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Antecedents of Burnout Among Elite Dancers: A Longitudinal Test of Basic Needs  
Theory

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## Abstract

**Objectives:** Little is known regarding the social-psychological predictors of burnout in the dance domain. Drawing from basic needs theory, a sub-theory in the self-determination theory framework (Deci and Ryan, 2000), this study examined whether changes in vocational dancers' autonomy, competence and relatedness satisfaction mediated the relationships between changes in the dancers' perceived autonomy support and burnout over a year of fulltime training.

**Method:** Dancers (N = 219) enrolled in vocational dance training, completed a questionnaire package tapping the variables of interest at three time points over a 36-week period.

**Results:** SEM indicated that the observed decreases in the dancers' perceptions of autonomy support positively predicted observed changes in reported basic need satisfaction that occurred over the school year. In turn, increases in the dancers' global burnout were negatively predicted by changes in satisfaction of the three needs. The three basic needs fully mediated the 'autonomy support – global burnout' relationship. When the sub-dimensions of burnout were examined independently, there were inconsistencies in the salience of each basic need. The increases in emotional and physical exhaustion experienced by the dancers over the school year were unrelated to changes in autonomy, competence and relatedness satisfaction. Changes in competence need satisfaction negatively predicted reduced accomplishment. Increases in the dancers' dance devaluation were negatively predicted by changes in satisfaction of the three needs.

**Conclusions:** Overall, the tenets of self-determination theory are supported. Findings point to the relevance of promoting and sustaining autonomy supportive training environments if burnout is to be avoided in elite dance settings.

**Key words:** Autonomy support, basic needs, burnout, dance

## Introduction

It has been hypothesized that 10,000 hours of practice is required to reach expert status in any pursuit (Ericsson et al., 1993). In performance-related physical activity settings such as sport and dance, the physical and psychological demands of hour upon hour of training can take their toll. Indeed, the inherent risk of burnout for athletes and dancers engaged in full time training has previously been noted (Cresswell & Eklund, 2006; Laws, 2005). In sport, burnout has been defined as a psychosocial syndrome incorporating emotional and physical exhaustion, sport devaluation and reduced sense of accomplishment regarding the activity in question (Raedeke & Smith, 2001). Recent research has implicated burnout to be triggered by the psychological as well as physical demands of elite sport (Lemyre et al., 2004). Nevertheless, burnout is not an inevitable consequence of high level performance (Cresswell & Eklund, 2006). Thus, identifying the social-psychological conditions that preclude burnout is a worthy topic of investigation.

Changes in levels of sport motivation have been considered to play a role in the development of burnout in athletes. Gould (1996) suggested that when motivational patterns change from intense desire, towards sport disengagement (i.e., a change in quantity of motivation), burnout is the likely consequence (Gould, 1996). In a series of studies, Lemyre and colleagues identified that the quality of motivation (i.e., the reasons why one participates) predicted variability in burnout symptomology experienced by elite swimmers (Lemyre, 2005; Lemyre, Hall, & Roberts, 2008). In their work, Lemyre et al applied the self-determination theory (SDT) framework (Deci & Ryan, 1985, 2000) as a theoretical lens through which to examine the social-psychological antecedents of athlete burnout. This perspective considers the quality as well as the quantity of motivation. Thus, unlike their predecessors examining motivation-related predictors of burnout (Gould,

1996), these authors concluded that the origin of burnout was a more complex phenomenon than ‘motivation gone awry.’

SDT proposes fulfilment of three basic psychological needs as central to the process via which optimal human engagement results (Ryan & Deci, 2002). When the need for autonomy is satisfied, one feels volitional in his/her actions and perceives that his/her behaviours are a reflection of self-endorsed goals and values (Deci & Ryan, 2000). Competence need satisfaction is evident when one feels that he/she is sufficiently proficient in the activity in question and can meet the associated demands (White, 1959). The need for relatedness is akin to a feeling of belongingness within the social setting (Baumeister & Leary, 1995). SDT holds that basic psychological need satisfaction (BPNS) will result in more self-determined forms of behaviour regulation, and in turn, signs of optimal functioning and well-being. On the contrary, need frustration is considered to lead to the adoption of more controlled regulations (i.e., behavior driven by internal or external contingencies), understood to lead to states of ill-being (Deci & Ryan, 2000).

A fundamental tenet of SDT, and the basic needs theory (BNT) specifically, is that a direct relationship exists between the degree of BPNS and indications of well- and ill-being (Deci & Ryan, 2000; Ryan & Deci, 2002). Studies undertaken in sport, as well as other performance-centred physical activities such as dance, tend to support the BNT-driven hypotheses regarding the needs as predictors of performers’ well-being (e.g., self-esteem, positive affect) and ill-being (e.g., negative affect) [for reviews see Gagne & Blanchard, 2007 (sport), Quested & Duda, 2009e (dance)].

## Self-Determination Theory and Burnout

The application of SDT as a framework to explore determinants of athlete burnout is relatively new. Of the work undertaken to date, the focus has leaned towards motivation

regulations as direct predictors of athlete burnout. In line with SDT, the over-riding conclusions of these investigations suggest burnout is more likely to result when athletes are amotivated and report low levels of self-determined motivation for engagement in their sport (Cresswell & Eklund, 2005a, 2005b; Gould, Tuffey, Udry, & Loehr, 1996; Lemyre, Roberts, & Stray-Gundersen, 2007; Raedeke & Smith, 2001).

For some time, research evidence has alluded to athlete burnout being a corollary of compromised BPNS. In the 1980's, athlete burnout was conceptualised as an outcome of the stress response process (Smith, 1986). Smith (1986) proposed that low perceptions of accomplishment and control would result when sporting demands outweighed the athlete's perceived available resources. This perspective corresponds with the hypothesis that autonomy and competence depletion may be important precursors of burnout risk. With regard to relatedness, Gould and colleagues (1996) suggested that high level sport involvement can lead to social isolation and consequently, athlete burnout. Thus, a reduction in the athletes' sense of belongingness may also be an instigator of burnout.

A few recent BNT-based studies have directly examined the role of BPNS as an antecedent of athlete burnout. Following a qualitative investigation involving elite rugby players, Cresswell and Eklund (2007) concluded that chronic frustration of the three needs appears to be central to the manifestation of athlete burnout. In another study involving young adult rugby players, diminished autonomy and competence were strongly associated with players' reported burnout (Hodge et al., 2008). Conversely, in research on high school student athletes, relatedness was the predominant predictor of burnout (Perreault et al., 2007).

Past research has identified discrepant results pertaining to the relevance of each basic need to the prediction of the three burnout sub-dimensions, namely, reduced accomplishment, devaluation, and emotional and physical exhaustion. Among adult

athletes, moderate relationships were found between autonomy and competence satisfaction and the athletes' reduced sense of accomplishment and global burnout (Lonsdale et al., 2009). Only autonomy significantly predicted reported sport devaluation. Weak but significant negative paths linked each need with emotional and physical exhaustion. Hodge et al (2008) found inconsistencies in the strength of relationships between the basic needs and the three characteristics of athlete burnout. Autonomy, competence and relatedness satisfaction were unrelated to the emotional and physical exhaustion reported by the adult rugby players. In a recent investigation examining the individual needs as predictors of indicators of adult sport participants' ill-being (Adie et al., 2008b), autonomy was the only need to be significantly related to the players' reported emotional and physical fatigue.

Research has started to address the implications of BPNS for burnout among dancers. In recent investigations with vocational dancers (Quested & Duda, 2010), as well as company-based hip hop performers (Quested & Duda, 2009d), need satisfaction was not significantly related to the dancers' reported emotional and physical exhaustion. It is important to note however, that the other dimensions of burnout (i.e., dance devaluation, reduced sense of accomplishment) were not assessed in these studies. In the present work therefore, we considered the relevance of BPNS to dancers' reported reduced accomplishment and dance devaluation as well as emotional and physical exhaustion.

The assumption that social-environmental factors serve as antecedents of the degree of BPNS experienced by those engaged in the setting in question is an inherent constituent of BNT (Deci & Ryan, 2000; Gagne & Blanchard, 2007; Ryan & Deci, 2007). BNT-based investigations of athlete and dancer burnout have yet to consider social-contextual predictors of BPNS. In order to address this limitation of past work conducted in the physical domain, we centred on the concomitants of autonomy support as

antecedents of BPNS and burnout in the targeted sample of vocational dancers. Autonomy supportive coaching/teaching is evidenced when coaches/instructors provide opportunities for choice, recognise the feelings and experiences of the learners and minimise the use of pressures and demands (Black & Deci, 2000). Autonomy support has been found to relate to BPNS reported by athletes (Adie et al., 2008b; Amorose, 2007; Gagne et al., 2003), and dancers (Quested & Duda, 2010) as well as students in mainstream education settings (Reeve, 2002).

A central characteristic of burnout is that it is a syndrome that manifests over time. In previous research, SDT-driven examinations of the motivation-related predictors of burnout have been marked by an over-reliance on cross-sectional research designs. One longitudinal study has examined changes in rugby players' burnout (Cresswell & Eklund, 2005a). This investigation spanned twelve weeks, and motivation regulations were the exclusive SDT-based predictors under scrutiny. In the present study we set out to longitudinally test a BNT-based model of burnout, specifically focusing on the role of autonomy support and BPNS in the manifestation of dancers' burnout experiences over thirty six weeks of the vocational dance school year.

We hypothesised that changes in the dancers' perceptions of autonomy support and BPNS would negatively predict changes in reported burnout over time. We also expected any association between changes in perceptions of autonomy support and dancers' burnout to be mediated by changes in need satisfaction. The strength and significance of the relationships between BPNS and each burnout dimension have been inconsistent in previous cross-sectional investigations (Hodge et al., 2008; Lonsdale et al., 2009; Perreault et al., 2007; Quested & Duda, 2010). Consequently, the present study also examined whether a change in the satisfaction of each basic need differentially predicted change in each burnout dimension. Based primarily upon the findings of past research (Hodge et al.,

2008; Lonsdale et al., 2009), our third hypothesis stipulated that the paths between the three needs and emotional and physical exhaustion would be weaker than those paths linking the three needs and the other dimensions of burnout as well as global burnout.

## Method

### Participants and Procedures

With the approval of a departmental ethics board at a large UK university, at time one (T1) 614 dancers (453 female, 156 male, 5 gender unspecified) were recruited from full time dance schools within the UK. Dancers were asked to complete three questionnaires over an eight month period. 425 dancers completed the time two questionnaire (T2) and 325 participated at in the final data collection (T3). Overall, 232 dancers participated at all time points. A further 13 dancers were excluded on account of substantial missing data, resulting in a final sample of 219 dancers (161 female, 58 male,  $M_{\text{age}} = 18.44$  years,  $SD = 2.29$ ). There were no significant differences in T1 burnout between the final sample and the dropouts. Dancers had been at their schools for an average of 12.17 months and had typically been dancing since they were 6.34 years old.

Data collection times were pre-arranged with school personnel. Dancers congregated in a studio or classroom where the study was explained and the dancers were invited to participate. Under the supervision of a trained researcher, dancers were asked to complete the questionnaires individually, were informed that there was no right or wrong answers, and were assured that their anonymity would be retained. Prior to participation, all dancers (and parents of dancers aged less than 16 years) provided written informed consent.

The T1 data collection took place at the onset of the school year (during weeks 1-3) when a 'baseline' assessment of burnout was made. The literature suggests that it can take

six weeks to establish the perceived motivational climate in youth sport settings (Miller & Roberts, 2004). Therefore, to ensure that the dancers had been at their school a sufficient amount of time to experience and judge the social environment manifested in dance classes we assessed initial perceptions of autonomy support as well as BPNS at T2 (six weeks post-baseline). All variables were reassessed in the T3 data collection, occurring approximately eight months after T1.

## Measures

The dancers' perceptions of autonomy support offered in their dance school were tapped via seven items adapted from the Health Care Climate Questionnaire (Reinboth et al., 2004; Williams et al., 1996). Dancers were asked to think about the typical atmosphere in their dance school as they responded to seven items (e.g., "I feel that my teachers provide me with choices and options") on a one (strongly disagree) to seven (strongly agree) scale. Items followed the stem "In this dance school...". The reliability and validity of this scale has been supported in previous investigations involving athletes (Reinboth et al., 2004) and dancers (Quested & Duda, 2010) of a similar age to the targeted population.

To tap BPNS, the dancers were asked to respond to a series of items reflecting on their feelings of autonomy, competence and relatedness in their school "over the past few weeks." The stem "In this dance school I feel..." preceded all need satisfaction items. Autonomy need satisfaction was tapped via three items including "that my choices are based on my true interests and values" (Sheldon et al., 2001). Items were anchored on a Likert scale ranging from not at all (1) to very much (5). Five items (e.g., "I am pretty skilled at dance") from the Intrinsic Motivation Inventory (McAuley et al., 1989) were employed to tap the dancers' competence need satisfaction. Dancers responded to the items assessing competence on a Likert scale ranging from one (strongly disagree) to

seven (strongly agree). Satisfaction of the need for relatedness was gauged via five items (e.g., “supported”, “valued”) (Richer & Vallerand, 1998). Relatedness items were gauged on a scale from one (strongly disagree) to five (strongly agree). All scales used to assess BPNS have demonstrated sound reliability and validity in a recent study involving similarly aged dancers (Quested & Duda, 2010).

The dancers’ degree of burnout was assessed using a version of the 15-item Athlete Burnout Questionnaire (ABQ) (Raedeke & Smith, 2001) modified for the dance population. This scale is comprised of three 5-item subscales. Specifically, the ABQ measures dancers’ perceived emotional and physical exhaustion (e.g., “I feel overly tired from my dance participation”), degree of dance devaluation (“I am not into dance like I used to be”) and reduced sense of dance accomplishment (“I am not achieving much in dance”) on a scale of one (almost never) to five (almost always). The psychometric properties of the ABQ have been supported in investigations involving athletes (Raedeke & Smith, 2001). In recent studies with dancers (Quested & Duda, 2010), the validity and reliability of the emotional and physical exhaustion subscale was supported.

## Data Analysis

Structural equation modeling (SEM) with maximum likelihood estimation was the primary data analysis tool. All models were tested using version 17 of the AMOS software (Arbuckle, 1999). Adopting a two-step approach to analysis (Kline, 2005), we preceded the main analysis by evaluating the factor structure of each scale.

The application of the chi square to assess adequacy of model fit has been criticized on account of the statistic’s sensitivity to sample size (Marsh, Balla, & McDonald, 1988). The Standardized Root Mean Square Residual (SRMR) has been recommended in instances where the sample size is  $\leq 250$  (Hu & Bentler, 1998). In line

with Hu and Bentler's two-index presentation recommendations, this indicator of absolute fit was accompanied by the Comparative Fit Index (CFI) as a gauge of incremental fit.

When the RMSEA was less than .08 and when the CFI was greater than .90, the data were considered to show good fit to the hypothesized models. CFI values  $> .95$  are the target for an excellently fitting model (Hu & Bentler, 1999).

The primary goal of our study was to determine whether changes in perceptions of autonomy support predicted changes in the dancers' need satisfaction, and in turn, burnout, over the course of the school year. To this end, we tested our T3 data in a hypothesized model (see Figure 3.1) with paths also specified between the T3 variables and their corresponding T1 or T2 measure. This approach results in the paths connecting the T3 variables representing a prediction of change over time (Sheldon & Elliot, 1999). As such, the basic needs were modeled as dynamic variables that are susceptible to environmental influence with the propensity to illicit change in well- and ill-being (Sheldon & Elliot, 1999). On account of the number of parameters in the proposed model, mean scores were employed as indicators of the targeted variables. The three basic needs are considered to be interrelated constructs (Ryan & Deci, 2000b). Therefore, replicating the approach of others (Quested & Duda, 2010; Reinboth et al., 2004), we correlated the error terms associated with the indicator variables representing each need at T3, and also took this action with respect to the T2 need error terms.

A further analytical objective was to determine whether the association between changes in autonomy support and burnout were mediated by changes in basic need satisfaction over the time period of the study. Accordingly, the procedural recommendations of Holmbeck (1997) were employed to judge the total mediating effect of the three needs. Specifically, we firstly examined whether autonomy support predicted burnout in a direct effects model (testing only the c path). In a mediation model, we next

evaluated the ‘autonomy support – basic needs’ paths (a, d and f) and ‘basic needs – burnout’ paths (b, e and g). Holmbeck advocated mediation to be supported if a combined effects model (testing all a – f paths) does not significantly improve the fit compared to that of the mediation model (i.e.,  $\chi^2$  difference  $p > .05$ ). The degree of mediation is judged by whether the previously significant c path in the direct effects model is reduced (partial mediation) or annulled (full mediation) in the combined effects model. This appraisal of total mediating effects was coupled with an assessment of the significance of each mediator’s independent effect (MacKinnon, 2000; MacKinnon et al., 2002). A final aim of the study was to examine whether these inter-relationships were consistent between the three sub-dimensions and the composite measure of burnout. Consequently, these analyses were replicated four times in models predicting reduced accomplishment, emotional and physical exhaustion, dance devaluation, and global burnout.

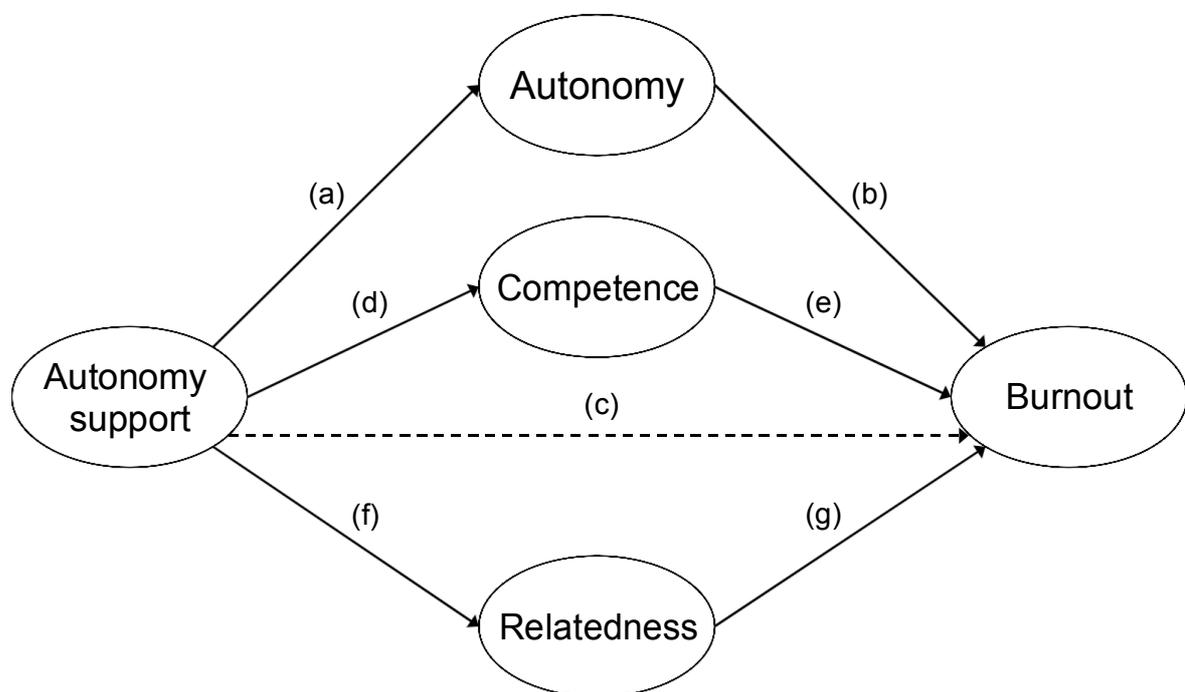


Figure 3.1. Hypothesized structural model of the associations between perceptions of autonomy support, BPNS and burnout.

## Results

Mean scores indicated that, at T2, the dancers experienced moderate BPNS and perceived their teachers to offer relatively high autonomy support (see Table 3.1).

Table 3.1

Mean Scores of Study Variables

Variable	T1/T2		T3		F (1, 218)
	M	SD	M	SD	
Autonomy support (1-7)	5.02	.97	4.61	1.24	29.06***
Autonomy (1-5)	3.52	.74	3.33	.81	10.12**
Competence (1-7)	4.51	1.13	4.61	1.11	2.43
Relatedness (1-5)	3.72	.78	3.46	.96	18.83***
Global burnout (1-5)	2.25	.57	2.46	.77	21.07***
Exhaustion (1-5)	2.66	.87	2.86	.99	9.04**
Reduced accomplishment (1-5)	2.32	.73	2.50	.88	10.88**
Dance devaluation (1-5)	1.76	.70	2.01	.94	16.44***

Note. \*  $p < .05$ . \*\* =  $p < .01$ . \*\*\* =  $p < .001$ .

The mean for T1 global burnout was under the scale's midpoint. Scrutiny of the ABQ subscale means revealed that the dancers reported low dance devaluation, and emotional and physical exhaustion that was just above the scale midpoint. Repeated Measures Multivariate Analysis of Variance (MANOVA) ( $F(1, 218) = 8.24, p < .001, \eta^2 = .21$ ) indicated that the dancers perceived their dance climates to be less autonomy supportive at T3 than at T2. The dancers' satisfaction of the needs for autonomy and

relatedness also significantly decreased, whereas reported global burnout and the sub-dimensions of burnout increased, over the school year (see Table 3.1). At T2 and T3, autonomy support positively correlated with the three needs. These variables were negatively related to the burnout dimensions when assessed at T1 and T3. The three needs were positively related at both time points; however the associations were stronger (though not significantly) at T3 than at T2 (see Table 3.2).

No significant outliers were identified in the dataset. There was evidence of significant negative skew in the mean scores of competence satisfaction and dance devaluation at both time points. Given that the under estimations associated with negative skew disappear with sample sizes over 200 (Tabachnick & Fidell, 2001), this was not considered problematic. The data showed evidence of significant multivariate nonnormality (Mardia's co-efficient = 22.26). Thus, when assessing the path coefficients in the structural models, we examined parameter estimates derived from multiple re-samples drawn via the bootstrapping approach (Kline, 2005).

Fit indices for the measurement models are available from the first author. Overall, responses to the scales demonstrated acceptable fit to the confirmatory factorial models. The reliability co-efficients of all scales were satisfactory ( $\alpha$  range = .69 - .91). While some caution should be exercised when interpreting findings associated with the T2 measure of autonomy need satisfaction ( $\alpha = .69$ ), co-efficients of 0.6 have been deemed acceptable for scales with few items (Hair, Black, Babin, Anderson, & Tatham, 2006).

Table 3.2

## Correlations Between Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(1) T2 Autonomy support															
(2) T2 Autonomy	.40**														
(3) T2 Competence	.18**	.41**													
(4) T2 Relatedness	.63**	.50**	.26**												
(5) T1 Global burnout	-.37**	-.40**	-.35**	-.43**											
(6) T1 Exhaustion	-.31**	-.29**	-.12	-.32**	.72**										
(7) T1 Reduced accomplishment	-.29**	-.35**	-.44**	-.38**	.78**	.27**									
(8) T1 Dance devaluation	-.23**	-.26**	-.25**	-.26**	.75**	.24**	.52**								
(9) T3 Autonomy support	.51**	.25**	.31**	.41**	-.43**	-.28**	-.40**	-.29**							
(10) T3 Autonomy	.35*	.36**	.27**	.31**	-.31**	-.25**	-.25**	-.19**	.55**						
(11) T3 Competence	.15*	.27**	.68**	.14*	-.36**	-.14*	-.41**	-.29**	.45**	.43**					
(12) T3 Relatedness	.39**	.30**	.38**	.48**	-.44**	-.29**	-.37**	-.33**	.77**	.54**	.49**				
(13) T3 Global burnout	-.31**	-.40**	-.44**	-.36**	.54**	.41**	.46**	.35**	-.48**	-.48**	-.58**	-.53**			
(14) T3 Exhaustion	-.28**	-.27**	-.20**	-.29**	.43**	.49**	.27**	.18**	-.28**	-.31**	-.24**	-.31**	.77**		
(15) T3 Reduced accomplishment	-.21**	-.34**	-.48**	-.28**	.44**	.22**	.52**	.26**	-.46**	-.44**	-.67**	-.50**	.83**	.40**	
(16) T3 Dance devaluation	-.28**	-.38**	-.41**	-.32**	.47**	.27**	.37**	.43**	-.46**	-.44**	-.54**	-.51**	.87**	.46**	.69**

Note. \*  $p < .05$ . \*\* =  $p < .01$ .

The hypothesized model, specifying a ‘T3 autonomy support – T3 basic needs – T3 global burnout’ sequence (while controlling for the corresponding variables at T1 and T2) demonstrated a poor fit to the data ( $\chi^2(29) = 252.10$ , CFI = .79, SRMR = .23). The modification indices indicated that the inclusion of paths connecting T1 and T2 variables in a manner theoretically consistent with BNT (i.e., ‘T2 autonomy support – T2 needs – T1 global burnout’) would substantially improve model fit. The wording of the measures and the timeframe of the data collection may help to explicate the recommendations of the modification indices. Although the T2 perceptions of autonomy support and need satisfaction measures were taken after the T1 burnout measures, the T2 assessments tapped the “past few weeks”, a time span that would have included the time of the first burnout assessment. Theoretical predictions and findings of past cross-sectional research (Quested & Duda, 2010; Reinboth et al., 2004) indicate that the inter-relationships presented in Figure 3.1 would be expected between the autonomy support, basic needs and burnout variables in a static as well as dynamic manner. With these theoretical and measurement-related points in mind, it was considered comprehensible that BPNS reported at T2 would be related to the degree of burnout the dancers had been experiencing at the baseline data collection. Drawing from this reasoning and the strong recommendations of the modification indices, paths were added between T2 autonomy support and T2 BPNS, and between T2 BPNS and T1 burnout, in the preceding models. This substantially improved model fit (see Table 3.3). With the inclusion of the aforementioned paths, the structural model centered on predictors of change in global burnout supported our hypotheses with respect to the positive associations between changes in autonomy support and each basic need over the school year. In line with our expectations, changes in autonomy, competence and relatedness satisfaction significantly predicted the changes in global burnout that occurred during this time (see Table 3.3).

Results from the ‘autonomy support – global burnout’ direct effects model indicated that decreases in the dancers’ perceptions of autonomy support significantly predicted 33% of the change in global burnout over the school year. In line with our hypotheses, there was evidence of mediation via changes in the dancers’ reported autonomy, competence, and relatedness satisfaction. Support for Holmbeck’s (1997) first mediation criterion is evidenced in the significant direct path (c) between perceptions of autonomy support and global burnout ( $\beta = -.31, p < .01$ ). Significant relationships were evident between autonomy support and each basic need (paths a, d, and f), and between each need and global burnout (paths b, e and g) in the mediation model (see Table 3.3). In line with our hypotheses, the  $\chi^2$  difference test indicated that the combined model did not offer a superior representation of the data to the mediation model ( $\chi^2$  difference = 3.77,  $p = .15$ ). Moreover, the c path reduced to insignificance with the inclusion of the mediators ( $\beta_c = -.31, p < .01$ ;  $\beta_{c'} = .01, p > .05$ ). The indirect effects via autonomy ( $\beta_a\beta_b = -.09, p < .05$ ), competence ( $\beta_d\beta_e = -.09, p < .01$ ) and relatedness ( $\beta_f\beta_g = -.10, p < .05$ ) were statistically significant (MacKinnon, 2000). In sum, these analyses suggested changes in the dancers’ BPNS to be a mechanism linking negative changes in perceptions of teachers’ autonomy support, and increases in global burnout, over the school year.

According to Holmbeck’s principles (1997), there was also evidence of the three needs providing a total mediation effect in the case of each individual facet of burnout. Specifically, the combined effects models did not offer any improvement in fit to the mediation models predicting reduced accomplishment, dance devaluation, and emotional and physical exhaustion. The insignificant c’ path in the corresponding combined effects models provided further evidence regarding the mediating role of the basic needs (Holmbeck, 1997). However, the independent mediating role of each basic need was not equal in the models predicting each dimension of burnout. In the case of reduced

accomplishment, only competence emerged as a significant mediator ( $\beta_d\beta_e = .13, p < .001$ ), although the indirect effect via autonomy was nearing significance ( $\beta_a\beta_b = -.09, p = .07$ ). Holmbeck's criteria supported mediation via autonomy and competence in the models predicting changes in dance devaluation. In this case, the indirect effects via autonomy ( $\beta_a\beta_b = -0.08, p < .05$ ) competence ( $\beta_d\beta_e = -.09, p < .01$ ) and relatedness ( $\beta_f\beta_g = -0.14, p < .05$ ) were significant (MacKinnon, 2000). However, changes in satisfaction of the three needs did not significantly predict changes in emotional and physical exhaustion. Therefore, the basic needs could not be considered to play a mediating role in the 'autonomy support – emotional and physical exhaustion' relationship.

Table 3.3  
Fit Indices and Standardized Pathways for All Models Tested

Burnout dimension	Fit indices			Autonomy Support – Needs			Needs – Burnout			AS – BO	BO	Model comparison	
	X <sup>2</sup> (df)	CFI	SRMR	Auto (a)	Comp (d)	Rel (f)	Auto (b)	Comp (e)	Rel (g)	(c)	R <sup>2</sup>	X <sup>2</sup> Δ (df)	
Global burnout													
Direct effects	20.35*** (2)	.91	.08								-.31**	.33**	
Mediation	72.22*** (22)	.95	.09	.49**	.28**	.68**	-.18**	-.32**	-.15*			.46*	
Combined effects	68.45*** (20)	.95	.08	.49**	.28**	.68**	-.18*	-.32**	-.16*	.006	.47**	3.77 (2)	
Reduced accomplishment													
Direct effects	22.25*** (2)	.90	.09								-.31**	.30**	
Mediation	65.66*** (22)	.96	.08	.49**	.28**	.68**	-.13 <sup>a</sup>	-.45**	-.13			.50**	
Combined effects	64.82*** (20)	.96	.08	.49**	.28**	.68**	-.13 <sup>a</sup>	-.44**	-.14	.02	.51**	.84 (2)	
Dance devaluation													
Direct effects	9.41** (2)	.95	.05								-.38**	.28**	
Mediation	66.62*** (22)	.95	.08	.49**	.28**	.68**	-.16*	-.31**	-.20**			.39**	
Combined effects	65.12*** (20)	.95	.08	.49**	.28**	.68**	-.15*	-.31**	-.17 <sup>a</sup>	-.05	.40**	1.50 (2)	
Emotional and physical exhaustion													
Direct effects	6.69* (2)	.97	.05								-.15*	.25**	
Mediation	57.79*** (22)	.96	.08	.49**	.28**	.68**	-.13 <sup>a</sup>	-.08	-.08			.27*	
Combined effects	53.79** (20)	.96	.07	.49**	.28**	.68**	-.14	-.09	-.10	.03	.27*	4.00 (2)	

Note. \* p < .05. \*\* = p < .01. \*\*\* = p < .001. <sup>a</sup> = p < .07. AS = Autonomy Support. BO = Burnout.

## Discussion

Past work, grounded in SDT, has supported the hypothesized associations between motivation regulations and burnout (Cresswell & Eklund, 2005a, 2005b; Gould et al., 1996; Lemyre et al., 2007; Raedeke & Smith, 2001). Recent sport research (Cresswell & Eklund, 2007; Hodge et al., 2008) has emphasized the relevance of basic needs (Ryan & Deci, 2000b) to variability in athlete burnout. These (typically cross-sectional) investigations have neglected to consider the role of social-environmental features in the manifestation of this maladaptive syndrome. Centering on the vocational dance milieu, the present study examined whether changes in perceptions of autonomy support predicted dancers' enhancement or depletion in BPNS, and in turn, reported burnout over the 36-week school year. Overall, this investigation supported the predictions of BNT (Ryan & Deci, 2000b) with regard to these presumed social-psychological determinants of changes in dancers' burnout susceptibility.

### Autonomy Support and Basic Need Satisfaction

The expected association between perceptions of autonomy supportive atmospheres and BPNS has been supported in studies undertaken with athletes (Adie et al., 2008b; Amorose, 2007) and dancers (Quested & Duda, 2010). Adding to this literature, the present study indicates that this autonomy promotive facet of the social context may also be a central determinant of change in dancers' degree of autonomy, competence and relatedness satisfaction. Findings suggest that when instructors increase the extent to which they take the dancers perspective, encourage choice and self-regulation, and temper extrinsic demands and pressures (Black & Deci, 2000), the dancers' BPNS will be enhanced. The results indicate that the converse may also be true; present findings

revealed that the dancers' perceptions of autonomy support, and in turn, BPNS decreased over the school year.

The strength of the path ( $\beta = .49$ ) between the reduction in the dancers' perceptions of their instructors' autonomy support and the corresponding decrease in autonomy satisfaction is unsurprising, given the inherent connection between these variables and the theoretical predictions regarding their association (Deci & Ryan, 2000). Findings suggest that when instructors are autonomy supportive, dancers are more likely to feel as though they are the initiators of their own actions and have a sense of personal autonomy. In the PE context, autonomy support has been found to link strongly with the students' competence satisfaction (Standage et al., 2006). This finding is contrary to results stemming from cross-sectional research undertaken in adult sport (Adie et al., 2008b) and vocational dance settings (Quested & Duda, 2010). In the aforementioned studies, the paths between autonomy support and competence were weak (Adie et al., 2008b) and non-significant (Quested & Duda, 2010). In the present research, perceived autonomy support emerged as a significant predictor of changes in dancers' perceived competence over time. It makes sense that when dance teachers reduce pressures and encourage self-initiated and self-controlled actions, the dancers are more likely to feel efficacious. It is important to keep in mind that the observed path between autonomy support and competence was only moderate ( $\beta = .28$ ). This suggests that other dimensions of the teacher-created social environment (e.g., perceptions of the task- and/or ego-involving features, (Duda & Balaguer, 2007)) may also be influential in terms of dancers' sense of competence. This was certainly the case in a recent cross-sectional investigation examining social-environmental predictors of dancers' BPNS (Quested & Duda, 2010).

In congruence with research by Adie et al, (2008b) and Quested & Duda (2010), changes in perceived autonomy support had the most pronounced relationship with the

dancers' change in relatedness satisfaction. This finding might be attributable to the teachers' conveyance of respect and shared perspective, benchmarks of an autonomy supportive teaching atmosphere (Black & Deci, 2000). In the absence of close family and friends, social agents in school may become the prevailing source of relatedness support for vocational dancers studying away from home (Quested & Duda, 2009e). Overtime, dancers may feel a greater sense of belongingness in their school when they are empowered by teachers that provide choices and empathize with the demands inherent in elite level training. From the present findings it is not possible to delineate which aspects of autonomy support are most pertinent to increased relatedness. Future research is warranted to identify which specific dimensions of autonomy supportive teaching behaviors are most likely to lead dancers to feel a sense of belongingness in their school.

#### Psycho-Social Predictors of Burnout

Previous studies have indicated that athletes and dancers report signs of ill-being when they perceive their context to be low in autonomy support (Adie et al., 2008b; Amorose, 2007; Quested & Duda, 2010). Findings from all four of the direct path models add credence to this hypothesis. The present study highlights that dancers' burnout risk is enhanced when teachers do not foster and sustain an autonomy supportive learning environment.

It is important to recognize that we did not specifically assess controlling teacher behaviors in this study. The results indicate that dancers' health may even be in jeopardy as a corollary of teachers' inaction (i.e., low provision of autonomy support), as opposed to active attempts to thwart autonomy or control behavior. Future investigations examining determinants of burnout could measure the dancers' perceptions of their teachers' controlling behaviors (Assor, Kaplan, Kanat-Maymon, & Roth, 2005), alongside

perceptions of provided autonomy support. Such research would clarify whether controlling atmospheres are accountable for, or contribute independently towards, the dancers' experiences of ill-being states.

Aligned with our hypotheses and in accordance with the predictions of BNT (Deci & Ryan, 2000), changes in satisfaction of the three needs mediated the negative relationship between changes in the dancers' perceived autonomy support and global burnout. As revealed in previous cross-sectional research on athletes (Lonsdale et al., 2009), change in competence satisfaction was the most salient predictor of changes in the dancers' global burnout. The results also support the premise that differential psychological processes may account for each burnout dimension (Lemyre, Treasure, & Roberts, 2006; Lonsdale et al., 2009). Of all the models tested, change in the basic needs accounted for the greatest proportion of the explained variance in reduced accomplishment. More specifically, it was changes in competence that were most relevant to changes in this facet of burnout. Supporting and extending previous cross-sectional findings (Lonsdale et al., 2009), the present results suggest that a sense of competence may play a central role in the development or depletion of perceived accomplishment in achievement settings. From the standpoint of SDT, this makes conceptual sense. When a dancer feels competent, he/she is more likely to exhibit adaptive motivational patterns and achievement-related behaviors, increasing the likelihood of perceived goal attainment.

In the present study, changes in satisfaction of all three needs predicted changes in the dancers' reported dance devaluation. However, only autonomy and competence mediated the association between changes in perceptions of autonomy support and this characteristic of the burnout syndrome. In past work in the sport domain, autonomy was found to be the only basic need to predict the athletes' reported sport devaluation

(Lonsdale et al., 2009). The present findings highlight the importance of teachers' attempts to sustain dancers' perceived autonomy and competence if the devaluation aspect of feeling burned out is to be forestalled. Our results also indicate that dancers are less likely to undervalue their dance experience when they feel volitional, as well as proficient in relation to their dance engagement.

Overall, the dancers reported higher levels of emotional and physical exhaustion at T3 than at T1. The direct negative path between changes in autonomy support and exhaustion was significant. However, the dancers' increased feelings of fatigue were unrelated to their reported changes in need satisfaction over the preceding months. These results concur with findings of cross-sectional studies, in which BPNS was found to have a weak or insignificant association with the emotional and physical exhaustion of dancers (Quested & Duda, 2010) and athletes (Hodge et al., 2008; Lonsdale et al., 2009). Collectively, these findings challenge the SDT-grounded conceptualization of the needs as 'essential' for optimal functioning and well-being (Deci & Ryan, 2000). However, it may be the case that need thwarting, rather than low need satisfaction per se, would better explain dancers' experiences of ill-being.

In explicating their findings, Lonsdale and colleagues suggested that the physical demands of sport participation may account for the exhaustion dimension of burnout to a greater extent than psychological antecedents (Lonsdale et al., 2009). Indeed, past research has indicated that athlete burnout may be a consequence of physical as well as motivational factors (Lemyre et al., 2004). This explanation assumes that emotional and physical exhaustion are always experienced concurrently; the possibility that exaggerated affective expressions of fatigue may occur in the absence of excessive physical tiredness (or vice versa) is neglected. It has been proposed that basic needs may be more salient predictors of emotional welfare than physical well-being (Quested & Duda, 2010).

However, it is not feasible to test this possibility with data collected via the ABQ. It could be argued that the items assessing emotional and physical exhaustion (“I feel so tired from my dance training that I have trouble finding energy to do other things”, “I feel overly tired from my dance participation”, “I feel “wiped out” (exhausted) from dance”, “I feel physically worn out from dance”) are non-specific with regard to the targeted experience of exhaustion. The wording of these items is more appropriate for gauging physical fatigue, which is not necessarily experienced in conjunction with emotional tiredness. It is possible that, regardless of a dancers’ degree of BPNS, he/she would experience physical exhaustion after intense daily dance training. This is not to say however, that the performer is also emotionally worn out. Thus, a comprehensive examination of the interplay between BPNS, physical fatigue and emotional exhaustion may currently be clouded by limitations in measurement. It is important to note that although direct paths from each need to emotional and physical exhaustion were insignificant, there was still evidence of a total mediating effect via the needs in the ‘autonomy support – exhaustion’ relationship. Therefore, although it was not possible to tease out independent effects, the evidence suggests BPNS to be a relevant mechanism in this association.

The three needs are considered to be inter-related (Ryan & Deci, 2000b) and the observed correlation co-efficients indicate this to be the case (see Table 3.2). Thus, shared variance between the needs may account for the presence of an overall mediating effect in the absence of significant paths between each need and exhaustion. Independent assessments of the emotional and physical facets of fatigue, alongside consideration of seemingly relevant physiological antecedents (e.g., hours and days of training per week, energy expenditure per training session and across sessions) may help to tease out the relevance of particular basic needs to the emotional and physical exhaustion experienced by elite performers.

When assessed at one point in time, relatedness satisfaction has been more strongly associated with indicators of vocational dancers' emotional well- and ill-being (i.e., positive and negative affective states) than the needs for competence or autonomy (Quested & Duda, 2010). In the present investigation, the strength of the negative paths between changes in relatedness and burnout were overshadowed by the impact of changes in competence and/or autonomy. These results are aligned with cross-sectional investigations undertaken with athletes (Hodge et al., 2008; Lonsdale et al., 2009). In SDT, autonomy and competence need satisfaction are considered to predominate because of their integral links with the development of intrinsic motivation (Ryan & Deci, 2002). The salience of autonomy and competence in the physical domain may explain why these needs appear to play a more prominent role in the manifestation of performers' burnout than the need for relatedness. Nevertheless, while other studies have pointed to the limited association between relatedness need satisfaction and indicators of physical welfare (Reinboth & Duda, 2006; Reinboth et al., 2004), links between relatedness and athletes' emotional health have previously been supported (Adie et al., 2008b; Quested & Duda, 2010; Reinboth & Duda, 2006). The inconsistencies in these findings vis-à-vis the 'relatedness – well-/ill-being' association in the physical domain is intriguing, and may be attributable to the targeted well- or ill-being outcomes. Future research, in which need satisfaction as well as need thwarting are assessed alongside multiple markers of physical and emotional health/ill-health, will help to delineate the relationships between relatedness and athletes' and dancers' welfare.

## Conclusions and Future Directions

In the context of vocational dance, this longitudinal investigation supports the BNT (Ryan & Deci, 2000b) premise that perceptions of autonomy support and BPNS are

pertinent to the development or prevention of burnout. Findings represent an important extension of recent BNT-grounded cross-sectional investigations concerning athlete burnout (Hodge et al., 2008; Lonsdale et al., 2009), in which the role of the social environment in the burnout process was not examined. In addition and furthering the current literature, results suggest that differential psychological processes may dominate in the development of each of the three facets of the burnout syndrome. Nevertheless, nurturing the basic needs of vocational dancers via autonomy supportive approaches to teaching appears to represent an important step in forestalling this undesirable state.

Studying the antecedents of athlete and dancers' burnout will only be a worthwhile pursuit if research findings and their theoretical underpinnings contribute towards evidence based practice. Dancers may be less at risk of burnout if researchers and practitioners focus upon the practical applications of recent BNT-grounded burnout research. Drawing from the present study, understanding how teachers and coaches can create and sustain an autonomy supportive teaching environment may be the next important step in reducing the prevalence of burnout experienced by elite performers.