

PERCEIVED AUTONOMY SUPPORT, PERSONAL GOAL CONTENT, AND EMOTIONAL WELL-BEING AMONG ELITE ATHLETES: MEDIATING EFFECTS OF REASONS FOR GOALS¹

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Summary.—The relations between perceived support of autonomy from coaches, characteristics of personal goals, and emotional well-being from the perspective of self-determination theory was examined among 95 elite athletes (59% men; $M=21.6$ yr., $SD=6.1$) from Track and Field, Greco-Roman Wrestling, Taekwondo, and Power Lifting. Elite athletes were those representing their country in their sport. It was hypothesized that having autonomous reasons for goals would mediate the positive associations between perceived autonomy support and intrinsic goal content with subjective positive emotional well-being, and that controlled reasons for goals would mediate the association between extrinsic goal content and subjective negative emotional well-being. An idiographic approach to measures of personal goals and the autonomous and controlled reasons and intrinsic and extrinsic contents were performed. Perceived autonomy support from the coach was assessed with the Sport Climate Questionnaire and subjective emotional well-being was assessed with the Positive and Negative Affect Schedule. All hypotheses were supported by path analyses using LISREL.

Goals and Subjective Well-being of Athletes

According to telic theories, people's behavior and well-being can best be understood by examining their goals (Diener, 1984), because goals can give meaning and purpose in life. Recent research is consistent with goals and values as potential contributors to well-being of people (Diener, 1984; Emmons, 1986; Diener, Suh, Lucas, & Smith 1999; Deci & Ryan, 2000). All athletes have goals. Elite athletes need psychological power to meet the challenges and maintain the driving force to perfection in sports. Athletes may have to renounce a lot to achieve outstanding performance (Vallerand & Rousseau, 2001). An elite athlete is focused on the aim of performing better, so days consist of training, eating, and getting enough sleep. Given this, athletes set goals to guide their training and energy expenditure. Their goals in sport are important and can affect their emotional well-being. In a review of three decades of research, Diener, *et al.* (1999) concluded that "the influence of goals on subjective well-being is more complex than simply achieving one's goals" (p. 284). Progress and importance of goals,

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resources, environment, motives, and structure can potentially affect one's well-being (Diener, *et al.*, 1999). It is important to investigate subjective emotional well-being because it is related to the quality of the athletes' experiences in sport. In addition, affect plays an important role in athletes' submission to goals and may be used as feedback to inform athletes about the status of their goals (Emmons, 1999). Goals may also predict ill-being depending on environmental circumstances, such as pressure from the coach or difficulty in attaining goals (Diener, *et al.*, 1999).

Usually sport psychologists examine *types* of goals when investigating the outcomes of goals, e.g., process, mastery, performance, and outcome (Hardy, Jones, & Gould, 1996; Roberts, 2001). In the Self-determination Theory (Deci & Ryan, 2000) not always does the type of goals matter most in well-being but the social context, and both the reason and the content of goals being pursued are important. Due to this, relations between perceived support of autonomy from the coach, the contents and reasons for the personal goals, and the emotional well-being of elite athletes were investigated.

Reasons for Goals

Self-determination Theory maintains that the reasons for people's behavior falls on a continuum of Perceived Locus of Causality (Ryan & Connel, 1989) ranging from self-determined to nonself-determined. Within the theory (Deci & Ryan, 2000), people are said to act in a self-determined or autonomous manner when their task engagement is based on inherent satisfaction or enjoyment (intrinsic regulation) or when engagement represents a self-endorsed commitment (identified regulation). On the other hand, people's task engagement is viewed as nonself-determined or controlled when people act to avoid feelings of guilt and shame, to preserve their self-worth (introjected regulation), or when they comply with the imposed demands of others (external regulation).

This continuum of Perceived Locus of Causality has been adapted to people's personal goals by Sheldon and associates who measured people's motivation for different goals. Research, mostly with students, has shown that, whether goals are pursued in an autonomous or controlled manner seems to affect people's well-being, learning, effort, and attainment differentially (Sheldon & Elliot, 1998, 1999; Sheldon, Ryan, Deci, & Kasser, 2004; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). The Self-determination Theory explains this difference as having self-determined (autonomous) reasons for goals, rather than controlled reasons, which allows attaining higher satisfaction of the three basic needs of autonomy, competence, and relatedness (Ryan, Sheldon, Kasser, & Deci, 1996; Deci & Ryan, 2000). The need for autonomy refers to the experience of oneself as initiator and regulator of actions. The need for social relatedness refers to a feel-

ing of belongingness, caring for others, and being cared for. The need for competence refers to the inherent desire to be effective in dealing with the environment. According to this view, well-being will be enhanced when these three needs are satisfied, and prior research has shown that autonomous reasons for goals are associated with higher need satisfaction than are controlled goals (Sheldon & Elliot, 1999).

Elite athletes are a highly motivated group and often display high scores on intrinsic or autonomous motivation (Kjørmo, 1997). Conversely, some of their goals might be perceived as controlled even though their goals are self-generated. As Sheldon and Elliot (1998) stated, "controlledness is a state of mind, as well as of one's environment" (p. 546). Athletes can experience a lot of pressure from the coach, media, or the sport federation, which may lead them to pursue goals not their own. Controlled goals have been negatively related to mental health outcomes (Deci & Ryan, 2000). Although this has never been investigated among elite athletes, the reasons athletes give for their goals are expected to be related to their emotional well-being.

Content of Goals

In addition to why people pursue goals, i.e., their reasons, Self-determination Theory also proposed that people may pursue qualitatively different types of goals, i.e., have different contents for their goals (Kasser & Ryan, 1993, 1996). Further, this theory distinguishes between intrinsic and extrinsic content of goals, and type of goal content has also been shown to affect differently people's well-being. More specifically, intrinsic content such as personal growth, friendship, and social contribution seem positively correlated with people's well-being. In contrast, extrinsic content of goals such as financial success, popularity, or physical appearance have been negatively correlated with well-being (Kasser & Ryan, 1996; Sheldon, *et al.*, 2004).

Intrinsic goals are expected to promote the three basic needs and people's natural growth tendencies (Deci & Ryan, 2000). More precisely, meaningful friendships and social engagement are believed to be important for the social relatedness need (Kasser & Ryan, 2001). Personal growth may help individuals' perception of self-initiation of activities and self-actualization of personal potential, and thus strengthen the experience of autonomy and competence (Kasser & Ryan, 1996). On the other hand, extrinsic goals all contain outcomes presumed to increase one's status in the eyes of other people (Kasser & Ryan, 2001) and are thought to be more distant from need-satisfying experiences because focus is on external outcomes and social comparison (Kasser & Ryan, 1996; Ryan, *et al.*, 1996).

The different effects of extrinsic and intrinsic goal content on well-being have been observed in both cross-sectional (Kasser & Ryan, 1996,

2001; Sheldon, *et al.*, 2004) and longitudinal studies of students (Sheldon & Elliot, 1999). In only one study has the relationship between goal content and psychological well-being in sports been investigated. Chatzisarantis and Hagger (2007) found a mediating effect of intrinsic goal content (life aspirations) between participation and psychological well-being. In addition, recreational athletes showed a preference for intrinsic goal content more than competitive athletes. These relations have not yet been assessed in a population of elite athletes who may have even more opportunities to achieve extrinsic goals. In elite sports today, there are many different outcomes which in Self-determination Theory would be labelled extrinsic. Elite athletes have many opportunities to make a lot of money. They may achieve fame through the media, and often as a bonus, a nice physical appearance is the outcome of training over time. Researchers have demonstrated that competitive sport may lead to a preference for extrinsic reward rather than intrinsic rewards (Vansteenkiste & Deci, 2003). Therefore, some athletes can be tempted to pursue the goal of financial reward or recognition instead of personal development. According to the Self-determination Theory, it could be detrimental for athletes to pursue goals with extrinsic content. It is therefore important to examine the relations among goal contents and well-being in elite athletes.

Athletes' Social Context

The Self-determination Theory further maintains that the social environment is important for people's motivation and need satisfaction. According to Ryan, *et al.* (1996), researchers must "attend to the quality of the interpersonal context wherein motivated goal behaviours are adopted" (p. 14). One aspect of social context considered to nurture autonomous motivation and need satisfaction is support for autonomy (Deci & Ryan, 1987). "The concept of autonomy support means that an individual in a position of authority (e.g., a coach) takes the other's (e.g., an athlete's) perspective, acknowledges the other's feelings, and provides the other with pertinent information and opportunities for choice, while minimizing the use of pressure and demands" (Black & Deci, 2000, p. 742).

Several studies, correlational, experimental, and longitudinal have emphasized the effect of autonomy support on people's motivation, learning, interest, well-being, adjustment, and performance (Grolnick & Ryan, 1989; Black & Deci, 2000; Williams, Cox, Hedberg, & Deci, 2000; Vansteenkiste, *et al.*, 2004). The effect of perceived autonomy support from the coach on motivation and well-being is also present in sport (Pelletier, Fortier, Vallerand, & Brieré, 2001; Gagne, Ryan, & Bargmann, 2003; Reinboth, Duda, & Ntoumanis, 2004). Pelletier, *et al.* (2001) found that perceptions of autonomy support from a coach was related to greater autonomous motivation in young competitive swimmers and that more autonomous

motivation was related to higher persistence at 10 and 22 mo. As for controlled motivation, introjected regulation was a significant predictor of persistence at 10 mo. but not at 22 mo., and external regulation was not a predictor at 10 mo. and became negative after 22 mo. Gagne, *et al.* (2003) found in a 4-wk. diary study that perceived autonomy support by parents and coaches influenced young gymnasts' adoption of more autonomous forms of motivation, which again predicted prepractice well-being for the participants.

In 1995, Sheldon and Kasser requested studies of the social processes which promote a more congruent set of goals, i.e., autonomous reasons and intrinsic goal contents. In terms of personal goals, few studies have investigated the effect of the environment and none with elite athletes. Recent research indicated the importance of perceived autonomy support from a teacher for students' intrinsic content for their goals of learning Tai-bo in a practical setting (Vansteenkiste, *et al.*, 2004). Other research indicated that the characteristics of goals held may be affected by perceived autonomy support from significant others (Williams, *et al.*, 2000). Although previous results on personal goals have supported the Self-determination Theory, they have been limited by the sampling of students and adolescents. There is often a close relationship between the coach and the athlete (Pelletier, *et al.*, 2001; Mageau & Vallerand, 2003), so assessment of the environment a coach creates and how that is related to athletes' goals and well-being (Reinboth, *et al.*, 2004) are important.

Reasons for Goals as Mediating Variables

No previous studies have investigated associations of perceptions of autonomy support from a coach, the content and reasons for personal goals, and the emotional well-being of elite athletes. Thus, in building the hypotheses, results from studies with students and adolescents have been used. Several important issues about the relations of goal content with reasons have emerged in the literature since the first study on goal content and well-being by Kasser and Ryan (1993). One question has been how perceived autonomy support can affect which goals people pursue and why they pursue them (Sheldon & Kasser, 1995), and another issue has been whether the effect of goal content on well-being is reducible to the underlying reason for that goal (Carver & Baird, 1998; Srivastava, Locke, & Bartol, 2001).

Researchers have indicated that the effect of autonomy-supportive social contexts on health, learning, and well-being are partially or fully mediated by autonomous motivation (Williams, Grow, Freedman, Ryan, & Deci, 1996; Vansteenkiste, *et al.*, 2004; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005; Halvari & Halvari, 2006). Vansteenkiste, *et al.* (2004) reported that autonomous motivation significantly mediated all main ef-

fects between social context and learning-related outcomes in three different studies of high school and college students. In a later study of early adolescents, the positive effect of autonomy-supportive communication style on conceptual learning was mediated by the respondents' relative autonomous motivation (Vansteenkiste, *et al.*, 2005). According to the Self-determination Theory and telic theories, goals pursued with joy and interest under the right circumstances will lead to higher emotional well-being (Diener, *et al.*, 1999; Deci & Ryan, 2000). Thus, in Hypothesis 1 (H_1) autonomous reasons for goals were expected to mediate the relation between perceived autonomy-support from the coach and positive emotional well-being among elite athletes. Included in this mediating hypothesis, a positive bivariate correlation between the predictor (autonomy support) and the criterion (positive emotional well-being) was also expected (Baron & Kenny, 1986).

For the content of goals, the picture is less clear. Data of two studies (Carver & Baird, 1998; Srivastava, *et al.*, 2001) have suggested that the effect of goal content on well-being is a result of the underlying reason for that goal. It is possible that autonomous reasons mediate the effect of goal content on emotional well-being, given that many studies have shown a positive correlation between intrinsic goal content and autonomous reasons (Sheldon & Kasser, 1995; Sheldon, *et al.*, 2004; Vansteenkiste, *et al.*, 2004). Sheldon, *et al.* (2004) investigated this possibility, finding that intrinsic goal content explained variance in well-being independently of that accounted for by autonomous reasons.

In the study by Vansteenkiste, *et al.* (2004), the goal manipulation (intrinsic goal) was a significant predictor of six out of 11 outcomes after controlling for the mediator, i.e., autonomous motivation. The subsequent study of adolescents indicated that the positive effect of intrinsic goal framing on conceptual learning was mediated by task involvement (Vansteenkiste, *et al.*, 2005). Task involvement has often been positively correlated with intrinsic or autonomous motivation (Ryan, 1982; Roberts, 2001). Accordingly, in H_2 autonomous reasons for goals were expected to mediate the relation between intrinsic goal content and positive emotional well-being.

For extrinsic content, Carver and Baird (1998) found that, after controlling for both autonomous and controlled reasons for financial success, the content of reasons remained a significant predictor of low self-actualization. Srivastava, *et al.* (2001) reported that among 266 business students, the negative relation between importance of money (extrinsic content) and subjective well-being was due to the motives of seeking power and social comparison. These authors used other motives than did those of Self-determination Theory, but they called for a study to explore this

relation on the motive locus (reasons). Elite athletes have an opportunity to achieve extrinsic goals, and may in this matter be similar to business students. Therefore, a "negative model" was also hypothesized in which controlled reasons for goals were expected to mediate the relation of extrinsic goal content and subjective negative emotional well-being among elite athletes (H_3).

METHOD

Procedure and Participants

All data were collected at the Norwegian Olympic Centre during the spring and autumn of 2004. After giving informed consent, 102 of 105 Norwegian elite athletes from Track and Field, Greco-Roman Wrestling, Taekwondo, and Power Lifting responded to the questionnaires. Given missing data for seven athletes, data from only 95 athletes were included in the analysis (response rate: 91%). Of the final sample, 56 men and 39 women ($M=21.6$ yr., $SD=6.1$, range = 14–44 yr.), 23 (24.2%) had competed in the Olympics or World Championships. All participants had also represented Norway internationally, either in European championships, international junior championships, or Nordic championships, and all of them were among the top three in Norway in their sport.

The athletes completed a questionnaire packet. A researcher was present at all meetings to make sure that there were no misunderstandings. All the athletes were informed that their answers were anonymous.

Measurements

Personal goals.—An idiographic assessment method (Emmons, 1986) was applied to assess the athletes' personal goals. They were asked to write down the four most important goals they were striving for in their sport at the moment. These goals of the athletes could be a "one-time shot" or long-term goals, e.g., "Improve my technique," and thus were similar to Little's personal projects (1989, 1993). Projects as units of analysis have previously been related to people's well-being (Palys & Little, 1983; Sheldon, *et al.*, 2004) and need satisfaction (Omodei & Wearing, 1990). Examples of goals generated by the athletes were, "Qualify for the Olympics 2008," "Medal in the World Championships," and "Improve my technique."

Next, they were asked to write down the four goals one more time in the same order at the bottom of the page and tear off that part. The athletes could then have the goals before them when they answered questions about each personal goal. This was done to strengthen the reliability and validity of the study. A nomothetic assessment followed in which athletes were asked to estimate the reasons for and content of each goal, the perceived autonomy support from their coach, and emotional well-being.

Reasons for goals.—The athletes first rated why they pursued these

particular goals using the self-determination continuum (i.e., perceived locus of causality; Ryan & Connell, 1989) on a Likert-type scale using anchors of 1: Not at all and 5: Very much. The reasons were, "I strive for this goal because of the enjoyment or stimulation that goal provides me" (intrinsic reason), "I strive for this goal because I really believe that it's an important goal for me" (identified reason), "I strive for this goal because I would feel ashamed or guilty if I didn't" (introjected reason), and "I strive for this goal because the coach wants me to or it's best for the situation" (external reason). Intrinsic reasons correlated .43 with identified reasons, .22 with introjected reasons, and $-.20$ with external reasons. Identified reasons correlated .31 with introjected reasons and $-.07$ with external reasons. Introjected reasons correlated .15 with external reasons. These values support the theory as the different regulations fall on a continuum of self-determination.

Similar to Sheldon and Elliot (1998), an autonomous reason variable was computed by the average sum of the ratings of intrinsic and identified reasons of the four goals ($\alpha = .80$), and a controlled reason variable was estimated by the average sum of introjected and external reasons of the four goals ($\alpha = .79$).

Sheldon and Houser-Marko (2001) previously validated the reasons of goals of students from the Perceived Locus of Causality method (Ryan & Connell, 1989) based on self-report and nonself-report assessment. Results indicated that the opinion of the Perceived Locus of Causality from significant others corresponds with the respondents' opinion of their own Perceived Locus of Causality. The items in the study by Sheldon and Houser-Marko (2001) are similar to ones used in the present study, and the reliability coefficients were acceptable also among the elite athletes.

Content of goals.—To assess the content of the athletes' goals, they were asked to estimate how much each goal might help to bring about six possible futures using a Likert-type scale with anchors of 1: No help and 5: Very much help. This procedure has been utilized to tap the content of self-generated goals rather than experimenter-imposed goals (e.g., Sheldon & Kasser, 1998; Sheldon, *et al.*, 2004). Three possible futures represented intrinsic content values, i.e., personal growth, friendship, and social contribution, and three represented extrinsic content values, i.e., financial success, popularity, and physical appearance. The athletes were asked to rate how helpful their goals would be in reaching each possible future in the following order, "Looking good and being attractive to others" (appearance), "Being happy and having a meaningful life" (personal growth), "Having good friends at the sport arena" (friendship), "Being popular and recognized by many people" (popularity), "Working with sport, or helping others with good sport experiences" (social contribution), and "Earning money or having much influence" (financial success).

As in other work, an intrinsic goal content variable was computed as the average sum of the three intrinsic possible futures, and an extrinsic goal content variable was computed as the average sum of the three extrinsic possible futures (Kasser & Ryan, 1996). Cronbach coefficients alpha were .82 and .90, respectively.

Perceived autonomy support.—To assess the athletes' opinion of their coach, a short version of the autonomy support scale from Williams, *et al.* (1996) was used. This 6-item questionnaire allowed specification of how athletes perceived their coach in terms of autonomy support. Examples were, "My coach encourages me to ask questions" and "I feel that my coach understands me." The athletes answered each item on a Likert-type scale, with anchors of 1: Not at all and 7: Very much. This sports version was previously employed with 265 British soccer and cricket players by Reinboth, *et al.* (2004) and yielded suitable reliability also in the present study ($\alpha = .90$).

Subjective emotional well-being.—The athletes' subjective emotional well-being was measured with the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), a 20-item questionnaire with 10 positive emotional affects and 10 negative emotional affects. Examples of positive emotional well-being are Excited, Happy, and Proud, and examples of negative emotional well-being are Upset, Angry, and Tired. The athletes were asked to rate how often they feel these emotions in general using a Likert-type scale with anchors of 1: Not at all and 5: Very often. A variable of positive emotional well-being was estimated as the average sum of the 10 positive affects ($\alpha = .78$), and the same procedure was conducted for the 10 negative affects, which yielded a variable of negative emotional well-being ($\alpha = .81$).

According to Watson, *et al.* (1988), the Positive and Negative Affect Schedule is a reliable measuring scale, independent of the response format, time frame, or sample. Crocker (1997) has validated the Positive and Negative Affect Schedule in sports with young participants.

Analysis of Data

For the present study, all measures yielded acceptable Cronbach coefficients alpha (see Table 2 below).

Hypotheses from the Self-determination Theory process model were tested using LISREL (Jöreskog & Sörbom, 1996). A model estimating indirect effects of perceived autonomy support and goal content on emotional well-being via reasons for goals was specified. Because the large numbers of indicators (items) in relation to the sample size did not allow use of all items for each latent variable, the measurement and structural models were tested with reduced items. In LISREL, the sample size should be related to the number of indicators (k), where $n = [k(k - 1)]/2$ (Bollen, 1989).

Accordingly, for the sample size of 95 in the present study, the number of indicators should not exceed 14. The total of 60 indicators in the present study is far above the suggestion mentioned. Given this, an *a priori* confirmatory factor analysis (i.e., measurement model in LISREL) was performed for positive and negative emotional well-being separately (see Fig. 1). This was done to reduce the number of items to three or four items for each variable. Items with high magnitudes of error correlation magnitudes and low factor loadings were omitted until 14 items remained.

The final measurement models of the (14 items) Self-determination Theory models of perceived autonomy support, goal reasons, goal content, and emotional well-being yielded a good fit (see Table 3 below).

RESULTS

Descriptive Statistics

The participants took part in four different individual sports. Altogether, 17.9% ($n=17$, 8 women, 9 men; $M=17.5$ yr.) participated in Taekwondo, 27.4% ($n=26$, 10 women, 16 men; $M=18.7$ yr.) participated in Greco-Roman Wrestling, 28.4% ($n=27$, 11 women, 16 men; $M=23.1$ yr.) participated in Track and Field, and 26.3% ($n=25$, 10 women, 15 men; $M=25.8$ yr.) participated in Power Lifting. All had competed at an international level, and their mean years of athletic experience was 10.0 yr. ($SD=5.3$).

Preliminary inspection of the data included a factor analysis of the 40 items on reasons for and contents of goals. According to Self-determination Theory, 10 factors were expected. A factor analysis with maximum likelihood extraction and varimax rotation yielded 11 factors, and total explained variance was 67.0% (see Table 1). Factor 11 included one identified

TABLE 1
FACTOR ANALYSES WITH MAXIMUM LIKELIHOOD EXTRACTION
AND VARIMAX ROTATION OF GOAL REASONS AND CONTENTS

Factor	No. Items	Eigenvalue	Factor Loading		Variance Explained (%)
			Range	Lowest Difference*	
1. Appearance or popularity	7	3.97	.46-.83	.21	9.9
2. Introjected reasons	4	3.00	.65-.85	.32	17.4
3. Personal growth	5	2.88	.49-.72	.23	24.6
4. Financial success	4	2.78	.65-.83	.29	31.6
5. Extrinsic reasons	4	2.74	.52-.88	.34	38.5
6. Social contribution	4	2.61	.61-.78	.39	45.0
7. Intrinsic reasons	4	2.25	.59-.74	.15	50.6
8. Identified reasons	3	2.01	.38-.82	.10	55.6
9. Friendship	2	1.94	.67-.69	.44	60.5
10. Popularity	2	1.43	.57-.66	.22	64.1
11. Identified reasons	1	1.17	.65	.39	67.0

*Primary versus secondary.

item (autonomous reasons), so this item was omitted from further analysis. Popularity items loaded on two factors, one a pure popularity factor and one combined with appearance items. This is theoretically meaningful according to the theory, because all extrinsic content items are summarized into one extrinsic content variable (Kasser & Ryan, 1996). The remaining items on autonomous and controlled reasons, and intrinsic and extrinsic contents were differentiated in the factor analysis as predicted from the Self-determination Theory.

Table 2 presents means, standard deviations, Cronbach coefficients alpha, and the correlation matrix for all psychological variables. The zero-order Pearson correlations are all in line with the hypotheses.

Structural Equation Modelling

Because the large number of indicators (items) in relation to the relatively small sample size did not allow use of all items for each latent variable, the measurement and structural models were tested with reduced items (see Method above).

According to Hu and Bentler (1999), the standardized root mean square residual (SRMSR), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) should be used to evaluate model fit. Hu and Bentler (1999) compared all fit indices and found that the SRMSR is most sensitive to misspecification in both simple and complex models and less sensitive to sample size and violations of distributional assumptions. Based on their research, a good model fit should have a value close to or lower than .08 for SRMSR, combined with a value close to or higher than .95 for the CFI, and a value close to or lower than .06 for the RMSEA. In using these new cutoff criteria, special attention should be given to RMSEA when the sample size is small (<250). RMSEA tend to overreject true population models at small sample size and is thus less preferable (Hu & Bentler, 1999).

TABLE 2
MEANS, STANDARD DEVIATIONS, VALUES OF CRONBACH ALPHA,
AND PEARSON ZERO-ORDER CORRELATIONS (N=95)

Measure	M	SD	α	r						
				1	2	3	4	5	6	
1. Perceived autonomy support	5.55	1.12	.90							
2. Autonomous reasons	4.42	0.52	.80	.22*						
3. Controlled reasons	2.33	0.79	.79	.04	.13					
4. Intrinsic goal content	3.54	0.70	.82	-.01	.29†	.17				
5. Extrinsic goal content	2.39	0.95	.90	.12	.10	.17*	.33‡			
6. Positive affect	3.88	0.45	.78	.19*	.40†	.05	.20*	.04		
7. Negative affect	1.95	0.50	.81	-.01	.05	.39†	.13	.31†	-.06	

* $p < .05$. † $p < .01$ (one-tailed). ‡ $p < .01$ (two-tailed).

Theoretical models.—It was expected that perceived autonomy support and intrinsic goal content would be positively associated with autonomous reasons, which would be positively correlated with positive ratings on emotional well-being. In addition, extrinsic goal content would be positively associated with controlled reasons, which would be positively correlated with negative emotional well-being.

Measurement models.—In the *a priori* measurement, the models' modification indices specified items with high magnitude of correlated error variance and low factor loadings (see Method). Items with the highest error scores and lowest factor loadings were omitted until perceived autonomy support had four items, each factor of intrinsic and extrinsic content and autonomous and controlled reasons had three items each, and positive affect and negative affect had four items each. After these respecifications, the fit indices for the final measurement models were all acceptable (see Table 3). It was interesting to note that the items from introjected reasons had the strongest loadings in the negative model, and all items from external reasons were omitted from the controlled reasons variable after testing the *a priori* measurement model.

Empirical structural models.—The results of the structural equation modelling analyses, which included the measurement models, yielded good fit indices (see Table 3). No changes were suggested by the modification indices. The standardized parameter estimates together with *t* ratios (in parentheses) are shown in Fig. 1. Explained variances (R^2) were for Model (a) .80 for autonomous reasons and .26 for positive affect, and for Model (b) .09 for controlled reasons and .11 for negative affect.

In accord with H_1 in Fig. 1, Model (a) indicates that autonomous reasons for personal goals mediate the relation between perceived autonomy support from the coach and positive emotional well-being. To test further the mediational hypothesis, data were added onto the Sobel test (Sobel, 1982), which indicated that autonomous reasons was a marginally significant mediator ($z = 1.89$, $p = .06$).

H_2 was also supported in the path analysis [see Fig. 1, Model (a)]. Autonomous reasons seem to mediate the association between intrinsic goal

TABLE 3
FIT INDEXES OF MEASUREMENT AND STRUCTURAL MODELS

	χ^2	<i>df</i>	<i>p</i>	CFI	RMSEA	SRMSR
Model (a) in Fig. 1						
Measurement model	87.47	71	.09	.95	.050	.070
Structural model	82.96	73	.20	.93	.038	.069
Model (b) in Fig. 1						
Measurement model	42.55	32	.10	.96	.059	.064
Structural model	47.89	33	.05	.95	.069	.093

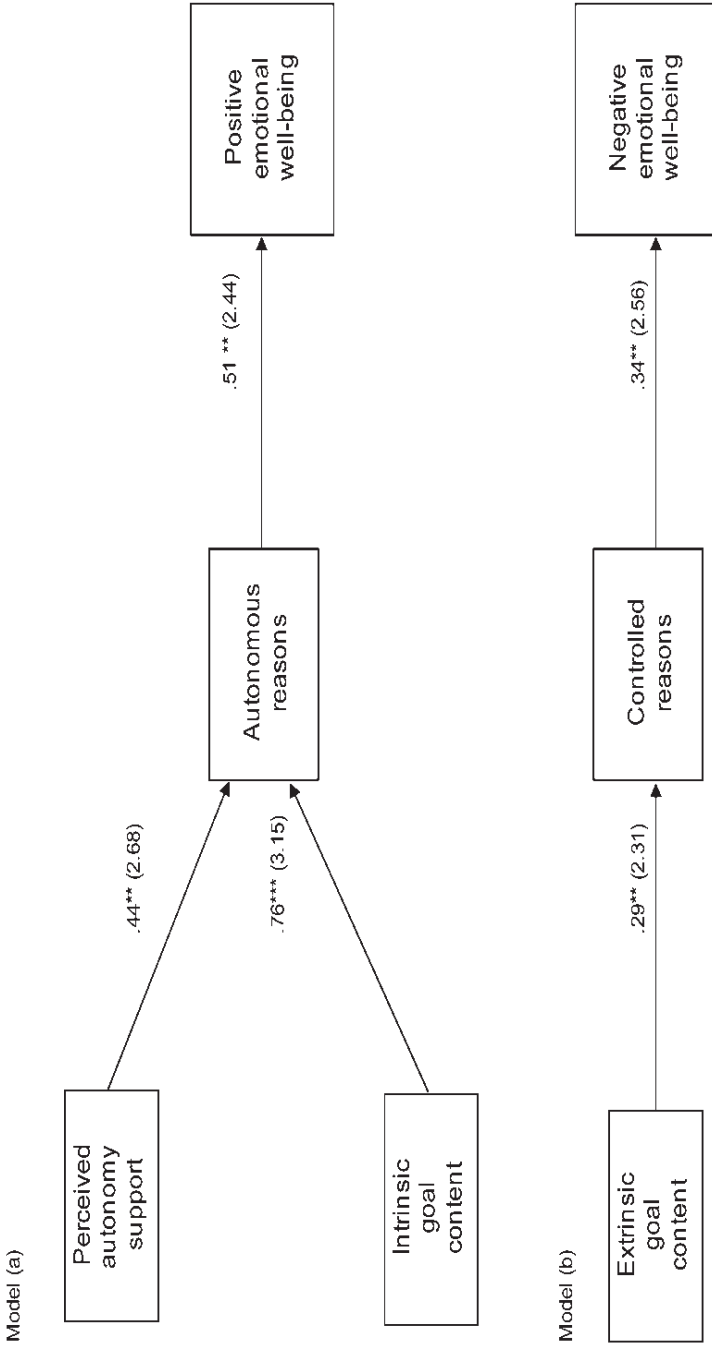


FIG. 1. Path models showing the relations of reasons with content of goals and emotional well-being of elite athletes. Model (a) shows the relations among perceived autonomy support, intrinsic content, autonomous reasons, and positive emotional well-being. Model (b) shows the relations between extrinsic goal content, controlled reasons, and negative emotional well-being (see Table 3 for fit indices).

content and positive emotional well-being in elite athletes. The direct zero-order correlation between intrinsic goal content and positive emotional well-being, evident in Table 1, was no longer significant in the LISREL model. This was also supported by the Sobel test. Autonomous reasons was a significant mediator between intrinsic goal content and positive emotional well-being ($z = 2.28, p = .02$).

The negative model, H_3 , was partially supported in the path analysis [Fig. 1, Model (b)]. Controlled reasons seem to mediate the relationship between extrinsic goal content and negative affect among the elite athletes. No direct path from extrinsic content to negative affect was suggested by LISREL modification indices. Again, this was further tested. Sobel test indicated that the mediation fell short of statistical significance ($z = 1.54, p = .12$).

Interaction alternatives between reasons and content of goals and emotional well-being were also tested. Similar to Sheldon, *et al.* (2004), these results yielded no significant interactions. Further, Vansteenkiste, *et al.* (2004) found interaction effects of context (autonomy support) and content (intrinsic goal framing) on learning text material, but this interaction was not tested because the weak zero-order correlation between perceived autonomy support and intrinsic goal content was not significant ($r = -.01$). Hypothetically, there could also be an interaction between autonomy support and autonomous reasons for goals on positive affect, but in this study no significant effect occurred.

In sum, perceived autonomy support, goal content, and goal reasons matter for emotional well-being, but their combination did not add to the explained variance in reported emotions among the athletes.

DISCUSSION

The purpose of the present study was to replicate and extend previous findings from Self-determination Theory about the goals and well-being of elite athletes. In accord with the hypotheses, reasons for goals seemed to be the important variable in the path analyses. Autonomous reasons for goals mediated the relation between perceived autonomy support from the coach and positive emotional well-being (H_1). Autonomous reasons for goals also carried the effect of intrinsic goal content on positive emotional well-being (H_2), and controlled reasons for goals partially mediated the relation between extrinsic goal content and negative emotional well-being (H_3).

Autonomous Reasons as a Mediator Between Perceived Autonomy Support and Positive Emotional Well-being

The present study provides an initial assessment showing when athletes experienced their coach as autonomy supportive, they reported more autonomous reasons for their goals. In addition, athletes with autonomous

reasons for goals also reported more positive emotional well-being. This is in line with several other studies of students (e.g., Sheldon & Elliot, 1999; Sheldon, *et al.*, 2004) and supports the Self-determination Theory (Deci & Ryan, 2000). The mediating role of autonomous reasons was supported in the path analysis, although the model fell short of statistical significance in the Sobel test.

Autonomy support may allow the athletes to set their own goals out of enjoyment and interest. However, the correlation between perceived autonomy support and autonomous reasons for goals was weak ($r = .22$, $p < .05$), perhaps because autonomy support is just one aspect of the environment a coach creates (Mageau & Vallerand, 2003). Researchers may also look at other aspects like the importance of structure for competence improvement and involvement from the coach to have a more complete picture of the social context of athletes. The present research also indicates that athletes who perceive their coach as autonomy-supportive also display more positive emotional well-being. This finding is supported by other research in sports (Gagne, *et al.*, 2003; Reinboth, *et al.*, 2004). The relation was not powerful ($r = .19$, $p < .05$), but may be due to other factors, besides autonomy support, which could influence athletes' positive emotional well-being at the time of assessment. For example, some athletes were young and so spent their first time with the national team. This is likely to have affected their rating of positive affect as they were happy just to be there. Reis, Sheldon, Gable, Roscoe, and Ryan (2000) also pointed out that positive emotional well-being appeared to be more prominent when people are social. The collection of data was in addition carried out on weekends, and diary studies have indicated that people often report higher positive emotional well-being during weekends because then they are usually engaged in voluntary activities (Sheldon, Ryan, & Reis, 1996).

Autonomous reasons for goals have previously been clearly important for people's effort, goal attainment, and persistence (Sheldon & Elliot, 1998; Vansteenkiste, *et al.*, 2004). Sheldon and Elliot (1998) stated that personal goals pursued for autonomous reasons were better attained over a 15-wk. period by 141 undergraduates. Path analysis indicated that this was in part because the participants invested more effort in their autonomous goals. Controlled goals did not predict attainment, so the students' effort apparently faded. If goals which are autonomously regulated and pursued for joy and interests are related to higher positive emotional well-being and are attained more strongly than controlled goals, this is important information to coaches who work with elite athletes. Many athletes struggle with drop-out, burn-out, and too much pressure (Lemyre, Roberts, & Stray-Gundersen, 2007). If athletes pursue goals for intrinsic or autonomous reasons, these negative issues may be prevented or reduced.

Within Self-determination Theory (Deci & Ryan, 2000), the results can be explained in relation to the three human needs for competence, relatedness, and autonomy. An autonomy-supportive environment may satisfy the basic needs of athletes and yield more autonomous reasons for goals and subsequent positive emotional well-being, but there are several other possible explanations of the findings. First, it could be a top-down explanation of the model. This means that positive emotional well-being may influence autonomous reasons for goals which again may influence perceived autonomy support. One prospective study has indicated that the need-satisfying experience of autonomous reasons explained the variance in well-being (Sheldon & Elliot, 1999), but one cannot know for sure in the present study. Second, when athletes pursue goals for autonomous reasons, these goals may be close to an optimal challenge. The flow-theory maintains that interesting and reasonably challenging goals will affect well-being and joy (Jackson & Csikszentmihalyi, 1999). Also, when the athletes themselves can decide and can influence their own goals, they set goals closer to optimal for them. If the goals are controlled, either by the coach or the federation, it is reasonable to think that they are often more abstract and too difficult. One approach to the relations of goals with well-being which supports this view is discrepancy theory (Diener, 1984). This view claims that when the gap between where the person is and where he wants to go is too big, well-being will be reduced. Third, the relationship between perceived autonomy support, autonomous motivation, and positive affect may be based on the fact that athletes in individual sports in Norway usually choose their own coach and elite athletes score high on the motive to achieve (Halvari & Kjørmo, 1999), and on intrinsic motivation (Kjørmo, 1997).

Autonomous Reasons as a Mediator Between Intrinsic Goal Content and Positive Emotional Well-being

As in previous studies (e.g., Sheldon & Kasser, 1995; Sheldon, *et al.*, 2004), there was in the present study a positive correlation between intrinsic goal content and autonomous reasons for goals. Further, there was a significant positive relation between intrinsic goal content and positive emotional well-being. The latter relation became nonsignificant in the path analysis. Therefore, the reasons athletes give for their goals most strongly affect their emotional well-being. This finding shows the importance of pursuing autonomous goals in everyday training, as it seems to be related to more positive emotional well-being. Carver and Baird (1998) and Srivastava, *et al.* (2001) suggested that the effect of goal content on mental health is a function of the underlying reason for that goal. The present results seem to contradict somewhat Deci and Ryan (2000) and Sheldon, *et al.* (2004) in that the reasons the athletes gave for their goals are more

important than the content for their emotional well-being. One explanation for this finding could be that the correlation was weak between intrinsic goal content and positive emotional well-being ($r = .20, p < .05$). This may indicate that the three possible futures employed to tap the intrinsic content in the sport goals did not fit the setting that well. Both community contribution and friendship displayed a low mean score ($M = 3.1$ and 3.5 , respectively) compared to personal growth ($M = 4.0$). Perhaps athletes do not set their personal goals with the aim of making friends or giving something back to the community, at least not at the beginning of their careers. This may be particularly true of the goals of elite athletes who are extremely performance-oriented individuals. Competition and friendship are perhaps not comparable or positively correlated. Later studies may consider health instead of friendship or social contribution as goals for athletes. The present study supports the Self-determination Theory as athletes who pursue goals for autonomous reasons with an intrinsic content in their everyday training display more positive emotional well-being.

Controlled Reasons for Goals as a Mediator Between Extrinsic Goal Content and Negative Emotional Well-being

Path analyses in LISREL yielded an acceptable fit for Hypothesis 3, and controlled reasons for goals seem to mediate the relation between extrinsic goal content and negative emotional well-being. However, RMSEA and SRMSR indices were above the suggested cutoff values. This may be related to the Sobel test which fell short of statistical significance. Thus, the data indicate that both controlled reasons for goals and extrinsic goal content had unique and independent effects on well-being. This supports the results of Sheldon, *et al.* (2004) and is similar to what Deci and Ryan (2000) predicted; the effect of extrinsic goal content on well-being is not reducible to the underlying reason of that goal.

A controlled goal is pursued from a nonautonomous locus of causality. This means that the goal is pursued under pressure from others or from an internal pressure like guilt or shame. According to the Self-determination Theory, goals which are controlled in nature do not satisfy the three basic psychological needs and lead to a lower feeling of well-being (Deci & Ryan, 2000). A goal others have forced on a person might be too hard to attain and may thwart the need for competence. Similarly, when a goal is managed by others (the coach, team, or federation), athletes experience of autonomy in goal striving is low. One interesting finding was that the strongest items in the path analysis were introjected reasons for goals. Out of eight items in controlled reasons, five were omitted, and the three left were introjected items. When a goal is pursued for introjected reasons, the negative pressure comes from inside the athlete. Thus, it seems feelings of guilt and perhaps bad conscience are the strongest predictors of

high negative emotional well-being for elite athletes. One explanation for this might be that the athletes feel they should do more or train harder to attain their goals. Another explanation could be that the athletes experience conflict among goals, which have been associated with negative affect (Emmons, 1986). Perhaps these athletes feel internal pressure to do well both at school and in sports, and it may be too much to be successful in both. This finding is important. Coaches and others should be aware of inner pressure in athletes and help them solve possible problems.

According to the Sobel test, the correlation between extrinsic goals and negative affect was not reducible to the reason for that goal. Similar to Sheldon, *et al.* (2004), there was also in the present study a somewhat stronger correlation between extrinsic goal content and negative emotional well-being ($r = .31$) than between intrinsic goal content and positive emotional well-being ($r = .20$). This is consistent with Self-determination Theory's predictions (Ryan, *et al.*, 1996; Sheldon, *et al.*, 2004) when they proposed that the overvaluation of extrinsic goals produces reduced well-being. Perhaps the goal of winning a medal in a championship is not compatible with a possible future involving social contribution or friendship. Sheldon and Bettencourt (2002) suggested that need-satisfying experiences could be more relevant for positive outcomes than the absence of negative outcomes. Here, it seems like the negative outcomes of not satisfying the needs are more destructive than the positive outcomes of satisfying the needs in the athlete's goal-striving. Researchers should evaluate this prediction.

Another explanation for the positive relation between extrinsic goals and negative emotional well-being may be that extrinsic goals, relative to intrinsic goals, are more difficult to obtain and often out of control, so this may lead to higher stresses and pressures (Kasser & Ryan, 2001). Extrinsic goals like an attractive image or financial success might also lead to more frequent social comparisons (Ryan, *et al.*, 1996) and more conflicting relationships with friends and romantic partners (Kasser & Ryan, 2001). Putting a lot of energy into extrinsic goals is likely to deplete the energy a person can put into intrinsic ones (Sheldon, *et al.*, 2004). The Self-determination Theory explains the positive relation between extrinsic goals and negative affect with basis in satisfaction of the three basic psychological needs. When need-satisfaction is not present in the goal-striving of a person, a lower feeling of well-being is often the outcome (see Deci & Ryan, 2000). For example, when an athlete pursues a goal with a content of financial success, this may be hard to attain and thus disrupt satisfaction of the competence need. Similarly, a goal of being recognized and popular might lead to conflicted relations to other people or upward comparison with athletes on a higher level than themselves. According to the theory,

this may lead to lower satisfaction of the need for social relatedness and competence and thus a lower feeling of well-being.

The present result is important in showing that when athletes pursue goals they feel are controlled from inside (introjected reason), they display lower emotional well-being. When the goal in addition is extrinsic in content, their well-being is even lower. Thus, it seems important that coaches and others working with athletes help them to set goals they feel interested in which are free from pressure and which lead away from extrinsic values as this may be detrimental to their mental health.

Limitations and Further Research

There are several limitations, other than those already discussed, in this study. First, this is a cross-sectional study, which means that no conclusions about cause and effect can be made. It is possible that the athletes with intrinsic goal content or autonomous reasons usually are happier than those with controlled reasons or extrinsic goal content (top-down). Longitudinal examinations in line with Sheldon and Elliot (1999) are needed also among elite athletes, especially in terms of goal-attainment as outcome which is considered very important for elite athletes. Sheldon and Elliot (1998) have further indicated that the striving for autonomous goals may constitute a risk, when their respondents appeared to display lower well-being if their autonomous goals were not achieved. Later studies should examine this also in sports. Second, all data are based on self-report. Self-reports have been criticized for misunderstandings, avoiding extremity in the scales or the answering to be more interesting for the researcher (Vealey, 2002). Third, need-satisfaction was not measured. The association of characteristics in goals and well-being are often explained in relation to needs within Self-determination Theory. Researchers should also measure need satisfaction within the athletes. Fourth, well-being has many indicators, one of them is affect which can be fluctuating (Sheldon, *et al.*, 1996). Thus, an eudaimonic measure of well-being as vitality might be more sensitive if included in such studies (Ryan & Frederick, 1997). Nix, Ryan, Manly, and Deci (1999) hypothesized that vitality was more influenced by one's motivational regulation than happiness (affect). This is presumably because vitality is characterized by high energy or activation. They found in three experimental studies that doing well when autonomously motivated enhanced vitality relative to doing well when controlled in motivation. For happiness, doing well under the two motivational states had no different effects. Nix, *et al.*'s study (1999) shows that it may be important to distinguish eudaimonic and hedonic well-being. Perhaps the results of the present study might have been different or more evident with a measure of vitality in addition to affect.

CONCLUSIONS

This study was designed to replicate and extend predictions from Self-determination Theory to a sample of elite athletes. An environment of autonomy support, an intrinsic goal, and autonomous reasons for goals seem important for elite athletes' positive emotional well-being. Vallerand and Blanchard (2000) suggested that affective processes typically play an adaptive role and are presumed to influence effort and performance in sport and training. Thus, allowing athletes to decide and feel free to pursue their own goals, their effort, performance, and well-being might increase. Sports psychologists typically examine *type* of goals when they investigate the meaning of goals for different outcomes. Deci and Ryan (2000) argued that the reasons and content govern the goal which makes the difference in people's well-being. Research with athletes should therefore take athletes' regulation and content of goals into consideration.

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