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Goal Striving, Goal Attainment, and Well-Being: Adapting and Testing the Self-Concordance Model in Sport

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Grounded in self-determination theory (Deci & Ryan, 1985) and the self-concordance model (Sheldon & Elliot, 1999), this study examined the motivational processes underlying goal striving in sport as well as the role of perceived coach autonomy support in the goal process. Structural equation modeling with a sample of 210 British athletes showed that autonomous goal motives positively predicted effort, which, in turn, predicted goal attainment. Goal attainment was positively linked to need satisfaction, which, in turn, predicted psychological well-being. Effort and need satisfaction were found to mediate the associations between autonomous motives and goal attainment and between attainment and well-being, respectively. Controlled motives negatively predicted well-being, and coach autonomy support positively predicted both autonomous motives and need satisfaction. Associations of autonomous motives with effort were not reducible to goal difficulty, goal specificity, or goal efficacy. These findings support the self-concordance model as a framework for further research on goal setting in sport.

Key Words: self-determination, motivation, need satisfaction, coach autonomy support, goal setting

Goal setting is promoted as a primary psychological skill and is used by athletes and coaches throughout all levels of sport (e.g., Weinberg, Burke, & Jackson, 1997). To date, sport research on goal setting has not examined whether striving for goals reflects an athlete's core values and beliefs or whether goal striving is the result of internal or external pressures. The purpose of the present study was to draw upon self-determination theory (Deci & Ryan, 1985) and, specifically, the proposals of the self-concordance model (Sheldon & Elliot, 1999) to investigate the motivational processes underlying sport-specific goal striving.

Self-determination theory (SDT; Deci & Ryan, 1985) has received considerable support within research conducted in sport, as well as work in numerous other contexts. Self-determination theory advances a differentiated concept of motivation in which multiple motivational regulations can be identified and organized along

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a continuum reflecting the extent to which behaviors resulting from each regulation are endorsed by the individual and engaged in through choice (Deci & Ryan, 1985). At the least autonomous end of the continuum, external regulation reflects externally controlled behavior prompted by external demands or rewards. Moving toward the autonomous end, introjected regulation represents internally controlled behavior prompted by internal pressures of anxiety, guilt, or shame. Identified regulation reflects an autonomous extrinsic regulation in which behaviors are prompted by the underlying value of an activity. Finally, at the autonomous end of the continuum is intrinsic regulation, which represents an inherent motivation toward enjoyment, learning, or task accomplishment. Deci and Ryan also proposed the concept of amotivation, referring to an absence of motivation. Consistent with SDT, sport research has typically found relatively more autonomous motivational regulations to relate to more positive affective, behavioral, and cognitive outcomes (see Vallerand & Losier, 1999, for review).

Self-determination theory also proffers three innate psychological needs to be essential for psychological well-being. These are the need to be self-initiating in the regulation of one's actions (autonomy), to experience mastery and produce desirable actions (competence), and to feel a connection with and a sense of belonging to the social environment (relatedness) (Vallerand & Losier, 1999). The three needs are considered essential for optimal functioning and for human growth and development. In the sport domain, the proposed association between need satisfaction and psychological well-being has been supported in a number of studies (e.g., Gagné, Ryan, & Bargmann, 2003; Reinboth, Duda, & Ntoumanis, 2004).

Despite empirical support for the tenets of SDT in sport, there is no research to date examining the motivational regulations underlying effective goal striving (Hall & Kerr, 2000) and their implications for psychological well-being. In order to address this gap in the literature, we utilized Sheldon and Elliot's (1999) self-concordance model, which addresses the process of goal striving and its effects on well-being within the broad conceptual framework of SDT.

The Self-Concordance Model

The self-concordance model (Sheldon & Elliot, 1999) focuses on the motives underlying personal goal striving, the influences of goal motives on goal attainment, and the consequences for psychological well-being. The model can be divided into two stages, namely, the processes linking goal selection to goal attainment (*goal striving*) and goal attainment to psychological well-being (*goal outcomes*).

Goal Selection to Goal Attainment

Consistent with SDT (Deci & Ryan, 1985), Sheldon and Elliot (1999) advocated the benefits of striving for personal goals undergirded by autonomous (intrinsic or identified) motivational regulations, in comparison to goal striving for internally or externally controlled reasons (introjected or external regulations, respectively). Reflecting the interests and values of the individual, goals pursued because of autonomous motives are proposed to lead to sustained effort over the period that the person strives to meet their goals. Goals pursued because of controlled motives may result in initial effort levels comparable to those for autonomously pursued goals;

however, in contrast, the degree of effort exerted in this case is proposed to diminish over time. As a result, it is assumed that goals pursued for autonomous motives are more likely to be attained than goals pursued because of controlled motives, particularly in the face of challenges. Sheldon and Elliot (1999) highlighted that the influence of autonomous goal striving in such circumstances is not reducible to the enjoyment experienced when striving for such goals. Instead, the distinguishing factor between goals pursued as a function of autonomous rather than controlled motives is whether individuals feel ownership over their goals and perceive an internally based locus of causality with respect to their goal striving.

Goal Attainment to Psychological Well-Being

Expanding upon research demonstrating an association between goal attainment and psychological well-being (e.g., Brunstein, 1993), Sheldon and Elliot (1999) further proposed that the goal attainment to well-being relationship is moderated by the motivational regulations underlying goal striving. This premise is rooted in SDT (Deci & Ryan, 1985), which asserts that experiences of achievement that do not promote the psychological development of an individual will not result in an enhanced sense of psychological well-being (Deci & Ryan, 2000). More specifically, Sheldon and Elliot proposed that attainment of goals striven for as a result of controlled motives, which are not congruent with an individual's values and interests, will not elevate psychological well-being because they offer modest advances toward personal growth and development. Sheldon and Kasser (1998) tested this moderating effect of goal motives via a short-term prospective study. They found that changes in the psychological well-being of university students pursuing goals because of controlled motives did not vary as a function of goal attainment. In contrast, students attaining autonomously pursued goals experienced enhanced psychological well-being following goal attainment, whereas those not successful in attaining autonomously pursued goals demonstrated lower psychological well-being compared with their baseline levels. This finding suggests that the well-being of individuals who invest personal meaning within their goals is to some extent dependent on the attainment of such goals.

Sheldon and Kasser (1998) also proposed, in agreement with SDT, that the moderation of the goal attainment–well-being relationship by goal motives is mediated by the satisfaction of the three psychological needs for autonomy, competence, and relatedness. Sheldon and Elliot (1999) provided support for this mediation, which they explained by proposing that the attainment of goals pursued for autonomous reasons was more conducive to experiences of need satisfaction, and that the accumulation of such experiences results in enhanced psychological well-being. In contrast, Sheldon and Elliot proposed that controlled goal motives are not associated with need satisfaction and thus the attainment of such goals affords little benefit to well-being.

Despite support for the self-concordance model within social psychological research, the model is yet to be tested in competitive sport in terms of the goal striving of athletes. It could be argued that, by focusing on the motives underlying goal use, the self-concordance model offers a potentially more comprehensive framework for goal setting research in sport than previous frameworks that focused primarily on the presence or absence of goal setting and/or the manipulation of goal

characteristics (Locke & Latham, 1985). Self-concordance research also promotes an alternative methodology for the study of goals. Specifically, Sheldon and Elliot (1999) have advocated an idiographic goal methodology in which participants' self-generated goals form the basis for analysis, in contrast to the researcher-assigned goals frequently used within goal-setting research in sport (e.g., Weinberg, Bruya, & Jackson, 1985). This approach controls for personal goal use by participants, highlighted as a potential confounding factor in previous goal-setting research in the physical domain (Kane, Baltes, & Moss, 2001). Finally, the self-concordance model extends the sport goal-setting literature by addressing a temporal sequence of goal striving including not only the striving for and attainment of goals, but also the affective consequences linked to goal accomplishment.

The term *self-concordance* originally referred to the motives underlying context-free goal striving, which are considered to reflect an individual's ability to select personally relevant goals. Kennon M. Sheldon (personal communication, September 29, 2006) has since advocated that context-specific goals, such as those strived for in sport, may also be investigated within the framework of the self-concordance model. However, he proposes that such goal motives may result from contextual factors (e.g., perceptions of coach behavior) as well as the extent to which the individual can select appropriate goals. In such context-based applications, Sheldon has recommended that the term *goal self-determination* may be more appropriate than *self-concordance*. However, despite such similarities in the terminology used and the fact that SDT provides the overarching conceptual framework, the self-concordance model is unique in that it specifically addresses the role of motivational regulations within the goal-striving process and the association of such goal motives with achievement-related processes such as effort exertion and goal attainment.

Coach Autonomy Support and the Goal Process

Kennon M. Sheldon's (personal communication, September 29, 2006) contention that goal self-determination may result from contextual factors, as well as person-related factors, creates potential for the investigation of contextual predictors of the motivational regulations underlying sport-specific goal striving. Previous SDT-based sport research (e.g., Gagné et al., 2003) has addressed the influence of the coach as one such social factor, principally through investigation of the associations of coaches' autonomy-supportive versus controlling behaviors with athletes' need satisfaction and contextual motivation. *Autonomy support* refers to the extent to which an individual in a position of authority (e.g., a coach) adopts another's (e.g., an athlete's) perspective, acknowledges their feelings, and provides relevant information and opportunities for choice while minimizing pressures and demands (Black & Deci, 2000). Mageau and Vallerand's (2003) motivational model of the coach–athlete relationship emphasized that perceived coach autonomy support should predict the satisfaction of athletes' needs for autonomy, competence, and relatedness, a proposal that was supported by Reinboth and colleagues (2004) in their study involving adolescent cricket and soccer players. Gagné et al., in their work on young gymnasts, also identified an association between perceived coach autonomy support and autonomous contextual motivational regulations. However, the relationships between coach autonomy support with goal-related motivational

regulations and need satisfaction (as opposed to generalized contextual measures of these constructs) have received no empirical investigation in the sport literature. With respect to self-concordance research, previous applications of the self-concordance model have only examined goal striving from the perspective of an individual's ability to select personally relevant goals and the demonstration of that ability through autonomous or controlled goal motives. The identification of a social-contextual predictor of goal motives, such as coach autonomy support, may identify an external factor through which an individual's experience of goal striving can be enhanced or thwarted.

The Present Study

Grounded in the SDT framework (Deci & Ryan, 1985), the primary purpose of the present study was to empirically test the proposals of the self-concordance model adapted to refer to sport-specific goal striving and to include perceived coach autonomy support as a predictor of goal striving and need satisfaction.

In contrast with previous self-concordance research in which a relative motivational regulation index was formed (e.g., Sheldon & Elliot, 1999), autonomous and controlled goal motives were considered separately to examine the unique associations of each with other variables in the model. Autonomous and controlled goal motives were hypothesized to be positively and negatively associated with effort, respectively. In turn, effort was predicted to be positively linked with goal attainment. We expected goal attainment to be positively associated with psychological need satisfaction, which, in turn, was predicted to be positively linked to psychological well-being. Goal motives and goal attainment were expected to interact to predict need satisfaction, reflecting the moderation of the goal attainment to need satisfaction relationship by goal motives. The association of goal motives with attainment was also hypothesized to be mediated by effort, and the relationship of goal attainment with well-being (including the moderation via goal motives) was predicted to be mediated by need satisfaction (Sheldon & Elliot, 1999). Additionally, based on previous SDT-based sport research, coach autonomy support was predicted to be positively associated with both autonomous goal motives and psychological need satisfaction. In an exploratory manner, we also examined whether coach autonomy support and goal motives would interact with need satisfaction, reflecting a synergistic effect similar to that found between autonomy support and intrinsic goal content by Vansteenkiste and colleagues (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

Finally, we hypothesized that the links between autonomous/controlled goal motives and effort would remain constant when controlling for other variables relevant to goal striving, namely, goal difficulty, goal specificity, and goal efficacy. According to Locke and Latham's (1985) goal-setting framework, which has formed the basis of the majority of research on goal setting in sport, increased goal difficulty, goal specificity, and goal efficacy can result in increased effort toward goal striving. Sheldon and Elliot (1999) supported the association of goal efficacy with effort; however, this link did not reduce the relationship of self-concordance with exerted effort in their study. Within the present study, the relationship of goal motives to effort was also proposed to be independent of the associations of goal difficulty and goal specificity to effort because the mechanisms through which goal motives

and these goal characteristics influence effort are presumed to differ. Specifically, goal difficulty and specificity are assumed to result in increased effort through increased demands and refined contingencies of success, respectively (Locke & Latham, 1985). In contrast, autonomously pursued goals result in high levels of effort because the values and interests that these goals express represent relatively enduring aspects of the personality (Sheldon & Elliot, 1999).

Method

Participants

Participants were 210 (104 male, 103 female, 3 unspecified) regularly training British athletes from a variety of individual and team sports (e.g., football, netball, and badminton). Participants ranged in age from 18 to 37 years ($M = 21.02$, $SD = 2.88$) and in sport level from locally competing athletes to international-level athletes. All participants had worked with their main coach for a minimum of 6 months ($M = 19.24$, $SD = 20.99$), allowing sufficient time for a coach–athlete relationship to develop (Jowett & Ntoumanis, 2004).

Measures

Personal Goals. Participants' personal sports goals were measured using the idiographic goal methodology advocated within self-concordance research (Sheldon, 2002). Specifically, participants were requested to nominate four goals that they were currently pursuing. Goals were defined as "objectives you are typically trying to attain in your sport" (adapted from Emmons, 1986). Examples of goals provided by the athletes include "to improve my upper body strength" and "to improve tactical decision making [in rugby union]."

To assess the motives underlying each of their goals, participants rated why they were striving for each goal in terms of four reasons relating to intrinsic, identified, introjected, and external regulations in a manner consistent with previous self-concordance research (e.g., Sheldon & Elliot, 1999). For each participant, aggregate scores of intrinsic, identified, introjected, and external goal motives were created first by averaging the ratings of each separate regulation across each of the participants' self-generated goals. Aggregate intrinsic and identified scores were then summed to create an autonomous goal motive score, and aggregate introjected and external scores were summed to create a controlled goal motive score. The effort invested in and the degree to which each goal was attained at the time of data collection were each measured using two items adapted from Sheldon and Elliot (1999). Effort and goal attainment scores were created for each participant by first averaging the item ratings across each of their generated goals and then averaging the relevant scale items to create aggregate effort and goal attainment scores. Finally, perceived goal difficulty and goal efficacy were each measured using single items taken from Sheldon and Kasser (1998). Average difficulty and efficacy variables were both formed by averaging responses to each item across all generated goals. Goal specificity was rated after questionnaire completion by the primary investigator and an additional researcher with a specialization in the area of sport motivation. Each self-generated goal was rated on a scale from 1 (*extremely vague*) to 7 (*extremely*

specific) according to the range of outcomes that would satisfy the attainment of the goal and the clarity of the outcomes implied by the goal statement (Kane et al., 2001). Before rating the goals, a comprehensive set of guidelines were created and raters assessed and discussed a preliminary set of goals randomly taken from the entire sample, to identify sources of disagreement. An agreed upon operational definition of specificity was then established. The interrater reliability of the final ratings was $r = .88$. For all other items relating to personal goals, a scale of from 1 (*not at all*) to 7 (*very much so*) was used.

Need Satisfaction. Satisfaction of the basic psychological needs for autonomy, competence, and relatedness was measured using six autonomy items from Standage, Duda, and Ntoumanis (2005), six items from the perceived competence subscale of the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989), and five items from the acceptance subscale of the Need for Relatedness Scale (Richer & Vallerand, 1998), respectively. Responses were provided on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) for each subscale.

Psychological Well-Being. Psychological well-being was measured using the 20-item Positive and Negative Affect Schedule (Watson, Tellegen, & Clark, 1988), the five-item Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), and the five-item emotional/physical exhaustion subscale of the Athlete Burnout Measure (Raedeke & Smith, 2001). Positive and negative affect and life satisfaction have been referred to as primary indicators of psychological well-being (Diener, 1994). Further, the Positive and Negative Affect Schedule and the Satisfaction With Life Scale have formed the basis of well-being measures within self-concordance research (e.g., Sheldon & Elliot, 1999). The items from the Athlete Burnout Measure were also included as a sport-specific index of ill-being. A 7-point scale was once again used for each of the subscales, with higher scores indicating stronger agreement with the well-being (positive affect and life satisfaction) and ill-being (negative affect and emotional/physical exhaustion) items. Participants were asked to respond to items relating to their general (for positive and negative affect, and life satisfaction) or sports-related (for emotional/physical exhaustion) experiences over the past month. The period of 1 month was utilized to obtain a measure of well-being that was neither too traitlike nor too statelike and susceptible to momentary influences (Sheldon & Kasser, 1998).

Coach Autonomy Support. Perceptions of coach autonomy support were measured using seven items taken from the Health-Care Climate Questionnaire (Williams, Grow, Freedman, Ryan, & Deci, 1996) that were modified for sport. This modified scale has been shown to be valid and reliable (Reinboth et al., 2004). Of the seven items included, six were taken from the short form of the scale. A further item ("my coach really makes sure I understand the goals of my involvement [in my sport] and what I need to do") was added owing to its relevance to the present study.

Procedure

After obtaining their informed consent, a multisection questionnaire was administered to the participants by the primary investigator during regular training sessions. The athletes responded to the questionnaire toward the end of their sport season to

control for seasonal influences on goal attainment. During questionnaire administration, the confidentiality of responses was emphasized to all participants.

Results

Descriptive Statistics and Scale Reliabilities

Table 1 presents the means, standard deviations, and reliability coefficients as well as the bivariate correlations between the study variables. The reliability of the goal-related variables was assessed using two intraclass correlation coefficients to determine the homogeneity of ratings across the self-generated goals (ICC [1]) and the reliability of the aggregated goal ratings (ICC [2]). Lüdtke and Trautwein (2007) advocated that this approach is preferable to the use of Cronbach alpha coefficients when assessing the reliability of aggregated goal variables because intraclass correlations consider both the homogeneity of goal ratings and the variability in the number of goals generated by participants. The intraclass correlation coefficients demonstrated that participants' responses were largely homogeneous across their self-generated goals for each of the goal-related variables, ICC (1) = .65 to .84. All of the goal-related variables were also found to be sufficiently reliable when accounting for homogeneity and number of goals, ICC (2) = .87 to .95. The reliability of all other variables in the study was assessed using Cronbach alpha coefficients. The alpha coefficient of the original autonomy scale was not deemed acceptable for a six-item scale ($\alpha = .69$). Following deletion of the reverse item ("I have to force myself to do activities in my sport"), the alpha coefficient was sufficiently improved ($\alpha = .80$). All other scales demonstrated satisfactory Cronbach alphas ($\alpha = .76$ to .93).

In general, participants rated their goals to be striven toward for more autonomous than for controlled reasons. For most other variables, mean participant ratings were above the midpoint of the scales, with the exception of the negative affect and emotional/physical exhaustion subscales. Pearson product moment correlations revealed that autonomous and controlled motives for goal striving were not related. Autonomous goal motives were positively related to effort, goal attainment, satisfaction of the needs for competence and relatedness, positive affect, and life satisfaction and were negatively associated with negative affect. Controlled motives were positively related to negative affect and emotional/physical exhaustion and were negatively correlated with satisfaction of the need for competence. Coach autonomy support was significantly and positively related to all variables, with the exception of an observed negative correlation with negative affect and no significant correlations with controlled motives and life satisfaction.

Moderating Effects of Goal Self-Determination

Owing to the complexity of the hypothesized model, prior to the structural equation modeling (SEM) the predicted interactions between autonomous/controlled goal motives and goal attainment on composite need satisfaction were tested separately to examine whether they should be included in the model. Two separate hierarchical multiple regressions were carried out for autonomous and controlled goal motives. In

Table 1 Descriptive Statistics, Internal Reliabilities, and Bivariate Correlations Among Study Variables

	M	*SD*	ICC/α[a]	1	2	3	4	5	6	7	8	9	10	11
1. Autonomous motives	11.01	1.60	.87	—										
2. Controlled motives	5.49	2.50	.95	.02	—									
3. Effort	5.48	.77	.93	.43**	.02	—								
4. Goal attainment	5.20	.87	.90	.37**	–.10	.62**	—							
5. Autonomy	4.92	1.00	.80	.14	–.10	.22**	.21**	—						
6. Competence	4.95	.84	.76	.14*	–.15*	.30**	.36**	.36**	—					
7. Relatedness	5.00	1.11	.88	.26**	.01	.27**	.40**	.26**	.38**	—				
8. Positive affect	5.42	.88	.87	.31**	–.02	.49**	.59**	.19**	.41**	.53**	—			
9. Negative affect	3.28	1.14	.84	–.16*	.28**	–.01	–.09	–.14*	–.15*	–.25**	–.04	—		
10. Life satisfaction	4.82	1.14	.86	.21**	–.12	.25**	.32**	.24**	.32**	.30**	.39**	–.17*	—	
11. Phys./emot. exhaustion	3.08	1.34	.92	.01	.17*	.18**	.13	.04	.11	.12	.18**	.08	–.01	—
12. Coach autonomy support	4.79	1.29	.93	.15*	–.11	.25**	.23**	.28**	.31**	.61**	.40**	–.21**	.13	.15*

[a]Intraclass correlations (2) are given for goal variables. Cronbach alpha coefficients are given for all other variables.

*$p < .05$, **$p < .01$.

each regression, goal motives and goal attainment were entered first as independent predictors of need satisfaction. A product term of these variables was entered in the second step. Both goal motives and goal attainment were standardized prior to formation of the product term to prevent multicollinearity (Aiken & West, 1991). In both regression analyses, a significant main effect was found for goal attainment ($\beta = .40$, $p < .01$, and $\beta = .44$, $p < .01$, respectively); however, autonomous and controlled motives did not emerge as independent predictors of need satisfaction ($R^2 = .20$, in both regressions). The product terms between autonomous/controlled motives and goal attainment were not significant and contributed minimally to the amount of variance explained, $\Delta R^2(1, 206) = .001$, $p > .05$, for both. Consequently, the interactions between autonomous/controlled motives and goal attainment were not included in the SEM model.

Structural Equation Modeling

In consideration of the sample size ($N = 210$), the number of factors and related indicators in the structural model were reduced to maintain an acceptable ratio of number of participants per estimated parameter (Bentler & Chou, 1987). Consistent with Ntoumanis (2005), and in agreement with the self-concordance model (Sheldon & Elliot, 1999), the three need satisfaction subscales were collapsed to form an overall need satisfaction latent factor with autonomy, competence, and relatedness scores as indicators. Similar to Sheldon and Elliot (1999), a relative well-being latent factor was constructed. Negative affect and emotional/physical exhaustion (ill-being indicators) item scores were summed and subtracted from summed positive affect and life satisfaction (well-being indicators) item scores to create five relative well-being (well-being minus ill-being) indicators.[1] Finally, items from the coach autonomy support scale were parceled to form three indicators, each consisting of mean scores of two or three items within the scale. The statistical literature has suggested the use of parceling within unidimensional scales as a means of increasing the stability of parameter estimates in studies involving small sample sizes (Bandalos & Finney, 2001). Aggregate intrinsic and identified scores were specified as the indicators of autonomous motives. Aggregate introjected and external scores were specified as the indicators of controlled motives. Individual items were maintained as indicators of effort and attainment latent factors.

Structural equation modeling using EQS version 6.1 (Bentler, 2003) was utilized to test the fit of the study data to the hypothesized model. The seven-factor hypothesized model was tested using robust maximum likelihood method (Mardia's normalized estimate of multivariate kurtosis = 14.96). The fit indices for the hypothesized model indicated modest fit of the model to the data with potential for improvement: scaled $\chi^2(147) = 286.98$, $p < .01$, CFI = .90, NNFI = .89, RMSEA = .07 (CI = .06–.08), SRMR = .10. The modification indices recommended the deletion of the path from controlled motives to effort and the addition of a path from controlled motives to relative well-being. Further, one attainment item ("do you think you have made much progress towards attaining this goal since the start of the current season?") was allowed to load on both the effort and attainment factors. Following application of these modifications, the indices indicated improved fit of the revised model to the data: scaled $\chi^2(146) = 214.27$, $p < .01$, CFI = .95, NNFI = .94, RMSEA = .05 (CI = .03–.06), SRMR = .08. All specified paths within the revised model were significant (see Figure 1).[2]

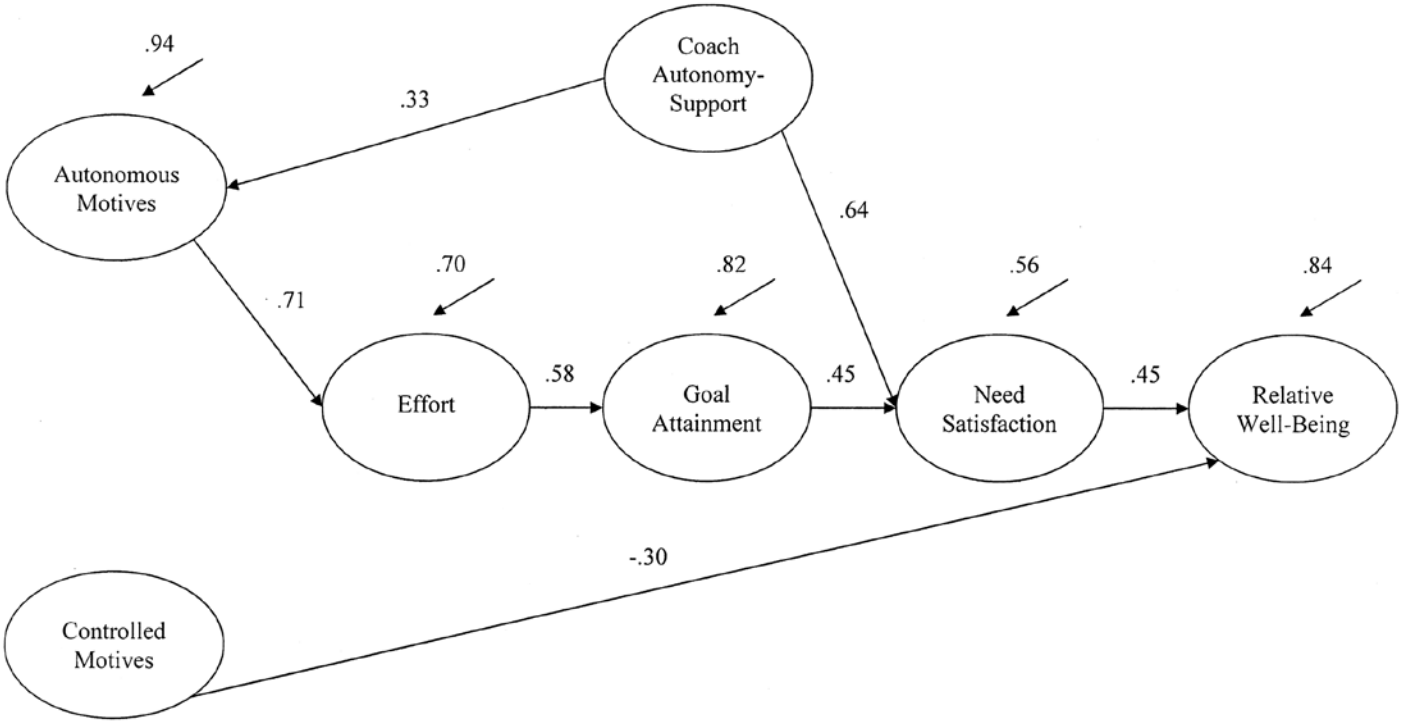

Figure 1 — The revised model showing the relationship between goal motives, effort, goal attainment, need satisfaction, relative well-being, and coach autonomy support.

To test for the hypothesized mediations in the model, Baron and Kenny's (1986) suggested four steps, which have been adapted for testing via SEM (Holmbeck, 1997), were followed. Firstly, the mediation of the association between autonomous goal motives and goal attainment via effort was tested using an initial model with a direct path ($\beta = .50$) from autonomous motives to attainment (Step 1 of Baron and Kenny's sequence). Steps 2 and 3 (paths from goal motives to effort and from effort to goal attainment, respectively) were tested in Figure 1. Step 4 was tested in an additional model in which effort was included as a mediator while also maintaining the direct path between autonomous motives and goal attainment. With the addition of effort, the path coefficient from autonomous motives to attainment dropped from $\beta = .50$ to $\beta = .27$ and became nonsignificant. A Satorra–Bentler scaled chi-square difference test (Satorra & Bentler, 2001) also found no significant difference between the mediation model (see Figure 1) and the model that included the direct path from autonomous motives to attainment, Satorra–Bentler scaled χ^2 difference(1) = .88, $p > .05$. This finding indicates that the mediated model is more parsimonious. The same method was also used to test for the hypothesized mediation of the association between goal attainment and relative well-being via need satisfaction. With the addition of need satisfaction, the path coefficient for the direct path from goal attainment to well-being dropped from $\beta = .34$ to $\beta = .15$ and became nonsignificant. No significant difference was found between the mediation model (Figure 1) and the model including the additional direct path from attainment to well-being, Satorra–Bentler scaled χ^2 difference(1) = 2.06, $p > .05$, again supporting the mediated model as the most parsimonious.

To examine whether the associations of autonomous motives with effort were independent of goal difficulty, goal specificity, or goal efficacy, each of these variables was included, in turn, in the revised model as predictors of effort. Controlling for these variables, the path from autonomous motives to effort remained significant and largely unchanged. All other paths in the model also remained significant and no improvements in model fit were evident.

Exploratory Interaction Analyses

To further analyze the relationship of coach autonomy support with autonomous motives found in the SEM analyses, the interaction of these two variables was tested using hierarchical multiple regression. Composite need satisfaction was once again used as the criterion variable. Standardized coach autonomy support and autonomous motives were first entered as independent predictors and their product term was entered in the second step. Significant main effects were found for both perceived coach autonomy support ($\beta = .54$, $p < .01$) and autonomous motives ($\beta = .18$, $p < .01$), accounting for 34% of the variance in need satisfaction. The interaction term was also significant ($\beta = .16$, $p < .01$), bringing the combined variance explained to 37%, $\Delta R^2(1, 193) = .03$, $p < .01$.

To determine the form of the interaction, Aiken and West's (1991) procedure for plotting interactions was followed. Two regression lines were plotted to represent the regression of coach autonomy support upon need satisfaction as a function of high (1 *SD* above the mean) and low (1 *SD* below the mean) autonomous motives. The interaction is presented in Figure 2. Post hoc simple slope analyses found the simple slopes for both high and low autonomous motives to be significant, $b = .49$, $t(207) = 8.93$, $p < .01$, and $b = .29$, $t(207) = 5.35$, $p < .01$, respectively. As depicted

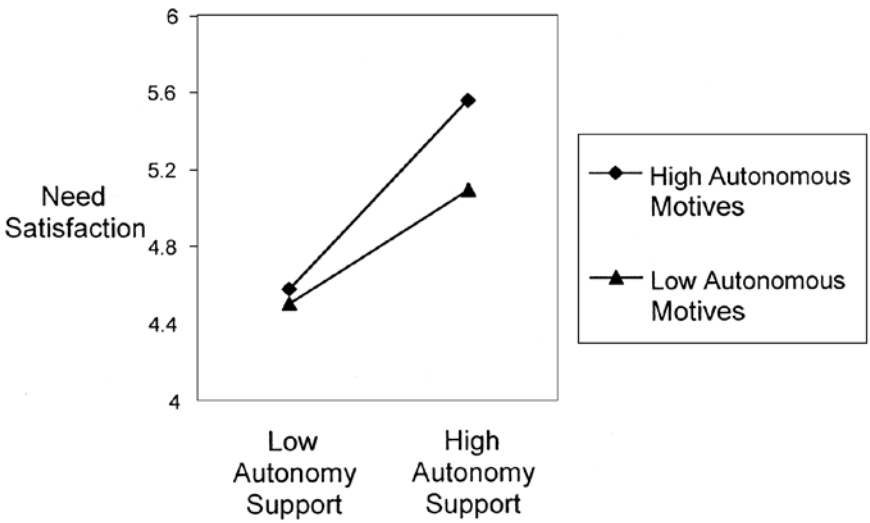

Figure 2 — Interaction between coach autonomy support and autonomous goal motives in the prediction of composite need satisfaction.

in the interaction plot, there was a synergistic effect between the two predictors. Specifically, for individuals pursuing goals with both high and low autonomous motives, need satisfaction was dependent upon coach autonomy support. However, the relationship of autonomous motives with need satisfaction was more pronounced for individuals reporting high perceived coach autonomy support.

Discussion

The primary purpose of the present study was to empirically test an adaptation of the self-concordance model (Sheldon & Elliot, 1999) in relation to sport-specific goal striving. Separate predictions were formed in relation to the associations of autonomous and controlled goal motives with other variables within the model. The role of autonomy support in predicting autonomous goal striving and need satisfaction was also examined. The results demonstrated support for a number of the hypothesized associations. Autonomous motives were found to positively predict effort toward goal striving, and effort was found to positively predict goal attainment. Goal attainment was found to be positively linked to psychological need satisfaction, which, in turn, was a positive predictor of relative psychological well-being. These findings are in line with proposals of the self-concordance model and demonstrate support for the application of the model to context-specific goals within sport. Furthermore, the results showed that the association of autonomous motives with effort was not reducible to other goal-related variables from goal-setting research, namely, goal difficulty, goal specificity, and goal efficacy. As hypothesized, coach autonomy support positively predicted both autonomous goal motives and need satisfaction.

Testing an Adaptation of the Self-Concordance Model in Sport

The association of autonomous motives with effort captures the combined contribution of intrinsic and identified motivational regulations. The observed link between intrinsic regulations, reflecting behaviors engaged for enjoyment, and effort is consistent with SDT (Deci & Ryan, 1985). Perhaps more notable is the association of identified regulation with effort. This relationship suggests that, even when they are not inherently enjoyable, goals that are congruent with an individual's values and beliefs and that are striven for with a sense of ownership will still mobilize the direction of effort toward their attainment. This supports Sheldon and Elliot's (1999) contention that goals originating from self-choices will receive increased effort because they represent "relatively enduring facets of personality" (p. 484), as opposed to being simply enjoyable to pursue. Koestner and Losier (2002) have also emphasized the adaptive benefits of identified motivational regulations in terms of increased commitment, particularly when an activity may lack intrinsic appeal.

With increased effort devoted toward autonomously pursued goals, such goals were found to be more readily achieved within the present study. The energizing and application of personal resources toward autonomously pursued goals and their protection in the face of challenges are considered to be responsible for goal achievement (Sheldon, 2002). In the current research, the association between autonomous motives and goal attainment was found to be mediated by the effort directed toward such goals, suggesting that influences of autonomous motives on attainment are indeed incurred though increases in effort toward such goals. In terms of the observed relationships between effort and goal attainment, it should be noted that it was necessary within the present study to allow one attainment item to load on the effort latent factor. Future research should refine the two scales to establish their independence.

Contrary to our hypothesis, controlled motives did not predict effort toward goal striving. The predicted negative association between these two variables was based on the original self-concordance model revealing a positive association of relative goal motives (autonomous ratings minus controlled ratings) to effort (e.g., Sheldon & Elliot, 1999). However, the present results suggest that the use of a relative index in such research may have obscured the independent contributions (or lack of) of autonomous and controlled motives. Our findings imply that it is necessary to treat these motives as separate in order to identify the unique associations of each with other variables within the model (interestingly, an approach also taken by Sheldon & Elliot, 1998). Notably, consistent with Sheldon and Elliot (1998), only weak correlations were found between autonomous and controlled motives in the present study. In terms of the goal motives–effort relationships, Sheldon and Elliot (1998) did support an association of both autonomous and controlled goal motives with intended effort prior to goal striving. However, in their study, controlled motives were not correlated with actual effort measured 8 weeks later. This suggests that controlled motives may contribute somewhat toward goal striving via effort-related intentions; however, this contribution is not sustained. This potential temporal effect on effort remains to be investigated via longitudinal designs in relation to sport-specific goal striving.

In addition to demonstrating no association of controlled motives with effort devoted toward goals, a negative association was identified in our study between controlled motives and relative well-being. Research focusing on the concomitants of contextual motivation among athletes has also indicated a negative relationship of controlled motivation to indicators of well-being (e.g., Brière, Vallerand, Blais, & Pelletier, 1995). Our finding raises concerns for athletes pursuing goals because of internal or external pressures in terms of the potential consequences of such goal striving on their general psychological well-being.

In the present study, and consistent with Sheldon and Elliot's (1999) findings, the path from goal attainment to well-being was mediated by composite need satisfaction. Bivariate correlations also demonstrated that goal attainment was significantly and positively related with the satisfaction of each of the three needs for autonomy, competence, and relatedness. All three needs also related to the targeted indices of well-being. The association of need satisfaction with well-being has previously been supported in sport research (e.g., Gagné et al., 2003; Reinboth et al., 2004); however, the relationship of goal attainment to need satisfaction has received less attention. It is possible that goal attainment reinforces and strengthens feelings of competency, agency, and affiliation within sport. Notably, of the three psychological needs, relatedness demonstrated the highest correlations with both goal attainment and indicators of well-being. Whereas the individual contribution of relatedness within the mediated path from goal attainment to well-being was not assessed within the present research, the bivariate correlations suggest that the sense of belonging perceived by athletes may be closely linked to their goal progress and may be crucial to their sense of psychological well-being. Relatedness also had the strongest correlation with coach autonomy support, suggesting that the coaches' behaviors are strongly linked to their athletes' sense of connectedness within their sport.

In Sheldon and Elliot's (1999) research, the association of goal attainment to need satisfaction was moderated by goal self-concordance. However, in the present study, this moderation was not supported. One explanation for this finding may be differences in the research design. The hypothesized moderation was previously supported within a longitudinal research design in which changes in need satisfaction were measured while controlling for baseline levels. The cross-sectional design of the present study allowed for only concurrent measures of each construct. Potentially, interactions between goal motives and goal attainment may have existed but were obscured by baseline differences in need satisfaction between individuals pursuing goals with high or low autonomous (or controlled) motives. For example, athletes pursuing goals with highly autonomous motives in the present study may have had higher baseline levels of need satisfaction than individuals pursuing goals with less autonomous motives. During the process of goal striving, need satisfaction levels of individuals pursuing goals with highly autonomous motives may have varied as a function of goal attainment but remained above the need satisfaction levels of individuals pursuing goals with less autonomous motives, owing to baseline differences. Indeed, Sheldon and Elliot (1998) reported significant positive correlations of relative self-concordance and baseline need satisfaction, reflecting interdependence between autonomous/controlled motives and need satisfaction prior to goal striving.

The positive observed association of coach autonomy support with contextual need satisfaction is consistent with previous sport research (e.g., Reinboth et al., 2004). Within the present study, the impact of coach autonomy support was supported in relation to need satisfaction, which is specific to goal striving. Further, the positive association of coach autonomy support with autonomous goal motives is in agreement with past research supporting a relationship between coach autonomy support and contextual motivation (e.g., Gagné et al., 2003). This latter finding suggests that the impact of a coach on an athlete's contextual motivation may extend to the motivational regulations underlying the goals that the athlete pursues.

In addition to the additive effects of coach autonomy support and autonomous motives on need satisfaction through the direct path and indirect paths identified in the model, an interactive (synergistic) effect was also found. Specifically, athletes reporting strong perceptions of autonomy support and striving for goals with highly autonomous motives reported the highest levels of need satisfaction compared with those pursuing the same goals in low autonomy support contexts, or those pursuing goals with controlled motives irrespective of their perceptions of autonomy support. This finding reinforces the importance for the satisfaction of basic psychological needs of not only striving for personally relevant goals, but also striving for such goals in an autonomy-supportive environment.

Implications, Limitations, and Future Research Directions

From a conceptual standpoint, the present research is, to our knowledge, the first adaptation of the self-concordance model for context-specific goal striving. The results of this contextual adaptation provide a preliminary foundation for contextual applications of Sheldon and Elliot's (1999) proposals and highlight the potential adaptability of the proposals of the self-concordance model to further domains. Another conceptual contribution of the present research is that it highlights the impact of social-contextual predictors, such as coach autonomy support, on the motives underlying such context-specific goal striving. The contextual adaptation of the self-concordance model supported in the present study also has implications for future research within sport. Specifically, it extends the focus of previous goal-setting theoretical frameworks adopted in sport (e.g., Locke & Latham, 1985) by considering not only the beneficial impact of goal setting on work rate and performance, but also the entire temporal sequence from goal adoption to goal attainment, and the consequences of goal striving for psychological well-being. The self-concordance framework also provides a useful perspective within which athletes' successful goal attainment and resultant well-being can be investigated in relation to two broad types of motivational regulations and not simply the presence or absence of goal-related motivation that has been considered within previous approaches to goal setting (e.g., Locke & Latham, 1985). Additionally, the idiographic goal methodology advocated within self-concordance research provides a "personologically valid" (Sheldon, 2002, p. 65) basis for analysis assessing the goals naturally held by athletes.

From an applied perspective, our findings emphasize the importance of encouraging athletes to set and strive for goals that are congruent with their values and interests, and training coaches to aid athletes in doing so. Even if goals are established by coaches, as is often the case, coaches can still aid athletes in fostering

the internalization and integration of such goals, through autonomy-supportive behaviors.

The cross-sectional design of the present study does present a limitation. Most notably, we could not control for levels of each variable at the start of the season. Longitudinal research designs are needed to investigate the associations of autonomous and controlled goal motives with temporal changes in need satisfaction and psychological well-being throughout the period of goal striving. Issues of causality could also not be addressed within the present research design. An alternative cross-sectional model postulating different sequences between goal motives and relative well-being demonstrated a fit to the data relatively similar to that of the adapted model, supporting the need for future experimental studies to establish the directions of associations identified. The present study was also limited by the use of two item scales to measure both effort and attainment. Future research should increase the number of items in each scale to enhance their reliability.

As a new and promising framework for goal-setting research in sport, many future research directions could further test this contextual adaptation of the self-concordance model. Subsequent research should look at certain aspects of the adapted model in more detail. In particular, the relative contributions of each psychological need warrant further investigation. In addition to further examining the temporal processes specified in the original self-concordance model, future longitudinal research could also investigate the impact of temporal fluctuations in coach autonomy support on goal striving and subsequent well-being. Objective measures of coach autonomy support could also be used to complement athletes' self-reports. Further, experimental work could investigate the influence of coach autonomy support on goal striving through the manipulation of coach behaviors.

The inclusion of coach autonomy support within this contextual adaptation of the model highlights the possibility for the inclusion of further variables in self-concordance-based research. For example, consideration of the specific contents of individuals' goals (i.e., the "what" of goals) could complement the investigation of the motives underlying goal striving (i.e., the "why" of goals; see Sheldon, Ryan, Deci, & Kasser, 2004; Vansteenkiste et al., 2004). Investigation of the associations of autonomous versus controlled motives with the coping strategies utilized in response to difficulties in goal striving might also identify potential mechanisms for sustained versus discontinued goal striving. Finally, it would be interesting to investigate motivational factors that can affect the successful internalization by athletes of assigned team goals, as well as potential conflicts of such goals with personal goals.

Notes

1. To examine whether combining global and contextual indicators could have masked a potential lack of effects of one of the two indicators, two further structural models were tested. First, emotional/physical exhaustion (contextual) was included as the only affective outcome in the model, with paths specified from need satisfaction and controlled goal motives. The fit indices were good: scaled $\chi^2(146) = 245.84$, $p < .01$, CFI = .94, NNFI = .93, RMSEA, .06 (CI = .05–.07), SRMR = .07. In a second model, subjective well-being (global) was included as the only affective outcome, with paths specified from need satisfaction and controlled motives. The fit indices were also good and were similar to the indices of both the contextual well-being model and the revised

model: scaled $\chi^2(146) = 211.05$, $p < .01$, CFI = .95, NNFI = .94, RMSEA = .05 (CI = .03–.06), SRMR = .08. The results from these two models suggest only marginal differences between the inclusion of both global and contextual measures of well-being/ill-being in the revised model and the inclusion of either alone.

2. Following a suggestion by an anonymous reviewer, two alternative models were also tested. Where relevant, these models included the same modifications as the revised model. First, in response to Sheldon's (2002) contention that well-being may have predicted goal self-concordance within previous cross-sectional research (e.g., Sheldon & Kasser, 1995), an alternative model was tested in which relative well-being was specified as a predictor of both goal motives. The fit indices were relatively good (with the exception of the SRMR) but did not reach the values achieved for the revised model: scaled $\chi^2(146) = 230.83$, $p < .01$, CFI = .94, NNFI = .93, RMSEA = .06 (CI = .04–.07), SRMR = .11. A second alternative model was constructed based on the motivational sequence proposed by Vallerand and Losier (1999). Need satisfaction, predicted by coach autonomy support, was specified as a predictor of both autonomous and controlled goal motives, which, in turn, predicted the outcomes of effort, goal attainment, and relative well-being. The fit indices did not reach the values achieved for the revised model: scaled $\chi^2(146) = 237.64$, $p < .01$, CFI = .94, NNFI = .93, RMSEA = .06 (CI = .04–.07), SRMR = .10.

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