efficacy. *Journal of Applied Sport Psychology, 16,* 92-102. doi: 10.1080/10413200490260080

Frey, F. E., & Tropp, L. R. (2006). Being seen as individuals versus as group members: Extending research on metaperception to intergroup contexts. *Personality and Social Psychology Review, 10,* 265-280. doi: 10.1207/s15327957pspr1003_5

Gammage, K. L., Hall, C. R., Martin-Ginis, K. A. (2004). Self-presentation in exercise contexts: Differences between high and low frequency exercisers. *Journal of Applied Social Psychology, 34,* 1638-1651. doi: 10.1111/j.1559-1816.2004.tb02791.x

Hanton, S., Mellalieu, S. D., & Hall, R. (2004). Self-confidence and anxiety interpretation: A qualitative investigation. *Psychology of Sport and Exercise, 5,* 477-495. doi: 10.1016/S1469-0292(03)00040-2

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1-55. doi: 10.1080/10705519909540118

Hutchinson, J. C., Sherman, T., Martinovic, N., & Tenenbaum, G. (2008). The effect of manipulated self-efficacy on perceived and sustained effort. *Journal of Applied Sport Psychology, 20,* 457-472. doi: 10.1080/10413200802351151

Jackson, B., Knapp, P., & Beauchamp, M. R. (2008). Origins and consequences of tripartite efficacy beliefs within elite athlete dyads. *Journal of Sport & Exercise Psychology, 30,* 512-540.

Jackson, B., Knapp, P., & Beauchamp, M. R. (2009). The coach-athlete relationship: A tripartite efficacy perspective. *The Sport Psychologist, 23,* 203-232.

Jackson, B., Myers, N. D., Taylor, I. M., & Beauchamp, M. R. (2012). Relational efficacy beliefs in physical activity classes: A test of the tripartite model. *Journal of Sport & Exercise Psychology, 34,* 285-304.

Jackson, B., Whipp, P. R., Chua, K. L. P., Dimmock, J. A., & Hagger, M. S. (2013). Students' tripartite efficacy beliefs in high school physical education: Within- and cross-domain relations with motivational processes and leisure-time physical activity outcomes. *Journal of Sport & Exercise Psychology, 35,* 72-84.

Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits - self-esteem, generalized self-efficacy, locus of control, and emotional stability - with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology, 86,* 80-92. doi: 10.1037//0021-9010.86.1.80

Judge, T. A., Jackson, C. L., Shaw, J. C., Scott, B. A., & Rich, B. L. (2007). Self-efficacy and work-related performance: The integral role of individual differences. *Journal of Applied Psychology, 92,* 107-127. doi: 10.1037/0021-9010.92.1.107

Jussim, L., Soffin, S., Brown, R., Ley, J., & Kohlhepp, K. (1992). Understanding reactions to performance feedback by integrating ideas from symbolic interactionism and cognitive evaluation theory. *Journal of Personality and Social Psychology, 62,* 402-421. doi: 10.1037/0022-3514.62.3.402

Kenny, D. A. & DePaulo, B. M. (1993). Do people know how others view them? An empirical and theoretical account. *Psychological Bulletin, 114,* 145-161. doi: 10.1037/0033-2909.114.1.145

Klassen, R. M., Perry, N. E., Frenzel, A. C. (2012). Teachers' relatedness with students: An underemphasized component of teachers' basic psychological needs. *Journal of Educational Psychology, 104,* 150-165. doi: 10.1037/a0026253

King, E. B., Kaplan, S., & Zaccaro, S. (2008). Metaperceptions in diverse workgroups: Intrapersonal perspectives and intragroup processes. In B. Mannix, M. Neale, & K. Phillips (Eds.), *Research on managing groups and teams* (pp. 109-141). Oxford, UK: Elsevier.

Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology, 58,* 281–342. doi: 10.1111/j.1744-6570.2005.00672.x

Kruisselbrink, L. D., Dodge, A. M., Swanburg, S. L., & MacLeod, A. L. (2004). Influence of same-sex and mixed-sex exercise settings on the social physique anxiety and exercise intentions of males and females. *Journal of Sport & Exercise Psychology, 26,* 616-622.

Lamarche, L., & Gammage, K. L. (2010). The effects of leader gender on self-presentational concerns in exercise. *Psychology & Health, 25,* 769–781. doi: 10.1080/08870440902866886

Leary, M. R. & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 1-62). San Diego: Academic Press.

Lent, R. W., & Lopez, F. G. (2002). Cognitive ties that bind: A tripartite view of efficacy beliefs in growth-promoting relationships. *Journal of Social and Clinical Psychology, 21,* 256-286. doi: 10.1521/jscp.21.3.256.22535

Lirgg, C. D. (1991). Gender differences in self-confidence in physical activity: A meta-analysis of recent studies. *Journal of Sport & Exercise Psychology, 13,* 294-310.

Little R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83,* 1198–1202. doi:10.1080/01621459.1988.10478722

Lopez, F. G., & Lent, R. W. (1991). Efficacy-based predictors of relationship adjustment and persistence among college students. *Journal of College Student Development, 32,* 223–229.

Marsh, H. W. (2007). Application of confirmatory factor analysis and structural equation modeling in sport and exercise psychology. In G Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (3rd ed., pp. 774-798). Hoboken, NJ: Wiley.

Martin, J. J., Kulinna, P. H., McCaughtry, N., Cothran, D., Dake, J., & Fahoome, G. (2005). The theory of planned behavior: Predicting physical activity and cardiorespiratory fitness in African American children. *Journal of Sport & Exercise Psychology, 27,* 456-469.

Martin, K. A., Rejeski, W. J., Leary, M. R., McAuley, E., & Bane, S. (1997). Is the Social Physique Anxiety Scale really multidimensional? Conceptual and statistical arguments for a unidimensional model. *Journal of Sport & Exercise Psychology, 19,* 360-368

McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the intrinsic motivation inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport, 60,* 48-58. doi: 10.1080/02701367.1989.10607413

Mead, G. H. (1934). *Mind, self and society.* Chicago: University of Chicago Press.

Meehl, P. E. (1990). Why summaries of research on psychological theories are often uninterpretable. *Psychological Reports, 66,* 195-244. doi: 10.2466/pr0.1990.66.1.195

Moran, M. M., & Weiss, M. R. (2006). Peer leadership in sport: Links with friendship, peer acceptance, psychological characteristics, and athletic ability. *Journal of Applied Sport Psychology, 18,* 97-113. doi: 10.1080/10413200600653501

Myers, N.D., Wolfe, E.W., & Feltz, D.L. (2005). An evaluation of the psychometric properties of the coaching efficacy scale for coaches from United States of America. *Measurement in Physical Education and Exercise Science, 9,* 135–160. doi: 10.1207/s15327841mpee0903_1

Muthén, L. K., & Muthén, B. O. (1998-2013). *Mplus User's Guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

National Health and Medical Research Council (2007). *National Statement on Ethical Conduct in Human Research 2007.* Retrieved January 20th 2014, from http://www. nhmrc.gov.au/_ files_nhmrc/publications/attachments/e72_national_statement_130813.pdf.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66,* 543-578. doi: 10.3102/00346543066004543

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 65,* 539-569. doi: 10.1146/annurev-psych-120710-100452

Putwain, D., Sander, P. and Larkin, D. (2013) Academic self-efficacy in study-related skills and behaviours: Relations with learning-related emotions and academic success. *British Journal of Educational Psychology, 83,* 633-650. doi: 10.1111/j.2044-8279.2012.02084.x

Raykov, T. (1997). Estimation of composite reliability for congeneric measures. *Applied Psychological Measurement, 21,* 173-184. doi: 10.1177/01466216970212006.

Rhemtulla, M., Brosseau-Laird, P. E., & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods, 17,* 354-373. doi: 10.1037/a0029315

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43,* 450-461. doi: 10.1037//0022-3514.43.3.450

Schaubroeck, J., Lam, S. S. K., & Xie, J. L. (2000). Collective efficacy versus self-efficacy in coping responses to stressors and control: A cross-cultural study. *Journal of Applied Psychology, 85,* 512-525. doi: 10.1037/0021-9010.85.4.512

Spink, K. S. (1995). Cohesion and intention to participate of female sport team athletes. *Journal of Sport & Exercise Psychology, 17,* 416-427.

Trouilloud, D., & Amiel, C. (2011). Reflected appraisals of coaches, parents and teammates: A key component of athletes' self? *International Journal of Sport Psychology, 42,* 97-115.

Wallace, H. M., & Tice, D. M. (2012). Reflected appraisal through a 21st-century looking glass. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (Vol. 2, pp. 124-140). New York: Guilford.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25,* 82-91. doi: 10.1006/ceps.1999.1016

Table 1. 95% confidence intervals (associated with standardized parameter estimates) for all significant direct/covariance pathways observed across all studies (for variables of substantive interest)

Pathway	95% CI
Study 1	
Peer RISE ↔ Leader RISE	.655, .818
Leader RISE → S-E	.141, .505
Peer RISE → S-E	.264, .642
Study 2	
Peer RISE ↔ Leader RISE	.442, .693
Leader RISE → S-E	.370, .612
Peer RISE → S-E	.274, .542
S-E → Sport intentions	.320, .772
S-E → Team intentions	.065, .583
Peer RISE → Enjoyment	.324, .702
Peer RISE → Team intentions	.074, .404
Study 3	
Peer RISE ↔ Leader RISE	.594, .776
Leader RISE → S-E	.204, .422
Peer RISE → S-E	.343, .534
S-E → Enjoyment	.162, .481
S-E → Instrumental attitude	.203, .566
Peer RISE → Enjoyment	.073, .352
Peer RISE → Instrumental attitude	.072, .368
Study 4	
Peer RISE ↔ Leader RISE	.475, .698
Leader RISE → S-E	.358, .568
Peer RISE → S-E	.130, .438
S-E → Achievement	.138, .585
S-E → Enjoyment	.048, .352
Peer RISE → Enjoyment	.128, .508

Note. RISE = relation-inferred self-efficacy. S-E = self-efficacy. "Peer RISE" = RISE beliefs regarding teammates (studies 1 and 2) or classmates (studies 3 and 4). "Leader RISE" = RISE beliefs regarding head coach (studies 1 and 2) or instructor/teacher (studies 3 and 4).

Table 2. Standardized specific indirect effects for RISE variables (through self-efficacy) across all studies

Indirect pathway	Estimate	SE	95% CI	*p*
Study 2				
Peer RISE → S-E → Sport intentions	.223 (.613)	.066	.093, .352	.001
Peer RISE → S-E → Enjoyment	.075 (.160)	.054	-.031, .181	.165
Peer RISE → S-E → Team intentions	.132 (.394)	.063	.009, .255	.036
Leader RISE → S-E → Sport intentions	.268 (.610)	.060	.150, .386	<.001
Leader RISE → S-E → Enjoyment	.090 (.159)	.074	-.054, .235	.221
Leader RISE → S-E → Team intentions	.159 (.392)	.068	.026, .292	.019
Study 3				
Peer RISE → S-E → Social physique anxiety	-.012 (-.013)	.031	-.072, .049	.703
Peer RISE → S-E → Enjoyment	.141 (.219)	.032	.078, .204	<.001
Peer RISE → S-E → Instrumental attitude	.169 (.309)	.038	.095, .243	<.001
Leader RISE → S-E → Social physique anxiety	-.008 (-.009)	.022	-.051, .034	.701
Leader RISE → S-E → Enjoyment	.101 (.156)	.035	.032, .169	.004
Leader RISE → S-E → Instrumental attitude	.120 (.219)	.046	.030, .210	.009
Study 4				
Peer RISE → S-E → Achievement	.103 (.161)	.025	.054, .151	<.001
Leader RISE → S-E → Achievement	.167 (.239)	.067	.036, .299	.013

Note. Unstandardized parameter estimate presented in parentheses alongside unstandardized coefficient. RISE = relation-inferred self-efficacy. S-E = self-efficacy. "Peer RISE" = RISE beliefs regarding teammates (studies 1 and 2) or classmates (studies 3 and 4). "Leader RISE" = RISE beliefs regarding head coach (studies 1 and 2) or instructor/teacher (studies 3 and 4).

Figure Captions

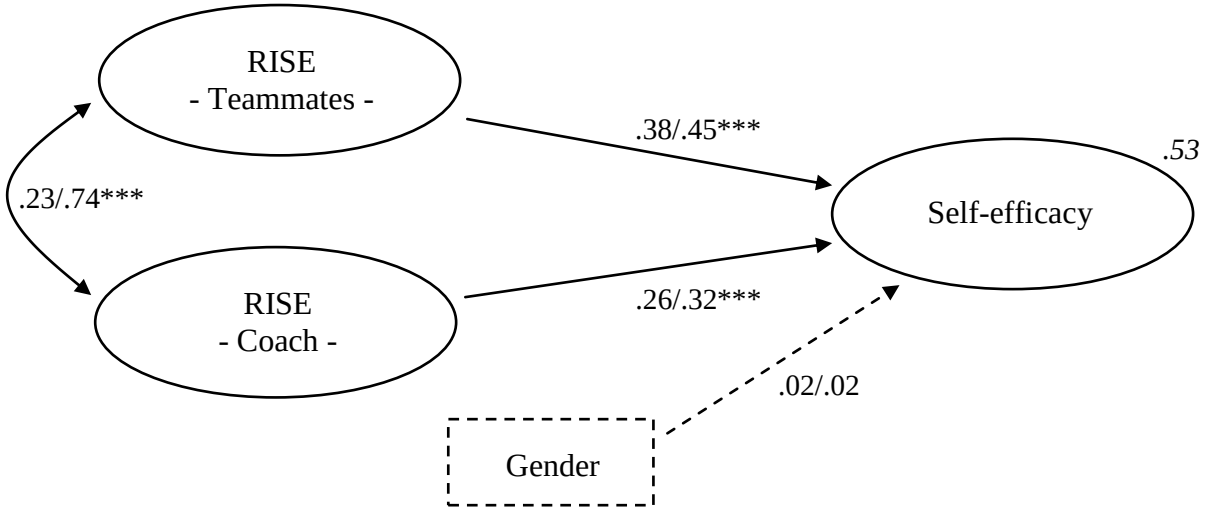
Figure 1. Relationships between latent efficacy variables. Values above/below arrows represent structural coefficients (in the form, 'unstandardized/standardized'). All measurement parameters (i.e., indicators) were included alongside structural pathways within a single model, but are excluded from the figure for clarity. Squared multiple correlation presented in italics above the self-efficacy variable. Gender covariate depicted in dashed box (coded 0 = female, 1 = male), and associated pathway indicated by dashed line. RISE = relation-inferred self-efficacy. The strength of standardized coefficients can be interpreted using Cohen's (1992) recommended effect size criteria (i.e., .10 = small, .30 = moderate, .50 = large). *** p <.001, ** p <.01.

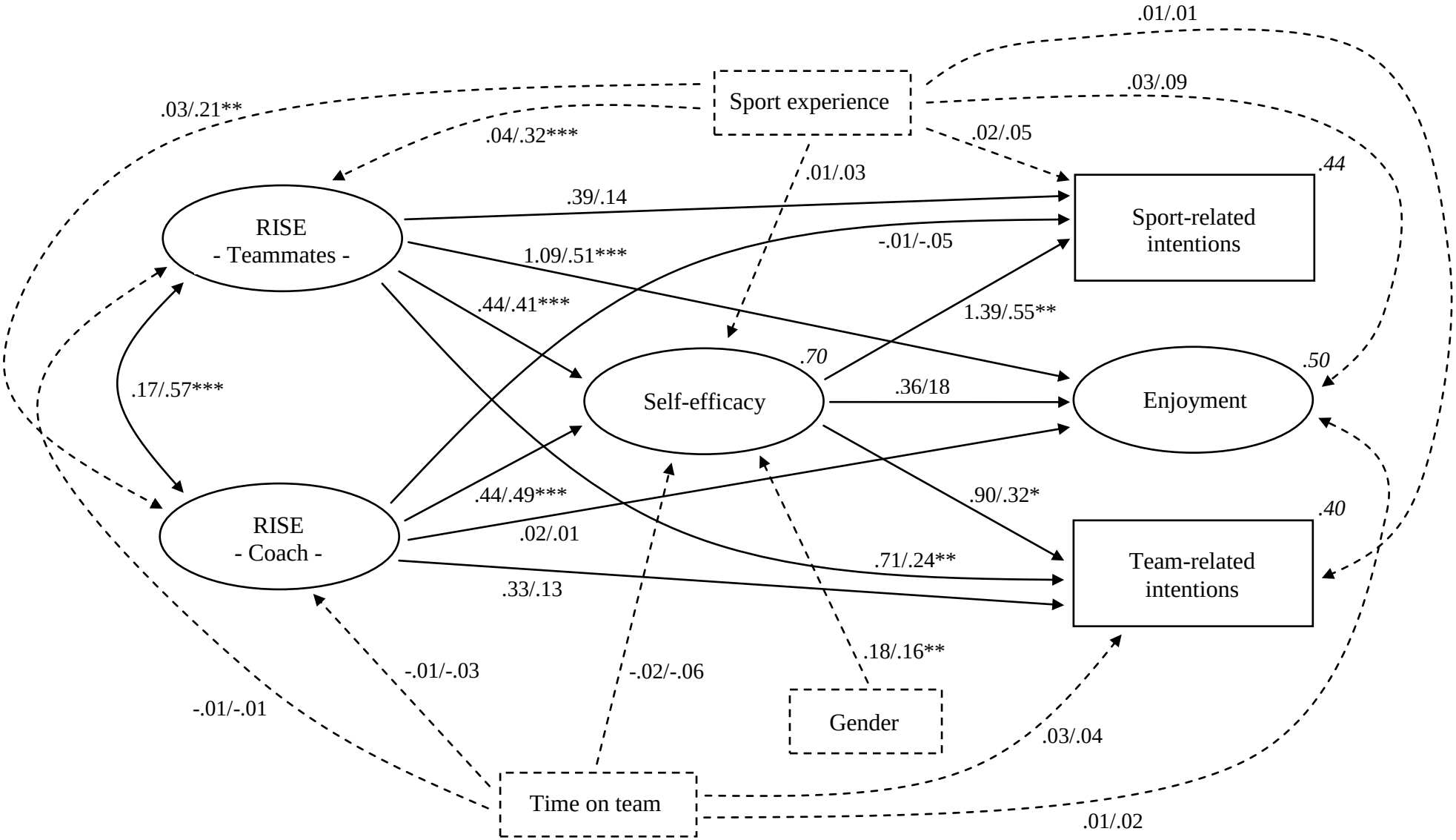
Figure 2. Direct relationships between latent and observed variables. Values above/below arrows represent structural coefficients (in the form, 'unstandardized/standardized'). All measurement parameters (i.e., indicators) were included alongside structural pathways within a single model, but are excluded from the figure for clarity. Squared multiple correlations are presented in italics above endogenous variables. Covariates (measured at Time 1) depicted with dashed boxes, and associated pathways indicated by dashed lines. Gender coded 0 = female, 1 = male. RISE = relation-inferred self-efficacy. The strength of standardized coefficients can be interpreted using Cohen's (1992) recommended effect size criteria (i.e., .10 = small, .30 = moderate, .50 = large). *** p <.001, ** p <.01, * p <.05.

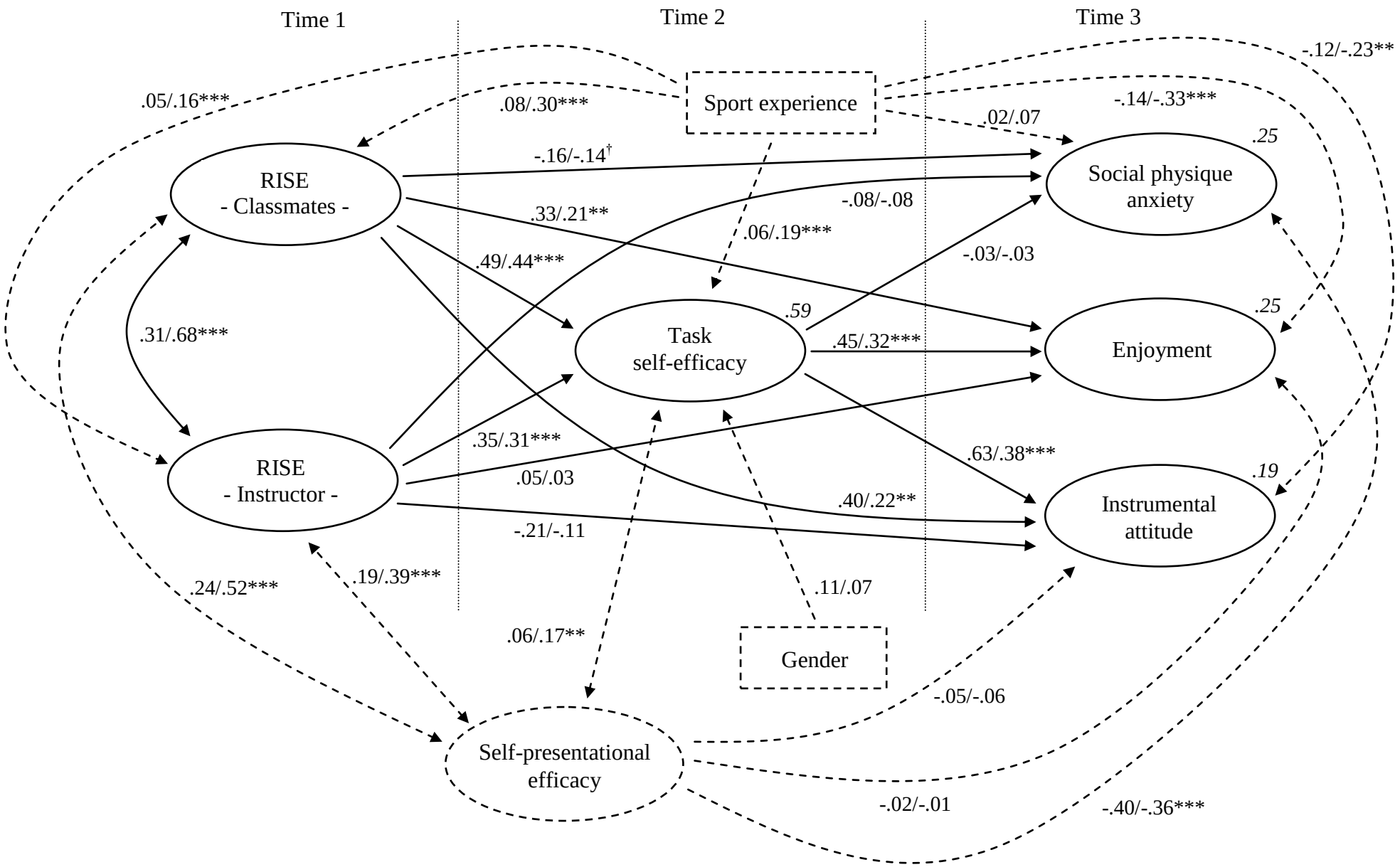
Figure 3. Direct relationships between latent variables. Values above/below arrows represent structural coefficients (in the form, 'unstandardized/standardized'). All measurement parameters (i.e., indicators) were included alongside structural pathways within a single model, but are excluded from the figure for clarity. Squared multiple correlations are presented in italics above endogenous variables. Covariates depicted with dashed boxes/circles, and associated pathways indicated by

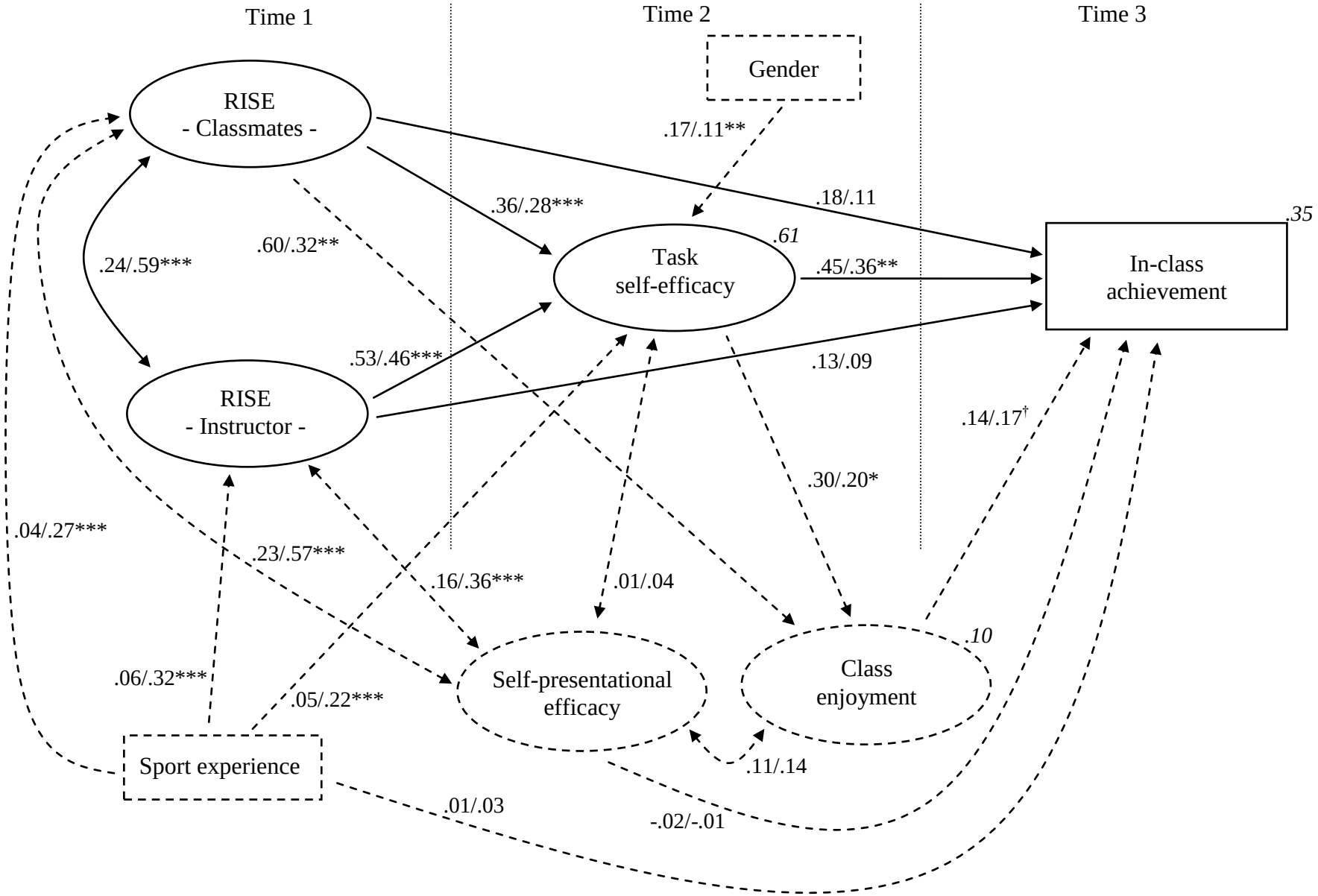
dashed lines. Gender (coded 0 = female, 1 = male) and sport experience measured at Time 1, and self-presentational efficacy measured at Time 2. RISE = relation-inferred self-efficacy. The strength of standardized coefficients can be interpreted using Cohen's (1992) recommended effect size criteria (i.e., .10 = small, .30 = moderate, .50 = large). *** p <.001, ** p <.01, * p <.05, † p = .052.

Figure 4. Direct relationships between latent and observed variables. Values above/below arrows represent structural coefficients (in the form, 'unstandardized/standardized'). All measurement parameters (i.e., indicators) were included alongside structural pathways within a single model, but are excluded from the figure for clarity. Squared multiple correlations are presented in italics above endogenous variables. Covariates depicted with dashed boxes/circles, and associated pathways indicated by dashed lines. Gender (coded 0 = female, 1 = male) and sport experience measured at Time 1, and self-presentational efficacy and enjoyment measured at Time 2. RISE = relation-inferred self-efficacy. The strength of standardized coefficients can be interpreted using Cohen's (1992) recommended effect size criteria (i.e., .10 = small, .30 = moderate, .50 = large). *** p <.001, ** p <.01, * p <.05, † p = .057.


RISE
- Teammates -
.38/.45***
.53
Self-efficacy
.23/.74***
RISE
- Coach -
.26/.32***
.02/.02
Gender


.01/.01
Sport experience
.03/.09
.03/.21**
.04/.32***
.02/.05
.01/.03
.44
RISE
- Teammates -
.39/.14
Sport-related
intentions
-.01/-.05
1.09/.51***
.44/.41***
1.39/.55**
.70
.50
.17/.57***
Self-efficacy
.36/18
Enjoyment
.44/.49***
.90/.32*
.40
RISE
- Coach -
.02/.01
.71/.24**
Team-related
intentions
.33/.13
.18/.16**
-.01/-.03
-.02/-.06
-.01/-.01
Gender
.03/.04
Time on team
.01/.02


Time 1
Time 2
Time 3
Sport experience
RISE
- Classmates -
RISE
- Instructor -
Task
self-efficacy
Social physique
anxiety
Enjoyment
Instrumental
attitude
Self-presentational
efficacy
Gender
.05/.16***
.08/.30***
-.12/-.23**
-.14/-.33***
.02/.07
-.16/-.14†
.25
.33/.21**
-.08/-.08
.06/.19***
.49/.44***
-.03/-.03
.31/.68***
.59
.25
.45/.32***
.35/.31***
.63/.38***
.05/.03
.19
.40/.22**
-.21/-.11
.24/.52***
.19/.39***
.11/.07
.06/.17**
-.05/-.06
-.02/-.01
-.40/-.36***


Time 1
Time 2
Time 3
Gender
RISE
- Classmates -
RISE
- Instructor -
Task
self-efficacy
In-class
achievement
Self-presentational
efficacy
Class
enjoyment
Sport experience
.17/.11**
.18/.11
.36/.28***
.61
.35
.60/.32**
.24/.59***
.45/.36**
.53/.46***
.13/.09
.14/.17†
.30/.20*
.04/.27***
.23/.57***
.16/.36***
.01/.04
.10
.06/.32***
.05/.22***
.11/.14
.01/.03
-.02/-.01