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4 The relationship between psychological well- and ill-being, and perceived autonomy  
5 supportive and controlling interpersonal styles: A longitudinal study of sport coaches.

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12

1 **Abstract**

2 The present study longitudinally explored sports coaches' psychological well-being (positive  
3 affect and integration of coaching with one's sense of self) and ill-being (negative affect and  
4 devaluation of coaching) as predictors of their perceived autonomy supportive and  
5 controlling interpersonal styles towards individuals under their instruction. Participants were  
6 195 sport coaches who completed questionnaire measures at three time points across an  
7 eleven-month period. Controlling for social desirability, multilevel analyses revealed that  
8 within-person increases and individual differences in positive affect and integration were  
9 positively associated with autonomy support. Conversely, within-person increases and  
10 individual differences in negative affect, but not devaluation, were associated with increased  
11 use of interpersonal control. The indicators of well-being did not predict interpersonal control  
12 and the indicators of ill-being did not predict autonomy support. In their entirety, the present  
13 findings suggest that autonomy supportive and controlling interpersonal styles have unique  
14 correlates, and affective determinants may play a particularly central role in controlling  
15 interpersonal styles. Supporting the psychological health of coaches may lead them to create  
16 an adaptive interpersonal environment for their athletes.

17

18 **Keywords:** Sport, Coaching, Self-determination theory, Hedonia, Eudaimonia, Interpersonal

19 behavior

1       The relationship between psychological well- and ill-being, and perceived autonomy  
2       supportive and controlling interpersonal styles: A longitudinal study of sport coaches.

3       Considerable research has attempted to identify the components of psychological  
4       well-being and pinpoint its antecedents within a range of life domains, including education,  
5       parenting, sport, and physical activity (e.g., Diener, 2000; Quested & Duda, 2011; Ryan &  
6       Deci, 2001; Ryff et al., 2006; Standage, Duda, & Ntoumanis, 2005).

7       This research agenda has, however, typically regarded psychological well-being as the  
8       end product, while less attention has been given to potential outcomes of this optimal state. In  
9       the current study we adopted the self-determination theory (SDT; Deci & Ryan, 2000)  
10      framework in order to examine whether indices of psychological well- and ill-being reported  
11      by sports coaches were related to their perceived autonomy supportive and controlling  
12      interpersonal styles towards athletes under their instruction. The coaching domain is one in  
13      which these research questions are particularly salient because the benefits for athletes of  
14      receiving autonomy support are manifold (see Amorose, 2007, for a review), yet controlling  
15      coaching styles remain evident (e.g., Fraser-Thomas & Côté, 2009). In addition,  
16      psychological ill-being in various forms is particularly prevalent in sport coaches, for  
17      example, negative affect (Stebbins, Taylor, Spray, & Ntoumanis, 2012), burnout (Goodger,  
18      Gorely, Lavellee, & Harwood, 2007), stress (Olusoga, Butt, Hayes & Maynard, 2009), and  
19      dissatisfaction (Dixon & Warner, 2010) have been reported by coaches. It is important,  
20      therefore to assess the potential effects this may have on interpersonal interactions.

### 21      **The SDT Perspective on Interpersonal Styles**

22      The investigation of coaches' behavior towards athletes has attracted considerable  
23      research attention. Within SDT, primary attention has been given to autonomy supportive and  
24      controlling interpersonal styles (Vallerand & Losier, 1999). Coaches create an autonomy  
25      supportive environment when they facilitate athletes' sense of volition and causality by

1 acknowledging their feelings and perspectives, highlighting the value of an activity, and  
2 demonstrating confidence in their abilities. Observational research conducted in educational  
3 settings has also demonstrated an autonomy supportive style to include praising improvement  
4 and mastery, encouraging effort, and responding positively to questions (Reeve, Bolt, & Cai,  
5 1999; Reeve & Jang, 2006). Conversely, behaviors characteristic of a controlling  
6 interpersonal style include seeking compliance, withdrawal of time and attention, coercion,  
7 criticism, punishment, task-contingent rewards, and the provision of feedback to manipulate  
8 subordinates' thoughts and behaviors (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani,  
9 2009; Reeve, Jang, Carrell, Jeon, & Barch, 2004). Previous research has pointed towards the  
10 independence of autonomy support and control in light of small negative associations  
11 between the constructs, and their distinct psychological correlates (Bartholomew, Ntoumanis,  
12 Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Pelletier, Fortier, Vallerand, & Brière, 2001;  
13 Silk, Morris, Kanaya, & Steinberg, 2003)

14         Considerable research has demonstrated the advantages of coach autonomy support  
15 (e.g., Adie, Duda, & Ntoumanis, 2012; Gagné, Ryan, & Bargmann, 2003; Quedsted & Duda,  
16 2011) and the deleterious effects of coaches' controlling strategies on their athletes (e.g.,  
17 Bartholomew, et al., 2011). This evidence implies that an autonomy supportive style should  
18 be promoted, whereas a controlling style should be discouraged. **This literature, however, has**  
19 **typically considered the athletes as the central group of interest, and only assessed athlete-**  
20 **based variables (i.e., athlete perceptions of coach behavior, and athletes' well-/ill-being).**  
21 **Research has been less forthcoming that addresses coach-related factors as** reasons why  
22 coaches engage in these contrasting interpersonal styles. There are many plausible factors,  
23 such as the coach's personal orientation, the coaching context, and athletes' behaviors and  
24 motivation (Mageau & Vallerand, 2003). Whilst these variables have received some research  
25 consideration, one other likely correlate is the coaches' psychological health.

## 1 **Psychological Well-Being and Ill-Being**

2           Numerous operationalisations of psychological health exist, yet considerable attention  
3 has been focused upon two key perspectives; the hedonic approach and the eudaimonic  
4 approach (Ryan & Deci, 2001). The hedonic tradition of well-being focuses on the attainment  
5 of happiness, and seeks to understand “what makes experience and life pleasant and  
6 unpleasant” (Kahneman, Diener, & Schwarz, 1999, p. ix). Consistent with this standpoint,  
7 early research (e.g., Andrews & Withey, 1976; Bradburn, 1969) conceptualised psychological  
8 well-being as a range of positive emotional experiences or moods (e.g., happiness, pleasure,  
9 interest, enthusiasm and inspiration); collectively termed positive affect (Diener, 2000). On  
10 the other hand, psychological ill-being is acknowledged as a separate, independent dimension  
11 of psychological functioning (Watson, Tellegen, & Clark, 1988; Ryff, et al., 2006), often  
12 associated with discrete predictors than that of well-being (Adie, Duda, & Ntoumanis, 2008,  
13 Bartholomew et al., 2011; Sheldon, & Bettencourt, 2002). From the hedonic tradition,  
14 psychological ill-being is reflected, not in the absence of positive affect, but in the overt  
15 experience of negative affect, such as distress, nervousness, anger, and aversion (Watson, et  
16 al., 1988).

17           Despite the value of assessing well-being in terms of pleasure and happiness, this  
18 hedonic standpoint has been criticized as being limited in scope. From Greek philosophers to  
19 modern psychological theorists, many contend that human psychological well-being  
20 encompasses more than the presence of positive affect and the absence of negative affect  
21 (Ryan & Deci, 2001). Rather, the eudaimonic approach is concerned with human growth and  
22 actualisation of potential. In order for individuals to experience eudaimonia, they must  
23 engage in activities that are personally expressive and congruent with their true sense of self  
24 (Waterman, 1993). In contrast to this integrated functioning, the concept of devaluation  
25 represents a sense of detachment from an activity (Raedeke, 1997). Researchers have

1 differentiated between this eudaimonic perspective and hedonic components of well-being in  
2 their discussions on psychological health (e.g., Mack et al., 2011; Gunnell, Crocker, Mack,  
3 Wilson, & Zumbo, 2014). As such, positive affect and integrated functioning are indicative of  
4 healthy psychological experience, whereas, negative affect, and devaluation of an activity are  
5 representative of psychological malfunction (Ryan & Deci, 2001).

### 6 **Psychological Well- and Ill-Being and Interpersonal Styles**

7         In a recent cross-sectional study, Stebbings, et al. (2012) reported that sports coaches'  
8 psychological well-being was significantly associated with the provision of autonomy support  
9 towards their athletes, whereas coaches' psychological ill-being was associated with their use  
10 of controlling interpersonal behaviors. These authors, however, operationalised psychological  
11 well- and ill-being as composite factors inclusive of a range of hedonic and eudaimonic  
12 indicators, including positive affect, subjective vitality, negative affect and emotional and  
13 physical exhaustion. As such, the present study is the first to examine the relative  
14 contributions of the different components of well- and ill-being and offer insight into the  
15 most important psychological correlates of perceived interpersonal behavior. No previous  
16 research has undertaken this task; however, indirect evidence suggests relations among  
17 different elements of well-being and interpersonal behavior. For instance, a positive affective  
18 state (i.e., hedonic well-being) has been associated with helping and altruism, persuasive  
19 communication, and negotiating. In addition, people in a positive mood may be more likely  
20 to be empathic towards others. On the other hand, individuals in a negative mood have been  
21 rated by others as more defensive, critical, and less friendly and cooperative (see Forgas,  
22 2002, for a review).

23         There is a scarcity of research examining the relationship between eudaimonic  
24 integrated functioning and interpersonal behavior. Research in the educational domain has,  
25 however, linked teachers' self-determined and internalized motivations, as well as their

1 degree of engagement with their role, with their use of adaptive interpersonal teaching and  
2 leadership strategies (Klussman, Trautwein, Lüdtke, & Baumert, 2008; Roth, Assor, Kant-  
3 Maymon, & Kaplan, 2007; Taylor, Ntoumanis, & Standage, 2008; Trepanier, Fernet, &  
4 Austin, 2012). For example, Trepanier and colleagues (2012) reported a link between school  
5 principals' autonomous motivation for work and their adaptive transformational leadership  
6 style. In addition, Taylor et al. (2008) speculated that autonomy supportive teaching  
7 strategies require one to invest personal effort into teaching and are, therefore, more likely if  
8 teaching is personally expressive and integrated into the essence of one's self.

9 Indicators of eudaimonic ill-being have similarly been associated with poor quality  
10 interpersonal behavior. For example, research has indicated that when teachers experience  
11 pressure to comply with set curricula and colleagues' teaching methods, and are evaluated  
12 based on student performance standards, they become less-self-determined in their work, and  
13 adopt a more controlling interpersonal style with students (e.g., Deci, Spiegel, Ryan,  
14 Koestner, & Kauffman, 1982; Pelletier, Séguin-Lévesque, & Legault, 2002). In addition,  
15 teachers' and sports coaches suffering with symptoms of burnout have been associated with  
16 the use of psychological controlling and autocratic instructional strategies (Soenens, Sierens,  
17 Vansteenkiste, Dochy, & Goossens, 2012; Vealey, Armstrong, Comar, & Greenleaf, 1998).

## 18 **Summary and Hypotheses**

19 A wealth of research has examined the effects of coaches' autonomy supportive and  
20 controlling behavior on athletes, yet very little has explicitly examined coaches'  
21 psychological well- and ill-being as potential precursors of these interpersonal styles. The  
22 present study aimed to fill this research gap and build on current knowledge in a number of  
23 ways. First, Stebbings et al. (2012) proposed that two separate processes exist in which  
24 psychological well-being and ill-being were differentially predictive of autonomy support and  
25 control, respectively. However, they did not explicitly test the associations between well-

1 being and control, and ill-being and autonomy support, therefore, we addressed this  
2 limitation. Second, we examined both hedonic and eudaimonic indices of well- and ill-being  
3 separately, as the indicators employed by Stebbings and colleagues were used to form overall  
4 composite factors. Third, the indirect evidence reviewed above was cross-sectional, hence,  
5 longitudinal research is warranted to clarify the temporal dynamics of these relationships. .  
6 One important benefit of longitudinal research is the disaggregation of within person  
7 fluctuations and individual change, and identifying both types of relationships has important  
8 theoretical implications (Curran & Bauer, 2011; Raudenbush & Bryk, 2002). This can only  
9 be done using longitudinal research over a minimum of three time points (Rogasa, 1995;  
10 Singer & Willett, 2003). The present study aimed to achieve this by exploring whether  
11 individual differences and within-person fluctuations in psychological well- and ill-being  
12 were related to perceived autonomy support and control. This disaggregation of effects is an  
13 important extension to the literature because it may help to identify individuals who may be  
14 prone to employing specific behavioral styles, as well as the potential effects of temporal  
15 changes in well- and ill-being on behavior. Finally, it is plausible that more experienced  
16 coaches are more consistent in their behavior and, therefore, are less influenced by their well-  
17 or ill-being, compared to newer coaches. On the other hand, factors such as the novelty of  
18 coaching roles or enthusiasm for coaching may override influences of psychological health in  
19 less experienced coaches. Therefore, to test these contrasting speculations, we investigated  
20 whether any observed relationships varied depending on the coaching experience of the  
21 participants.

22         It was hypothesised that positive affect and integration would predict autonomy  
23 support at both levels of analysis, and that negative affect and devaluation would predict  
24 control at both levels of analysis. Due to the independence of the autonomy support and  
25 control, and well- and ill-being constructs, it was expected that the two indices of ill-being



1 (negative affect and devaluation) would not be significantly associated with autonomy  
2 support, and the two indices of well-being would not be significantly associated with control.  
3 We also included a measure of social desirability as a covariate to account for the possibility  
4 that items regarding coaches' interpersonal behavior may be susceptible to socially desirable  
5 responses. As described above, it is not clear how coaching experience might influence  
6 observed relationships between the study variables, therefore, we made no a priori predictions  
7 regarding this aspect of the study.

## 8 **Method**

### 9 **Participants and Procedures**

10 Following approval from a university ethics committee, the study was conducted in  
11 accordance with APA guidelines. Data collection occurred at three time points, with time  
12 points two and three approximately five and eleven months after time point one, respectively.  
13 Examining the study variables (particularly indices of eudaimonic health and interpersonal  
14 behaviors) over a relatively long time was required to allow these potentially more robust  
15 variables to change.

16 Prior to data collection, invitation emails were sent out by national governing bodies  
17 to coaches on behalf of the research authors. Coaches who provided informed consent  
18 responded to an online multi-section questionnaire that took approximately 15 minutes to  
19 complete. At the end of the questionnaire, participants were asked to provide an email  
20 address if they wished to complete the study at time points two and three. Email addresses  
21 were not associated with the data collected - coaches' initials and age were used to match  
22 responses across time points.

23 Participants were 195 coaches from the United Kingdom (154 male, 41 female; *M* age  
24 = 46.24 years, *SD* = 13.26, range = 18-75), comprising 119 coaches who completed the  
25 measures at all three time points, and 76 who completed the measures twice. Data from all

1 195 coaches were included in the analyses and all variables were measured at all time points.  
2 The coaches reported being involved in one of 26 sports, operating at the recreational ( $n =$   
3 20), club ( $n = 81$ ), regional ( $n = 37$ ), national ( $n = 41$ ), and international/professional ( $n = 16$ )  
4 levels. Coaches had, on average, 14.91 years ( $SD = 10.99$ ) years of coaching experience and  
5 spent 11.93 ( $SD = 10.60$ ) hours per week coaching. Coaches reported their job status as either  
6 paid full-time ( $n = 25$ ) paid part-time ( $n = 63$ ), voluntary full-time ( $n = 8$ ), voluntary part-  
7 time ( $n = 74$ ) or a combination of the above ( $n = 25$ ).

## 8 **Measures**

9 **Positive and negative affect.** Positive and negative affect were assessed using the  
10 Positive And Negative Affect Schedule (Watson, et al., 1988), which comprises two 10-item  
11 subscales. Coaches indicated the degree to which they had experienced positive (e.g.,  
12 “Enthusiastic”, “Proud”, and “Excited”) and negative (e.g., “Nervous”, “Upset”, and  
13 “Distressed”) emotions whilst coaching during the last month on a five-point scale ranging  
14 from 1 (*not at all or very slightly*) to 5 (*extremely*). Researchers have reported factorial  
15 validity, internal consistency, and test-retest reliability of the subscales in samples of  
16 undergraduate students (Watson et al., 1988) and sport coaches (Stebbing et al., 2012).

17 **Integration.** To assess the extent to which coaching was personally expressive and  
18 congruent with the coaches' sense of self over the previous month, the integration subscale of  
19 the Work Motivation Inventory (WMI; Blais, Lachance, Vallerand, Brière, & Riddle, 1993)  
20 was adapted to the coaching context. The items were preceded by the question “Why do you  
21 coach...?” and required coaches to rate five items (e.g., “Because it has become a  
22 fundamental part of whom I am”, “Because by being a coach, I am living in line with my  
23 deepest principles”) on a scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds*  
24 *exactly*). The WMI has not been used in coaching contexts previously; however, it has been  
25 adapted to physical education teaching contexts (e.g., Taylor et al., 2008).

1           **Devaluation.** Coaches' levels of devaluation were assessed using the five-item  
2 Devaluation subscale of the Athlete Burnout Questionnaire (Raedeke & Smith, 2001),  
3 adapted to the coaching context. Coaches were asked to reflect on their experiences over the  
4 last month, and rate the frequency of which they had experienced devaluation (e.g., "The  
5 effort I spend coaching would be better spent doing other things") on a five-point scale  
6 anchored by 1 (*almost never*) to 5 (*most of the time*). The scale authors report internal  
7 consistency, factorial structure and test-retest reliability with an athlete population.

8           **Autonomy support.** Coaches' perceptions of their autonomy supportive style was  
9 measured using the six-item version of the Health Care Climate Questionnaire (HCCQ;  
10 Williams, Grow, Freedman, Ryan, & Deci, 1996), adapted to the sport context. Coaches were  
11 asked to consider their coaching practices over the last month, and rate the degree to which  
12 they agreed with each of the items (e.g., "I provide my athletes with choices and options") on  
13 a seven-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Previous  
14 research has adapted the six-item HCCQ to assess coaches' perceptions of their autonomy  
15 support, and demonstrated internal consistency and factorial validity (Stebbins et al., 2012).

16           **Controlling behavior.** The 15-item Controlling Coach Behaviors Scale (CCBS;  
17 Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010), adapted to reflect a coach's  
18 perspective, was employed to assess coaches' perceptions of their controlling interpersonal  
19 style over the previous month. The scale measures four types of controlling behaviors,  
20 including controlling use of rewards (e.g., "I try to motivate my athletes by promising to  
21 reward them if they do well"), negative conditional regard (e.g., "I am less friendly with my  
22 athletes if they don't make an effort to see things my way"), intimidation (e.g., "I embarrass  
23 my athletes in front of others if they do not do certain things"), and excessive personal  
24 control (e.g., "I try to interfere in aspects of my athletes' lives outside of sport"), anchored by  
25 1(*strongly disagree*) and 7 (*strongly agree*). Previous research that modified the CCBS items

1 to reflect a coach's perspective has found the scale to possess internal consistency and  
2 factorial validity (Stebbing et al., 2012).

3 **Social desirability.** Participants' tendency to respond to items in a socially desirable  
4 manner was assessed using a short form of the Marlowe-Crowne Social Desirability Scale  
5 (Strahan & Gerbasi, 1972). Participants were required to rate 10 items as either true or false  
6 (e.g., "I am always willing to admit when I make a mistake"). A socially desirable response  
7 carried a weighting of one, with a non-socially desirable answer scoring zero. The scores  
8 were then summed to produce a social desirability score for each participant. Previous  
9 research has demonstrated the scale's validity (Reynolds, 1982).

## 10 **Results**

11 Table 1 presents the descriptive statistics and Cronbach's alpha coefficients for each  
12 of the study variables at each time point. All subscales demonstrated excellent internal  
13 reliability ( $\alpha > .80$ ), with the exception of the social desirability measure ( $\alpha \geq .56$ ). We  
14 nonetheless retained the measure because social desirability was not directly related to the  
15 study hypotheses, but was simply included as a control variable.

16 Participants generally reported levels of positive affect, integration and autonomy  
17 support above the midpoint of the respective scales, and levels of negative affect,  
18 devaluation, and controlling behaviors below the midpoint of the respective scales.

19 *Approximate location of Table 1.*

20 The primary analyses were conducted by performing a series of multilevel regression  
21 models using MLwiN software (version 2.25; Rasbash, Browne, Healy, Cameron, &  
22 Charlton, 2012). Multilevel analysis is the preferred option when data are hierarchically  
23 structured (Hox, 2010), such as in the present study, where the repeated measures (level 1)  
24 were nested within individuals (level 2). In line with our research aims, multilevel analysis

1 also allowed us to simultaneously estimate within-person fluctuations and individual  
2 differences.

3         Prior to entering predictor variables into the models, intercept-only models were  
4 constructed to identify the intraclass coefficients (ICCs) for each variable (shown in Table 1),  
5 which represented the proportion of variance at the individual difference level, compared to  
6 the total variance. Multilevel modelling is warranted when significant variance exists at the  
7 within-person and individual difference levels (Hox, 2010). Between 62% and 70% of the  
8 variance in the study variables was attributable to the individual difference level (therefore,  
9 between 30% and 38% was attributable to the within-person level).

10         Models were also tested with demographic variables (gender, age, sport type,  
11 competitive level, coaching experience, and hours per week coaching) and social desirability  
12 entered into level 2 equations as predictors of autonomy support and control. Gender and type  
13 of sport were coded as dummy variables (gender: 0 = female, 1 = male; type of sport: 0 =  
14 individual, 1 = team). Coaches of team sports, compared to individual sports, reported  
15 providing significantly less autonomy support ( $\beta = -.23, p < .05$ ) and greater use of control ( $\beta$   
16 =  $.42, p < .001$ ). Years of coaching experience ( $\beta = .19, p < .01$ ) and hours per week spent  
17 coaching ( $\beta = .19, p < .001$ ), were also positively related to greater use of autonomy support.  
18 Social desirability bias showed significant positive associations with autonomy support ( $\beta =$   
19  $.21, p < .001$ ), and significant negative associations with control ( $\beta = -.16, p < .01$ ). Sport  
20 type, coaching experience, hours per week coaching, and social desirability were therefore  
21 entered into the multilevel regression model for autonomy support, and sport type and social  
22 desirability were entered into the model for control, to control for any potential confounding  
23 effects.

24         Two conditional models were subsequently estimated to explore the primary research  
25 questions. To examine whether fluctuations in coaches' well- and ill-being were associated

1 with their perceived provision of autonomy support and control (i.e., within-person effects),  
2 the time-varying indices of well- and ill-being were entered into the level 1 equation of the  
3 respective models. Each predictor was centred on the unique mean for each individual (i.e.,  
4 group mean centering; Raudenbush & Bryk, 2002). Further, to assess whether individual  
5 differences in well- and ill-being were associated with autonomy support and control,  
6 participants' scores for each predictor averaged across time were centred on the sample mean  
7 (i.e., grand mean centred) and entered into the level 2 equation in each model. Within these  
8 conditional models we tested whether the relationships among predictor variables and  
9 dependent variable were constant across coaches (i.e., fixed effects) or varied (i.e., random  
10 effects) by examining the significance of the level 2 variance term when the slope was  
11 allowed to vary, as well as the difference in deviance between the fixed effects model and the  
12 random effects model (Hox, 2010). In an attempt to explain any observed random effects, we  
13 ran exploratory models with coaching experience predicting the slopes describing the  
14 relationship between the predictor and outcome variable (i.e., coaching experience  $\times$   
15 predictor interaction terms included). Results of these conditional models are shown in Table  
16 2 and summarized below.

17 *Approximate location of Table 2*

18 Model A explored the effects of coaches' well-being (positive affect and integration),  
19 and ill-being (negative affect and devaluation) on coaches' perceived provision of autonomy  
20 support at the within-person and individual difference levels. Results indicated that increases  
21 in positive affect and integration beyond one's normal levels were associated with greater  
22 perceived use of autonomy supportive strategies, however, the latter relationship varied  
23 across coaches ( $\Delta\chi^2 = 23.93, p < .001$ ). Moreover, coaches with generally high levels of  
24 positive affect and integration reported greater autonomy support, compared to those coaches

1 with lower levels of positive affect and integration. Negative affect and devaluation  
2 demonstrated no significant associations with autonomy support.

3 In light of the significant random effect found for the relationship between within-  
4 person changes in integration and autonomy support, we constructed a model with coaching  
5 experience entered as a predictor of the slope of this relationship, which was found to be  
6 significant ( $b = -.11, p < .05$ ). Using techniques outlined by Curran, Bauer, and Willoughby  
7 (2006), it was established that the relationship between fluctuations in integration and  
8 autonomy support was significant for less experienced coaches ( $b = 1.40, p < .05$ ), but not for  
9 more experienced coaches ( $b = -1.08, p > .05$ ).

10 Model B explored the effects of coaches' well-being (positive affect and integration),  
11 and ill-being (negative affect and devaluation) on coaches perceived controlling behavior at  
12 the within-person and individual difference levels. Increases in negative affect beyond one's  
13 normal levels were associated with greater perceived controlling behavior, however, this  
14 relationship varied across coaches ( $\Delta\chi^2 = 6.06, p < .05$ ). In addition, coaches with generally  
15 high levels of negative affect reported greater controlling behaviors, compared to those  
16 coaches with lower levels of negative affect. No within-person or individual difference  
17 relationships were found for devaluation, positive affect or integration.

18 In view of the significant random effect found for the relationship between within-  
19 person changes in negative affect and control, we constructed a model with coaching  
20 experience entered as a predictor of the slope of this relationship, which was found to be  
21 significant ( $b = .12, p < .05$ ). Subsequent analysis of this interaction indicated that the  
22 relationship between fluctuations in negative affect and control was significant for more  
23 experienced coaches ( $b = 1.41, p < .05$ ), but not for less experienced coaches ( $b = -1.16, p >$   
24  $.05$ ).

25 **Discussion**

1           The purpose of the present study was to examine the differential effects of both  
2 hedonic and eudaimonic indicators of psychological well- and ill-being on perceived  
3 autonomy supportive and controlling interpersonal styles. Using a longitudinal design, we  
4 were also able to decompose these relationships into within-person and individual difference  
5 levels. Controlling for socially desirable responses, coaching experience, hours per week  
6 spent coaching, and differences between coaching individual and team sports, the present  
7 study offers a number of significant advances to the existing literature.

8           Consistent with our hypothesis, hedonic well-being was found to be positively  
9 associated with the perceived provision of autonomy support at both the within-person and  
10 individual difference levels. That is, a coach who is happier and more excited (for example)  
11 than normal, may be more likely to provide greater opportunities for athletes under their  
12 instruction to express their values and beliefs, compared to when he or she is less happy and  
13 excited. Moreover, coaches who experience generally higher levels of positive affect may be  
14 more likely to convey confidence in their athletes' abilities and encourage athletes to ask  
15 questions, compared to coaches without this attribute. On the other hand, negative affect was  
16 significantly associated with more experienced coaches' interpersonal control at the within-  
17 person level, and for all coaches at the individual difference level. In other words, a coach  
18 who becomes more irritable and upset (for example), may be more likely to criticize,  
19 intimidate, and coerce their athletes more than usual. Additionally, coaches who are prone to  
20 greater levels of negative affect may be more susceptible to employing a controlling  
21 behavioral style, compared to coaches generally experiencing lower levels.

22           These findings extend previous research (e.g., see Forgas, 2002, for a review) by  
23 providing new insight into the within-person and individual difference processes linking  
24 hedonic psychological health and interpersonal behavior, and offers two major applied  
25 implications. First, individuals in coaching positions need to be made aware that fluctuations



1 in their affective state may influence how they interact with their athletes. It may be  
2 worthwhile, therefore, to provide self-awareness and emotional regulation training within  
3 coaching settings. For example, coaches could plan to some degree to engage in the  
4 interpersonal elements of their job (where high autonomy support and low control are central)  
5 during periods when they are most likely to be in a positive affective state (e.g., after a lunch  
6 break). Other non-interpersonal aspects of the coaching role, such as administrative tasks,  
7 could be undertaken when coaches are less likely to be in a positive affective state. Moreover,  
8 techniques commonly employed in alternative psychological settings, such as mindfulness  
9 techniques (e.g., Baer, 2003), could be adapted to assist coaches in minimizing the impact of  
10 negative affect on their interpersonal style.

11         With respect to eudaimonic well-being, increasing less experienced coaches' feelings  
12 of integration beyond one's average state was associated with higher reported autonomy  
13 support. In addition, all coaches who generally considered their coaching role to be fully  
14 integrated into their sense of self, (e.g., I 'am' a coach, as opposed to coaching being  
15 something I just 'do') may be more likely to engage in autonomy supportive coaching,  
16 compared to coaches reporting lower integration between coaching and the self. This finding  
17 extends previous research (e.g., Klussman et al., 2008; Roth et al., 2007; Taylor et al., 2008),  
18 in which internalised motives and engagement towards teaching were related to adaptive  
19 classroom behaviors. Individuals responsible for managing coaches (e.g., head coaches,  
20 sports club management, performance directors) could facilitate the internalization process by  
21 providing coaches with feedback and opportunities for training courses, allowing input into  
22 how coaches develop athletes, and providing opportunities to develop networks with other  
23 coaches. In addition, as highlighted by Taylor et al. (2008), autonomy supportive strategies  
24 require the investment of effort, therefore, when coaches experience a sense of congruence  
25 between their coaching role and their personal values, this may empower them with more

1 energy to invest personal time and effort into that role. This implies that performance  
2 directors, head coaches and other employers of coaches should allow coaches the freedom to  
3 express their ideas and work in accordance with their values and beliefs. This can be achieved  
4 by providing choice and avoiding strict regulation of management and leadership strategies.

5 In contrast to our initial hypothesis, however, devaluation did not emerge as a  
6 significant predictor of a controlling interpersonal style. It may be that when coaches devalue  
7 their coaching role, they adopt a laissez-faire approach to their coaching, rather than a  
8 controlling style. Indeed, research in the education context suggests that teacher's  
9 psychological ill-being, in the shape of symptoms of burnout, is linked with a lack of energy,  
10 enthusiasm, persistence, and willingness to invest effort into their work (i.e. a lack of  
11 engagement; Hakanen, Bakker, & Schaufeli, 2006). Hence, a coach who devalues their role,  
12 and feels as if their effort would be better spent engaged in other activities, may reduce  
13 interpersonal effort by abdicating responsibilities, avoiding making decisions, and being  
14 absent when needed. Future research is required to assess this style of interpersonal behavior,  
15 and its distinct antecedents.

16 From a theoretical perspective, the overall pattern of findings endorses Stebbings et  
17 al.'s (2012) argument for distinct adaptive and maladaptive processes that facilitate autonomy  
18 support and control. Specifically, we found no support for associations between  
19 psychological well-being and a controlling style, nor psychological ill-being and an  
20 autonomy supportive style. Researchers should consider these divergent processes when  
21 exploring potential antecedents of interpersonal behavior.

22 The findings can also be extended in several ways. First, only two markers of hedonic  
23 and eudaimonic well- and ill-being were assessed, however, numerous other indices (e.g.,  
24 subjective vitality, Ryan & Frederick, 2001; life satisfaction; Diener, 1994) could be used to  
25 assess the individual and interactive effects of a wider range of determinants on interpersonal

1 behavior. Similarly, other aspects of positive interpersonal behavior should be explored, such  
2 as the provision of structure and interpersonal involvement (Ryan & Deci, 2002). Previous  
3 research has tended to combine scores on all three dimensions of interpersonal style into  
4 composite 'psychological need support' scores (e.g., Ntoumanis, 2005), whereas future  
5 research could address the differential and cumulative effects of the three interpersonal  
6 dimensions. Third, research could assess daily fluctuations in well-/ill-being, alongside  
7 fluctuations in interpersonal behavior, to better assess how these relationships function at the  
8 state-level on a day-to-day basis, or within and across training sessions. Fourth, interventions  
9 or lab-based experimental research aimed at manipulating coaches' behavior via their  
10 psychological well- and ill-being would be a useful addition to the extant literature. Such  
11 research designs offer the benefits of high internal reliability and validity, and would allow  
12 causality in the relationships to be determined (Thomas, Nelson, & Silverman, 2011). In  
13 addition, athlete reports of coach behavior and observational data is warranted to more fully  
14 and objectively assess coach interpersonal behavior. These alternative methodologies would  
15 counteract the use of entirely self-report data within the present study, which may have given  
16 rise to common method variance partially accounting for our findings (although the existence  
17 of this statistical artefact is contentious; Spector, 2006). Last, in addition to psychological  
18 well- and ill-being, alternative variables could be assessed as potential predictors of  
19 interpersonal behavior. For example, the SDT-based goal content mini theory (Vansteenkiste,  
20 Niemiec, & Soenens, 2010) distinguishes between intrinsic (e.g., personal growth,  
21 community contribution) and extrinsic (e.g., money, fame, image) goals. Future research  
22 could examine the extent to which coaches' personal goals (whether at the global or  
23 contextual level) impact upon interactions with their athletes.

## 24 **Conclusions**

1           The present study represents the primary attempt to delineate the differential effects of  
2 indices of well- and ill-being on coaches' autonomy supportive and controlling interpersonal  
3 behaviors over time. The results extend previous literature by decomposing the within-person  
4 and individual difference relationships between psychological health and interpersonal  
5 behavior. The current research also highlights the potential existence of two distinct  
6 mechanisms by demonstrating that psychological well-being was unrelated to control, and ill-  
7 being was unrelated to autonomy support. Overall, the present findings suggest that  
8 supporting coaches so that they can experience positive affect and integration (and limit their  
9 experience of negative affect) may lead them to create an adaptive interpersonal environment  
10 (i.e., autonomy supportive, non-controlling), allowing athletes under their instruction to  
11 flourish. **Interventions based upon these findings could target the employers of sport coaches**  
12 **(e.g., head coaches, performance directors, governing bodies) to sustain coaches'**  
13 **psychological health, and also target the coaches themselves to promote an awareness of how**  
14 **their own well-/ill-being might affect their interpersonal behavior towards athletes.**  
15

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1 Table 1

2 *Descriptive Statistics, Cronbach's Alpha Coefficients, and Intraclass Correlation Coefficients (ICCs) of all Study Variables*

Variable	Range	Time Point One			Time Point Two			Time Point Three			ICC
		<i>M</i>	<i>SD</i>	<i>α</i>	<i>M</i>	<i>SD</i>	<i>α</i>	<i>M</i>	<i>SD</i>	<i>α</i>	
Positive Affect	1 to 5	4.16	.54	.85	4.10	.63	.91	4.05	.72	.93	.62
Integration	1 to 7	5.41	1.25	.90	5.33	1.13	.86	5.54	1.20	.89	.62
Negative Affect	1 to 5	1.68	.62	.86	1.66	.70	.89	1.55	.56	.86	.65
Devaluation	1 to 5	1.64	.74	.85	1.70	.78	.86	1.76	.93	.92	.69
Autonomy Supportive Behaviors	1 to 7	5.90	.77	.83	5.86	.82	.87	5.95	.72	.80	.70
Controlling Behaviors	1 to 7	2.03	.77	.83	1.99	.84	.88	1.87	.73	.85	.70
Social Desirability Index	1 to 10	7.14	1.87	.56	6.94	1.91	.58	7.13	1.99	.63	.66

1 Table 2

2 *Multilevel Regression Models Exploring Within-Person and Individual Difference Variability in Well- and Ill-Being as Predictors of Autonomy*3 *Supportive and Controlling Interpersonal Styles.*

<b>Predictors</b>	<b>Model A: Autonomy Support</b>		<b>Model B: Control</b>	
	$\beta$	SE	$\beta$	SE
Intercept	5.97	.04***	1.90	.05***
Sport Type	-.26	.09**	.32	.10**
Coach Experience	.01	.04	N/A	N/A
Hours Per Week Coaching	.11	.04**	N/A	N/A
Social Desirability	.12	.05*	-.04	.05
<b>Within-Person Changes</b>				
Positive Affect	.11	.04**	-.01	.05
Integration	.13	.05**	.00	.04
Negative Affect	-.01	.04	.10	.05*
Devaluation	-.06	.04	.06	.05
<b>Between-Person Differences</b>				
Positive Affect	.37	.06***	-.05	.07
Integration	.19	.05***	.02	.06
Negative Affect	-.03	.05	.29	.06***
Devaluation	.09	.06	.08	.07
<b>Random Effects</b>				
Within-Person Integration	.17	.05***	N/A	N/A
Within-Person Negative Affect	N/A	N/A	.10	.04*

4 *Note.* \*p < .05; \*\*p < .01, \*\*\*p < .001.