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Perfectionism, Burnout, and Engagement in Dance: The Moderating Role of Autonomy Support

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Abstract

Previous findings highlight the relationships between 2×2 perfectionism and burnout in dancers, but researchers are yet to examine the relationships between 2×2 perfectionism and, the opposing outcome of, engagement in dance. Similarly, we know little about the factors that may moderate these relationships. We therefore sought to extend previous research by examining the relationships between 2×2 perfectionism and both burnout and engagement in dancers, and by assessing whether autonomy support moderated the relationships between subtypes of perfectionism and the two opposing outcomes. Adolescent dancers ($N = 244$, female $n = 198$, M age = 15.00 years, $SD = 2.90$ years) completed measures capturing four subtypes of perfectionism (pure personal standards perfectionism, pure evaluative concerns perfectionism, mixed perfectionism, and nonperfectionism), burnout dimensions (reduced sense of accomplishment, emotional/physical exhaustion, devaluation), engagement dimensions (confidence, dedication, vigour, enthusiasm), and autonomy support provided by their dance teacher. Moderated regression analyses supported all four hypotheses of the 2×2 perfectionism model for burnout (all dimensions) and dedication, vigour, and enthusiasm, and supported three hypotheses for confidence (Hypotheses 1a, 2 and 3). In addition, autonomy support moderated the relationships between subtypes of perfectionism and burnout (reduced accomplishment and devaluation) and engagement (all dimensions). The findings suggest that providing autonomy support offers a potential strategy to prevent burnout and promote engagement in perfectionistic dancers.

Keywords: youth dancers; burnout; engagement; self-determination theory; dance teacher
autonomy support

The 2 × 2 Model of Perfectionism, Burnout and Engagement in Dance:

The Moderating Role of Autonomy Support

Becoming a professional dancer requires substantial training and high levels of performance over many years (Aujla, Nordin-Bates, & Redding, 2014). For some young dancers, this process can be a deeply rewarding experience that sets them on a pathway to long term participation (Aujla et al., 2014). Yet, for others, the demands can become overwhelming, leading to negative experiences and disaffection (Walker, Nordin-Bates, & Redding, 2012). These contrasting experiences arise, in part, due to characteristics of the dancers as well as features of the dance environment. If dancers strive for success in a flexible manner, view setbacks as opportunities for development, and others reinforce this approach, we might reasonably expect dancers to have more positive experiences. Conversely, if dancers engage in compulsive striving and tie their self-worth to unattainable standards set by themselves or others, negative experiences are likely to ensue (Hall & Hill, 2012). In the present study, we tested these assertions by examining the relationships between perfectionism, engagement and burnout in dancers, and whether autonomy support provided by dance teachers moderated these relationships.

Burnout can be generally defined as a cognitive-affective syndrome (Gustafsson, DeFreese, & Madigan, 2017). In dance and sport research, burnout is most typically assessed by measuring three core symptoms; a reduced sense of accomplishment, emotional/physical exhaustion, and devaluation based on Raedeke & Smith (2001). Reduced sense of accomplishment reflects perceived decline in performance and achievements. Emotional/physical exhaustion reflects perceived depletion of emotional and physical resources stemming from practice and performance. Finally, devaluation reflects a cynical attitude toward dance participation. Attesting to the maladaptive role of burnout, these

symptoms are related to a range of negative outcomes including anxiety (Cresswell & Eklund, 2006), reduced performance (Cresswell & Eklund, 2007), and dropout (Goodger, Gorely, Lavalley, & Harwood, 2007).

A directly opposing cognitive-affective experience is engagement (Schaufeli & Bakker, 2004). Engagement consists of four dimensions; confidence, vigour, dedication, and enthusiasm (Lonsdale, Hodge, & Jackson, 2007). Confidence is belief in one's ability to maintain high levels of performance and pursue goals. Dedication is desire, investment and effort directed toward pursuing goals. Vigour is feelings of mental and physical liveliness. Finally, enthusiasm is feelings of excitement and enjoyment. In contrast to burnout symptoms, these dimensions are positively associated to other desirable outcomes such as self-regulation (Martin & Malone, 2013), work-life balance (DeFreese & Smith, 2013), and flow (Hodge, Lonsdale, & Jackson, 2009).

Several theories have been proposed to explain the onset of burnout including stress, commitment, and identity perspectives, self-determination theory (SDT), and the integrated model (see Gustafsson et al., 2017 for a review). Of these, SDT (Ryan & Deci, 2018) offers an encompassing framework that can also be used to explain engagement. From the SDT perspective, engagement is more likely when motivation for dancing is autonomous (i.e., personally valued and well assimilated with other needs and values). Autonomous motivation emerges when basic psychological needs for autonomy (i.e., sense of choice and volition), competence (i.e., sense of effectiveness), and relatedness (i.e., sense of belonging in one's environment) are supported. By contrast, in SDT, burnout is more likely when motivation for dancing is controlled (i.e., dependent on punishment and reward and contingent self-worth).

Controlled motivation occurs in environments that do not support, or actively thwart, basic psychological needs. In support of these ideas, researchers have found that need satisfaction and autonomous motivation are related to engagement, whereas need thwarting and controlled motivation are related to burnout (Jowett, Hill, Hall, & Curran, 2013, 2016).

Multidimensional Perfectionism and the 2 × 2 Model

One factor that appears to influence the motivational processes outlined in SDT is perfectionism. Perfectionism is a multidimensional personality trait characterised by striving for exceedingly high standards accompanied by harsh criticism (Frost, Marten, Lahart, & Rosenblate, 1990). Striving for perfection may underpin personally important accomplishments that align with one's values, and therefore relate to other adaptive outcomes. However, unremitting criticism and self-worth tied to achievement mean that perfectionism may also undermine the quality of dancers' motivation and underpin psychological difficulties (Hall & Hill, 2012). These core components of perfectionism can be captured by differentiating two positively related higher-order factors; personal standards perfectionism (PSP) and evaluative concerns perfectionism (ECP; Dunkley, Zuroff, & Blankstein, 2006).

Examining two higher-order factors of perfectionism involves combining dimensions and subscales from existing instruments (Hill, Mallinson-Howard, & Jowett, 2018). PSP consists of dimensions that capture the personal pursuit of perfection including personal standards and self-oriented perfectionism. ECP consists of dimensions that capture evaluative components of perfectionism such as concern over mistakes, doubts about actions and socially prescribed perfectionism (Gotwals & Dunn, 2009; Hewitt & Flett, 1991). There is evidence for the contrasting effects of ECP and PSP in relation to burnout in dancers.

Specifically, ECP is positively related to emotional/physical exhaustion, whereas PSP is unrelated (Cumming & Duda, 2012). To date, there is no evidence in relation to engagement in dancers, but findings from youth sport suggest that PSP is related to engagement whereas ECP is unrelated (Jowett et al., 2016). Given similarities in the achievement-oriented domains of dance and sport (e.g., high intensity training, focus on skill acquisition, competition for leading roles/starting positions), we might reasonably expect equivalent relationships to emerge in youth dancers.

Recently, researchers have begun to examine the interactions between ECP and PSP in relation to psychological outcomes. Doing so allows researchers to test the relative importance of different combinations of ECP and PSP in the 2×2 model of perfectionism (Gaudreau, 2016). The model includes four perfectionism sub-types; pure PSP (high PSP and low ECP), pure ECP (high ECP and low PSP), mixed perfectionism (high PSP and high ECP), and non-perfectionism (low PSP and low ECP). Gaudreau (2016) formalised the differences between the subtypes using four hypotheses. Due to the equivocal effects of PSP, three versions of Hypothesis 1 were proposed; pure PSP would be associated with better (Hypothesis 1a), worse (Hypothesis 1b), or equivalent outcomes (Hypothesis 1c) in comparison to non-perfectionism. Hypothesis 2 stated that pure ECP would be associated with worse outcomes than non-perfectionism. Hypothesis 3 stated that pure ECP would be associated with worse outcomes than mixed perfectionism. Hypothesis 4 stated that mixed perfectionism would be associated with worse outcomes than pure PSP. Applying this functional hierarchy to burnout and engagement, we anticipated that pure ECP would be associated with the lowest levels of engagement and highest levels of burnout (Hypotheses 2 and 3), followed by mixed perfectionism (Hypothesis 4), then non-perfectionism, and finally – based on Hypothesis 1a – pure PSP.

The 2×2 perfectionism model in relation to burnout in dancers has been examined in two previous studies. First, Cumming and Duda (2012) examined emotional/physical exhaustion and found that dancers with pure PSP reported lower levels of this symptom of burnout than dancers with mixed perfectionism (Hypothesis 4). Second, Nordin-Bates, Raedeke, and Madigan (2017) examined all burnout symptoms and found that dancers with pure ECP reported higher reduced sense of accomplishment, devaluation, and emotional/physical exhaustion than dancers with nonperfectionism (Hypothesis 2), and that dancers with mixed perfectionism reported higher reduced sense of accomplishment than in dancers with pure PSP (Hypothesis 4). Researchers are yet to examine the 2×2 model in relation to engagement in dancers. However, findings from Quested et al. (2014) suggest some support for the model in relation to similar outcomes in dancers. Specifically, they found that dancers with pure PSP reported higher levels of intrinsic motivation than dancers with non-perfectionism (Hypothesis 1a) and higher levels of self-esteem than dancers with mixed perfectionism (Hypothesis 4). Therefore, there is at least indirect evidence that the perfectionism subtypes within the 2×2 model may explain aspects of the adaptive outcome of engagement in dancers. The present study was the first to formally examine this possibility.

The Moderating Role of Teacher Autonomy Support

Another key but underdeveloped area of research is the identification of factors that moderate the perfectionism-burnout and perfectionism-engagement relationships. Distinct from a mediator that explains the relationship between predictor and a criterion variable, a moderator affects the strength and/or direction of the relationship between a predictor and a criterion variable (Baron & Kenny, 1986). Investigating moderators is important because it allows us to understand when a relationship can be altered, providing a potential target for

intervention. The structure of the performance environment may be particularly important in this regard (Hall & Hill, 2012). Dance teachers are often best placed to structure dancers' performance environments, and it appears that this constitutes a moderating factor of the relationship between dancers' characteristics and wellbeing outcomes. Specifically, Draugelis, Martin, and Garn (2014) found that when dancers perceived that their teacher provided a task-oriented environment (i.e., where success is measured by personal improvement and effort), this provided protection against anxiety and worry by maintaining the dedication and confidence dimensions of engagement.

Alongside task-oriented environments, the performance environment can also be characterized by the extent to which dance teachers provide autonomy support or control. Autonomy supportive environments are evident when teachers nurture volition, interests, and values by adopting the dancers' perspectives, encouraging problem-solving, and providing choices (Ryan & Deci, 2018). Autonomy support facilitates satisfaction of autonomy, competence and relatedness, and encourages true self-esteem (i.e. self-worth that does not depend upon specific achievements; Ryan & Brown, 2003). Therefore, autonomy support may challenge the contingencies of self-worth that characterise perfectionism, and increase engagement, and reduce burnout (Hall & Hill, 2012). By contrast, teachers may instead create controlling environments that emphasise normative comparisons and rely on external rewards and threats of punishment (Ryan & Deci, 2018). Controlling environments thwart autonomy, competence and relatedness, and encourage contingent self-esteem (i.e. self-worth that depends on continually meeting standards). Emphasising such contingencies of self-worth may strengthen the link between perfectionism and burnout, and weaken the link between perfectionism and engagement.

145 Researchers are yet to establish whether autonomy support moderates the influence of
146 perfectionism, but some of their findings attest to the positive influence of autonomy support.
147 For example, autonomy support was found to negatively correlate with burnout and positively
148 correlate with optimal functioning (e.g., intrinsic motivation, self-esteem) via basic
149 psychological needs satisfaction in dancers (Quested & Duda, 2010; Quested & Duda, 2011).
150 Furthermore, longitudinal findings from sport suggested that autonomy support provided by
151 coaches predicted lower emotional/physical exhaustion and higher subjective vitality in
152 adolescent footballers over two seasons (Adie, Duda, & Ntoumanis, 2012).

153 Regarding perfectionism, there is some evidence that situational factors can moderate
154 its effects. For example, Crocker, Gaudraeau, Mosewich, and Kljajic (2014) found that
155 perceived goal progress moderated the relationships between 2×2 perfectionism, control
156 appraisal and avoidance coping. Specifically, they found that when goal progress was lower
157 (but not when higher), athletes with pure ECP reported higher control appraisals and
158 avoidance coping than athletes with nonperfectionism (Hypothesis 2). By contrast, when goal
159 progress was higher (but not when lower), athletes with pure PSP reported lower levels of
160 control appraisals and avoidance coping than athletes with mixed perfectionism (Hypothesis
161 4).

162 **The Present Study**

163 Based on the theoretical and empirical arguments outlined above, the aims of the
164 study were to (a) examine the 2×2 model of perfectionism in relation to engagement, (b) re-
165 examine the
166 2×2 model in relation to burnout, and (c) assess whether autonomy support moderated these
167 relationships in dancers. Hypotheses 1a, 2, 3 and 4 from the 2×2 model were posed in
168 relation to aims (a) and (b), and in relation to aim (c) we hypothesised that autonomy support

would buffer the relationships between perfectionism subtypes and all burnout dimensions and enhance the relationships between perfectionism subtypes and all engagement dimensions. That is, autonomy support would buffer against the relationships between pure ECP and burnout, and mixed perfectionism and burnout (i.e. reduced support for Hypotheses 2 and 3 at higher compared to lower levels of autonomy support); and would enhance the relationships between pure PSP and engagement (i.e. increased support for Hypotheses 1a and 4 at higher compared to lower levels of autonomy support).

Method

Participants and Procedure

Following institutional ethical approval, 244 dancers were recruited from 53 dance organizations in the UK. Between one and 42 dancers represented each school. These included 198 females and 46 males whose mean age was 15.00 ($SD = 2.90$) years. Dancers completed measures in the presence of the lead author either before or after class. On average, they took part in 8.11 ($SD = 5.30$) classes per week which constituted 15.41 ($SD = 10.83$) hours dancing per week. They described their main dance genre as ballet ($n = 183$), contemporary ($n = 35$), jazz ($n = 6$), street ($n = 14$), or tap ($n = 2$), with four non-respondents. On average, participants rated their involvement in dance as very important in comparison to other activities in their life ($M = 6.53$, $SD = .72$: 1 = *not important at all* to 9 = *extremely important*), and when asked how much they had enjoyed dancing that year, they generally responded very positively ($M = 4.74$, $SD = 0.56$: 1 = *not at all* to 5 = *very much*).

Instruments

Burnout. The Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001) was used in the present study to assess burnout in dancers. The ABQ includes 15 items which were adapted in line with Quested and Duda (2011) to reflect the dance context. These items

are used to measure three five-item subscales: reduced sense of accomplishment (e.g., 'I am not achieving much in dance'), perceived emotional/ physical exhaustion (e.g., 'I feel so tired from my training that I have trouble finding the energy to do other things'); and devaluation (e.g., 'The effort I spend in dance would be better spent doing other things'). The instructions ("The following items are concerned with how you feel at the moment about your dancing...") were adapted to reflect the dance context.

The subscales were measured on a five-point scale (1 = *Almost never* to 5 = *Almost always*). Researchers have found support for the validity and the reliability of the subscale scores. This includes factor structure, internal consistency ($\alpha \geq .85$), and test-retest reliability ($r \geq .86$) (see Raedeke & Smith, 2001). Previous studies have supported the use of adapted ABQ in the dance context (e.g. Quested & Duda, 2011).

Engagement. The Athlete Engagement Questionnaire (AEQ; Lonsdale, et al., 2007) was used in the present study to assess engagement in dance. The AEQ includes four four-item subscales: confidence (e.g., 'I am confident in my abilities'), dedication (e.g., 'I am dedicated to achieving my goals'), vigour (e.g., 'I feel really alive'), and enthusiasm (e.g., 'I am enthusiastic').

The stem ("When I participate in dance...") was adapted to reflect the dance context. The subscales were measured on a five-point Likert scale (1 = *Almost never* to 5 = *Almost always*). Researchers have found support for the validity and reliability of the AEQ subscale scores in athletes and dancers. This includes support for the factor structure of the scale via confirmatory factor analysis (CFA), and internal consistency (internal reliability coefficient $\geq .80$, Draugelis et al., 2014; $\alpha \geq .84$, Lonsdale, et al., 2007).

Multidimensional perfectionism. Following the recommendations of Stoeber (2014), and factor analytic studies highlighting the common higher-order structure of perfectionism dimensions across different measures (e.g., Bieling, Israeli, & Antony, 2004; Cox, Enns, & Clara 2002), multiple measures were used to capture PSP and ECP. Two subscales were used to capture dancers' PSP. These were the seven-item personal standards subscale (e.g., "I hate being less than the best at things in dance.") from the Sport Multidimensional Perfectionism Scale (SMPS-2; Gotwals & Dunn, 2009), and the five-item self-oriented perfectionism subscale (e.g., "One of my goals is to be perfect in everything I do.") from the short version of the Multidimensional Perfectionism Scale (HMPS-SF; Cox, Enns, & Clara, 2002). Three subscales were used to capture dancers' ECP. These were the eight-item concern over mistakes subscale (e.g., "If I fail in competition I feel like a failure as a person.") and the six-item doubts about actions subscale (e.g., "I usually feel unsure about the adequacy of my pre-performance practices.") from the SMPS-2, and the five-item socially prescribed perfectionism subscale (e.g., "People expect nothing less than perfection from me.") from the HMPS-SF. To account for the potential domain specificity of perfectionism, instructions, items and the stems of the SMPS-2 and the HMPS-SF were amended to reflect the dance context, for example, the word 'sport' was changed to 'dance' for items in the SMPS-2. Evidence has been provided to support the internal consistency (SMPS-2, $\alpha \geq .74$; HMPS-SF, $\alpha \geq .79$) of the subscale scores (Cox et al., 2002; Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010).

Teacher autonomy support. The Sport Climate Questionnaire (SCQ; Deci, 2001) was used to assess dancers' perceptions of autonomy support provided by their teachers (e.g., 'I feel that my teacher provides me with choices and options). The instructions ("... Teachers have different styles in dealing with dancers, and we would like to know more about how you

have felt about your encounters with your teacher...”) were adapted to reflect the dance context. The SCQ contains 15 items measured on a seven-point Likert scale (1 = *Strongly disagree* to 7 = *Strongly agree*). The items were also amended to reflect the dance context e.g. ‘sport’ was replaced with ‘dance’ and ‘coach’ was replaced with ‘teacher’. Evidence has been provided in to support the internal consistency of the scale scores ($\alpha = .81$, Jöesaar, Hein, & Hagger, 2012).

Analytical Strategy

Analyses comprised four stages. First, following the procedures outlined by Tabachnick and Fidell (2013), data were screened for out of range values, missing data, and univariate and multivariate outliers, and internal consistencies were calculated for each subscale. Second, descriptive statistics and bivariate correlations were calculated. Third, procedures for testing the 2×2 perfectionism model were followed (Gaudreau, 2012). Moderated regression analyses were conducted using PROCESS Model 1 (Hayes, 2013). PSP and ECP and their interaction term were entered as predictors of each criterion variable. Significant interactions were probed by examining two sets of simple slopes at relatively lower (-1 SD) and relatively higher (+1 SD) levels of the moderator (Aiken & West, 1991). Assessment of simple slopes enables examination of the 2×2 model hypotheses by indicating contrasts between the predicted values of the different perfectionism subtypes (Gaudreau & Thompson, 2010). Fourth, moderated regressions were run using PROCESS Model 3 (Hayes, 2013) to test the moderating role of autonomy support on the perfectionism-engagement and perfectionism-burnout relationships. PSP, ECP, autonomy support, and interaction terms were entered as predictors. Again, simple slopes were then probed, this time at relatively lower (-1 SD) and relatively higher (+1 SD) levels of autonomy support. In stages three and four, factor scores based on CFA item loadings for each scale were used as predictor and criterion. This approach was adopted to account for measurement error in each

subscale (Hair, Black, Babin, & Anderson, 2013). Power analysis (GPower version 3.1.9.2; Faul, Erdfelder, Buchner, & Lang, 2009) based on the number of predictors ($k = 8$) in the three-way models and small incremental effect sizes from the only other previous examination of three-way interactions involving perfectionism in a performance context ($\Delta R^2 = .049$, Crocker, et al., 2014), power ($1 - \beta$) = .80 and $\alpha = .05$, indicated that a total sample size of $N = 155$ would be sufficient for the three-way moderated regressions.

Results

Preliminary Analyses and Data Screening

Participants with more than 5% missing data ($n = 3$) were removed from the analysis (Tabachnick & Fidell, 2013). The remaining participants had either no missing data ($n = 200$) or very small amounts of missing data ($n = 41$, M number of missing items = 1.34, $SD = 0.69$, range 14). Therefore, missing values were replaced using the mean of the non-missing items from the relevant subscale in each individual case (see Graham, Cumsille, & Elek-Fiske, 2003). Univariate outlier screening indicated 17 cases with values outside the standardized z score range (± 3.29 , $p < .001$), which were removed. Subsequently, no values exceeded Kline's (2011) recommended cutoffs for absolute skewness (< 3) and absolute kurtosis (< 10). Mahalanobis distance: $\chi^2(10) = 29.59$, $p < .001$, indicated six multivariate outliers, which were removed. On completion of outlier removal, $n = 218$ participants were retained for the subsequent analyses. Internal consistencies were $\alpha \geq .71$ and composite reliabilities were $\rho_c \geq .73$ (see Table 1).

Descriptive Statistics and Bivariate Correlations

Descriptive statistics and bivariate correlations are displayed in Table 1¹. Bivariate correlations indicated that PSP shared a medium positive correlation with ECP, small positive correlations with autonomy support, confidence, and vigour, medium positive correlations

with dedication and enthusiasm, a small negative correlation with reduced sense of accomplishment, and a medium negative correlation with devaluation. ECP shared small negative correlations with autonomy support, confidence and enthusiasm, a small positive correlation with devaluation, and medium positive correlations with reduced sense of accomplishment and exhaustion. Autonomy support shared medium positive correlations with confidence, dedication, vigour and enthusiasm, and medium negative correlations with reduced sense of accomplishment, exhaustion, and devaluation.

Moderated Regression Analyses: Testing the 2×2 Model of Perfectionism

Significant PSP×ECP interactions were found in relation to reduced accomplishment, devaluation, confidence, dedication, and enthusiasm. All significant interactions constituted small effects, denoted by ΔR^2 . Non-significant PSP × ECP interactions were found in relation to emotional/physical exhaustion and vigour.

Reduced sense of accomplishment. The PSP×ECP interaction was significant in relation to reduced sense of accomplishment. Simple slopes were significant for: PSP at lower ECP, $b = .10, p < .01, 95\% \text{ CI } [-.34, -.10]$; PSP at higher ECP, $b = -.19, p < .01, 95\% \text{ CI } [-.25, -.13]$; ECP at lower PSP, $b = .28, p < .01, 95\% \text{ CI } [.20, .36]$; and ECP at higher PSP, $b = .16, p < .01, 95\% \text{ CI } [.09, .23]$. These results supported Hypotheses 1a, 2, 3 and 4.

Emotional/physical exhaustion. PSP was a significant negative predictor of emotional and/physical exhaustion; whereas, ECP was a significant positive predictor of emotional/physical exhaustion. These main effects supported Hypotheses 1a, 2, 3 and 4.

Devaluation. The PSP×ECP interaction was significant in relation to devaluation.

Significant simple slopes were evident for: PSP at lower ECP, $b = -.11, p < .01, 95\% \text{ CI } [-.17, -.05]$;

PSP at higher ECP, $b = -.22, p < .01$, 95% CI $[-.29, -.16]$; ECP at lower PSP, $b = .25, p < .01$, 95% CI $[.16, .33]$; and ECP at higher PSP, $b = .10, p = .01$, 95% CI $[.02, .17]$. These results supported Hypotheses 1a, 2, 3, and 4.

Confidence. The PSP×ECP interaction was significant in relation to confidence.

Simple slopes were significant for: PSP at lower ECP, $b = .15, p = .01$, 95% CI $[.04, .27]$; PSP at higher ECP: $b = .40, p < .01$, 95% CI $[.28, .51]$; ECP at lower PSP, $b = -.43, p < .01$, 95% CI $[-.60, -.27]$; and non-significant for ECP at higher PSP, $b = -.13, p = .08$, 95% CI $[-.26, .02]$. These results supported Hypotheses 1a, 2, and 3.

Dedication. The PSP×ECP interaction in relation to dedication was significant.

Simple slopes were significant for: PSP at lower ECP, $b = .26, p < .01$, 95% CI $[.17, .35]$; PSP at higher ECP, $b = .42, p < .01$, 95% CI $[.33, .51]$; ECP at lower PSP, $b = -.36, p < .01$, 95% CI $[-.49, -.23]$; and ECP at higher PSP, $b = -.15, p < .01$, 95% CI $[-.26, -.04]$. These results supported Hypotheses 1a, 2, 3, and 4.

Vigour. PSP was a significant positive predictor of vigour. ECP was a significant negative predictor of vigour. These main effects supported Hypotheses 1a, 2, 3 and 4.

Enthusiasm. The PSP×ECP interaction in relation to enthusiasm was significant.

Simple slopes were significant for: PSP at lower ECP, $b = .25, p < .01$, 95% CI $[.15, .36]$; PSP at higher ECP $b = .40, p < .01$, 95% CI $[.29, .50]$; ECP at lower PSP, $b = -.35, p < .01$, 95% CI $[-.50, -.21]$; and ECP at higher PSP, $b = -.17, p < .01$, 95% CI $[-.29, -.04]$. These results supported Hypotheses

1a, 2, 3, and 4.

Together these results indicated support for all four hypotheses of the 2×2 model in relation to all burnout dimensions and the dedication, vigor, and enthusiasm dimensions of

engagement. For confidence Hypotheses 1a, 2, and 3 were supported but Hypothesis 4 was refuted.

The Moderating Role of Autonomy Support

Three-way PSP \times ECP \times Autonomy Support interactions were evident in relation to reduced sense of accomplishment, devaluation, confidence, dedication, vigour, and enthusiasm (see Table 2 and Table 3). All significant interactions constituted small effects, denoted by $R^2\Delta$.

The PSP \times ECP \times Autonomy Support interaction was non-significant in relation to emotional and physical exhaustion. Table 4 presents a summary of whether the simple slopes support the 2 \times 2 hypotheses at relatively lower and relatively higher levels of autonomy support.

Reduced sense of accomplishment. The PSP \times ECP \times Autonomy Support interaction was significant in relation to reduced sense of accomplishment. At lower levels of autonomy support, simple slopes were non-significant for PSP at lower ECP, $b = -.05$, $p = .30$, 95% CI $[-.15, .05]$; significant for PSP at higher ECP, $b = -.23$, $p < .001$, 95% CI $[-.32, -.16]$; significant for ECP at lower PSP, $b = .31$, $p < .001$, 95% CI $[.22, .40]$; and non-significant for ECP at higher PSP: $b = .06$, $p = .44$, 95% CI $[-.09, .20]$. At higher levels of autonomy support, simple slopes were significant for PSP at lower ECP, $b = -.11$, $p = .01$, 95% CI $[-.18, -.03]$; non-significant for PSP at higher ECP, $b = -.04$, $p = .42$, 95% CI $[-.12, .05]$; non-significant for ECP at lower PSP, $b = .08$, $p = .15$, 95% CI $[.03, .20]$; and significant for ECP at higher PSP, $b = .17$, $p < .01$, 95% CI $[.08, .26]$. These results supported Hypotheses 1c, 2 and 3 at lower levels of autonomy support, and supported Hypotheses 1a and 4 at higher levels of autonomy support.

Devaluation. The PSP \times ECP \times Autonomy Support interaction was significant in relation to devaluation. At lower levels of autonomy support, simple slopes were non-significant for PSP at lower ECP, $b = -.06$, $p = .24$, 95% CI $[-.17, .04]$; significant for PSP at

higher ECP, $b = -.29, p < .01$, 95% CI $[-.37, -.20]$; significant for ECP at lower PSP, $b = .30, p < .01$, 95% CI $[.20, .39]$; and non-significant for ECP at higher levels of PSP, $b = -.01, p = .90$, 95% CI $[-.16, .14]$. At higher levels of autonomy support, simple slopes were significant for PSP at lower ECP, $b = -.12, p < .01$, 95% CI $[-.20, -.04]$; non-significant for PSP at higher ECP: $b = -.05, p = .24$, 95% CI $[-.31, .08]$; non-significant for ECP at lower PSP: $b = .02, p = .76$, 95% CI $[-.10, .14]$; and significant for ECP at higher PSP, $b = .10, p = .03$, 95% CI $[.01, .19]$. These results supported Hypotheses 1c, 2 and 3 at lower levels of autonomy support, and supported Hypotheses 1a and 4 at higher levels of autonomy support.

Confidence. The $PSP \times ECP \times$ Autonomy Support interaction was significant in relation to confidence. At lower levels of autonomy support, simple slopes were: non-significant for PSP at lower ECP, $b = -.05, p = .66$, 95% CI $[-.25, .16]$; significant for PSP at higher ECP: $b = .37, p < .01$, 95% CI $[.21, .53]$; significant for ECP at lower PSP, $b = -.41, p < .01$, 95% CI $[-.60, -.23]$; and nonsignificant for ECP at higher levels of PSP, $b = -.12, p = .38$, 95% CI $[-.15, .39]$. At higher levels of autonomy support, simple slopes were significant for PSP at lower ECP, $b = .22, p = .01$, 95% CI $[.07, .38]$; significant for PSP at higher ECP, $b = .25, p < .01$, 95% CI $[.08, .43]$; non-significant for ECP at lower PSP, $b = -.21, p = .09$, 95% CI $[-.44, .03]$; and non-significant for ECP at higher PSP: $b = -.17, p = .06$, 95% CI $[-.34, .01]$. These results indicate support for Hypotheses 1c, 2 and 3 at lower levels of autonomy support, and support for Hypotheses 1a and 3 at higher levels of autonomy support.

Dedication. The $PSP \times ECP \times$ Autonomy Support interaction was significant in relation to dedication. At lower levels of autonomy support, simple slopes were: significant for PSP at lower

ECP, $b = .18, p = .02$, 95% CI [.03, .34]; significant for PSP at higher ECP, $b = .46, p < .01$, 95% CI [.34, .58]; significant for ECP at lower PSP, $b = -.37, p < .01$, 95% CI [-.51, -.23]; and nonsignificant for ECP at higher levels of PSP, $b = -.01, p = .93$, 95% CI [-.21, .20]. At higher levels of autonomy support, simple slopes were significant for PSP at lower ECP, $b = .22, p = .01$, 95% CI [.07, .38]; significant for PSP at higher ECP, $b = .25, p < .01$, 95% CI [.08, .43]; non-significant for ECP at lower PSP, $b = -.11, p = .22$, 95% CI [-.29, .07]; and significant for ECP at higher PSP, $b = .15, p = .03$, 95% CI [-.29, -.02]. These results indicate support for Hypotheses 1a, 2 and 3 at lower levels of autonomy support, and support for Hypotheses 1a, 3 and 4 at higher levels of autonomy support.

Vigour. The $\text{PSP} \times \text{ECP} \times \text{Autonomy Support}$ interaction was significant in relation to vigour. At lower levels of autonomy support, simple slopes were non-significant for PSP at lower ECP, $b = -.02, p = .89$, 95% CI [-.23, .20]; significant for PSP at higher ECP: $b = .34, p < .01$, 95% CI [.17, .51]; significant for ECP at lower PSP: $b = -.29, p < .01$, 95% CI [-.48, -.09]; and nonsignificant for ECP at higher levels of PSP: $b = .16, p = .27$, 95% CI [-.13, .45]. At higher levels of autonomy support, simple slopes were significant for PSP at lower ECP, $b = .26, p < .01$, 95% CI [.09, .42]; non-significant for PSP at higher ECP, $b = .15, p = .11$, 95% CI [-.04, .34]; nonsignificant for ECP at lower PSP, $b = -.08, p = .52$, 95% CI [-.34, .17]; and significant for ECP at higher PSP, $b = -.22, p = .02$, 95% CI [-.40, -.03]. These results supported Hypotheses 1c, 2 and 3 at lower levels of autonomy support, and supported Hypotheses 1a and 4 at higher levels of autonomy support.

Enthusiasm. The $\text{PSP} \times \text{ECP} \times \text{Autonomy Support}$ interaction was significant in relation to enthusiasm. At lower levels of autonomy support, simple slopes were non-

significant for PSP at lower ECP, $b = .11$, $p = .20$, 95% CI $[-.06, .29]$; significant for PSP at higher ECP, $b = .43$, $p < .01$, 95% CI $[.30, .57]$; significant for ECP at lower PSP, $b = -.34$, $p < .01$, 95% CI $[-.50, -.18]$; and nonsignificant for ECP at higher levels of PSP, $b = -.07$, $p = .57$, 95% CI $[-.17, .30]$. At higher levels of autonomy support, simple slopes were significant for PSP at lower ECP, $b = .25$, $p < .01$, 95% CI $[.12, .38]$; significant for PSP at higher ECP, $b = .20$, $p = .01$, 95% CI $[.06, .35]$; nonsignificant for ECP at lower PSP, $b = -.08$, $p = .43$, 95% CI $[-.29, .12]$; and significant for ECP at higher PSP, $b = .20$, $p = .01$, 95% CI $[-.35, -.05]$. These results supported Hypotheses 1c, 2 and 3 at lower levels of autonomy support, and supported Hypotheses 1a, 3 and 4 at higher levels of autonomy support.

In summary, as displayed in Table 4: Hypothesis 1a was supported in 1/6 analyses at lower autonomy support (i.e., dedication) and in 6/6 analyses at higher autonomy support; Hypothesis 2 was supported in 6/6 analyses at lower levels of autonomy support and in 0/6 analyses at higher levels of autonomy support; Hypothesis 3 was supported in 6/6 analyses at lower autonomy support and in 3/6 analyses at higher autonomy support (i.e., confidence, dedication, enthusiasm), and Hypothesis 4 was supported in 0/6 analyses at lower autonomy support and in 5/6 analyses at higher autonomy support with confidence being the exception.

Discussion

In this study we aimed to (a) provide the first test of the 2×2 model of perfectionism in relation to engagement, (b) re-examine the 2×2 model in relation to burnout, and (c) assess whether autonomy support moderated these relationships in dancers. Consistent with the hypotheses outlined in the 2×2 model we found that: pure PSP was associated with higher engagement (all dimensions) and lower burnout (all dimensions) relative to non-perfectionism (Hypothesis 1a); pure ECP was associated with lower engagement (all

dimensions) and higher burnout (all dimensions) relative to non-perfectionism (Hypothesis 2); pure ECP was associated with lower engagement (all dimensions) and higher burnout (all dimensions) relative to mixed perfectionism (Hypothesis 3); and mixed perfectionism was associated with lower engagement (all dimensions except confidence) and higher burnout (all dimensions) relative to pure PSP (Hypothesis 4). We also found that autonomy support moderated the 2×2 perfectionism-engagement relationships (all dimensions), and the 2×2 perfectionism-burnout relationships (all dimensions except emotional/physical exhaustion).

Perfectionism and Burnout in Dancers

We found support for Hypotheses 1a, 2, 3 and 4 in relation to all burnout dimensions. This aligns with the 2×2 model (Gaudreau, 2016) by indicating that pure ECP is the subtype of perfectionism most likely to relate to debilitating outcomes. From an SDT perspective, this may be because pure ECP contributes to perceptions of need thwarting and controlled motivation for dance, which underpin burnout. Dancers displaying pure ECP may also be more likely to measure their self-worth against unattainable external standards, and therefore encounter burnout symptoms when they inevitably fail to meet standards imposed by others (Hall & Hill, 2012). One further critical factor in determining the development of burnout may be that, despite the strain placed on athletes by pure ECP, it embeds a rigid form of psychological commitment that manifests in dancers feeling entrapped in dance and as though they *have to* continue (Raedeke, 1997). This may mean that burnout, rather than dropout, is likely for many perfectionistic young dancers.

In contrast to pure ECP, our findings suggest that pure PSP is negatively associated with burnout dimensions. This may be because pure PSP contributes to perceptions of need satisfaction and autonomous motivation, which negate burnout. Researchers have found support for SDT mechanisms explaining the relationships between perfectionism dimensions

and burnout in previous studies (e.g., Jowett et al., 2013; 2016). Relative to other perfectionism subtypes, dancers reporting pure PSP may place less emphasis on self-worth being measured against dance achievement. Alternatively, it may be the case that dancers in the present study reporting pure PSP, did measure self-worth by their achievements but perceive themselves to be performing well. In accord, an interesting future research direction would be to examine the relationship between pure PSP and burnout under conditions of relative success and adversity (e.g., performance slumps, transition from vocational youth dancer to senior professional, injury). Under conditions of adversity all dimensions of perfectionism may confer vulnerability to maladaptive outcomes such as burnout (Flett & Hewitt, 2016).

Our findings regarding 2×2 perfectionism and burnout are partly consistent with previous studies in dance. Nordin-Bates et al. (2017) found support for Hypotheses 2 and 4 only in relation to emotional/physical exhaustion. However, unlike in our study, Nordin-Bates et al. (2017) found no support for Hypothesis 3 in relation to reduced sense of accomplishment or devaluation, and Cumming and Duda (2012) found no support for Hypothesis 1a in relation to emotional/physical exhaustion. The discrepancies across these studies may be due in part to the use of a variable-centred or person-centred approach. We adopted a variable-centred approach to examine the 2×2 model, whereas Cumming and Duda (2012) and Nordin-Bates et al. (2017) adopted a person-centred approach. Variable-centred approaches do not enable identification of specific subgroups of people in a population. However, by examining interactions between PSP and ECP and unique main effects we were able to compare predicted outcomes at distinct intersecting points along the continuous distributions of PSP and ECP (Gaudreau, Franche, Kljajic, & Martinelli, 2018). Moreover, relative to variable-centred approaches, person-centred approaches are more problematic when examining 2×2

perfectionism because the groups clustered to represent different perfectionism subtypes can vary across different studies, and so can the degree to which the groups accurately capture subtypes consistent with the 2×2 model (Gaudreau et al., 2018). This was evidenced by the differences in the mean perfectionism dimension scores for 2×2 clusters between Cumming and Duda (2012) and Nordin-Bates et al. (2017).

Moreover, mean scores of PSP in Cumming and Duda (2012) were higher for the mixed perfectionism cluster than for the pure PSP cluster, when according to the model, the mean scores should be equivalent.

Perfectionism and Engagement in Dancers

We found support for Hypotheses 1a, 2, 3 and 4 in relation to dedication, vigour, and enthusiasm. These findings lent credence to the functional hierarchy within the 2×2 model, whereby pure PSP is the subtype most likely to relate to optimal functioning, followed by nonperfectionism, then mixed perfectionism, and finally pure ECP. They also partly corroborated recent examinations of 2×2 perfectionism in relation to other adaptive outcomes including positive affect (Hypothesis 4; Cumming & Duda, 2012) and intrinsic motivation (Hypothesis 1a; Quested et al., 2014). It therefore appears that for dancers, different perfectionism subtypes underpin contrasting SDT processes and outcomes in the form of burnout on one hand, and engagement on the other. Regarding engagement, the self-imposed striving which characterises PSP may contribute to more autonomous motivation for dance, and higher basic need satisfaction. Conversely, the externally imposed standards which characterize ECP may undermine engagement via controlled motivation and lower basic need satisfaction or active need thwarting.

We found support for Hypotheses 1a, 2 and 3 but no support for Hypothesis 4 in regard to confidence. This lack of distinction between pure PSP and mixed perfectionism

may be due to the relatively weak relationship between PSP and confidence highlighted in a recent meta-analysis (see Hill et al., 2018). Inconsistency in the perfectionism-confidence relationship may be due to confidence being one of the less stable elements of engagement. Based on previous findings, the relationship between perfectionism and confidence certainly appears to be situation dependent, for example, the positive correlation between PSP and confidence appears to weaken in the lead up to competition (Hall, Kerr, & Matthews, 1998). Therefore, much like examining conditions of success and adversity seem important in terms of the relationships between perfectionism and burnout, so too do the relationships between perfectionism and confidence.

The Moderating Role of Autonomy Support

The most novel contribution of the present study is the evidence that autonomy support moderated the perfectionism-engagement and perfectionism-burnout relationships for all engagement dimensions and for the reduced sense of accomplishment and devaluation dimensions of burnout. The effect of autonomy support was most pronounced in relation to reduced sense of accomplishment and devaluation. These findings suggest that when autonomy support levels are higher, the negative relationships that pure PSP shares with reduced accomplishment and devaluation are stronger, and the positive relationships that pure ECP shares with these burnout dimensions are weaker. These findings align with previous studies by highlighting the potential protective quality of autonomy support in relation to burnout (Adie et al., 2012). Extending previous research, our findings indicate that the protective quality of autonomy support in terms of burnout extends to perfectionistic dancers.

Regarding engagement, the moderating effects of autonomy support were evident but more complex than for burnout. The enhancing effect of autonomy support on pure PSP was evident for confidence (Hypothesis 1a), dedication (Hypothesis 4), and vigour and

enthusiasm (Hypothesis 1a and 4), and the buffering effect on pure ECP was evident for all engagement dimensions in relation to Hypothesis 2 but only for vigour in relation to Hypothesis 3. Therefore, although autonomy support appears to enhance the relationships between perfectionism and all engagement dimensions, it is the relationships between perfectionism subtypes and dancers' sense of liveliness where this is most pronounced. As such, when dance teachers nurture volition, and emphasise selfinitiation and problem-solving, this appears to protect dancers against evaluative concerns and encourages less extreme striving which manifests in enhanced engagement, particularly in the form of vigour. Again, these findings align with, and extend, previous studies that have shown a positive relationship between autonomy support and other positively valanced affective outcomes (e.g., subjective vitality, Adie et al., 2012; positive affect, Quested & Duda, 2010).

Practical Implications

Researchers have argued that a 'culture of perfection' exists in dance that has harmful consequences for dancer well-being (Hamilton, 1997). Our findings suggest that the detrimental relationships shared between perfectionism and burnout may be buffered when dance teachers provide autonomy support. The potential benefits in terms of reduced burnout and improved engagement suggest that teachers should acknowledge their dancers' perspectives and encourage problem solving. For example, adapted from strategies outlined by Cheon, Reeve, Lee and Lee (2015), when a dancer makes a mistake, rather than criticise them for making the error, teachers could try to understand the underpinning cause by accepting and acknowledging what is happened (e.g., "I notice that you had some difficulty with falling out of your pirouette."), acknowledging why from the dancers' perspective it has occurred (e.g., "Yes it has been a long week and this is a tough routine isn't it."), and then inviting the dancer to find a solution

(Okay, so how can we help you to focus on spotting? Any suggestions?). Although intervention studies are yet to be conducted in dance, findings by Cheon et al. (2015) in Paralympic sport suggest that educating coaches about how to create an autonomy supportive environment for their athletes, can protect athletes against declines in motivation, performance.

Limitations and Future Directions

The cross-sectional design means that temporal precedence was not established. It is possible that burnout and engagement dimensions predict perfectionism and perceptions of autonomy support, although this is unlikely given findings which suggest that perfectionism predicts burnout over time, rather than vice versa (e.g. Madigan, Stoeber, & Passfield, 2015). Nonetheless, longitudinal research is required which establishes the temporal precedence of the relationships examined in the present study. Further, our assessment of autonomy support was limited to dancers' perceptions. Although dancers' perceptions of the environment are influential in shaping their experiences, dance teachers' perspectives could be measured in future research to provide a more rounded assessment of the motivational climate. Moreover, we did not give dancers guidance on which dance teacher to complete the questionnaire in relation to, and it is possible that the dancers had multiple dance teachers. In future, researchers may want ask dancers to consider the extent to which different teachers create autonomy supportive environments. Another limitation was the use of sport-specific measures in the dance environment. We adapted sport-specific measures and they demonstrated reasonable internal consistency and composite reliability, but measures developed for the dance context would be preferable. However, no dance-specific measures of any of the variables were available at the time of study. The current findings will need to be replicated once these are established.

Conclusions

The present study built on previous research in dance by demonstrating that the effects of 2×2 perfectionism for burnout extend to engagement, and by highlighting the moderating role of autonomy support in regard to both engagement and burnout. Our findings align with the 2×2

model in highlighting pure ECP as the most problematic subtype and by suggesting pure PSP is comparatively less problematic for burnout and engagement. The moderating effects of autonomy support found here suggest that autonomy support may be a potentially fruitful target for interventions designed to manage dancers' perfectionistic tendencies.

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1 Footnotes

- 2 ¹See supplementary material for findings in
relation to total index scores of burnout and
- 3 engagement. They are not included in the main
body of the manuscript as they were largely
- 4 consistent with the findings in relation to
respective dimensions of burnout and
engagement.

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Table 1. Descriptive Statistics, Bivariate Correlations, Internal Consistencies, and Composite Reliabilities.

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. PSP	.84									
2. ECP	.39***	.81								
3. Autonomy Support	.16*	-.19**	.89							
4. Reduced Acc.	-.18**	.34***	-.42***	.74						
5. Exhaustion	.01	.29***	-.40***	.42***	.88					
6. Devaluation	-.34***	.15*	-.37***	.57***	.38***	.71				
7. Confidence	.23**	-.16*	.33***	-.61***	-.38***	-.41***	.81			
8. Dedication	.48***	-.11	.40***	-.54***	-.34***	-.59***	.57***	.80		
9. Vigour	.25***	-.13	.36***	-.48***	-.51***	-.43***	.60***	.56***	.84	
10. Enthusiasm	.30***	-.18**	.43***	-.56***	-.44***	-.62***	.56***	.71***	.71***	.76
<i>M</i>	4.95	3.45	5.87	1.96	2.38	1.51	3.91	4.46	4.16	4.52
<i>SD</i>	0.81	0.76	0.84	0.67	0.89	0.58	0.74	0.55	0.65	0.51
ρ_c	.84	.82	.93	.75	.89	.73	.81	.81	.84	.76

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2 Note: $n = 218$. PSP = personal standards perfectionism, ECP = evaluative concerns perfectionism. Cronbach's alphas are reported on the diagonal. $*p < .05$, $**p < .01$, $***p < .001$

Table 2. Main and Interactive Effects of Perfectionism and Autonomy Support on Burnout.

	Reduced accomplishment		Exhaustion		Devaluation	
	$R^2 (R^2\Delta)$	B	$R^2 (R^2\Delta)$	B	$R^2 (R^2\Delta)$	B
2 × 2 interaction	.26 (.02*)		.10 (.00)		.24 (.03**)	
PSP		-0.15***		-0.17**		-0.17***
ECP		0.22***		0.40***		0.17***
PSP×ECP		-0.07*		-0.06		-0.09**
3-way interaction	.40 (.03**)		.22 (.01)		.37 (.04***)	
PSP		-0.11***		-0.07		-0.13***
ECP		0.16***		0.26**		0.10**

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Autonomy support	-0.16***	-0.39***	-0.15***
PSP×ECP×AS	0.13**	0.14	0.15***

2 Note: $n = 218$. PSP = personal standards perfectionism, ECP = evaluative concerns perfectionism. * $p < .05$, ** $p < .01$, *** $p < .001$ Table 3.
Main and Interactive Effects of Perfectionism and Autonomy Support on Engagement.

	Confidence		Dedication		Vigour		Enthusiasm	
	R^2 ($R^2\Delta$)	B	R^2 ($R^2\Delta$)	B	R^2 ($R^2\Delta$)	B	R^2 ($R^2\Delta$)	B
2 × 2 interaction	.20 (.04**)		.33 (.02**)		.15 (.01)		.26 (.02*)	
PSP		0.27***		0.34***		0.27***		0.33***
ECP		-0.28***		-0.25***		-0.23***		-0.26***
PSP×ECP		0.18**		0.12**		0.11		0.11*
3-way interaction	.29 (.02*)		.44 (.02*)		.27 (.03**)		.39 (.03**)	
PSP		0.20***		0.28***		0.18***		0.25***

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ECP	-0.17**	-0.16**	-0.11	-0.14**
Autonomy support	0.28***	0.24***	0.33***	0.30***
PSP×ECP×AS	-0.20*	-0.16*	-0.24**	-0.21**

2 Note: $n = 218$. PSP = Personal standards perfectionism, ECP = Evaluative concerns perfectionism. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4. Summary of Support for 2×2 Hypotheses Based on Simple Slopes at Lower (-1 SD) and Higher (+1 SD) Autonomy Support

	PSP at Lower ECP (H1)		ECP at Lower PSP (H2)		PSP at Higher ECP (H3)		ECP at Higher PSP (H4)	
	Lower AS	Higher AS	Lower AS	Higher AS	Lower AS	Higher AS	Lower AS	Higher AS
Reduced accomplishment	H1c	H1a	H2	H2 ns	H3	H3 ns	H4 ns	H4
Devaluation	H1c	H1a	H2	H2 ns	H3	H3 ns	H4 ns	H4
Confidence	H1c	H1a	H2	H2 ns	H3	H3	H4 ns	H4 ns
Dedication	H1a	H1a	H2	H2 ns	H3	H3	H4 ns	H4
Vigour	H1c	H1a	H2	H2 ns	H3	H3 ns	H4 ns	H4

1	Enthusiasm	H1c	H1a	H2	H2 ns	H3	H3	H4 ns	H4
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2 Note: PSP = Personal standards perfectionism, ECP = evaluative concerns perfectionism, AS = autonomy support.

Emotional/physical 3 exhaustion omitted due to nonsignificant 3-way interaction.

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