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Goal Striving, Coping, and Well-Being: A Prospective Investigation of the Self-Concordance Model in Sport

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Developing upon cross-sectional research (Smith, Ntoumanis, & Duda, 2007) supporting the self-concordance model (Sheldon & Elliot, 1999) as a framework for contextual goal striving, the current study investigated the assumptions of the model in relation to season-long goal striving in sport. The study additionally examined the role of coping strategies in the persistence of goal-directed effort. Structural equation modeling analysis with a sample of 97 British athletes indicated that start-of-season autonomous goal motives were linked to midseason effort, which subsequently predicted end-of-season goal attainment. Attainment was positively related to changes in psychological need satisfaction, which, in turn, predicted changes in emotional well-being. In a second model, autonomous and controlled motives positively predicted task- and disengagement-oriented coping strategies, respectively. In turn, these strategies were differentially associated with effort. The findings provide support for contextual adaptations of the self-concordance model and demonstrate the role of coping strategies in the goal striving process.

Keywords: goal setting, self-determination, motivation, coping, sport

In both short-term personal projects and general life strivings, anecdotal and empirical evidence supports the role of goal setting in the mobilization and direction of resources toward the attainment of desired objectives (e.g., Locke & Latham, 2002). Grounded in self-determination theory (SDT; Deci & Ryan, 1985), the self-concordance model (Sheldon & Elliot, 1999) presents a temporal sequence of goal striving through which volitional processes (i.e., goal motives and effort) impact upon both goal attainment and changes in psychological well-being. Cross-sectional research in the sport domain (Smith, Ntoumanis, & Duda, 2007) offered support for this model as a framework for context-specific personal goal striving.

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Expanding upon the study of Smith et al., the primary purpose of the current study was to test the assumptions of the self-concordance model in relation to athletes' season-long goal striving in sport using a prospective design with three waves of data. A secondary aim was to examine the role of coping strategies in the relationship between goal motives and goal-directed effort.

Testing the Assumptions of the Self-Concordance Model

The self-concordance model (Sheldon & Elliot, 1999) is an application of key constructs and principles of SDT to personal goal striving. Consistent with SDT, the model advocates the benefits of striving for personal goals for *autonomous motives* in comparison with striving for *controlled motives*. Autonomous goal motives comprise both intrinsically regulated goals, which are fully endorsed by the individual and engaged in for enjoyment and pleasure, and goals mobilized by the identification of personal value in them. In contrast, controlled goal motives comprise introjected goal striving, driven by anxiety, guilt, or contingent self-esteem, and externally regulated goal pursuit prompted by the expectancy of tangible rewards or threatening punishments. Reflecting greater integration with the self and, thus, greater alignment with relatively enduring personal interests and values, autonomously striven goals are proposed to result in sustained effort and, consequently, are more likely to be attained. In contrast, although controlled goal motives may initiate some positive intentions and efforts toward goal striving (Sheldon & Elliot, 1998), the energy behind such goals is more quickly consumed, particularly when individuals are forced to cope with goal difficulties.

As evidenced by a meta-analysis of goal striving conducted by Koestner, Otis, Powers, Pelletier, and Gagnon (2008), the association of autonomous goal motives with goal attainment has received support from a number of studies employing diverse research designs and assessing goal striving across a variety of timeframes. Notably, Koestner and colleagues highlighted a lack of association between controlled goal motives and goal attainment, which contrasts with the negative association implied by Sheldon and Elliot (1999). Koestner et al. suggest that this null finding may result from the variable impact of controlled striving across differing situations. For example, controlled motives may prompt goal striving when feedback regarding the importance of goal attainment is prevalent; however, these motives may not facilitate striving in the absence of such cues.

As an achievement-based context, competitive sport represents a domain in which goal striving is extremely prevalent and in which various goal setting strategies are highly recommended (e.g., Hardy, Jones, & Gould, 1996). To date, sports-based goal setting research has focused primarily upon specific characteristics of goals, such as difficulty and specificity, and has largely failed to examine the motivational processes underlying goal striving. To address this empirical void, Smith and colleagues (2007) tested the relevance of the self-concordance model to sport by examining the goals pursued by competitive athletes. Similarly to Koestner et al. (2008), Smith and associates (2007) opted to examine the unique contribution of autonomous and controlled goal motives in the goal striving process in contrast to adopting a relative index (i.e., autonomous minus controlled). Smith et al. identified a positive link from autonomous goal motives to effort, which, in turn, was positively associated with goal attainment. Consistent with Sheldon and Elliot's

(1999) model, effort was also found to mediate the path from autonomous goal motives to goal attainment. Consistent with Koestner and colleagues, controlled motives were found to be unrelated to effort. However, the negative implications of controlled motives were indicated through a negative association of such motives with well-being.

Stemming from Carver and Scheier's (1990) control-process model of self-regulation, Sheldon and Elliot (1999) proposed that the attainment of personal goals has positive affective consequences. The positive links from goal progress and goal attainment to subjective well-being have since found support from more than 30 longitudinal studies, assessing both student and adult samples across a variety of domains (see Wiese, 2007). However, in a caveat to the proposed positive implications, Sheldon and Elliot suggested that the affective outcomes of attainment are dependent upon the motives underlying goal striving. Specifically, Sheldon and Elliot suggested that only the attainment of autonomously motivated goals, as opposed to goals underpinned by controlled motives, enables psychological growth and well-being through the realization of valued objectives. Sheldon and Elliot further suggested that the moderated path between goal attainment and well-being was mediated by basic need satisfaction. Specifically, the attainment of autonomously pursued goals is proposed to result in increases in psychological well-being as this type of goal striving satisfies the innate psychological needs for autonomy (i.e., experiencing oneself as the originator of one's behavior), competence (i.e., feeling proficient in one's actions), and relatedness (i.e., feeling connected to the social environment). In contrast, the attainment of goals that are regulated by internal or external pressures is assumed not to facilitate need fulfillment and, thus, well-being remains unchanged.

Consistent with Sheldon and Elliot's (1999) model, the study of Smith et al. (2007) found athletes' goal attainment to be positively related to basic need satisfaction, which, in turn, predicted psychological well-being. Need satisfaction was also found to mediate the path from attainment to well-being. However, in contrast to predictions, autonomous motives were not found to moderate the path from goal attainment to need satisfaction. The authors suggested that this null finding might have resulted from the use of concurrent measures of each construct without controlling for early season scores. Specifically, the moderation might have been masked by preexisting differences in need satisfaction between individuals with high or low autonomous motives. To date, this moderation has not been tested longitudinally in sport.

The primary purpose of the current study was to build upon Smith and colleagues' (2007) cross-sectional investigation of sport-specific goal striving by prospectively testing the assumptions of the self-concordance model (Sheldon & Elliot, 1999) in relation to athletes' season-long goal striving. Based upon the findings of previous research in other domains highlighting the longitudinal association of autonomous goal motives with goal attainment (e.g., Judge, Bono, Erez, & Locke, 2005), start-of-season autonomous goal motives were hypothesized to be positively associated with end-of-season goal attainment. In addition, consistent with the cross-sectional findings of the Smith et al. study the path from autonomous motives to attainment was proposed to be mediated by midseason goal-directed effort (Hypothesis 1). In line with the studies of Sheldon and Elliot and Smith and colleagues, goal attainment was expected to be positively related to changes in well-being across the season. Furthermore, this relationship was expected to

be mediated via changes in need satisfaction (Hypothesis 2). The present study focused upon emotional components of hedonic well-being, specifically positive affect and life satisfaction. Consistent with Sheldon and Elliot, autonomous goal motives were predicted to synergistically moderate the association between goal attainment and end-of-season need satisfaction, when controlling for initial need satisfaction (Hypothesis 3). Specifically, the association of goal attainment with need satisfaction was expected to be significant only when accompanied by highly autonomous goal motives. Controlled goal motives at start-of-season were not expected to predict effort or goal attainment, but were expected to be negatively associated with concurrent well-being (Hypothesis 4). In an expansion of Sheldon and Elliot's model, Smith and colleagues additionally examined the role of autonomy support as a social-environmental predictor of goal motives. Coach autonomy support refers to the extent to which a coach enables the development of athletes' autonomy through considering their perspective, providing opportunities for choice and volition, and minimizing pressure. Consistent with previous research focusing on contextual motivation in sport (e.g., Gagné, Ryan, & Bargmann, 2003), Smith et al. identified positive links from autonomy support to both autonomous goal motives and need satisfaction. Consequently, in the current study coach autonomy support reported at the start of the season was expected to predict both autonomous motives and need satisfaction at the same time point (Hypothesis 5).

Integrating Coping Strategies in the Goal Striving Model

The present study's second aim was to examine the role of coping strategies used in response to difficulties experienced during goal striving. Although the advantages of goal setting in terms of initiating and focusing resources are evident (Locke & Latham, 2002), it is also clear that goal striving is rarely without its challenges. The continued investment of effort toward a desired objective inherently places a demand upon personal resources. Furthermore, due to both internal and external factors, goals may become more difficult during striving, placing greater demands upon the individual. Lazarus (2000) proposed that the coping strategies athletes use in response to challenges and stressful circumstances might be integral to persistence and performance. Coping has been defined as the cognitive and behavioral actions individuals use in response to internal and external demands that exceed their resources (Lazarus & Folkman, 1984). The categorization of coping strategies provides a continued debate in the coping literature. Nevertheless a practically appealing distinction summarizes coping strategies into two higher-order coping dimensions reflecting constructive engagement with (*task-oriented*), or disengagement from (*disengagement-oriented*), the stressor(s) (see Skinner, Edge, Altman, & Sherwood, 2003, for review). Athletes' coping responses, in terms of proactive engagement with, or disengagement from, goal demands may determine the persistence or withdrawal of goal-directed effort from personal goals. Furthermore, the coping strategies an individual adopts may develop from the motives underlying their goal striving. As Lazarus (1991) suggested, an individual's coping responses in particular situations depend both upon the coping strategies available as well as the individuals' goals in that situation. Consequently, coping responses may play an explanatory role in linking the motives underlying personal goals to the persistence of effort in the face of goal difficulties.

Addressing this role, Amiot, Gaudreau, and Blanchard (2004) and Gaudreau and Antl (2008) examined the links between contextual motivation in sport (in terms of general motives for sport participation), coping strategies used during competition, and competition-related goal attainment. The findings of both studies revealed links between autonomous and controlled motivation and task- and disengagement-oriented strategies, respectively. In turn, task- and disengagement-oriented strategies were positively and negatively associated with athletes' self-reported goal attainment, respectively. While this research supports the association of motivation with coping and indicates the consequences for sports performance, the specific motives underlying athletes' personal goals and the effort devoted toward the attainment of these goals were not measured. Consequently, in the current study we expand upon the studies of Amiot et al. and Gaudreau and Antl by examining the possible integration of coping strategies in the self-concordance model (Sheldon & Elliot, 1999). Based upon previous findings, we expected that autonomous and controlled goal pursuit would be positively associated with task- and disengagement-oriented coping strategies employed during goal striving, respectively (Hypothesis 6). Specifically, we expected that controlled striving would positively predict cognitive and behavioral disengagement when faced with difficulties. This is because, given that individuals who pursue goals for controlled reasons are more likely to base their self-esteem upon goal success, the negative feedback implied in the setback is more likely to be appraised as a threat to one's self-worth (Ryan & Deci, 2002). As individuals want to avoid such threats in the future, they are more likely to disengage from goal striving. In contrast, when individuals pursue goals autonomously, they are more likely to have energy available to proactively deal with setbacks and are more likely to stay focused on how to overcome the obstacles rather than perceiving the lack of goal progress as indicative of low self-worth. In turn, such differing coping responses should differentially impact upon individuals' continue devotion of effort toward goal striving. Thus, we expected task-oriented coping to be positively associated with goal-directed effort, reflecting continued goal engagement. In contrast, disengagement-oriented coping was predicted to be negatively related with goal-directed effort reflecting a direction of resources away from goal striving (Hypothesis 7).

Method

Participants and Procedure

The study was conducted following institutional ethical approval and in accordance with the APA ethical principles. One hundred and forty-three (57 male, 86 female) regularly training British University athletes provided informed consent to participate in the study and completed start-of-season measures. Questionnaires were administered at two further time points at the approximate midpoint of the season (3 months later) and the end of the season (approximately 6 months after the initial questionnaire). To enable questionnaires to be matched across time points while preserving anonymity, participants were asked to indicate their date of birth, gender, and initials on each questionnaire. Throughout the study, athletes sustaining injuries which resulted in an absence from training of one month or more ($n = 10$) were excluded from further analyses. A further 36 participants were

unavailable at midseason and end-of-season time points. In total, 97 (35 male, 62 female) participants provided data for all time points, reflecting a 68% retention rate overall (85% retention from Time 1 to Time 2, 80% retention from Time 2 to Time 3). The retention rate and final sample size ($n = 97$) for the current study are comparable to those reported by Sheldon and colleagues (e.g., Sheldon & Kasser, 1998) during the development of the self-concordance model. Participants who did not complete the study did not differ significantly from those who completed all three times points in terms of gender ($\chi^2_{(1)} = 2.51$, $p > .05$) or age ($F_{(1, 141)} = 2.44$, $p > .05$). Furthermore, no significant differences between the two groups were found for Time 1 measures of autonomy support ($F_{(1, 138)} = 2.38$, $p > .05$), autonomous and controlled goal motives ($F_{(2, 140)} = 2.43$, $p > .05$; Wilks's $\lambda = .97$), need satisfaction ($F_{(1, 141)} = 1.16$, $p > .05$) and emotional well-being ($F_{(1, 140)} = 2.38$, $p > .05$). Participants completing all three time points ranged in age from 18 to 28 years ($M = 20.14$, $SD = 1.75$). Similar to the Smith et al. (2007) study, participants were from a variety of individual and team sports including basketball ($n = 22$), lacrosse ($n = 19$), badminton ($n = 18$), volleyball ($n = 12$), field hockey ($n = 10$), soccer ($n = 9$), and netball ($n = 7$) and a variety of competitive levels including local ($n = 4$), university ($n = 56$), regional ($n = 10$), national ($n = 23$), and international ($n = 4$).

Measures

Goal-Related Measures. Participants' personal sports goals were assessed using the idiographic goal methodology advocated by Sheldon and Elliot (1999). Specifically, early in the university sport season participants were asked to self-generate three personal, sport-specific goals that they were planning to strive for from the start of the season and which they hoped to attain by the end of it. Examples of goals listed by participants include "to improve non-dominant stickwork [in field hockey]" and "to maintain a starting 5 position [in basketball]."

To measure goal motives, participants rated the extent to which they were striving for each goal in terms of four reasons relating to intrinsic ("because of the fun and enjoyment the goal provides you"), identified ("because you personally believe it's an important goal to have"), introjected ("because you would feel ashamed, guilty, or anxious if you didn't"), and external ("because someone else wants you to") motives. As in Sheldon and Elliot (1999), for each participant, mean motive scores were created first by averaging the ratings of each motive across each of the participants' goals. Intrinsic and identified motive scores were then aggregated to create an autonomous goal motive score. Similarly, introjected and external scores were aggregated to form a controlled motive score.

The effort directed toward each goal up to the midpoint of the season (e.g., "how much effort have you devoted towards this goal since the start of the current season?"), and the perceived attainment of each goal between the midpoint and end of the season (e.g., "to what extent do you feel you have attained this goal since mid-season?"), were each measured using four items developed from previous research (Smith et al., 2007). Effort and goal attainment scores were calculated for each participant by first averaging the item ratings across each goal and then averaging the relevant scale items. Before completing the effort and attainment scales, participants were reminded of their personal goals. For all goal-related items, a scale from 1 (*not at all*) to 7 (*very much so*) was used.

Coach Autonomy Support. Perceived coach autonomy support was measured at the start of the season using six items adapted from the Health-Care Climate Questionnaire (Williams, Grow, Freedman, Ryan, & Deci, 1996). In accordance with previous research (Smith et al., 2007), an additional seventh item ("my coach really makes sure I understand the goals of my involvement and what I need to do") was added to the six-item short form of the scale, owing to its relevance to the study. Smith and colleagues found the seven-item scale to be sufficiently valid and reliable.

Psychological Need Satisfaction. Need satisfaction was assessed at the beginning and end of the sport season using five autonomy items adapted 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. Evidence for the validity and reliability of the three scales has been presented in each of the respective studies. The items in each subscale were adapted to assess satisfaction of the needs in the sport context. At both time points, need satisfaction was measured in relation to the past month to obtain a measure that was neither too state-like and susceptible to momentary changes nor too trait-like and unlikely to change throughout the season (Sheldon & Kasser, 1998). Consistent with the self-concordance model (Sheldon & Elliot, 1999) and in accordance with the sport-based adaptation of the model (Smith et al., 2007), a need satisfaction composite score was created by averaging the three individual need scores. Participants completed each subscale using a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Cronbach alpha coefficients for separate psychological needs indicated satisfactory reliabilities (αs = .73 to .91). Significant interscale correlations supported the aggregation of need satisfaction scales to form a composite score at both Time 1 (r = .34 to .56) and Time 3 (r = .29 to .45).

Emotional Well-Being. Positive affect and life satisfaction were assessed as indicators of emotional well-being at both the start and end of the sport season. Positive affect was measured using the 10-item positive affect subscale from the Positive and Negative Affect Schedule (Watson, Tellegen, & Clark, 1988). Life satisfaction was measured using the five-item Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Both well-being indicators have been assessed in the majority of previous self-concordance research (e.g., Sheldon & Elliot, 1999) and have been found to be valid and reliable. Once again, at both time points positive affect and life satisfaction were referenced in relation to the previous month. For each participant, a composite emotional well-being score was created by averaging the responses to the two subscales. Each of the subscales was measured on a 7-point scale, with higher scores indicating stronger agreement with the items.

Coping Strategies. Coping strategies employed between the start and midpoint of the season to deal with difficulties in attaining the reported goals were assessed retrospectively at midseason using four subscales adapted from the brief version of the COPE (Carver, 1997). These subscales measured two task-oriented coping strategies (planning and use of instrumental social support) and two disengagement-oriented strategies (cognitive and behavioral disengagement), which may be used

by athletes when experiencing difficulties during goal striving. For each participant, mean combined scores for planning and instrumental support strategies and for cognitive and behavioral disengagement strategies were calculated by averaging the relevant items within each of the dimensions. Participants rated each coping item using a 7-point scale, varying between 1 (*completely disagree*) and 7 (*completely agree*). Confirmatory factor analysis indicated acceptable fit for a two-factor structure, $\chi^2(19) = 43.55$, $p < .01$, CFI = .90, NNFI = .85, RMSEA = .12 (CI = .07, .16), SRMR = .09, with task- and disengagement-focused items loading significantly on two negatively associated factors. Cronbach alpha coefficients supported the reliability of both task-oriented ($\alpha = .80$) and disengagement-oriented ($\alpha = .78$) items.

Results

Descriptive Statistics and Scale Reliabilities

Means, standard deviations, and reliability coefficients are presented in Table 1. The reliability of the goal-related variables (goal motives, effort, and goal attainment) was assessed using Lüdtke and Trautwein's (2007) intraclass correlation approach, which identifies the homogeneity of ratings across self-generated goals in addition to the reliability of aggregated goal scores. The intraclass correlation coefficients demonstrated that participants' responses were generally homogenous across their personal goals and were sufficiently reliable (ICC (2) = .73 to .96) when accounting for homogeneity and the number of personal goals generated per participant. The reliability of all other scales was assessed using Cronbach alpha coefficients and was satisfactory ($\alpha = .78$ to .92).

Similar to previous research (Smith et al., 2007), autonomous motives were rated higher than controlled motives. For all other variables, mean scores were above the scale midpoints, with the exception of cognitive and behavioral disengagement coping strategies. Bivariate correlations are presented in Table 1. Autonomous and controlled goal motives were unrelated ($r = .00$), supporting their inclusion as independent motivation-related factors in our models.

Testing the Assumptions of the Self-Concordance Model

To test the fit of the data to the hypothesized model, structural equation modeling analysis was conducted using EQS, version 6.1 (Bentler, 2003). In consideration of the relatively low sample size ($N = 97$), an observed variables model was tested to maintain a satisfactory ratio of participants per specified parameter (Bentler & Chou, 1987). In addition to the aforementioned hypothesized associations, paths were specified in the model from initial need satisfaction and emotional well-being to their end-of-season equivalents. The path between initial need satisfaction and well-being was also freed in view of the frequently observed concurrent association between these variables (e.g., Reinboth, Duda, & Ntoumanis, 2004). To represent the interaction between autonomous motives and goal attainment, a product term was created and entered in the model with a path to end-of-season need satisfaction. To prevent multicollinearity, both independent variables were centered before their inclusion in the model and the product term was created using these centered scores (Aiken & West, 1991).

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

		M	*SD*	ICC_2/α[a]	1	2	3	4	5	6	7	8	9	10
1	T1 Coach autonomy support	5.04	1.16	.92	—									
2	T1 Autonomous goal motives	11.57	1.37	.73	.12	—								
3	T1 Controlled goal motives	6.43	2.66	.91	–.16	.00	—							
4	T1 Need satisfaction	4.98	.72	.86	56**	.15	–.16	—						
5	T1 Emotional well-being	10.75	1.44	.85	.24*	36**	–.15	41**	—					
6	T2 Goal-directed effort	5.18	.85	.96	.09	34**	–.10	.15	.18	—				
7	T2 Planning and instrumental social support	4.59	1.10	.80	.18	31**	–.07	.16	.10	51**	—			
8	T2 Cognitive and behavioral disengagement	2.89	1.22	.78	–.08	–.02	.21*	–.10	.04	–.29**	–.22*	—		
9	T3 Goal attainment	4.66	1.17	.96	.06	35**	–.02	.10	.18	42**	32**	–.10	—	
10	T3 Need satisfaction	5.01	.70	.86	.25*	.20*	–.09	49**	28**	39**	.25*	–.18	46**	—
11	T3 Emotional well-being	10.16	1.41	.86	.23*	29**	–.20	.37**	.61**	28**	.08	–.15	30**	.39**

[a]Intraclass correlations (2; Lüdtke & Trautwein, 2007) are given for goal variables. Cronbach alpha coefficients are given for all other variables. T1 = Start of season, T2 = Midseason, T3 = End of season

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

The hypothesized model was tested using robust maximum likelihood method (Mardia's normalized estimate of multivariate kurtosis = 15.74). The fit indices indicated satisfactory fit with room for improvements, scaled $\chi^2(34) = 41.29$, $p > .05$, CFI = .95, NNFI = .93, RMSEA = .05 (CI = .00–.09), SRMR = .21. The modification indices recommended the deletion of nonsignificant paths from autonomy support to autonomous motives ($p = .29$) and from controlled motives to initial well-being ($p = .41$), as well as the addition of a path from autonomous motives to initial well-being. Following these modifications, the fit indices indicated improved fit, scaled $\chi^2(26) = 27.42$, $p > .05$, CFI = .99, NNFI = .99, RMSEA = .02 (CI = .00–.09), SRMR = .11. All specified paths in the revised model were significant with the exception of the path from the interaction term to end-of-season need satisfaction. This path was marginally nonsignificant ($p = .07$) but, due to its theoretical importance, it was retained in the model. The hypothesized and revised models are presented in Figure 1.[1,2]

The predicted mediations in the model were tested using Holmbeck's (1997) approach, which assesses Baron and Kenny's (1986) four steps for mediation in three structural models, and through assessing indirect effects for mediated paths. Results from the four-step procedure provided evidence for mediation. Specifically, with the addition of effort, the coefficient for the direct path from autonomous motives to goal attainment dropped from $\beta = .33$ to $\beta = .21$ and became nonsignificant. A Satorra–Bentler (Satorra & Bentler, 2001) scaled chi-square difference test (scaled χ^2 difference (1) = 2.29, $p > .05$) revealed no significant differences between the mediated model (Figure 1) and the model including the direct path, supporting the mediated model as the most parsimonious representation of the data. An identical procedure was used to test the hypothesized mediation from goal attainment to changes in well-being via changes in need satisfaction. With the addition of changes in need satisfaction the coefficient for the direct path from goal attainment to well-being dropped from $\beta = .20$ to $\beta = .13$ and became nonsignificant. No significant difference was identified between the mediated model and the model including the direct path, once again supporting the mediated model as the most parsimonious: Satorra–Bentler scaled χ^2 difference (1) = 1.66, $p > .05$.[3] Indirect effects indicated that autonomous motives positively predicted goal attainment through effort ($\beta = .15$, $p < .05$), and goal attainment positively predicted changes in well-being via changes in need satisfaction ($\beta = .10$, $p < .05$).

Probing the Interaction Between Autonomous Motives and Goal Attainment

To examine the form of the interaction between autonomous motives and goal attainment, and in line with Aiken and West's (1991) recommendations, two regression lines were plotted to represent the association of attainment with changes in need satisfaction at high (1 *SD* above the mean) and low (1 *SD* below the mean) autonomous motives scores (see Figure 2). Post hoc simple slope analyses revealed the slopes for both high and low autonomous motives, respectively, to be significant: $b = .32$, $t(95) = 4.61$, $p < .01$, and $b = .19$, $t(95) = 2.68$, $p < .01$. The interaction plot indicated a disordinal interaction between autonomous motives and goal attainment showing that low levels of autonomous goal motivation attenuated the positive affect of goal attainment on need satisfaction. However, since both slopes

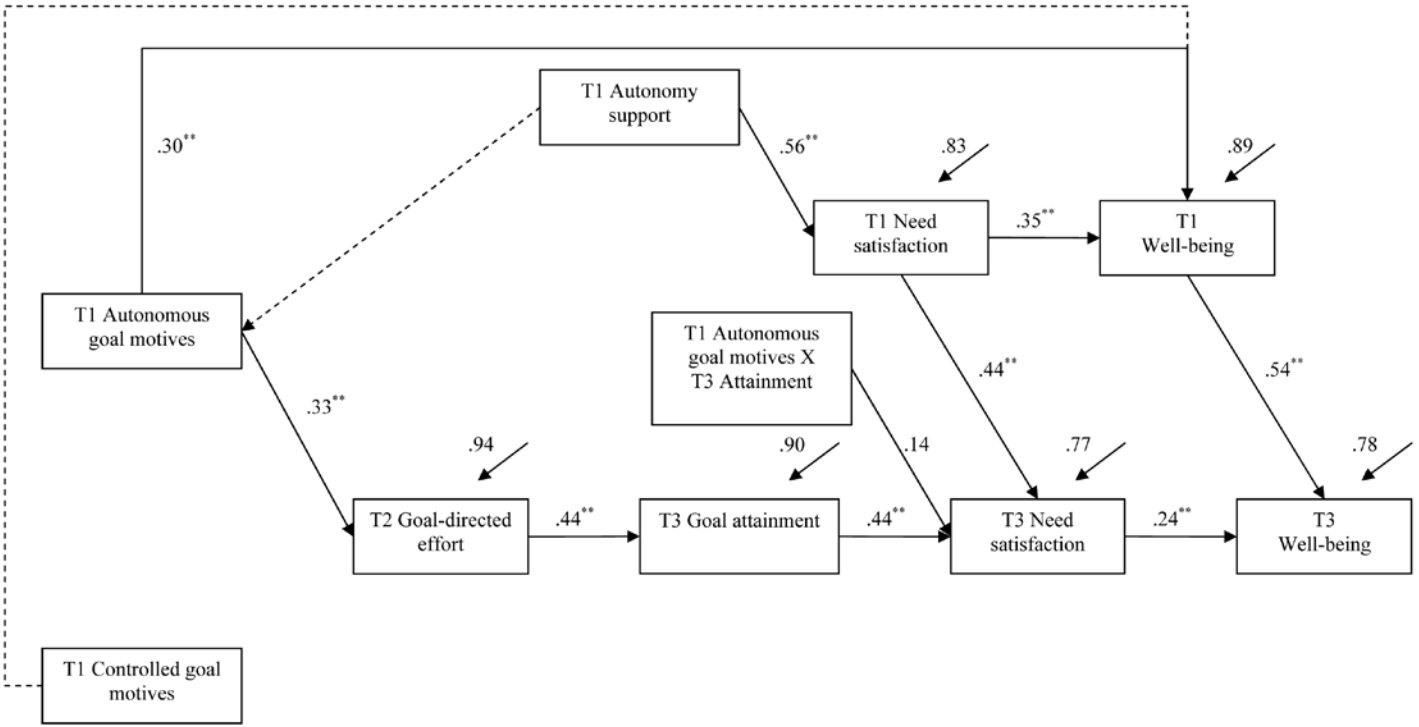

Figure 1 — The original and revised (as indicated by dashed lines) longitudinal models. *Note.* Deleted paths are indicated with dashed lines. T1 = Start of season, T2 = Midseason, T3 = End of season. $^{**}p < .01$.

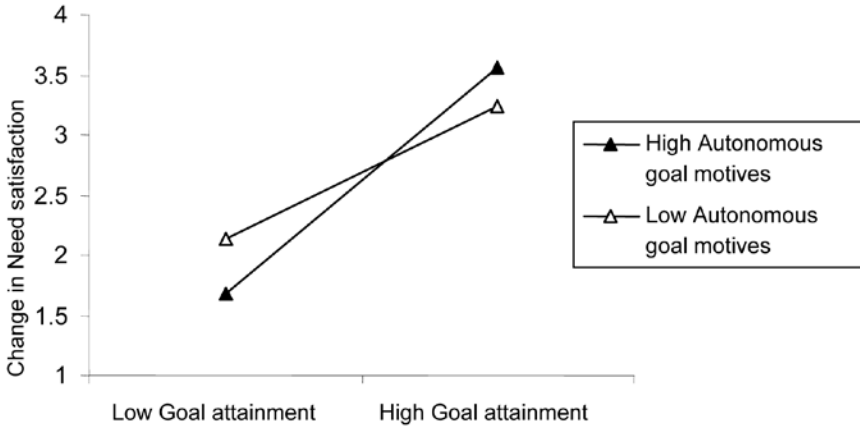

Figure 2 — Interaction between initial autonomous goal motives and end-of-season goal attainment in the prediction of changes in psychological need satisfaction.

were significant, low autonomous goal motivation did not eliminate the beneficial effect of goal attainment. In accordance with Preacher, Curran, and Bauer (2006), the region of significance, which defines the values of a moderator at which the regression of a predictor on an outcome variable becomes significant, was also calculated. For the present interaction, the regression of goal attainment (predictor) on changes in need satisfaction (outcome) was significant for values of autonomous motives (moderator) falling within the upper (18.13) and lower (–1.91) bounds of the region. Comparison of the region of significance with maximum and minimum values of autonomous motives obtained from the sample (2.43 and –3.57, respectively) indicated that the regression of attainment upon need satisfaction change became nonsignificant for individuals with quite low autonomous motives (i.e., between –1.91 and –3.57).

Coping Strategies and Goal-Directed Effort

To assess the role of coping strategies in the goal striving process, coping strategies used between the start and midpoint of the season were included as observed variables in an expanded model. Paths were specified from autonomous goal motives to planning and instrumental social support and from controlled motives to cognitive and behavioral disengagement. In turn, both coping strategies were hypothesized to predict midseason effort (see Figure 3). The fit indices indicated good fit of the model to the data, scaled $\chi^2(53) = 58.55$, $p > .05$, CFI = .97, NNFI = .96, RMSEA = .03 (CI = .00–.08), SRMR = .11. All paths in the model were significant and in the predicted direction, with the exception of the path from controlled motives to disengagement-oriented coping strategies ($p = .09$), and the path from the interaction term to end-of-season need satisfaction ($p = .08$), which were marginally nonsignificant.[4] Indirect effects indicated that planning and instrumental social support positively predicted Time 3 goal attainment through goal-directed effort ($\beta = .13$, $p < .05$). Cognitive and behavioral disengagement were found to

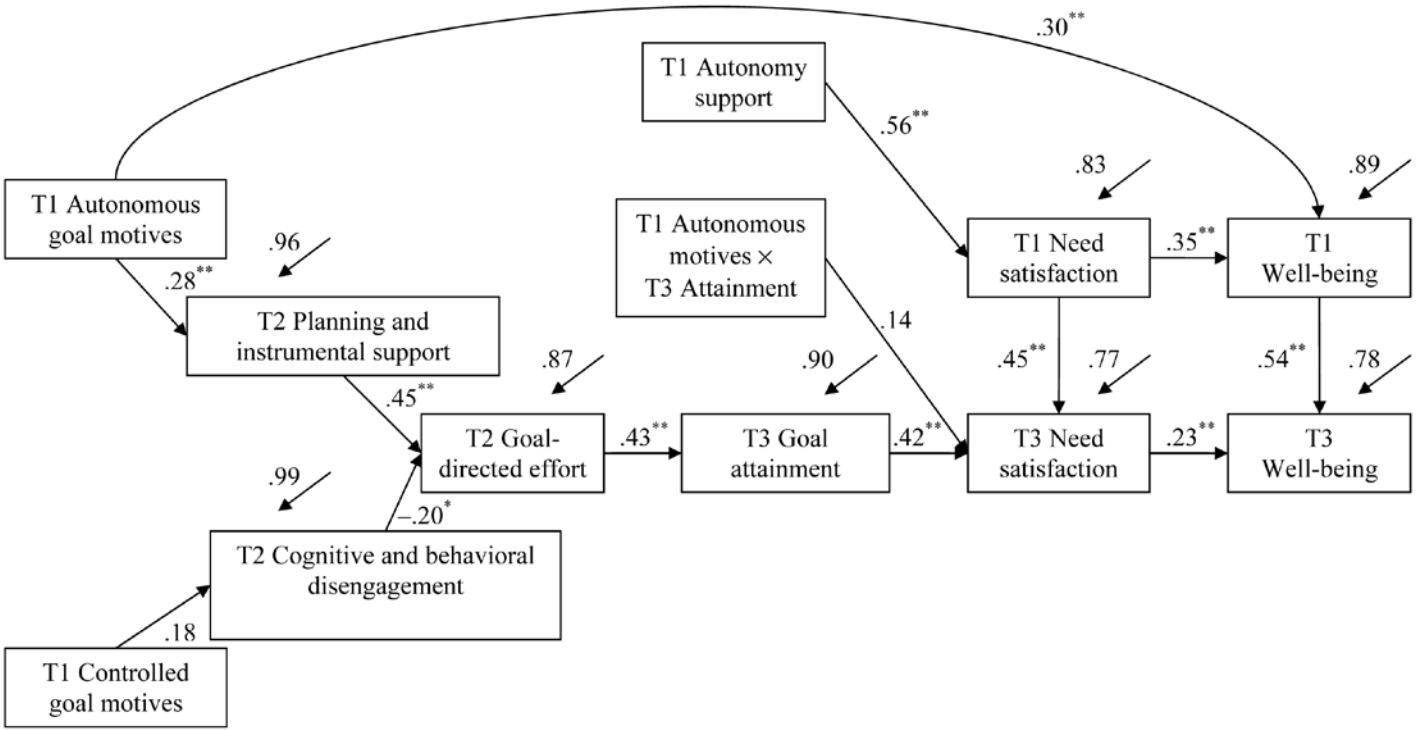

Figure 3 — The expanded model incorporating coping strategies. *Note.* T1 = Start of season, T2 = Midseason, T3 = End of season. *$p < .05$, **$p < .01$.

Table 2 Standardized Parameter Estimates of Indirect Effects for the Expanded Model

Parameter	Indirect Effect
T1 Coach autonomy support → T1 Emotional well-being	.20*
T1 Coach autonomy support → T3 Need satisfaction	.26*
T1 Coach autonomy support → T3 Emotional well-being	.17*
T1 Autonomous goal motives → T2 Goal-directed effort	.13*
T1 Autonomous goal motives → T3 Goal attainment	.06*
T1 Autonomous goal motives → T3 Need satisfaction	.02
T1 Autonomous goal motives → T3 Emotional well-being	.17*
T1 Controlled goal motives → T2 Goal-directed effort	–.04
T1 Controlled goal motives → T3 Goal attainment	–.02
T1 Controlled goal motives → T3 Need satisfaction	–.01
T1 Controlled goal motives → T3 Emotional well-being	.00
T1 Need satisfaction → T3 Emotional well-being	.29*
T2 Planning and instrumental support → T3 Goal attainment	.19*
T2 Planning and instrumental support → T3 Need satisfaction	.08*
T2 Planning and instrumental support → T3 Emotional well-being	.02
T2 Cognitive and behavioral disengagement → T3 Goal attainment	–.09*
T2 Cognitive and behavioral disengagement → T3 Need satisfaction	–.04*
T2 Cognitive and behavioral disengagement → T3 Emotional well-being	–.01
T2 Goal-directed effort → T3 Need satisfaction	.18*
T2 Goal-directed effort → T3 Emotional well-being	.04
T3 Goal attainment → T3 Emotional well-being	.10*
T1 Autonomous goal motives × T3 Goal attainment → T3 Emotional well-being	.03

*$p < .05$.

negatively predict goal attainment via effort; however, the indirect effect was not significant ($\beta = -.04$, $p > .05$). A list of the indirect effects for the expanded model is provided in Table 2.

Discussion

The primary aim of the current study was to empirically test a contextual adaptation of the self-concordance model (Sheldon & Elliot, 1999) by examining the model in relation to season-long goal striving in sport. A secondary aim was to examine a conceptual extension of the model by exploring the potential integration of coping strategies in the goal striving process. The data revealed support for a number of

hypotheses and, in line with previous findings, highlighted the benefits of striving for personal goals based on autonomous rather than controlled motives.

Testing the Assumptions of the Self-Concordance Model

In line with Hypothesis 1, autonomous goal motives at the start of the sport season positively predicted goal-directed effort at the midpoint of the season. In turn, effort was positively associated with perceived end-of-season goal attainment. This finding agrees with cross-sectional examinations of goal striving in sport (Smith et al., 2007) and supports previous self-concordance research (Sheldon & Elliot, 1999). Autonomous goal motives reflect the combined contribution of intrinsic and identified motivational regulations. Consequently, higher agreement with items both identifying goals as inherently enjoyable to pursue and identifying goals that align with one's personal values and convictions were positively associated with goal-directed effort, when controlling for controlled goal motives. In line with previous cross-sectional findings (e.g., Smith et al.), the mobilizing of personal resources in the case of autonomous goal striving, as evidenced through higher ratings of goal-directed effort, was positively linked to goal attainment. In addition, in the current study, effort was found to mediate this path. This latter finding highlights the integral role of effort in ensuring the attainment of personal goals. Future research would do well to address the multidimensional nature of effort by assessing not only the *quantity* of effort directed toward goal striving but also the implications of autonomous goal striving for the *quality* of effort and its sustainability over time.

In accordance with Hypothesis 2, end-of-season goal attainment was positively associated with changes in emotional well-being. This finding supports Carver and Scheier's (1990) control-process model of self-regulation, which advocates the positive affective consequences of reducing discrepancies between current and desired states. In the current study, the path between end-of-season goal attainment and changes in well-being was mediated by changes in psychological need satisfaction. From an SDT perspective, the needs for autonomy, competence, and relatedness are "innate requirements rather than acquired motives" (Ryan & Deci, 2002, p. 7) and, as such, are considered to be fundamental for psychological growth and optimal functioning and development. However, the role of goal attainment in fulfilling these needs, and the mechanisms underlying this relationship, has received minimal attention and warrants further examination.

Extending the findings of Smith and associates (2007), the present data indicated that the association of goal attainment with need satisfaction was partially moderated by autonomous motives (Hypothesis 3). Although the interaction was marginally nonsignificant, we consider it appropriate to discuss it given its theoretical relevance and the fact that this result is based on a relatively small sample size. Differing from the hypothesized synergistic interaction, simple slopes analyses indicated that the association of goal attainment with need satisfaction was significantly positive for athletes with both high and low autonomous goals indicating that goal attainment by itself is conducive to enhanced need satisfaction and emotional well-being. However, analyses revealed that a low level of autonomous goal motives attenuates the positive relationship of goal attainment with need satisfaction. In contrast, the association of goal attainment with need satisfaction, and subsequent well-being, appeared to be stronger for individuals pursuing highly

autonomous goals which originate from the self. These findings concur with goal literature stating that the successful pursuit of meaningful goals is important for psychological well-being (Wiese, 2007). It might be the case that the attainment of personally endorsed goals yields a more vitalizing effect as such goal attainment engenders a stronger perception of need satisfaction. Notably, simple slope analysis also revealed that individuals with highly autonomous goal motives might experience smaller increases in need satisfaction when goals are not achieved, when compared with individuals with less autonomous motives. Consistent with Sheldon and Kasser (1998), this finding suggests a potential risk for individuals not attaining goals that are enjoyable to pursue and/or are aligned with personal values. However, it should be noted that, due to the relatively high mean score for autonomous motives, comparisons between high and low autonomous motive groups should be interpreted with caution.

In contrast to previous cross-sectional findings (Smith et al., 2007), the predicted negative association of controlled motives with baseline well-being (Hypothesis 4) did not emerge in the current study. Although this may suggest that such motives are not detrimental to well-being, it is important to note that no indicators of ill-being were assessed. Future research should measure both positive and negative indicators (e.g., negative affect, emotional/physical exhaustion) of well-being, as the implications of controlled goal striving may not be evident from positive indicators alone.

It is important to note that the identification of unique associations of autonomous motives with goal attainment and affective consequences in this study, and the lack of association of controlled goal motives with both goal-directed effort and goal attainment are consistent with previous goal striving research supporting the consideration of these motives as separate factors in the goal process (e.g., Koestner et al., 2008). As noted by Koestner and colleagues, further understanding of the goal striving process may only be gained through assessing the independent links from autonomous and controlled goal motives to goal progress and attainment. Interestingly, Sheldon and Elliot (1998) also adopted this approach in three studies examining the motives underlying University undergraduates' context-free personal strivings (e.g., "get more exercise," "avoid procrastination") and revealed unique associations of autonomous and controlled motives with effort and goal attainment. Although Sheldon (2002) later advocates the use a relative index of autonomy to assess goal self-concordance, minimal justification was given for the use of this approach in preference to separate autonomous and controlled factors. We believe that the present findings reiterate the need to consider autonomous and controlled motives separately, both at the level of contextual goals and in terms of more general personal strivings, to examine their independent contributions (or lack of) to the goal striving process.

As highlighted within SDT (Ryan & Deci, 2002), support of an individual's need for autonomy by significant others (such as the coach in sport settings) results in enhanced psychological need satisfaction and intrinsic motivation. In the current study, it was anticipated that such positive implications of autonomy support would extend to the motives underlying personal goal striving (Hypothesis 5). The significant link we found from autonomy support to initial need satisfaction supports previous findings in sport (e.g., Reinboth et al., 2004). Contrary to our expectations autonomy support did not predict athletes' goal motives at the start of the season. However, the conflict of this finding with previous cross-sectional research assessing

coach behaviors and goal motives at midseason (Smith et al., 2007) suggests that our finding may be attributable to the timing of the initial measures in relation to the athletes' academic and training programs. For many University-level athletes, the start of the sport season in autumn coincides with a return to training following the summer break. Consequently, the impact of the coach upon athletes' goal motives may not have been strong at the start of the season, due to a lack of recent and continuous contact between the coach and his or her athletes.

Sheldon (2002) proposed that goal motives reflect an individual's personal ability to select goals that are congruent with his or her own needs. Although social-contextual factors represent one contributor to the formation of goal motives, when environmental factors are not pronounced, personal variables (such as an individual's ability to distinguish between enduring interests and transient impulses; Sheldon, 2002) may contribute more strongly to variability in goal motives. Considering Snyder and Cantor's (1998) suggestion that the relative impact of personal and social environmental factors on motivation is dynamic, it would be interesting to investigate the potentially differential contributions of such variables over the length of a sport season.

Integrating Coping Strategies in the Goal Striving Model

Developing upon the proposed benefits of coping responses for persistence and performance in sport (Lazarus, 2000), the current study expanded upon the self-concordance model (Sheldon & Elliot, 1999) by investigating the role of differing coping strategies adopted when athletes experience difficulties during goal striving. In accordance with Hypothesis 6, autonomous goal motives were found to positively predict planning and seeking instrumental social support. In contrast, controlled goal motives were predictive of cognitive and behavioral disengaging from one's goals. Lazarus and Folkman's (1984) transactional model of stress proposes that coping strategies are preceded by the primary and secondary cognitive appraisals individuals form when encountering a situation in which demands challenge personal resources. Correspondingly, autonomous and controlled goal motives may be associated with differing coping strategies as a result of differing associations with primary and secondary level appraisals. Specifically, at primary level an individual striving for goals with autonomous motives may be inclined to appraise difficulties as a challenge, comprised of opportunities for learning and growth. In contrast, goal difficulties encountered when goals are regulated by controlled motives may be appraised as threatening as self-worth is more heavily implied within the activity and is contingent upon successful reaching of personal goals. At the secondary appraisal level, resources available to deal with goal difficulties might also vary as a function of goal motives. When goals are regulated by controlled motives, internal conflicts arising from the pressure to satisfy a goal that is not congruent with one's sense of self are likely to be mentally draining and energy consuming, resulting in fewer personal resources available to effectively cope with goal difficulties (Moller, Deci, & Ryan, 2006). In contrast, autonomous goal motives may leave more energetic resources available to cope with the stressor as they are volitionally pursued. However, we should note that the path from controlled motives to disengagement-oriented strategies was marginally nonsignificant in the current study (possibly because of the relatively small sample size).

Supporting Hypothesis 7, planning and instrumental social support and cognitive and behavioral disengagement were positively and negatively related to goal-directed effort and subsequent goal attainment, respectively. It is important to note that effort elicited in direct response to difficulties may also be used as a coping strategy; however, in the current study effort was assessed as a goal-related variable indicating the application of effort toward personal goal striving, regardless of goal difficulties. The differing links of task- and disengagement-focused strategies with goal-directed effort can be explained as a function of the direction of personal resources toward or away from stressors. Whereas task-oriented coping allows one to actively fight and proactively deal with stressors, resulting in sustained effort-expenditure toward goal accomplishment, disengagement-oriented coping may be associated with a flight reaction, such that one escapes expending further effort in one's goals. These findings are consistent with mounting empirical evidence supporting effective coping as a key psychological factor underpinning successful performance in sport (e.g., Van Yperen, 2009). Due to both competing internal demands and external distractions, goal striving in sport is rarely undertaken without facing difficulties. The use of task-oriented coping strategies, such as planning and seeking instrumental support, provides means by which such challenges may be addressed and managed instead of presenting a threat to successful attainment.

Conclusions, Limitations, and Future Directions

From a theoretical perspective, the current study provides a prospective examination of context-specific goal striving that extends the time frame of previous self-concordance research in the sport psychology literature (e.g., Smith et al. 2007). Expanding upon previous self-concordance research, the current study also advanced the important role of coping strategies in the persistence of effort toward goal striving. The results also linked these coping strategies with different motives underlying goal pursuit.

From an applied standpoint, the findings underline the benefits of goal striving which is concordant with personal values and interests, for both goal attainment and subsequent increases in emotional well-being. Even when originating outside of the self (e.g., team goals in sport), goals can still be pursued autonomously if they are fully endorsed by athletes and engaged in through choice (Deci & Ryan, 1985). In addition, the present findings highlight the role of coping strategies during goal striving to facilitate goal attainment. Educating athletes with regard to effective task-oriented coping strategies for dealing with goal difficulties, for example encouraging the use of implementation intention planning to shield goals from potential distractions (Achtziger, Gollwitzer, & Sheeran, 2008), as well as explaining the detriments of disengagement-oriented strategies may further supplement autonomous goal striving and may counteract the negative implications of controlled goal motives.

The prospective design of this study advances previous sport-based self-concordance research (Smith et al., 2007); however, due to its correlational nature, causality cannot be ascertained. Future investigations should endeavor to use experimental designs to identify the causal influences of goal motives on goal attainment and well-being. The employment of such designs is also needed in the broader self-concordance literature and may be realizable through priming autonomous and

controlled motives before goal striving (e.g., Hodgins, Brown, & Carver, 2007). The use of self-report measures also limits the current study. Although Sheldon and Elliot's (1999) model is also based upon work utilizing self-reported perceptions of goal striving, it would be interesting to use objective assessments of goal attainment (e.g., measurable sport performance indicators) for comparison with self-reports of goal attainment in terms of the motivational processes involved and their impact upon goal outcomes. Finally, the current study is limited by the focus upon four coping strategies assessed with a brief scale. Further research should endeavor to provide a more comprehensive assessment of the role of coping strategies in the goal striving process.

Future research measuring athletes' primary and secondary appraisals of goal difficulties, and the origins of such appraisals in the motives underlying goal striving, will undoubtedly provide further understanding of the mechanisms linking coping, motivation, and goal attainment. Greater insight into these processes may aid athletes and, coaches, in identifying coping strategies for ensuring goal attainment in the face of difficulties. In addition, a number of theoretically interesting mediations, such as mediation of association of coping and changes in need satisfaction via effort and goal attainment, were evident in the findings and warrant further examination. Finally, it would be interesting to assess individuals' reactions when goals go beyond being difficult to pursue and become unattainable. Individuals' responses, in terms of their ability and flexibility to disengage from such goals and engage in new goals, may prove to be crucial for their future goal striving and psychological well-being (Wrosch, Scheier, Miller, Schultz, & Carver, 2003). Furthermore, autonomous and controlled goal motives might be differentially related to the ability to effectively disengage from unattainable goals. Specifically, controlled goal pursuit may lead one to become rigidly focused on attaining one's goals, as feelings of ego-enhancement are dependent upon goal success. In contrast, autonomous goal pursuit might be associated with a more flexible stance, such that individuals manage to integrate goal-failure in setting new, more realistic, and therefore more attainable goals.

Notes

1. In response to comments from an anonymous reviewer, two alternative versions of the revised model were tested. In the first model an additional path was specified from Time 1 need satisfaction to Time 1 autonomous goal motives, reflecting the proposed role of need satisfaction as a predictor of both motivation and well-being (Ryan & Deci, 2002). Indices indicated good fit of the model to the study data, scaled $\chi^2(25) = 26.06$, $p > .05$, CFI = .99, NNFI = .99, RMSEA = .02 (CI = .00–.09), SRMR = .10. However, the additional path was not significant. Furthermore, all other path coefficients were unchanged. In the second alternative model an additional path was specified from Time 1 coach autonomy support to Time 3 need satisfaction. The additional path was significant, $\beta = .43$, $p < .05$; however, model fit remained largely unchanged, scaled $\chi^2(25) = 27.05$, CFI = .99, NNFI = .99, RMSEA = .03 (CI = .00–.09), SRMR = .11.

2. A further revised model was tested in which an additional path was specified from Time 1 autonomous goal motives to Time 3 need satisfaction. This path allowed for both independent predictors that comprised the autonomous goal motives (Time 1) by goal attainment (Time 3) interaction to be controlled for in the model. Minimal changes in model fit were evident from the addition of this path, scaled $\chi^2(25) = 27.27$, $p > .05$, CFI = .98, NNFI = .98, RMSEA = .03 (CI = .00–.09), SRMR = .11. Furthermore, the path from the interaction term to Time 3 need satisfaction remained unchanged from the revised model ($\beta = .14$, $p = .07$).

3. Further analysis of the revised model (see Figure 1) conducted in response to an anonymous reviewer's comment evidenced a significant direct path between the interaction term (autonomous goal motives × goal attainment) and Time 3 emotional well-being ($\beta = -.20$, $p < .05$).

4. In light of research indicating a link from psychological need satisfaction to coping strategies (e.g., Ntoumanis, Edmunds, & Duda, 2009), a further extension of the expanded model (Figure 3) was tested in which direct paths were freed from Time 1 need satisfaction to Time 2 coping strategies. Indices supported the fit of the model to the data, scaled $\chi^2(51) = 57.32$, CFI = .96, NNFI = .95, RMSEA = .04 (CI = .00–.08), SRMR = .11, but both paths from need satisfaction to coping strategies were nonsignificant.

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