The relationship between perfectionism and creativity in competitive dancers: The moderating role of autonomy-supportive teachers

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Abstract

Creativity is becoming an increasingly important aspect of being a successful dancer. Dancers are now being asked to be a part of the development and choreography of their routines and performance (Butterworth, 2004; Clements & Redding, 2020; Nordin-Bates & Abrahamsen, 2016). Perfectionism is also another common personality disposition present in dancers. The present study aimed to examine the relationship between multidimensional perfectionism and creativity among dancers and to test whether perceived teacher autonomy support moderated that relationship. A sample of 215 competitive dancers (M_{age} = 17.17, SD = 1.92) completed measures capturing variables of creativity (creative self-concept, attitudes and values towards creativity), 4 subtypes of perfectionism (pure personal standards perfectionism, pure evaluative concerns perfectionism, mixed perfectionism, non-perfectionism) and perceived autonomy support provided by their dance teacher in a cross-sectional research design. The findings of two iterative multiple regression analyses found a positive main effect for personal standards perfectionism and a negative main effect for evaluative concerns perfectionism in relation to creative self-concept and a negative main effect for evaluative concerns perfectionism in relation to attitudes and values towards creativity. These main effects supported all 4 hypotheses of the 2 × 2 model of perfectionism for creative self-concept and supported 3 hypotheses of the 2 × 2 model for attitudes and values towards creativity (H1c, H2, and H4). In addition, neither of the relationships were moderated by perceived teacher autonomy support. The discussion speculates as to why relationships were significant for pure evaluative concerns perfectionism across both relationships and pure personal standards perfectionism was only significant regarding creative self-concept.

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High-level dancers are often thought of being hard-working individuals who can execute complex movements effortlessly (Pickard, 2015). In a traditional dance class setting, the idea of executing movements effortlessly often takes precedence over dancers being given creative agency. However, as the dance world evolves, dancers are being given more opportunities to help choreograph and improvise in class and competitions (Butterworth, 2004; Clements & Redding, 2020; Nordin-Bates & Abrahamsen, 2016); creativity is becoming an increasingly important aspect of being a successful dancer. Therefore, it would be valuable to understand different factors contributing to dancers' creativity. Personality and environmental factors are critical components of predicting whether an individual will be more likely to be creative (Amabile, 1996). The general purpose of the study was to explore potential factors that may contribute to high-level competitive dancers' levels of creativity. The two constructs that were explored as factors were multidimensional perfectionism and perceived teacher autonomy support.

Creativity

In general, creativity is a multidimensional concept that can be defined as both original and suitable behaviours for a specific context (Amabile & Pillemer, 2012). It is essential to consider that there are many different definitions and conceptualizations of creativity proposed within different areas of research, which exemplifies the extreme complexity of creativity (Clements & Weber, 2018). It can also be conceptualized as a skill that can be learned and a process of discovering new knowledge (Press & Warburton, 2007). Creativity is also recognized

as a positive personality characteristic that can exist within a person at different levels (i.e., everyday creativity, task-specific creativity; Richard & Runco, 2020).

In line with the definition of creativity, a creative individual can be defined as someone who can produce work or movements that satisfy the definition of creativity (Runco & Jaeger, 2012). Characteristics associated with creative people include being original, independent, risk-takers, attracted to complexity, and artistic and intuitive (Davis, 1999). Two characteristics of creativity commonly recognized in dancers are intrinsic motivation and openness to experience (Clements & Nordin-Bates, 2020; Clements & Redding, 2020; Watson et al., 2012). Intrinsic motivation can be defined as participating in an activity for its inherent satisfactions rather than external incentives or pressures (Deci & Ryan, 2000). Openness to experience can be defined as the extent to which an individual is imaginative, curious, and broad-minded (McCrae, 1987). Individuals who possess both characteristics tend to be more cognitively flexible, are fascinated by ambiguity and open-ended tasks, focus on the creative process and its inherent rewards and seek sensation from different experiences (Foregard & Mecklenburg, 2013; McCrae, 1987). Since these characteristics facilitate creativity, intrinsically motivated and open individuals tend to behave and perform creatively.

Creativity is essential to consider regarding high-level dance performance and competitive aspects. Creativity is becoming increasingly asked for in dancers because they are being called to be a part of the development and choreography of their routines and performances. This growing demand for dancers as strong technical dancers and creative artists solidifies that creativity is an essential attribute to a dancer's success (Butterworth, 2004; Clements & Redding, 2020; Nordin-Bates & Abrahamsen, 2016). Success as a dancer relies on athleticism and strength, but it also requires aesthetics and beauty (Yannakoulia & Matalas,

2000). Typically, a dancer's success in competition is measured by technical execution and objectifiable aspects (i.e., flexibility, power, alignment), which do contribute to success but do not provide a comprehensive description of a successful dancer (Clements & Weber, 2018). During a competition, dancers are also scored on esthetics, emotional execution, stage presence, and various other subjective skills, which are considered important elements of a performer's creativity (Richard et al., 2017). Creativity is an important aspect of being a successful dancer because it is related to an individual's overall well-being and optimal human functioning (Conner et al., 2018; Simonton, 2000) and engaging in creative activities fosters positive health outcomes (Lomas, 2016).

Due to the complexity of creativity, measuring it also comes with some complexity. There are several different ways that researchers measure creativity within the literature. For example, the participant's ability to produce novel solutions and ideas, current creative activities, and past creative accomplishments (Richard & Runco, 2020). Since creativity is an essential component of a dancer's overall success and well-being, it is important to consider how dancers view their abilities to be creative. Therefore, the dancers' self-perceptions and their attitudes and values towards creativity are key components to understanding how to nurture creativity.

Self-perceived measures of creativity assess the extent to which an individual perceives themselves to hold the personality traits or cognitive abilities to produce a creative product (Maliakkal & Reiter-Palmon, 2020) and are closely aligned with creative self-efficacy and personality (Reiter-Palmon et al., 2012). An attitude can be defined as predispositions to respond favourably or unfavourably concerning a given object or task, and values can be defined as individual beliefs that motivate individuals to act in specific ways (Ntoumanis et al., 2014). The impact of positive attitudes and values towards creativity and creative performance is well

documented (Dollinger et al., 2007). Attitudes and values towards creativity are essential

because if a dancer does not value or have positive attitudes towards creativity, they are unlikely

to invest in the creative process (Plucker & Dow, 2010; Richard et al., 2017). Individuals who

see themselves as creative are more likely to answer as such, they are also more likely to report

more confidence in their ability to be creative, and when they can perceive their ability to be

creative, they are more likely to hold positive attitudes and values toward creativity (Maliakkal

& Reiter-Palmon, 2020; Reiter-Palmon et al., 2012).

Given the importance of creativity in dance, it would be valuable to understand factors

that influence dancers' self-perceptions of and attitudes toward creativity. Personality

characteristics are an important factor to consider in increasing the likelihood of creativity

(Memmert, 2015; Sternberg, 2006). Personality characteristics conducive to creative behaviours

are self-discipline, tolerance for ambiguity, and task orientation (Amabile, 1996; Richard &

Runco, 2020). One could have all the internal characteristics necessary for creativity; however,

they may never display their creativity without some degree of environmental support (Amabile,

1996). Environments that allow individuals to engage in the present moment (Larimer, 2012),

express themselves and explore new things free of judgment tend to support creativity (Biasutti,

2013; Richard et al., 2017). Seeking out these environments supportive of creativity does not

guarantee creative behaviours; nonetheless, they generally increase the odds (Harrington, 2011).

The present study examined if perfectionism and teacher autonomy support influenced dancers'

level of creativity.

Perfectionism

Perfectionism can be defined as a multidimensional personality disposition that includes

the desire for excessively high personal performance standards while also critically evaluating

oneself over the implications of failing to achieve the set standards (Flett & Hewitt, 2006; Frost et al., 1990). Perfectionism has been found to be a prominent and salient characteristic among high-level dancers (Jowett et al., 2021; Nordin-Bates et al., 2011; Nordin-Bates et al., 2017). Early specialization, highly demanding training loads, rigid focus on body shape are aspects that most high-performance dancers experience (Nordin-Bates & Abrahmansen, 2016) and may lead to perfectionism; which can be associated with disordered eating, body dysmorphia, burnout, and anxiety in dancers (Cumming & Duda, 2012; Jowett et al., 2021; Penninment & Egan, 2012). However, it has been found that dancers with perfectionism strivings displayed more adaptive outcomes than their perfectionism concerns counterparts (Cumming & Duda, 2012).

The use of the 2 × 2 model of perfectionism may clarify why certain types of perfectionism may be more predictive of creativity than others. Gaudreau and Thompson (2010) developed the 2 × 2 model of dispositional perfectionism that conceptualizes multidimensional perfectionism, presented in Figures 1 and 2. The model recognizes two dimensions of perfectionism: personal standards perfectionism (PSP; also referred to as perfectionistic strivings) and evaluative concerns perfectionism (ECP; also referred to as perfectionist concerns). Personal standards perfectionism represents an individual's desire to set highly demanding standards and strive towards these standards while being consistently self-oriented. Evaluative concerns perfectionism represents an individual's tendency to perceive that others exert pressure on one to be perfect while also evaluating themselves harshly and doubting their capabilities to progress towards the high standards they wish to achieve (Gaudreau & Thompson, 2010). It has been stated that the outcomes associated with ECP are consistently negative, whereas the outcomes associated with PSP are ambiguous; sometimes, they are found to be positive and other times negative (Hall et al., 2012; Hill et al., 2020; Stoeber, 2011).

It is vital to consider perfectionism as multidimensional because it suggests that dimensions coexist within an individual. The 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010) attempts to clarify multidimensional perfectionism by recognizing that the two perfectionism dimensions coexist at varying levels within individuals. This rationale gives rise to four perfectionism subtypes—prototypical within-person profiles across PSP and ECP that represent "different ways of being a perfectionist" (Gaudreau, 2016, p.175). The first subtype is pure personal standards perfectionism, and this subtype indicates that an individual has a high degree of personal standards perfectionism and a low degree of evaluative concerns perfectionism. The second subtype is pure evaluative concerns perfectionism, and this subtype indicates that an individual has a low degree of personal standards perfectionism and a high degree of evaluative concerns perfectionism. The third subtype is mixed perfectionism, and this subtype indicates that an individual has a high degree of both personal standards perfectionism and evaluative concerns perfectionism. The fourth subtype is non-perfectionism; this subtype indicates that an individual has a low degree of personal standards perfectionism and evaluative concerns perfectionism (Gaudreau, 2016).

The 2 × 2 model predicts that the subtypes should show different relationships to positive and negative outcomes given their different degree of internalization, regulation, and how they interact with their environment (Gaudreau, 2016; Gaudreau et al., 2017). The model codifies these differences in four testable hypotheses (Gaudreau & Thomson, 2010). Hypothesis 1 compares non-perfectionism and pure PSP and examines whether pure PSP is associated with better (H1a), or worse (H1b), or equivalent (H1c) outcomes as compared to non-perfectionism. This hypothesis covers the controversy over whether perfectionism is solely negative or whether certain aspects of perfectionism can be healthy and positive (Hill, 2016). Hypothesis 2 states that non-perfectionism should be more strongly associated with positive outcomes in comparison to

pure ECP. This hypothesis reflects the negative characteristics of ECP. Hypothesis 3 compares mixed perfectionism and pure ECP and suggests that mixed perfectionism will lead to more positive outcomes compared to pure ECP. This hypothesis suggests that the high degree of PSP associated with mixed perfectionism will buffer the negative effects of pure ECP. Hypothesis 4 compares pure PSP and mixed perfectionism and suggests that pure PSP will be associated with more positive outcomes than mixed perfectionism. The hypothesis tests whether the degree to which PSP is associated with positive outcomes is dependent on the presence versus absence of ECP. Recent reviews of research conducted within and outside of sport (e.g., Gaudreau, 2016; Gaudreau et al., 2017; Hill & Madigan, 2017) generally support the 2 × 2 model's hypotheses. The model has been moderately tested within dance contexts (Cumming & Duda, 2012; Jowett et al., 2021; Nordin-Bates et al., 2017); however, never with creativity serving as the criterion variable.

Evidence of the Perfectionism-Creativity Relationship

Evidence based in Theory and Research Conjecture

While the relationship between perfectionism and creativity has not been examined through the lens of the 2 × 2 model of perfectionism, it has been described how the two dimensions of perfectionism should, in theory, relate to creativity among dancers. These descriptions can predict how the perfectionism subtypes of the 2 × 2 model should differ concerning creativity within dance. For example, it has been suggested that dancers with high levels of ECP would show lower levels of creativity (Nordin-Bates, 2020; Nordin-Bates & Abrahamsen, 2016). In Nordin-Bates (2020), it was discovered that individuals who were high in levels of ECP exhibited fears of failure and worried about not being good enough, which ultimately inhibited creativity. It was also reasoned in Nordin-Bates & Abrahamsen (2016) that since individuals who are high in levels of ECP tend to be extrinsically motivated, it makes them

less likely to have the strong intrinsic task motivation typical of creative individuals. In relation to the 2 × 2 model's hypotheses, these claims best support Hypotheses 2 and 4, that is, pure ECP and mixed perfectionism would be associated with lower levels of creativity compared to non-perfectionism and pure PSP, respectively. The relationship between personal strivings and creativity has been found to be more complicated (Nordin-Bates & Abrahamsen, 2016; Nordin-Bates, 2020). In Nordin-Bates (2020), it was found that individuals who were more flexible in PSP were more likely to exhibit creativity and that the relationship between PSP and creativity may be curvilinear. This idea was also suggested in Nordin-Bates and Abrahamsen (2016); it was suggested that moderate levels of PSP could nurture creativity. However, extreme levels of PSP could inhibit creativity. In relation to the 2 × 2 model's hypotheses, these claims best support Hypotheses 1a and 1b; that is, pure PSP would be associated with higher or lower creativity levels than non-perfectionism.

Evidence based on Empirical Findings

The degree to which the 2 × 2 model's perfectionism subtypes differ concerning dancers' creativity can also be evaluated by reviewing past studies that directly examined the relationship between perfectionism and creativity. This body of literature is limited; there are 15 studies presented in 12 articles that examine the relationship between perfectionism and creativity in various contexts and populations (e.g., students, corporate employees, gifted adolescents). Goulet-Pelletier and colleagues (2021) recently reviewed this body of literature. A central finding was that the "past studies yielded inconsistent findings regarding the association between perfectionism and creativity" (p. 4). In general, they found that personal standards perfectionism was often positively connected with creative behaviours. PS was also found to have varying outcomes across the samples; however, it was more frequently positive than negative. On the

other hand, evaluative concerns perfectionism was largely uncorrelated with creative behaviours. Due to these inconsistencies, it is difficult to use this body of literature to predict how perfectionism and creativity may relate to dance.

Goulet-Pelletier and colleagues' (2021) review included the only study to quantitatively examine the relationship between multidimensional perfectionism and creativity among dancers: namely, Nordin-Bates (2020).[1] Nordin-Bates (2020) conducted a two-stage research study which included a quantitative stage and qualitative stage. Teenage dancers from a national ballet school were recruited in stage one and asked to complete questionnaires assessing perfectionism and creativity. Dancers found to have the highest and lowest scores for PSP and ECP were then recruited to participate in stage two. In stage two the dancers participated in an interview, which consisted of questions about the dancer's views on dance, perfectionism, and creativity. The results of stage one found that overall the participants reported relatively high scores of creativity and moderate to high scores for perfectionism; however, no significant correlations between perfectionism and creativity were found. The results of the interviews suggested that PSP and creativity were complementary. Dancers suggested that to be successful and achieve perfection, they must be creative, which suggests a positive relationship between PSP and creativity. The results also suggested that perfectionism and creativity are contradictory. Dancers reported how PSP could reduce their openness to try new things and reported that ECP could inhibit creativity due to fear of failure and worries about not being good enough. This would suggest a negative relationship between perfectionism and creativity. There is limited support for the 2×2 model's hypotheses regarding how the perfectionism subtypes should differ in their relationship to

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[1] One other study (Chou et al., 2019) that looked specifically at the direct relationship between perfectionism and creativity in collegiate dancers with the potential moderator of self-esteem. However, they did not consider perfectionism as multidimensional, which does not align with the 2×2 model. It is also a practice that is widely criticized (Frost et al., 1990; Hewitt & Flett, 1991). Therefore, it will not be included in the review of literature.

creativity. None of the hypotheses would be supported based on the quantitative results. Based on the qualitative results, Hypotheses 2 and 4 would be supported by these findings. The profiles that include higher levels of ECP would be associated with lower levels of creativity. Hypotheses 1 and 3 would not be supported, the inconsistency of the findings on the relationship of PSP and creativity; therefore, it is difficult to make any claims about these hypotheses.

The Potential Moderator Role of Teacher Autonomy Support

Moderators help clarify relationships based on other factors that affect a relationship (Chaplin, 2007). Since there is an inconsistency in the perfectionism-creativity literature, a moderator may help clarify the relationship. In perfectionism research, it has been acknowledged that research examining potential moderators of the relationship between perfectionism and its outcome variables is needed (Stoeber, 2018). A moderator can be defined as a variable that affects the direction or strength of the relationship between a predictor variable and a criterion variable (Hayes, 2018). That is, the effect of X (predictor variable) on some variable Y (outcome variable) is moderated by W (moderator) if its size, sign, or strength depends on or can be predicted by W. Identifying a moderator of a relationship helps to establish boundary conditions of an effect or the circumstances, stimuli, or type of people for which the effect is significant versus small, present, or absent, positive, or negative. Past literature has suggested that environmental factors may play a role in determining the relationship between perfectionism and creativity in dance (Nordin-Bates, 2020), as in autonomy support.

Self-determination theory (SDT; Deci & Ryan, 1985) can be applied to help explain why individuals may function more or less optimally on any given day (Reis et al., 2000). SDT contains three basic needs as key psychological mechanisms that suggests why individuals are motivated to grow and succeed. SDT suggests that individuals can become self-determined when

their needs for competence, relatedness and autonomy are supported (Ryan, 1995). Autonomy support, in general, is described as the extent to which adults or people of importance enable and encourage initiative and choice in individuals and share in their perspective when solving problems or offering advice (Gagne, 2003). An autonomy-supportive environment can then be characterized as an environment where one understands and acknowledges one's perspectives and provides a meaningful rationale for challenging tasks, offering opportunities for unique solutions, and minimizing performance pressure (Ryan & Deci, 2020). Autonomy supportive individuals' behaviours foster this type of environment. Such individuals can hold significant importance, such as teachers and coaches (Lonsdale & Langan, 2014). They can be described as attentive and empathetic, providing rationales for decisions, opportunities, and choices, and acknowledging others' feelings and perspectives (Mageau & Vallerand, 2003; Ryan & Deci, 2020). Dance teachers are important individuals in structuring the environment for their dancers, this would suggest that this constitutes a moderating factor between the dancers' personality traits and well-being outcomes (Jowett et al., 2021).

To the best of my knowledge, no study has examined whether teacher autonomy support moderates the relationship between perfectionism and creativity among dancers or any population. Therefore, theoretical predictions will help predict how teacher autonomy support will affect the perfectionism-creativity relationship. Based on the 2×2 model of perfectionism and the contention that the subtypes differ in their relationship to positive and negative outcomes, an individual's motivation is internalized and regulated (Gaudreau et al., 2017). Autonomy support encourages autonomous internalization and more intrinsic forms of regulation (Ryan & Deci, 2020). Therefore, if a dance teacher provides an autonomy-supportive environment, they are likely to increase the likelihood of their dancers being creative. The

likelihood would also increase if dancers had higher levels of personal standards perfectionism as this profile of perfectionism tends to be more closely aligned with positive outcomes.

This question has been directly proposed but never tested (Karin & Nordin-Bates, 2019). One study did test autonomy support as a moderator of any relationship involving perfectionism among dancers; Jowett and colleagues (2021) assessed whether dance teacher autonomy support moderated the relationships between the dancers' subtypes of the 2 × 2 model of perfectionism and the risk of burnout and their level of engagement. The moderated regression analyses supported all four hypotheses of the 2 × 2 model for burnout, dedication, vigour, and enthusiasm and supported three hypotheses for confidence. They also found that autonomy support moderated the relationships between subtypes of perfectionism and burnout and engagement. Overall, they found that pure ECP was related to negative outcomes and pure PSP was related to positive outcomes. Based on the findings of the study predictions can be made about the outcomes of the proposed study. Like burnout and engagement, creativity is fostered by motivational regulation. Therefore, it could be suggested that autonomy support could have the same effect on the perfectionism-creativity relationship. That is, dancers with higher PSP are more likely to be even more creative when they also receive autonomy support and dancers with higher ECP are less likely to be creative but will experience an increase in creativity when they receive autonomy support. Dancers with subtypes high in ECP will potentially experience a more significant increase in creativity, compared to dancers with subtypes high in PSP, due to ECP being more susceptible to changes in the environment (Gaudreau & Thompson, 2010).

As stated previously, very few studies have examined the relationship between perfectionism and creativity among dancers, and none have tested factors that may dictate the nature of that relationship. Since perfectionism is very prevalent in dance, the importance of

creativity for a dancers' success and well-being and the inconsistency in past perfectionism-creativity research in general, introducing autonomy support as a moderator has theoretical and practical importance. This study was designed to address these specific inconsistencies and gaps.

The Present Study: Purpose and Hypotheses

The purpose of the study was to examine the relationship between multidimensional perfectionism and creativity among dancers and to test whether perceived teacher autonomy support moderated that relationship. The specific models represented in this purpose are presented in Figure 2. Given the limited amount of past research, the study's hypotheses are founded on the 2 × 2 model's general hypotheses and based on the assumption that creativity is a positively laden construct. Accordingly, it was expected that:

- Dancers with pure PSP would show stronger, weaker, or equivalent levels of creativity in comparison to non-perfectionists (H1a, b, and c, respectively);

- Non-perfectionists would be more creative in comparison to dancers with pure ECP (H2);

- Mixed perfectionists would be more creative in comparison to dancers with pure ECP (H3);

- Dancers with pure PSP would be more creative in comparison to mixed perfectionists (H4).

Regarding the moderating role of perceived teacher autonomy support, it was expected that all these hypothesized, comparative relationships would be inhibited when perceived teacher autonomy support was perceived as high and exacerbated when perceived teacher autonomy support was perceived as low. Specifically, it is expected that creativity would be less inhibited among dancers who endorse subtypes that are defined, in part, as having high evaluative concerns perfectionism (i.e., pure evaluative concerns perfectionism and mixed perfectionism) in

comparison to dancers who endorse subtypes that are defined as having low evaluative concerns perfectionism (i.e., pure personal standards perfectionism and non-perfectionism) when they perceived their environment as autonomy supportive. Therefore, H2, H3 and H4 would be supported to a greater extent with lower perceived autonomy support as opposed to higher perceived autonomy support.

Method

Design

The study reflected a cross-sectional research design to determine correlations and associations among the present study's variables (Kowalski et al., 2018, Chapter 4). The data was collected via an online survey, where participants completed self-report measures. Before implementation, approval to conduct the study was obtained from the Research Ethics Board at Lakehead University. At the time of the study, Lakehead University's Research Ethics Board suggested that any research that could be done remotely should be done so. Following these guidelines, the study's procedures were conducted remotely. However, conducting the study remotely was beneficial in reaching a much larger participant pool than if the study was conducted in person.

Targeted Participants

Targeted participants were 200 dancers who train for high-level competitive dance. High-level competitive dance is generally characterized by high volumes of intense training, including several hours per week learning and practicing choreographed routines in various styles (e.g., ballet, jazz, contemporary). It requires the development of stamina, physical and emotional fitness in preparation for performing the routine(s) before a set of judges at a competition(s) (Burkhardt & Brennan, 2012). A sample size of 200 is specified because samples of this size

have been used in past research studies of moderation models involving creativity (Chou et al., 2019; Xu et al., 2016) and in studies of the 2 x 2 model of perfectionism in dance (Cumming & Duda, 2012; Jowett et al., 2021). Based on the power analysis conducted by Jowett et al. (2021), when testing a three-way interaction, they found that at least 155 participants would provide sufficient power. Therefore, it is expected that recruiting 200 participants would provide sufficient power to test the current study's moderation model.

Since data was collected via a publicly available online survey, the student researcher did not have total control over who participated in the project. However, the student-researcher did control which participants' data was included in the project's primary analyses. For participants' data to be included in the study's analyses, they had to meet five inclusion criteria. First, the participant had to be 16 years of age or older or were born in 2006. Second, the participant had to be planning on competing in at least one of the following styles: ballet, contemporary/lyrical/modern and/or jazz in the current season. This is because these are the main styles of focus in high-level competitive dance. Third, they had to be taking at least four hours of formal dance class (i.e., taught by a dance teacher) per week. Fourth, they must have had at least three years of competition experience. Fifth, they had to be planning on competing in the upcoming year. Participants' data was excluded from the analysis if they were not fluent in English.

Instruments

The instruments used in the present study are described and presented below. Evidence produced on the reliability and validity of the measures used in the current study are provided in the results section.

Pre-Screening Instrument

The pre-screening instrument (see Appendix A) was developed by the student researcher and was used to ensure that the participants met the study's requirements. The instrument included six screening questions (e.g., "I am 16 years of age or older or am turning 16 this year (born in 2006)") and was responded to with 'yes' or 'no'.

Demographics

A questionnaire developed by the student researcher was used to collect demographic information (see Appendix B) related to the participants' personal characteristics (e.g., age, gender identity) and background in dance (e.g., hours/week of training, where they train, years of dance experience).

Creative Self-Concept

The study used the Short Scale of Creative Self (SSCS; Karwowski, 2012) to measure perceived creative self-concept (see Appendix C). The instrument was developed to elaborate on other measures of creative self-efficacy (Karwowski et al., 2018). Creative self-concept is a multifaceted construct that includes the characteristics of creative self-efficacy (i.e., a dancer's self-perception on their ability to engage in creative behaviours/activities) and creative personal identity (i.e., how important creativity is to a dancer's identity, see Karwowski, 2015). The instrument is an 11-item questionnaire that captures self-perceived creative self-efficacy (6 items; "I trust my creative abilities") and creative personal identity (5 items; "My creativity is important for who I am"). It was scored on a 5-point Likert-type scale ranging from 1 (*definitely not*) to 5 (*definitely yes*). A total score was produced by summing responses across the items of both subscales. Higher total scores implied that the individual perceives themselves to hold high creative self-concept, which consists of two main motivational concepts that influences an

individual's creative goals and decisions. A high score on the creative self-efficacy subscale implied that the respondent perceives themselves to have high creative self-efficacy and the same can be implied for a high score on the creative personality identity subscale. A considerable amount of evidence has been produced in support of the reliability and validity of the instrument's scores (Goulet-Pelletier et al., 2021; Karwowski, 2014; Karwowski et al., 2018). The SSCS is a global measure of creativity, past research has made minor amendments to better reflect specific contexts (Puente-Diaz et al., 2019). The study took a similar approach to make the instrument specific to the context of dance. For example, "I think I am a creative person" was changed to "I think I am a creative dancer".

Attitudes and Values Towards Creativity

The study used the Attitude and Values Scale from the Runco Creative Assessment Battery (A&V; Runco, 2011) to measure dancers' attitudes toward creative behaviour (see Appendix D). The scale is comprised of 25 items and uses a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A high score implies that the individual holds a stronger inclination towards, and respect for, creative behaviours. Previous support for the A&V has showed good internal reliability (α =.73; Acar & Runco, 2014). The A&V is a global measure of creativity, past research has made minor amendments to better reflect specific contexts (Richard et al., 2017). The study took a similar approach to make the instrument specific to the context of dance. For example, "I avoid working outside my area of expertise. I do not want to be a beginner again and again" was changed to "I avoid training outside my area of expertise. I do not want to be a beginner again and again".

Perfectionism

In line with previous suggestions from Stoeber and Madigan (2016) the study used multiple subscales from different perfectionism instruments. The study used instruments adopted in previous investigations of perfectionism among dancers (Cumming & Duda, 2012; Jowett et al., 2021; Nordin-Bates et al., 2017). More specifically, the study used the second version of the Sport Multidimensional Perfectionism Scale (SMPS-2; Gotwals & Dunn, 2009) and the short version of the Multidimensional Perfectionism Scale (MPS-SF; Cox et al., 2002).

The SMPS-2 (see Appendix E) is a popular measure of sport-based perfectionism and consists of 42-items that reflect six subscales: Personal Standards, Organization, Concern Over Mistakes, Doubts About Actions, Perceived Parental Pressure, and Perceived Coach Pressure. The study used the Personal Standards subscale as one of the measures of personal standards perfectionism (Gotwals & Dunn, 2009; Jowett et al., 2021). The Personal Standards subscale contains seven items and captures tendencies to set very high personal performance standards (e.g., "I have extremely high goals for myself in dance"). The Concern Over Mistakes subscale was used to measure evaluative concerns perfectionism. The subscale of Concern Over Mistakes contains eight items and captures the degree to which athletes worry about making a mistake during performance (e.g., "The fewer mistakes I make in competition, the more people will like me"). Respondents were asked to indicate the extent to which they agree with each statement using a 5-point Likert-type scale ranging from 1 (*strongly Disagree*) to 5 (*strongly Agree*). Higher subscale scores represent higher levels of perfectionism for the corresponding facet. The SMPS-2 has provided validity and reliability evidence supporting it as a measure of perfectionism in sport across numerous studies in a variety of different sports (See Dunn et al., 2016; Gotwals & Dunn, 2009; Gotwals et al., 2010).

The MPS-SF (see Appendix F) is an abbreviated version of the MPS (Hewitt & Flett, 1991), which is a widely used measure of general or global levels of perfectionism. Due to the online nature of the study the MPS-SF was more conducive. The measure consists of 15-items distributed among three subscales: Self-Oriented Perfectionism (SOP), Other-Oriented Perfectionism (OOP) and Socially Prescribed Perfectionism (SPP). The study used the SOP subscale as the second subscale to measure personal standards perfectionism (Cox et al., 2002; Jowett et al., 2021). This subscale contains five items and aims to capture the participants' excessively high standards that they set for themselves (e.g., "One of my goals is to be perfect in everything I do"; Cox et al., 2002). The SSP subscale was used to capture evaluative concerns perfectionism. This subscale is comprised of five items and aims to measure the degree to which the participants perceive others to hold excessively high standards of oneself (e.g., "People expect nothing less than perfection from me"; Cox et al., 2002). Following previous recommendations, the study did not include the subscale measuring OOP (see Stoeber & Madigan, 2016, p. 40). With the exclusion of the OOP subscale, the study only used ten items. Respondents were asked to indicate the extent to which they agree or disagree with each question using a 7-point Likert-type scale ranging from 1 (*disagree*) to 7 (*agree*). The SOP and SPP subscales of the MPS-SF have shown excellent factorial validity (Stoeber & Madigan, 2016), as well as good internal consistency (α = .79; Jowett et al., 2021).

The SMPS-2 was designed for team sport; accordingly, items use terms such as "sport", "player" and "coaches". For example, "I have extremely high goals for myself in my sport" and "If I do not set the highest standards for myself in my sport, I am likely to end up as a second-rate player". In the study, these terms were replaced with terms that are relevant to dance, such as "dance", "dancer" and "teacher". For example, "I have extremely high goals for myself in

dance" and "If I do not set the highest standards for myself in dance, I am likely to end up as a second-rate dancer". The MPS-SF was designed to measure general levels of perfectionism, to make it specific to dance minor amendments were made. For example, "One of my goals is to be perfect in everything I do" was changed to "One of my goals in dance is to be perfect in everything I do". The amendments mirror those used by Jowett et al. (2021) in their assessment of perfectionism among dancers.

Perceived Teacher Autonomy Support

The study used the Sport Climate Questionnaire (SCQ; Deci, 2001) to assess the dancers' perceptions of autonomy support provided by their teachers (see Appendix G). The questionnaire contains 15 items and is measured on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A higher average score represents a higher level of perceived teacher autonomy support. Evidence has been provided to support the internal consistency of the scale scores (α = .81; Joesaar et al., 2012) and reliable factorial validity (Lim & Wang, 2009). The SCQ was designed for sport; accordingly, items used terms such as "athletics" and "coach". For example, "I am able to be open with my coach while engaged in athletics" and "I feel understood by my coach". In the study, these terms were replaced with terms that are relevant to dance, such as "dance" and "teacher". For example, "I am able to be open with my teacher while engaged in dance" and "I feel understood by my teacher". The amendments mirror those used by Jowett et al. (2021) in their assessment of perceived teacher autonomy support. The instructions asked the participants to complete the questionnaire with the dance teacher who teaches them the most, in mind. This recommendation (see Jowett et al., 2021, p. 13) helped to clarify that the dancers were only reporting perceived autonomy support on their most prominent dance teacher.

Procedure

Participant Recruitment

Once ethical approval was received from the Lakehead University Research Ethics Board, a variety of recruitment strategies were employed to recruit potential participants. Convenience and purposive sampling were used by implementing social media campaigns and a promotional video (see Appendix H), accessing potential participants through gatekeepers, and recruiting potential participants through direct communication. The gatekeepers were individuals who had regular access to the dancers and acted as an intermediary between the researcher and potential participants (Lavrakas, 2008). Examples included studio directors, studio office administrators, dance teachers, choreographers, and competition directors. Gatekeepers were provided an information letter that described the study (see Appendix I) and were asked to help identify potential participants and to facilitate the researcher's ability to communicate with those potential participants.

Potential participants were also directly recruited through email and phone. Regardless of the contact method, the same procedure to recruit participants was followed. First, the student researcher provided the dancer with an information letter (see Appendix J) and described the study with a brief lay description of the project and its purpose. Participants were told about what their participation in the study would mean and the boundaries of the confidentiality, anonymity, and protection of their personal data. The opportunity to ask questions or address any concerns was provided to the potential participant during the recruitment session as well. At the conclusion, potential participants were asked if they would like to participate and provided with the link for the study's online survey.

The final strategy to recruit potential participants was snowball sampling. During recruitment sessions, potential participants were asked to identify other dancers who may meet the inclusion criteria. From there, potential participants were asked to help facilitate the student researcher's ability to connect with and recruit those dancers.

Informed Consent and Data Collection

SurveyMonkey®, an online cloud-based survey tool, was used to administer procedures associated with obtaining informed consent and collecting data. The first page of the online survey presented the study's information letter. The second page of the online survey presented the informed consent form (see Appendix K). Instructions asked the respondents to indicate their informed consent to take part in the study by selecting the "next" button. If the potential participant agreed to participate, the following pages asked them to respond to the pre-screening instrument, demographics questionnaire, SSCS, A&V scale, S-MPS-2, MPS-SF, and SCQ. The order of the latter five questionnaires were presented in a random order, for each participant to control for order effects. It was estimated that it would take approximately 40 minutes for participants to complete the questionnaires. Once participants submitted their responses, they received a message of gratitude thanking them for their time.

Data Analysis

The models in this study (see Figures 2 & 3) reflect moderated moderation (Hayes, 2018). The models were tested using multiple regression as conducted through the Statistical Package of the Social Sciences (SPSS) version 25 in conjunction with the PROCESS macro (Hayes, 2018). Analyses were conducted in-line with guidelines on testing the 2×2 model of perfectionism (Gaudreau, 2012; Gaudreau & Thompson, 2010) and current perspectives on

testing and exploring moderation in general (e.g., Hayes, 2018) and in relation to perfectionism specifically (Hill, 2021).

Two sets of analyses were conducted, where one had perceived creative self-concept (as represented by the SSCS) as the outcome variable and the other had attitude towards creativity (as represented by the A&V) as the outcome variable. In each set, personal standards perfectionism was the predictor variable with evaluative concerns perfectionism and perceived teacher autonomy support as the moderator variables. If significant moderation effects were detected, then effects would be probed through visual depictions, simple slope analyses, and/or the Johnson-Neyman technique (see Hayes, 2018, p. 434). If evaluative concerns perfectionism and/or perceived teacher autonomy support were not shown to be significant moderators, then the interaction terms involving the variable would be iteratively removed and the analysis would be re-run with a focus only on main effects (see Gaudreau, 2012, p. 28; Hayes, 2018, p. 231). In these cases, the main effects of personal standards perfectionism and evaluative concerns perfectionism would be used to make statistical inferences about hypotheses based on the 2×2 model of perfectionism (Gaudreau, 2012). All findings were interpreted in line with the perspective that perceived creative self-concept and attitudes towards creativity are positive and adaptive outcomes.

Results

Preliminary Analysis

Screening for Inclusion Criteria Violations

A total of 404 participants responded to at least one question in the present study's survey. As previously discussed, the study's survey was administered through a publicly available online survey platform and the student-researcher had no control over who completed

the survey. The first step in the preliminary analyses then was to screen the for individuals who did not meet the study's inclusion criteria. This was accomplished by screening participants' responses to the pre-screening instrument (see Appendix A) and the demographic questionnaire (see Appendix B). Eight participants were identified as not meeting the studies inclusion criteria, seven participants did not meet the inclusion criteria based on how they responded to the pre-screening questionnaire and one participants answers on the demographic's questionnaire suggested that they did not meet the study's inclusion criteria. Therefore, the participants were removed from the dataset, the resulting dataset was comprised of data from 396 participants.

Addressing Missing Data

The second step in the preliminary analyses was to identify participants with excessive missing data. Participants were defined as having excessive missing data if they were missing responses to every item within one or more of the questionnaires that represented the study's primary variables (i.e., the SSCS, A&V, SMPS2, MPS-SF, & SCQ). Subsequently, 176 participants were removed from the dataset due to excessive missing data. The dataset then comprised of data from 220 participants. In this dataset the amount of missing data within the primary variable questionnaires was very small (i.e., 60 instances of missing data points out of a total of 16,720 or 0.36%; less than 5% is considered a small amount of missing data, Tabachnik & Fidell, 2013). Little's Missing Completely at Random test was performed to determine if this data was missing in a predictable or random manner. The result of the test was not significant $(x^2(1384, N = 220) = 1380.07, p = .53)$ indicating that the data was missing randomly. Due to the small amount and the nature of the missing data, expectation-maximization was then used to impute values for these missing data points (Tabachnik & Fidell, 2013).

Primary Variables: Creation, Evaluation, and Inter-Relationships

The third step in the preliminary analysis was to create variables representing each of the study's primary constructs. Variables representing creative self-concept, attitudes and values towards creativity and perceived teacher autonomy support were created by respectively averaging the responses to the SSCS, A&V, and SCQ based on the total scores. Variables representing the perfectionism dimensions of personal standards perfectionism and evaluative concerns perfectionism were following the recommendations of Stoeber and Madigan (2016). In line with this approach scores from the SMPS-2 and MPF-SF were standardized using z-scores. The standardized scores from the SMPS-2 personal standards subscale and the MPS-SF self-oriented perfectionism subscale were then aggregated to represent personal standards perfectionism. The SMPS-2 concern over mistakes subscale and the MPS-SF socially prescribed perfectionism subscale were aggregated to represent the evaluative concerns perfectionism.

Table 1 presents descriptive statistics, distributional characteristics, and internal consistency estimates (in the form of Cronbach's alphas) for the study's variables. On average, the dancer's scored higher on the measures of personal standards perfectionism compared to evaluative concerns perfectionism. However, there is no normative data on these measures of perfectionism so the data is difficult to interpret. The SSCS, SMPS-2, MPS-SF, and SCQ showed internal consistencies greater than .78 suggesting that each instrument/subscale demonstrated adequate internal consistency (Furr & Bacharach, 2008). The general rule of thumb, that most researchers follow, is that Cronbach alpha should be above .70, however, values above .60 and close to .70 are also acceptable (Griethuijsen et al., 2015; Taber, 2018). The A&V scale showed an internal consistency of .68, which is just below the alpha suggesting adequate internal consistency.

Table 2 presents the bivariate correlations between the study's primary variables. Creative self-concept and attitudes and values towards creativity showed a moderated positive relationship with perceived teacher autonomy support. Creative self-concept showed small positive relationship with personals standards perfectionism whereas attitudes and values towards creativity showed a small negative relationship with personal standards perfectionism. Attitudes and values towards creativity and perceived teacher autonomy support both showed a moderated negative relationship with evaluative concerns perfectionism. Finally, personal standards perfectionism showed a large positive relationship with evaluative concerns perfectionism.

Outlier Analysis

The dataset was screened for univariate and multivariate outliers. The screening for univariate outliers was conducted first. Participants were defined as univariate outliers if their standardized mean score on any of the primary measures were outside the range of ±3.29 (Tabachnik & Fidell, 2013). Based on this definition, four participants qualified as univariate outliers and were removed from the dataset. The dataset was then screened for potential multivariate outliers. Participants were defined as multivariate outliers if the probability of Mahalanobis' D^2 score associated with their score profile across the predictor (Evaluative Concerns Perfectionism) and moderator (Personal Standards Perfectionism, Perceived Teacher Autonomy Support) variables was less than .001 (Tabachnik & Fidell, 2013). Based on this criterion, one multivariate outlier was detected. This participant was also removed resulting in a dataset comprised of data from 215 participants. All further analyses were conducted on this dataset.

Participants

The student research was able to contact approximately 1200 dance studios and 100 competitions from North America, Europe, South Africa, and Australia. As a result of the recruitment efforts the final dataset consisted of 215 participants. 206 of those participants identified as female, five identified as non-binary, and four identified as male[2]. The mean age of the participants was 17.17 years ($SD = 1.92$). Participants from North America (n = 180), Australia (n = 20), the United Kingdom (n = 13) and South Africa (n =1) participated. On average participants participated in 5.72 different styles of dance ($SD = 1.98$; e.g., ballet, jazz, lyrical, tap). Participants reported having an average of 12.6 years ($SD = 3.44$) of dance class experience, 8.37 years ($SD = 3.28$) of competition experience, participated in 10.62 classes ($SD = 4.4$) per week and 5.61 competitions ($SD = 1.99$) per year. A large percentage of participants, more than 95%, rated dance and performing well in dance as being important or very important to them. Based on the above information, the average participant appeared to be a competitive dancer who has participated in 13 years of dance class and eight years of competition experience and placed high personal value on engaging and performing well in dance.

Primary Analysis

Predicting Creative Self-Concept

As previously stated, the study's purpose and hypotheses reflected a model of moderated moderation (see Hayes, 2018, p. 329). Personal standards perfectionism served as the predictor variable, and evaluative concerns perfectionism and perceived teacher autonomy support as the moderator variables. Multiple regression was used to test how well the model predicted creative

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[2] Due to the large difference in gender a re-analysis was run with only females included in the sample. No significant differences were found between the samples. Therefore, non-binary and male participants were included in the final sample. This topic is addressed further in the discussion section.

self-concept and attitudes and values towards creativity. Focusing on the prediction of creative self-concept, the model explained a significant amount of variance ($R^2 = 0.15$, $MSE = 0.25$, $F(7, 207) = 6.71$, $p < .001$), but the three-way interaction coefficient between evaluative concerns perfectionism, personal standards perfectionism, and perceived teacher autonomy support was not significant ($ß = .001$, $p > .05$). In line with the iterative process outlined in the data analysis sub-section, the regression was then repeated with the three-way interaction term removed from the analysis.

The subsequent model reflected additive multiple moderation (see Hayes, 2018, p. 320) personal standards perfectionism and perceived teacher autonomy support each serving as individual moderators of the relationship between evaluative concerns perfectionism and creative self-concept. This model explained significant amount of variance in creative self-concept ($R^2 = 0.14$, $MSE = 0.25$, $F(5, 209) = 7.68$, $p < .001$), but again the coefficient associated with the two-way interaction between evaluative concerns perfectionism and perceived teacher autonomy support was not significant ($ß = .06$, $p > .05$). The analysis was also repeated with evaluative concerns perfectionism and perceived teacher autonomy support as individual moderators of the relationship between personal standards perfectionism and creative self-concept. This model also explained a significant amount of variance in creative self-concept ($R^2 = 0.13$, $MSE = 0.25$, $F(5, 209) = 6.00$, $p < .001$), but again the coefficient associated with the two-way interaction between personal standards perfectionism and perceived teacher autonomy support was not significant ($ß = -.01$, $p > .05$).

The present study conceptualized perceived teacher autonomy support as a moderator of the perfectionism-creativity relationship. Findings from the previous regression analyses do not support that conceptualization. Because of this, in combination with the fact that autonomy

support was also not conceptualized as a distinct predictor of creative self-concept, terms representing the interactive and individual effect of autonomy support were removed and the regression analysis was repeated. The resulting model represented a case of simple moderation with evaluative concerns perfectionism as the predictor and personal standards perfectionism as the sole moderator. The model explained a significant amount of variance in creative self-concept (R^2 = 0.11, MSE = 0.26, $F(3, 211)$ = 7.63, $p < .001$), but again the coefficient associated with the two-way interaction between evaluative concerns perfectionism and personal standards perfectionism was not significant (ß = .05, $p > .05$). As a result, the term representing the interaction between the two perfectionism dimensions was removed and the regression analysis was repeated. This analysis tested the main effects of personal standards perfectionism and evaluative concerns perfectionism. The model explained a significant amount of variance in creative self-concept (R^2 = 0.10, MSE = 0.51, $F(2, 212)$ = 11.27, $p < .001$). Table 3 presents the coefficients from this analysis along with their associated characteristics. The coefficient associated with personal standards perfectionism was significant and positive (ß = .224, $p < .001$) and the coefficient associated with evaluative concerns perfectionism was significant and negative (ß = -.205, $p < .001$). Figure 3 illustrates these results within the context of the 2 × 2 model of perfectionism and identifies whether the results support each of the model's hypotheses (see Gaudreau, 2012). The positive main effect of personal standards perfectionism indicates that (a) pure personal standards perfectionism is associated with higher levels of creative self-concept in comparison to non-perfectionism and (b) mixed perfectionism is associated with significantly higher creative self-concept than pure evaluative concerns perfectionism. This supports the 2 × 2 model's H1a and H3. The negative main effect of evaluative concerns perfectionism indicates that (a) pure evaluative concerns perfectionism is associated with lower creative self-concept

compared to non-perfectionism and (b) pure personal standards perfectionism is associated with higher creative self-concept than mixed perfectionism. This supports the 2 × 2 model's H2 and H4.

Predicting Attitudes and Values Towards Creativity

Attitudes and values towards creativity were tested following the same iterative multiple regression process used to test creative self-concept. The first model tested reflected moderated moderation with personal standards perfectionism as the predictor variable, and evaluative concerns perfectionism and perceived teacher autonomy support as moderator variables. A significant amount of variance in attitudes and values towards creativity was found ($R^2 = 0.10$, $MSE = 0.09$, $F(7, 207) = 2.78$, $p < .05$), but the three-way interaction coefficient was not significant ($ß = .01$, $p > .05$). The regression was then repeated in line with the iterative process outlined in the data analysis sub-section. The three-way interaction term between evaluative concerns perfectionism, personal standards perfectionism and perceived teacher autonomy support was removed from the analysis.

The subsequent model reflected additive multiple moderation (see Hayes, 2018, p. 230), personal standards perfectionism and perceived teacher autonomy support each serving as individual moderators of the relationship between evaluative concerns perfectionism and attitudes and values towards creativity. This model also explained a significant amount of variance in the attitudes and values towards creativity ($R^2 = 0.09$, $MSE = 0.09$, $F(5, 209) = 3.76$, $p < .05$), but again the coefficient for the two-way interaction between evaluative concerns perfectionism and perceived teacher autonomy support was not significant ($ß = .01$, $p > .05$). In line with the previous analysis with creative self-concept as the outcome variable, the regression analysis was repeated with perceived teacher autonomy support removed from the analysis as a

moderation and predictor variable. Again, the analysis was repeated with evaluative concerns perfectionism and perceived teacher autonomy support as individual moderators of the relationship between personal standards perfectionism and attitudes and values towards creativity. This model also explained a significant amount of variance in attitudes and values towards creativity ($R^2 = 0.10$, $MSE = 0.09$, $F(5, 209) = 4.25$, $p < .05$), but again the coefficient associated with the two-way interaction between personal standards perfectionism and perceived teacher autonomy support was not significant (ß $= .03$, $p > .05$)

Again, the present study conceptualized perceived teacher autonomy support as a moderator of the perfectionism-creativity relationship. Findings from the previous regression analyses do not support that conceptualization. Because of this, in combination with the fact that autonomy support was also not conceptualized as a distinct predictor of attitudes and values towards creativity, terms representing the interactive and individual effect of autonomy support were removed and the regression analysis was repeated. The resulting model represented a case of simple moderation with evaluative concerns perfectionism served as the predictor variable, and personal standards perfectionism acted as the sole moderator variable. The model explained a significant amount of variance in attitudes and values towards creativity ($R^2 = 0.07$, $MSE = 0.09$, $F(3, 211) = 5.82$, $p < .001$), but again the coefficient for the two-way interaction between evaluative concerns perfectionism and personal standards perfectionism was not significant (ß $= -.05$, $p > .05$). As a result, the term representing the interaction between the two perfectionism dimensions was removed and the regression analysis was repeated.

The analysis tested the main effects of personal standards perfectionism and evaluative concerns perfectionism. The model explained a significant amount of variance in attitudes and values towards creativity ($R^2 = 0.06$, $MSE = 0.30$, $F(2, 212) = 6.18$, $p < .05$). Table 4 presents the

coefficients from this analysis along with their associated characteristics. The coefficient associated with personal standards perfectionism was positive but not significant ($ß = .01$, $p > .05$), whereas the coefficient associated with evaluative concerns perfectionism was significant and negative ($ß = -.09$, $p < .05$). Figure 4 illustrates these results within the context of the 2×2 model of perfectionism and identifies whether the results support each of the model's hypotheses (see Gaudreau, 2012). The non-significant main effect for personal standards perfectionism suggested that pure personal standards perfectionism and non-perfectionism showed similar associations to attitudes and values towards creativity. This supports H1c. The same finding suggested that pure evaluative concerns perfectionism was associated with similar levels of attitudes and values towards creativity when compared with mixed perfectionism. This does not support H3. The negative main effect of evaluative concerns perfectionism indicates that (a) pure evaluative concerns perfectionism is associated with lower attitudes and values towards creativity compared to non-perfectionism and (b) pure personal standards perfectionism is associated with higher attitudes and values towards creativity than mixed perfectionism. This supports the 2×2 model's H2 and H4.

Discussion

The present study examined the relationship between multidimensional perfectionism and creative self-concept and attitudes and values towards creativity among dancers and to determine whether perceived teacher autonomy support moderated that relationship (see Figure 2). This was the first study to investigate these relationships using the 2×2 model of perfectionism as a foundation. Regarding the model's hypotheses and based on the assumption that creativity is a positively laden construct, findings were expected to support H1a and H4. Such that pure personal standards perfectionism would show a stronger positive relationship with the two

constructs of creativity compared to non-perfectionism and mixed perfectionism respectively. In line with H2 and H3, pure evaluative concerns perfectionism was expected to show a weaker and negative relationship with the two constructs of creativity compared to non-perfectionism and mixed perfectionism. Regarding the moderating role of autonomy support, it was expected that comparative relationships between perfectionism and creativity would be inhibited when teacher autonomy support was perceived as high and exacerbated when teacher autonomy support was perceived as low. These hypotheses were tested through analysis of self-reported data provided by 215 competitive dancers who, on average, were based in North America, actively participating in formal dance training and planning to compete in dance competitions this year and viewed performance and engagement in dance as personally meaningful. An iterative multiple regression process did not produce support for the hypothesized moderating effect of perceived autonomy support. However, it did show a main effect for personal standards perfectionism and evaluative concerns perfectionism in relation to creative self-concept and a main effect for evaluative concerns perfectionism in relation to attitudes and values towards creativity. In the following sections, these results will be applied to the 2×2 model's hypotheses and discussed in relation to past research on the relationship between perfectionism and creativity.

The Relationship Between Perfectionism and Creativity

Hypotheses Two and Four

As previously stated, a negative main effect was found for evaluative concerns perfectionism in the prediction of both creative self-concept and attitudes and values towards creativity. Creativity is generally viewed as a positively laden construct given that it is related to positive personality characteristics such as openness to experience and intrinsic motivation and is

associated with enhanced well-being and performance (Clements & Nordin-Bates, 2020; Clements & Redding, 2020; Simonton, 2000; Watson et al., 2012). Given this, the significant negative main effect of evaluative concerns perfectionism supported the 2 × 2 model's H2 and H4 in relation to both creative self-concept and attitudes and values towards creativity. This implies that, among competitive dancers, non-perfectionism and pure personal standards perfectionism were respectively associated with a higher level of both creative-self-concept and attitudes and values towards creativity compared to pure evaluative concerns perfectionism (H2) and mixed perfectionism (H4).

Through a review of perfectionism-creativity literature in dance, anecdotal claims have been made that suggest the relationship between evaluative concerns perfectionism and creativity should be straightforward (Nordin-Bates, 2020; Nordin-Bates & Abrahamsen, 2016). Nordin-Bates and Abrahamsen (2016) predicted that evaluative concerns perfectionism would make creativity unlikely in dancers. This is because the links to negative self-criticism and perceived personal inadequacy from evaluative concerns perfectionism are incompatible with the characteristics needed for creativity. The current study's findings support these anecdotal claims.

The anecdotal claims presented in the previous paragraph were supported in the current study. However, most empirical studies have found no significant relationship between evaluative concerns perfectionism and creativity (Gallucci et al., 2000; Miller et al., 2012; Wigert et al., 2012). These studies examined the perfectionism–creativity relationship among a variety of populations (e.g., students, employees, and gifted children), measured perfectionism through an assortment of measures (e.g., Frost and colleagues [1990] Multidimensional Perfectionism Scale and Hewitt and Flett's [1991] Multidimensional Perfectionism Scale) and

focused on various aspects of creativity, such as the need to be different, creative engagement and creative cognitive style. Only one study of the perfectionism-creativity relationship supports the current study's findings. Kim and colleagues (2017) investigated perfectionism and creativity in 437 employees in a workplace setting and had the supervisors of the employees rate their creativity. They produced results which also would support H2 and H4.

This contrast between the reviewed anecdotal claims, empirical studies, and the current study's results, in combination with the fact that this study is the first to examine these specific models (see Figure 2), makes replication an important future research direction. In doing so, researchers should consider factors that may help clarify the evaluative concerns perfectionism–creativity relationship. One such factor could be the use of global versus domain-specific measures. Researchers in the dance science field have recommended that the best way to measure creativity and perfectionism is to use measures that can account for domain specificity (Amabile & Pillemer, 2012; Jowett et al., 2021). The problem with this recommendation is that there are no dance specific measures of creativity[3] or perfectionism. Therefore, future research should focus developing dance-specific measures in both creativity and perfectionism as an effective way to increase the reliability and validity of the results in future studies. The present study could also be replicated within other aesthetic sports, such as figure skating, artistic swimming, and gymnastics. These sports all include things that promote perfectionism such as demanding training loads, early specialization and rigid focus on physical appearance and could benefit from increased creative behaviours. Given these similarities, establishing the consistency of the evaluative concerns perfectionism-creativity relationships across these contexts would

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[3] There is one measure of creativity that was developed specifically for dancers, the Dancer's Perceptions of the Creative Process Questionnaire (Clements et al., forthcoming). However, the foundational reliability and validity evidence regarding the instrument has never been published. Because of this, the instrument was not used in the current study.

make a valuable academic and applied contribution. Replication of the study using domain specific measures and in other aesthetic sports would help with generalizability and to clarify the consistency of the present findings.

Mediation is another feature that future research could incorporate when replicating the current study. A mediator is a variable that explains the process or mechanism through which a predictor variable relates to an outcome variable (Hayes, 2018). Fear of failure is a possible mediator of the evaluative concerns perfectionism–creativity relationship in dance (Davis, 1999; Nordin-Bates, 2020; Sagar & Stoeber, 2009). Characteristics associated with evaluative concerns perfectionism have theoretical and empirical evidence that suggests it can lead to fear of failure. In the dance literature, it has been found through qualitative evidence that creativity, when improvising in class, was inhibited by the fear of failure or worries about not being good enough (Nordin-Bates, 2020). Empirical evidence has also found that high-level athletes with pure evaluative concerns perfectionism or facets related to evaluative concerns perfectionism (concern over mistakes and doubts about actions) are more likely to experience fear of failure and negative affect (Sagar & Stoeber, 2009). There is also evidence that fear of failure is a barrier to creativity and creative behaviours. Davis (1999) suggested that fear of failure is a permanent source of insecurity and can interfere with creative thinking and the creative process. Collectively, this suggests that fear of failure may represent a mechanism through which evaluative concerns perfectionism inhibits creativity. The possible mediator of fear of failure in the perfectionism-creativity relationship has not been directly tested. In general, studying mediators can allow researchers to learn about key processes in generating adaptive outcomes (Windgassen et al., 2016). Further, in the dance literature, it has been suggested that the exploration of mediation in the perfectionism-creativity relationship could help determine if

interventions led to enhanced creativity or reduced perfectionism or whether it was a coincidence (Karin & Nordin-Bates, 2016).

Hypotheses One and Three

It was hypothesized that all four of the 2 × 2 model's hypotheses would be supported in relationships between perfectionism and both creativity variables. As indicated in the previous section, findings supported this expectation in relation to H2 and H4. However, this expectation was not supported in relation to H1 and H3. In other words, whether the present findings supported H1 and H3 depended on whether creative self-concept or attitudes and values toward creativity served as the criterion variable. The following paragraphs describe this inconsistency, offer speculative explanations, and suggest directions for future research.

The present findings indicated a negative main effect for evaluative concerns perfectionism as well as a positive main effect for personal standards perfectionism in the prediction of creative self-concept. The main effect of personal standards perfectionism supported the 2 × 2 model's H1a and H3. A different pattern of findings was produced in relation to attitudes and values towards creativity. Similar to creative self-concept, findings indicated a negative main effect for evaluative concerns perfectionism. In contrast to creative self-concept, findings did not indicate a significant main effect for personal standards perfectionism. This means that in the prediction of attitudes and values towards creativity, findings supported H1c (as opposed to H1a) and did not support H3. This pattern of findings suggests that while subtypes defined by higher levels of personal standards perfectionism (pure personal standards perfectionism/mixed perfectionism) may be associated with higher levels of creative self-concept than subtypes associated with low levels of personal standards perfectionism (pure evaluative

concerns perfectionism/non-perfectionism), they share similar levels of attitudes and values towards creativity in competitive dancers.

Researchers have recognized that the relationship between personal standards perfectionism and creativity may be complicated. For example, Goulet-Pelletier et al. (2021) suggested that subtypes high in personal standards perfectionism generally score higher on self-perceived measures of creativity but lower on scores on measures that predict creative behaviours. Nordin-Bates (2020) suggested that the relationship between personal standards perfectionism and creativity may have a concave curvilinear relationship instead of a linear relationship. Subtypes high in personal standards perfectionism have high expectations for success and define themselves based on achievement. In today's world of competitive dance demonstrating creativity is integral to success. This is because dancers are now being called to be a part of the choreography process and to show their own creative agency, which is a critical aspect of being a successful dancer (Clements & Redding, 2019; Watson et al., 2012). As a result, it might be important for pure personal standards perfectionists and mixed perfectionists to see themselves as creative and believe that they can engage in creative behaviours and for creativity to be a part of their identity as a dancer (Karwowski, 2015).

However, while pure personal standards perfectionism and mixed perfectionism dancers may value the notion of being creative, they may not understand the creative process or appreciate the characteristics required to actually be creative. Being creative requires dancers to be open-minded, flexible, and take risks (Davis, 1999; Nordin-Bates, 2020). However, subtypes high in personal standards perfectionism may struggle to demonstrate these characteristics. This is because dancers high in personal standards perfectionism often are closed-minded and rigid. It could also be because creativity lacks *perpetual forward moment*. That is, it seems to conflict

with the notion that being creative does not always and immediately result in progress towards one's goal, which is important to subtypes high in personal standards perfectionism (Gotwals & Tamminen, 2020).

Collectively, this suggest that while subtypes high in personal standards perfectionism may report relatively high levels of creative self-concept, but their attitudes and values towards creativity and the value they place on the creative process may not differ substantially from those of non-perfectionists and pure evaluative concerns perfectionists. This would explain why in the present study there is inconsistent support for H1 and H3. As previously stated, there is support from past research that found personal standards perfectionism sometimes has higher scores on measures of self-perceived creativity but lower on measures of creative behaviour. Regardless, this explanation is speculative and in need of empirical validation.

When considering the contradictory findings between personal standards perfectionism and the variables of creativity, it seems that the overall personal standards perfectionism-creativity relationship might be curvilinear. Perfectionism-creativity literature in dance has produced anecdotal claims that suggest the relationship between personal standards perfectionism and creativity may be curvilinear (Nordin-Bates & Abrahamsen, 2016). It was suggested that moderate levels of personal standards perfectionism could help nurture creative exploration due to the focus and hard work associated with striving towards high goals and perfection. However, extreme levels of personal standards perfectionism were predicted to inhibit creativity due to rigidity and closed-mindedness, which is not congruent with creativity. Curvilinear relationships can sometimes describe the complexity of a relationship better than a linear relationship (Darlington & Hayes, 2017). In the dance literature, Nordin-Bates (2020) further explored these claims through qualitative research; in interviews with their participants,

they found complimentary and contradictory findings for personal standards perfectionism nurturing creativity. These findings suggest the claim that a curvilinear relationship between personal standards perfectionism and creativity may also be present in their sample of high-level dancers. Outside of the dance literature, one other study has supported these claims in a sample of undergraduate students. Wigert and colleagues (2012) found that creativity had a concave curvilinear relationship with personal standards perfectionism. That is, personal standards perfectionism was associated with greater creativity until extreme levels of personal standards perfectionism were associated with a drop in creativity. A limitation of the study was that the analytical approach used (ordinary least squares regression) in this study was based on the assumption that perfectionism and creativity were linearly related. This potential mismatch between the analytical tool used and the actual nature of the personal standards perfectionism-creativity relationship could have contributed to the inconsistent results regarding H1 and H3 across the two creativity variables. Future research should aim to use data analysis tools that can detect curvilinear relationships, such as quadratic regression analysis (Darlington & Hayes, 2017).

Perceived Teacher Autonomy Support

Results relevant to perceived teacher autonomy support were hypothesized to show that it would moderate the relationships between perfectionism and both creativity variables. However, these expectations were not supported: perceived teacher autonomy did not suggest a mechanism for the relationship between perfectionism and either creative self-concept or attitudes and values towards creativity. These findings, or lack thereof, were interesting given the results of a study between perfectionism, burnout, and engagement, with the possible moderator of perceived autonomy support (Jowett et al., 2021).

As mentioned, no other studies have examined explicitly whether perceived teacher autonomy support moderates the relationship between perfectionism and creativity in general or high-level dancers. However, one other study has examined perceived teacher autonomy support as a possible moderator between multidimensional perfectionism, using the 2×2 model, burnout, and engagement in high-level dancers (Jowett et al., 2021). Their moderated regression analyses supported all four hypotheses for burnout, and dedication, vigour, and enthusiasm supported H1a, 2 and 3.

However, the current study's results did not support the hypotheses as there were no significant findings regarding tests of moderation. A few possible explanations for the different results between the present study and Jowett et al. (2021) can be explored. The first possible reason different results were found is because of the use of different outcome variables. The present study used two variables of creativity (i.e., creative self-concept and attitudes and values towards creativity) and Jowett and colleagues used burnout and engagement. It could be that burnout and engagement are more susceptible to environmental changes (Jowett et al., 2013, 2016), whereas creativity is a personality disposition that is relatively stable and less susceptible to environmental changes (Richard & Runco, 2020).

Another possible explanation for the difference in the findings between the present study and Jowett et al. (2021) could be the difference in the samples. There are a few key differences in the samples used; for example, in the current study, the average age of the participants was 17 years old and mainly from North America, whereas Jowett and colleagues' sample was on average 15 years old and all from the United Kingdom. Their sample was slightly younger and possibly more susceptible to an autonomy-supportive environment. There is also a big difference between the type of dance teenagers participate in in North America versus the United Kingdom.

North American dancers tend to participate in competition-oriented dance training, where most of their training is focused on preparing dances for judges to evaluate and critique. In the United Kingdom and other European countries, dancers tend to participate in performance-oriented dance training, where most of their training is focused on preparing dancers for audiences and peers. There is a possibility that autonomy support is perceived differently in each of these settings. However, there is no empirical evidence to support these claims, and they are speculative. As mentioned previously, this was the first study to examine perceived teacher autonomy support as a potential moderator between perfectionism and creativity. The explanations for why autonomy support was not a moderator are speculative and need to be studied further to determine if promoting autonomy support is important for all types of perfectionism and nurturing creativity.

Practical Implications

Some evidence-based suggestions can be made to practitioners, dancers, teachers, dancers, and dancers guardians on how the present study findings can be applied to dance contexts. Based on the current study's findings, non-perfectionist and pure evaluative concerns perfectionist dancers are at most risk of low creative self-concept and mixed perfectionist and pure evaluative concerns perfectionist dancers are at most risk for poor attitudes and values towards creativity. If practitioners, dance teachers and guardians can identify the different subtypes of perfectionism, they may be able to promote different ways to increase creative self-concept and attitudes and values towards creativity. Dancers with pure personal standards perfectionism may show higher scores of creative self-concept because it is a desirable characteristic to have in competitive dance. However, these dancers were found to have

relatively lower attitudes and values conducive to creativity. These dancers could use education about the creative process, the characteristics necessary to be creative and its benefits in dance.

Overall, no form of perfectionism should be actively encouraged or nurtured in dance. Promoting perfectionism in dance can make dancers more vulnerable to motivation, well-being, and performance difficulties (Flett & Hewitt, 2005, 2014). If perfectionism is promoted, it can also lead to higher levels of self-criticism, depression, body image troubles, and burnout in dancers (Hill et al., 2020). Practitioners, dance teachers and guardians should be made aware of these harmful side effects of promoting perfectionism and educated further on how different interventions may be able to reduce the nurturing of perfectionism in their classes. Due to the uniqueness of the present study and the limited amount of evidence in this specific area of research, these practical implications are suggestions and should not be implemented until the topic is investigated further.

Limitations and Future Directions

The present study had a number of noteworthy limitations. First, it is limited by its research design. The study used a cross-sectional design and assessed dancers' general perceptions of the degree to which they perceived their creative self-concept and attitudes and values towards creativity at a single time point. The use of this design limits the ability to make definitive conclusions on the direction and causal nature of the perfectionism-creativity relationship. Cross-sectional research designs have shown to be problematic when testing for moderation and non-experimental data cannot be used to develop a definitive test of a model that includes moderation (Hoyle & Robinson, 2008). Past dance literature has suggested that perfectionism and creativity may affect each other in multiple ways; however, it has never been explored using empirical measures (Nordin-Bates, 2020). To address these limitations, future

research may use a quasi-experimental design in which perfectionism is assessed prospectively and then related to the levels of creativity that dancers experience at different time points throughout the dance season. Researchers could consider a cross-lagged panel analysis used to determine directional influences between variables to examine whether perfectionism predicted changes in creativity or vice-versa (Cook & Campbell, 1979).

Second, the study was limited because most participants identified as female (95.8%). As a result, the present findings cannot be assumed to apply to dancers who identify with other genders. This limitation is important to note because there is potential that creativity and perfectionism could differ across genders in dance. There is no empirical evidence in the dance literature that suggests a difference between genders and creativity. This could be because dance is heavily female-dominated and other genders are not as strongly represented in the dance literature. In general, the available empirical evidence suggests that females tend to score higher on creativity tests than males (Baer & Kaufman, 2008). There is also limited evidence regarding the role of gender in perfectionism, and it has not identified any consistent gender differences (Crocker et al., 2018). Future research should continue to increase targeted recruitment efforts to dancers' who identify with genders other than female to a) increase the degree to which people who identify with genders other than female are represented in the dance literature and b) to examine if the findings of the current study are consistent across genders.

Finally, another possible limitation of the present study is that the overlap between perfectionism and excellencism may not have been adequately controlled for. Excellencism reflects "a tendency to aim and strive toward very high yet attainable standards in an effortful, engaged, and determined yet flexible manner" (Gaudreau, 2019, p. 200). The overlap exists between the two constructs because excellence can be attained without perfection, but perfection

cannot be attained without excellence (Gaudreau, 2019). The presence of excellencism within personal standards perfectionism may explain why personal standards perfectionism is often referred to as the subtype most often related to adaptive outcomes (Gaudreau, 2019). As a result, excellencism should be related only to adaptive outcomes. The limitation with the measures of perfectionism used in the present study is that they do not clearly differentiate between perfectionism and excellencism (Gaudreau, 2019; Gaudreau et al., 2022; Gotwals & Lizmore, under review). This could explain why inconsistent findings between personal standards perfectionism and creativity were found in the present study. Researchers interested in re-examining the relationship between perfectionism and creativity in dance should consider using measures that more clearly recognize the overlap between perfectionism and excellencism, such as the perfectionism subscale within the Scale of Perfectionism and Excellencism (SCOPE; Gaudreau, 2019). Despite these limitations, meaningful relationships were still found, providing an exciting expansion of the current literature.

Conclusion

The present study examined the relationships multidimensional perfectionism, through the 2×2 model of perfectionism, showed with creative self-concept and attitudes and values towards creativity among dancers and tested whether perceived teacher autonomy support moderated those relationships. Within a sample of experienced, dedicated, and primarily female competitive dancers, findings indicated that pure personal standards perfectionism and mixed perfectionism were associated with higher levels of creative self-concept compared to non-perfectionism and pure evaluative concerns perfectionism, respectively. In contrast, pure personal standards perfectionism and mixed perfectionism did not show higher levels of attitudes and values towards creativity than non-perfectionism and pure evaluative concerns

perfectionism, respectively. The findings also indicated that perceived teacher autonomy support did not moderate the relationship between perfectionism and both creativity variables. This study was the first to examine perceived teacher autonomy support as a possible moderator for the relationship between perfectionism and creativity among any population. Practical implications are suggestions based on limited evidence and should not be implicated until the topic is investigated further. As a result, replication of the study is necessary to establish the consistency of the findings and the validity of the practical implications. Due to the negative impact perfectionism has on dancers and the importance of creativity on their success and well-being the present study provides meaningful insight into how the results can be used in practical settings. As such, continuing this line of research, with the present suggestions, it should be both academically and practically valuable.

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Table 1

Descriptive Statistics, Distributional Characteristics, and Estimates of Internal Consistency for

Primary Variables

Variables	M	SD	Skewness	Kurtosis	Internal Consistency (α)
Creative Self-Concept[a]	4.19	0.58	-1.18	1.57	0.87
Attitudes and Values Towards Creativity[a]	3.66	0.32	-0.16	-0.14	0.68
Perfectionism Facets					
Personal Standards[a]	3.81	0.69	-0.19	-0.86	0.80
Self-Oriented Perfectionism[b]	5.79	1.07	-0.82	-0.38	0.83
Concern Over Mistakes[a]	3.53	0.93	-0.43	-0.59	0.89
Socially Prescribed Perfectionism[b]	3.96	1.32	0.03	-0.75	0.78
Perfectionism Dimensions					
Personal Standards Perfectionism	0.00	0.92	-0.51	-0.69	--
Evaluative Concerns Perfectionism	0.00	0.91	-0.26	-0.47	--
Teacher Autonomy Support[b]	5.65	1.16	-1.24	1.35	0.95

[a] Possible range of scores: 1.00-5.00. [b] Possible range of scores: 1.00-7.00.

Table 2

Bivariate Correlations between Primary Variables

Variable	1	2	3	4	5
1. Creative Self-Concept	--				
2. Attitudes and Values Towards Creativity	.27**	--			
3. Personal Standards Perfectionism	.17*	-.14*	--		
4. Evaluative Concerns Perfectionism	-.11	-.24**	.63**	--	
5. Perceived Teacher Autonomy Support	.23**	.20**	-.01	-.34**	--

* $p < .05$

**$p < .01$

Table 3

*Regression Results for the Main Effects in the Prediction of Creative Self-Concept*

Variable	Coeff.	*SE*	*t*	*p*	95% CI	
					LL	*UL*
Constant	4.23	0.03	120.42	.00	4.14	4.28
Evaluative Concerns Perfectionism	-0.21	0.05	-4.38	.00	-0.30	-0.11
Personal Standards Perfectionism	0.22	0.05	4.39	.00	0.12	0.32

Table 4

Regression Results for the Main Effects in the Prediction of Attitudes and Values Towards Creativity

| Variable	Coeff.	SE	t	p	95% CI	
					LL	UL
Constant	3.67	0.02	175.84	.00	3.63	3.71
Evaluative Concerns Perfectionism	-0.09	0.03	-2.88	.00	-0.15	-0.03
Personal Standards Perfectionism	0.01	0.03	0.28	.78	-0.05	0.07

Figure 1

The 2 x 2 Model of Perfectionism
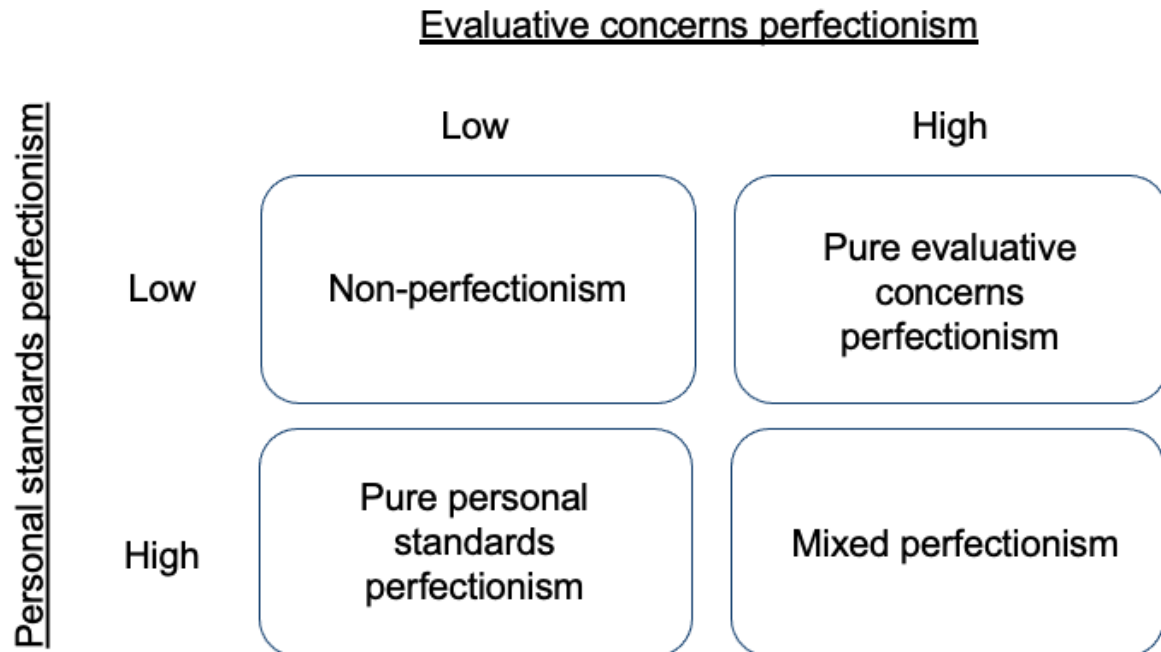
Note. This figure shows which perfectionism subtypes are formed with which of the within

person combinations by the varying degrees of personal standards perfectionism and evaluative

concerns perfectionism. This figure is adapted from "Testing a 2 x 2 model of dispositional

perfectionism" by P. Gaudreau & A. Thompson, 2010, *Personality and Individual Differences,*
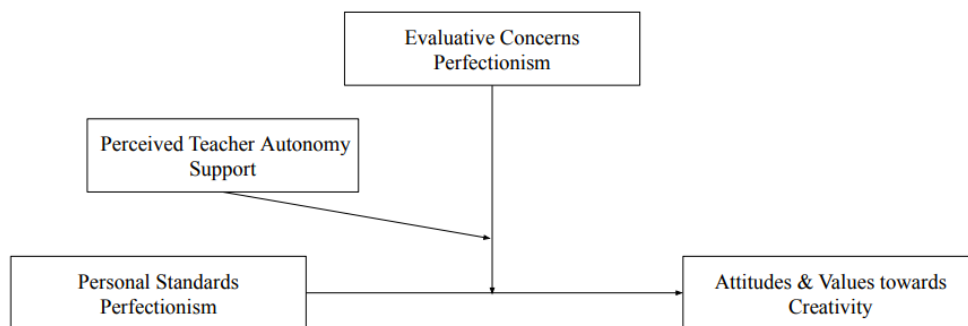
48, 532-537.

Figure 2

Moderated Moderation: The Interactive Roles of Personal Standards Perfectionism, Evaluative Concerns Perfectionism, and Perceived Teacher Autonomy Support on Creative Self-Concept and Attitudes and Values Towards Creativity
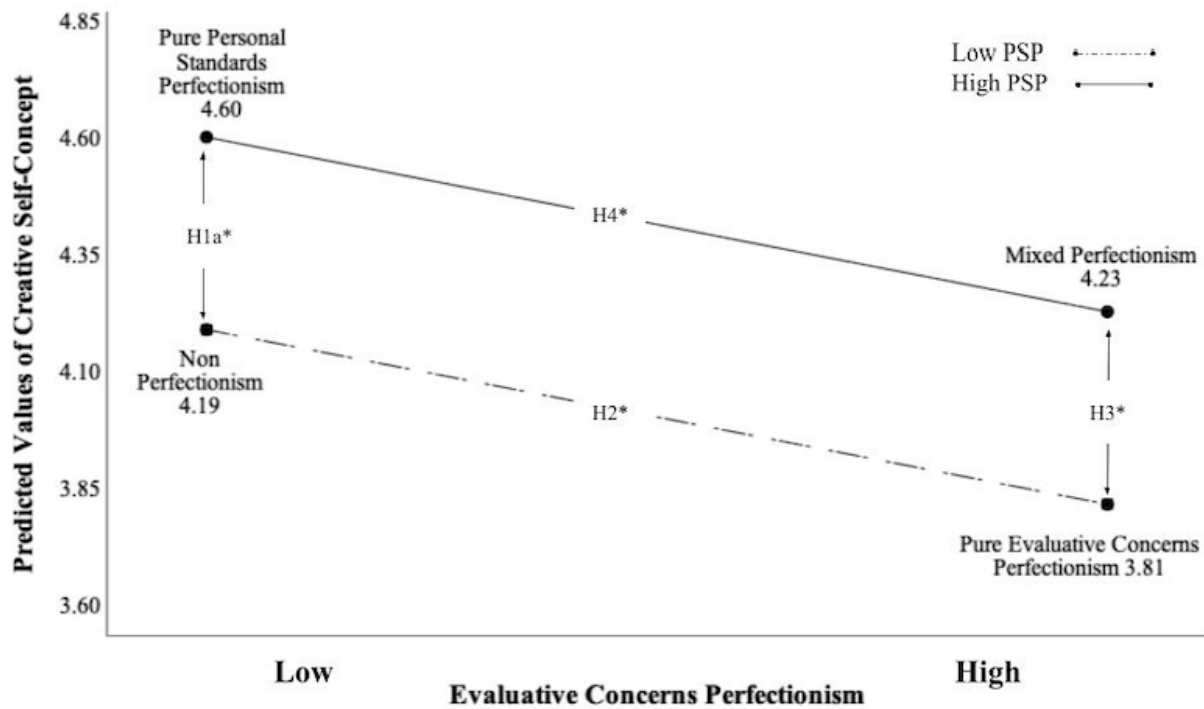
a)
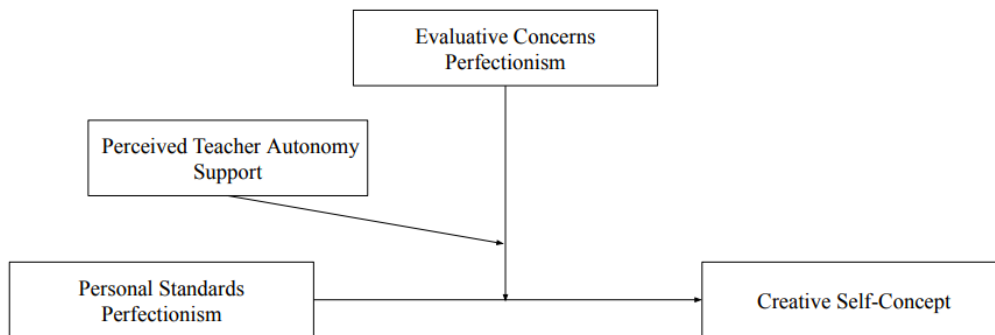
b)

Note. These figures illustrate the effect of personal standards perfectionism on creative self-concept and attitudes and values towards creativity as predicted by evaluative concerns perfectionism and moderated by perceived teacher autonomy support.

Figure 3

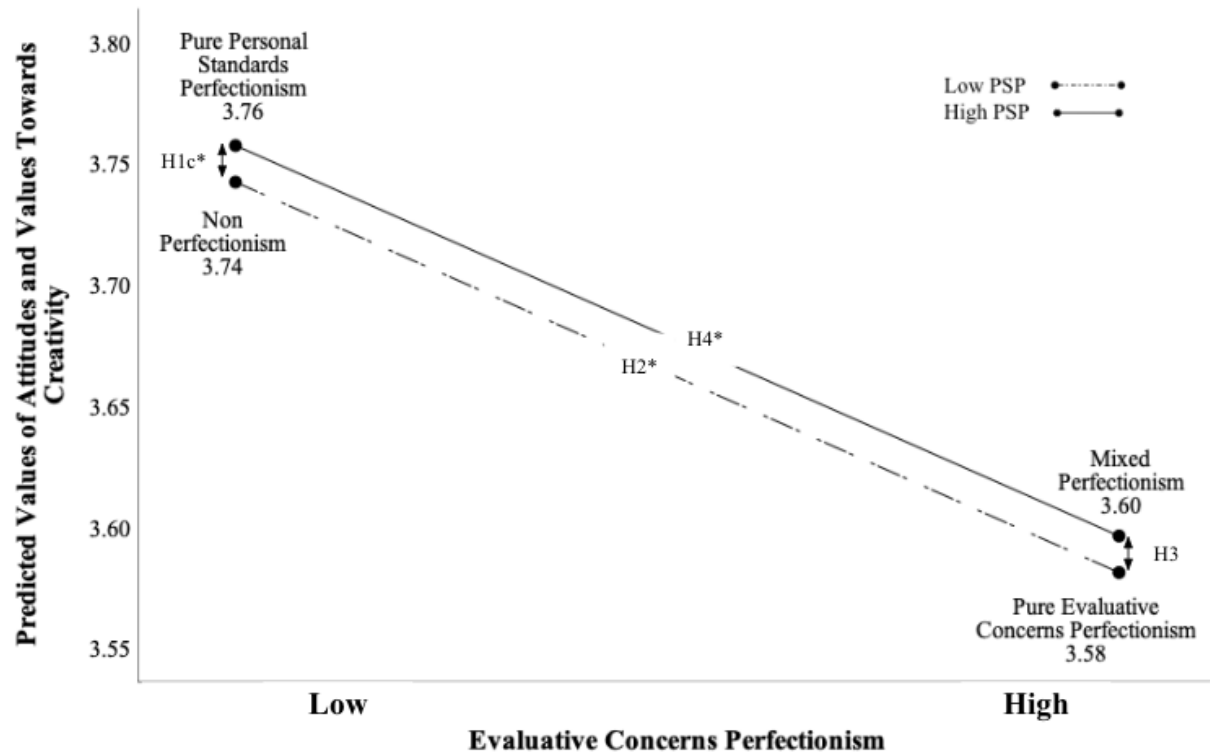*Perfectionism as a Predictor of Creative Self-Concept: Visualization of Regression Results*

Note. The above figure illustrates the significant main effects of evaluative concerns perfectionism and personal standards perfectionism (respectively) in the prediction of creative self-concept. H1a, H2, H3, and H4 refer to the hypotheses of the 2 × 2 model of perfectionism. * Indicated support for the associated hypothesis.

Figure 4

Perfectionism as a Predictor of Attitudes and Values Towards Creativity: Visualization of

Regression Results

Note. The above figure illustrates the significant and non-significant main effects of evaluative

concerns perfectionism and personal standards perfectionism (respectively) in the prediction of

attitudes and values towards creativity. H1c, H2, H3, and H4 refer to the hypotheses of the 2×2

model of perfectionism. * Indicates support for the associated hypothesis.

Appendix A: Participant Pre-Screening Instrument

Title presented to participants: *Participant Pre-Screening*

Instructions: As indicated earlier, there are a few requirements that individuals must meet in order to take part in this study. These are listed below. Please indicate whether you meet these requirements.

Response format: "Yes" or "No"

Items:

1. I am 16 years old or older.

2. I compete in one or more of the following dance styles: ballet, contemporary/lyrical/modern, or jazz.

3. I take formal dance classes that are taught by a teacher for at least four hours per week.

4. I have at least three years of experience taking part in dance competitions.

5. I am currently taking part in dance competitions or plan on taking part in the upcoming season.

6. I can read and understand questions written in English.

Appendix B: Demographic Questionnaire

Title presented to participants: *Your Personal Characteristics and Background in Dance*

Instructions: Please tell us about your personal characteristics and your background in dance.

Items and Response Formats:

Heading: Personal Characteristics

1. What gender (if any) do you identify with?

   Response format: Blank text box

2. How old are you?

   Response format: Blank text box

3. What country do you live in?

   Response format: Blank text box

Heading: Your Background in Competitive Dance

4. How long (in years) have you taken part in formal dance training (i.e., consistently taking dance classes taught by a teacher at a dance studio)?

   Response format: Blank text box

5. For how many years have you competed in dance?

   Response format: Blank text box

Heading: Your Current Involvement in Competitive Dance

6. Please select all the dance styles that you are currently training in and plan on competing in this year.

   Response format: Select all that apply (ballet, contemporary, lyrical, modern, jazz, tap, acro, hip-hop, musical theatre, pointe, other)

7. I currently participate in _____ (insert number) of dance classes per week.

Response format: Fill in the blank

8. How many hours per week do you train in ballet (including any pointe classes)?

   Response format: Blank text box

9. How many hours per week do you train in either lyrical, contemporary and/or modern?

   Response format: Blank text box

10. How many hours per week do you train in jazz?

    Response format: Blank text box

11. On average, I compete in _____ (insert number) of competitions per year/competition season.

    Response format: Fill in the blank

12. How important is dance to you?

    Response format: 5-point Likert scale (1 = *Not important at all*; 5 = *Very important*)

13. How important is it to you to perform well when competing in dance?

    Response format: 5-point Likert scale (1 = *Not at all important*; 5 = *Very important*)

Appendix C: Short Scale of Creative Self

Title presented to participants: *Creative Self*

Instructions: Below you will find several sentences used by people to describe themselves. Please decide to what extent each of these statements describes you as a dancer. There are no good or wrong answers.

Response Format: 5-point Likert scale (1 = *definitely not*; 5 = *definitely yes*)

Items:

1. I think I am a creative dancer.

2. My creativity is important for who I am as a dancer.

3. I know I can efficiently solve even complicated problems in dance.

4. When it comes to dance, I trust my creative abilities.

5. My imagination and ingenuity distinguish me from other dancers. (*Note: Ingenuity is defined as the quality of being clever and original)*

6. There are many times in dance where I have proved that I can cope with difficult situations.

7. Being a creative dancer is important to me.

8. I am sure I can deal with problems in dance that require creative thinking.

9. I am good at proposing original solutions to problems in dance.

10. Creativity is an important part of myself as a dancer.

11. Ingenuity in dance is a characteristic that is important to me. (*Note: Ingenuity is defined as the quality of being clever and original)*

Appendix D: Attitudes and Values Towards Creativity Scale

Title presented to participants: *Attitudes and Values*

Instructions: Use the scale (given below) to indicate how much you agree or disagree with a certain statement. You may need to approximate. Please indicate how you really think and behave, not how you would like to. Remember, no names are used. Your responses are confidential. Again, you may need to approximate. For each item, click the response option that is THE CLOSEST to being accurate. Here are the options: (1) = totally DISAGREE; (2) = mostly disagree; (3) = neutral; (4) = mostly agree; (5) = totally AGREE

Response Format: 5-point Likert scale (1 = *totally disagree*; 5 = *totally agree*)

Items:

1. In dance, even if some method has worked well in the past, it is a good idea to question and perhaps change it on a regular basis.

2. In dance, one of the advantages of developing expertise is that you can make useful assumptions and work more quickly.

3. In dance, time is often wasted when everyone involved in a project shares each of their own ideas.

4. Diversity is a good thing to have in a dance group that wants to be innovative.

5. When solving problems in dance, it is often beneficial to postpone judgment about possible solutions.

6. Maybe it is good for dance prodigies to be strange, but for the rest of us its best to go along with the crowd.

7. In dance, solutions and ideas are often improved by considering a variety of perspectives.

8. In dance, it isn't enough to just find an original idea. That idea is only worth something if you test it, verify it, implement it.

9. If you produce a large number of ideas in dance, you are likely to find some high-quality ideas and solutions.

10. In dance, problem solving and innovation benefit from shifts in perspective.

11. It can be useful to collect data and obtain new information before solving a problem in dance.

12. In dance, any group work, and all projects should have a person of authority who constantly ensures that no time is wasted exploring every option.

13. In dance, it is best to stick with a "tried and true" approach to innovation, once you find something that works.

14. Good insights often result from concentrating on a problem. It is best not to take time off when immersed in a dance project.

15. I look for ways to isolate myself so I can concentrate and think deeply about my work in dance.

16. In dance, useful ideas can often be found if you change the problem; don't just look for solutions to the problem as it is presented.

17. In dance, there is a clear benefit to thinking about ideas that other people will not consider.

18. I avoid training outside my area of expertise in dance. I do not want to be a beginner again and again.

19. The important thing in dance class is to find out what will gain the approval of other people (teachers, peers, friends).

20. In dance, it is useful to tolerate people who have different views, even if we are trying to solve a particular problem.

21. In dance, it is difficult for me to work with people who have very different backgrounds.

22. Dance practice can be fun if you approach exercises playfully, like they are games and have fun.

23. Originality can be very useful in dance class or in dance competitions.

24. In dance, sometimes it is best to be unconventional.

25. In dance, I am tolerant of people who are different, bohemian, contrarian, odd.

Appendix E: Sport Multidimensional Perfectionism Scale - Second Version

Title presented to participants: *Competitive Orientations to Dance Scale*

Instructions: The purpose of this questionnaire is to identify how dancers view certain aspects of their competitive experiences in dance. Please help us to more fully understand how dancers view a variety of their competitive experiences by indicating the extent to which you agree or disagree with the following statements. (Select one response for each statement). Some of the questions relate to your dance experiences in general, while others relate specifically to experiences within your group that you have most recently danced with. There are no right, or wrong answers so please don't spend too much time on any one statement; simply choose the answer that best describes how you view each statement.

Response Format: 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*)

Items:

1. If I do not set the highest standards for myself in dance, I am likely to end up as a second-rate dancer.

2. Even if I fail slightly in a dance competition, for me, it is as bad as being a complete failure.

3. I hate being less than the best at things in dance.

4. If I fail in a dance competition, I feel like a failure as a person.

5. The fewer mistakes I make in a dance competition, the more people will like me.

6. It is important to me that I be thoroughly competent in everything I do in dance.

7. I think I expect higher performance and greater results in my daily dance-training than most dancers.

8. I feel that other dancers generally accept lower standards for themselves in dance than I do.

9. I should be upset if I make a mistake in a dance competition.

10. If a team-mate or other dancer (at the same level and in the same age category as me) does better than me during a dance competition, then I feel like I failed to some degree.

11. If I do not do well all the time in a dance competition, I feel that people will not respect me as a dancer.

12. I have extremely high goals for myself in dance.

13. I set higher achievement goals than most dancers.

14. People will probably think less of me if I make mistakes in a dance competition.

15. If I dance well but only make one obvious mistake in the entire performance, I still feel disappointed with my performance.

Appendix F: Multidimensional Perfectionism Scale - Short Form

Title presented to participants: *Achievement Orientation Towards Dance*

Instructions: The following items are statements concerning personal characteristics that some people demonstrate when they are **participating in dance**. Read each item and indicate the extent to which you agree or disagree with each statement. There are no right, or wrong answers so do not spend too much time on any one statement. Simply read each statement and indicate the extent to which you agree or disagree with each statement.

Response Format: 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*)

Items:

1. One of my goals in dance is to be perfect in everything I do.

2. In dance, anything that I do that is less than excellent will be seen as poor performance by those around me.

3. I strive to be as perfect as I can be in dance.

4. I am perfectionistic in setting goals in dance.

5. In dance, I feel that people are too demanding of me.

6. Although they may not show it, other people get very upset with me when I slip up in dance.

7. My family expects me to be perfect in dance.

8. In dance, people expect nothing less than perfection from me.

9. I set very high standards for myself in dance.

10. I must always be successful in dance.

Appendix G: Adapted Version of the Sport Climate Questionnaire for Dance

Title presented to participants: *Feelings and Attitudes Towards Your Dance Teacher*

Instructions: This section contains items that are related to your experience with your teacher. 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 dance teacher that teaches you most often. Your responses are confidential. Please be honest and candid.

Response Format: 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*)

Items:

1. I feel that my dance teacher provides me choices and options.

2. I feel understood by my dance teacher.

3. I am able to be open with my dance teacher while engaged in dance.

4. My dance teacher conveys confidence in my ability to do well at dance.

5. I feel that my teacher dance accepts me.

6. My dance teacher makes sure I really understood the goals of my athletic involvement and what I need to do.

7. My dance teacher encourages me to ask questions.

8. I feel a lot of trust in my dance teacher.

9. My dance teacher answers my questions fully and carefully.

10. My dance teacher listens to how I would like to do things.

11. My dance teacher handles people's emotions very well.

12. I feel that my dance teacher cares about me as a person.

13. I don't feel very good about the way my dance teacher talks to me.

14. My dance teacher tries to understand how I see things before suggesting a new way to do things.

15. I feel able to share my feelings with my dance teacher.

Appendix H: Recruitment Scripts

Note

Presented below are parallel scripts that will be used by members of the research team and gatekeepers when promoting the proposed study to potential participants over email. The script can easily be adapted if research team members are promoting the study over the phone or Zoom® and if gatekeepers are promoting the study in-person.

Script for Research Team Members

I'm not sure if you know this, but I'm a sport psychology <<professor/graduate student>> at Lakehead University. I'm currently conducting a study that examines how competitive dancers' perspectives on achievement relate to their thoughts and attitudes about creativity in dance. To recruit participants, we're reaching out to people who are experienced and actively taking part in competitive dance. I'm thinking that you may fit that description.

Taking part in the study involves completing an online survey that will take about 30 minutes. If you're interested in participating, click the link provided below. There you'll be presented with more information about the study and given the opportunity to take part.

<<*Insert survey monkey link*>>

If you participate in the study, your responses will be anonymous and confidential. This means that I will not know who participates and who doesn't and that no one outside of the research team will have access to your responses. Basically, the choice of whether or not to participate is yours and it will in no way affect our relationship or your experience in dance.

Finally, I'd love it if you could spread the word about the study. If you know any other dancers who are actively training and competing and who might be interested in taking part, feel free to pass on the survey link.

If you have any questions or want to run anything by me, just get in touch.

Thanks in advance for your consideration.

Script for Gatekeepers

Hi there,

John Gotwals and Mikayla Grant are sport psychology researchers at Lakehead University. They recently asked me to help promote one of their studies. The study examines how competitive dancers' perspectives on achievement relate to their thoughts and attitudes about creativity in dance. Attached are some promotional materials for the study. To recruit participants, they're

trying to reach people who are currently training for competition for the upcoming season and who think that dance is important and meaningful. You all probably fit that description.

Taking part in the study involves completing an online survey that will take about 30 minutes. If you are interested in participating, click the link provided below. There you'll be presented with more information about the study and given the opportunity to take part.

<<*Insert the survey monkey link*>>

If you participate in the study, your responses will be anonymous and confidential. This means that I will not know who participates and who doesn't and will not have access to any of your responses. This choice is yours and it will in no way affect our relationship or your experience in dance. If you have any questions, you can contact John and/or Mikayla. Their contact information is provided in the online survey and on the attached posters.

Finally, John and Mikayla told me that they'd love help spreading the word about the study. So, if you know anyone else that might be interested in taking part, feel free to pass on the study's promotional material and survey link.

Thanks.

Appendix I: Promotional Posters

School of Kinesiology
t: (807) 343-8544 **f**: (807) 343-8944

The relationship between perfectionism and creativity in competitive dancers: The moderating role of autonomy-supportive teachers

COMPETITIVE DANCERS NEEDED FOR STUDY

Looking for dancers who:

- Are at least 16 years old or turning 16 this year (born in 2006);
- Compete in at least one of the following dance styles: ballet, lyrical/contemporary/modern and/or jazz;
- Have at least 3 years of dance competition experience;
- Take at least 4 hours of formal dance class per week;
- Plan to compete this upcoming year; and
- Are able to read and understand English

IF YOU WOULD LIKE MORE INFORMATION CONTACT

mkgrant@lakeheadu.ca

REB Approval No. 1469132

Appendix J: Gatekeeper Information Letter

![Lakehead University logo]

Title of Study:	**The relationship between perfectionism and creativity in competitive dancers: The moderating role of autonomy-supportive teachers**
Primary Researcher	**Ms. Mikayla Grant**
Faculty Supervisor:	**Dr. John Gotwals**
Committee Members:	**Dr. Sanna Nordin-Bates & Dr. Carlos Zerpa**

Dear [Gatekeeper Name],

We are currently recruiting dancers who are at least 16 years old or are turning 16 this year (born in 2006) to participate in the research project identified above. <u>The purpose of this letter is to describe this study and to ask if you would be willing to collaborate with us in the identification of potential participants.</u>

What is this Project?
The purpose of this study is to examine how competitive dancers' perspectives on achievement relate to their thoughts and attitudes about creativity in dance. Mikayla Grant is a student in the MSc program offered out of the School of Kinesiology at Lakehead University. This project represents the thesis that is required by that program.

What Does Taking Part in this Project Involve?
Participating in this project involves the completion of six questionnaires. The questionnaires can be completed at any time that is convenient through SurveyMonkey - an online survey platform. One of the questionnaires asks for general information about the dancer and their background in dance. Two questionnaires assess the dancer's behaviours, attitudes, and values towards dance. Two other questionnaires assess the dancer's perspectives on achievement in dance. The final questionnaire assesses the dancer's perceptions of their most prominent dance teacher. The survey will take approximately 30 minutes to complete.

Who Are We Looking For?
Individuals must meet six criteria to take part in this study. First, they must be at least 16 years of age. Second, they must compete in either ballet, lyrical/contemporary/modern and/or jazz. Third, they must take at least 4 hours per week of formal dance class. Fourth, they must have at least 3 years of dance competition experience. Fifth, they must plan to compete in the upcoming dance competition season. Finally, they must be able to read and understand English.

What are we asking of you?

We would greatly appreciate it if you could assist us in our ability to recruit dancers that meet these inclusion criteria and that may be interested in participating. This would involve distributing promotional materials and sharing the link to the online survey. Both could be done through various formats (e.g., email, videoconferencing, or in-person). To facilitate the process, we've developed a script for you to use when promoting the study. This text could be easily copied into an email or read out loud.

Please note that we will not be able to inform you if any specific individual decided to participate in the study or provide you with results based on data from any specific individual. However, we would gladly provide you with a summary of the general results of the study and discuss those results with you.

The study has been approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team, please feel free to contact the Research Ethics Board at 1-807-343-8283 or research@lakeheadu.ca.

We hope that you find this study interesting and will help us recruit potential participants.

Thank you for your consideration,

Mikayla Grant   Dr. John Gotwals
MSc. Kinesiology Candidate   Associate Professor
(807)-474-6243   (807)-346-7952
mkgrant@lakeheadu.ca   john.gotwals@lakeheadu.ca

Appendix K: Participant Information Letter

Lakehead
U N I V E R S I T Y

School of Kinesiology
t: (807) 343-8544
f: (807) 343-8944

Participation Information Letter

Title of Study:	**The relationship between perfectionism and creativity in competitive dancers: The moderating role of autonomy-supportive teachers**
Primary Researcher	**Ms. Mikayla Grant**
Faculty Supervisor:	**Dr. John Gotwals**
Committee Members:	**Dr. Sanna Nordin-Bates & Dr. Carlos Zerpa**

Dear Potential Participant,
We are currently recruiting high-level dancers to take part in the research project identified above. The purpose of this letter is to describe the study so you can make an informed decision about whether to participate. When you click **"Next"** at the bottom of this page you will be given the opportunity to indicate that decision

What is this Project?
The purpose of this project is to examine how high-level dancers' perspective on achievement relates to their attitudes and behaviours in dance. Mikayla Grant is a student in the MSc program offered out of the School of Kinesiology at Lakehead University. This project represents the thesis that is required by that program.

Who are we looking for?
Individuals must meet six criteria to take part in this study. First, they must be at least 16 years of age or are turning 16 this year (born in 2006). Second, they must compete in either ballet, lyrical/contemporary/modern and/or jazz. Third, they must take at least 4 hours per week of formal dance class. Fourth, they must have at least three years of competition experience. Fifth, they must be able to read and understand English.

What Does Taking Part in this Project Involve?
Participation in this project involves the completion of six questionnaires. The questionnaires can be completed anonymously at any time that is convenient through SurveyMonkey® - an online survey platform. One of the questionnaires asks for general information about yourself and your background in dance. Two questionnaires ask about your perspective on achievement in dance. Two other questionnaires ask about your attitudes and behaviours towards dance. The final questionnaire asks about your perceptions towards your most prominent dance teacher. It will take approximately 30 minutes to complete the questionnaires.

Ethical Issues Regarding Participation

1. Your decision to take part in the study is entirely voluntary.
2. The research team is taking steps to support the confidentiality and anonymity of participants' data. The questionnaires will not ask you to provide your name and the use of SurveyMonkey® will allow you to submit your questionnaire responses anonymously. Additionally, only members of the research team will have access to participants' data. Individuals associated with your participation in dance (e.g., teammates or teachers) or personal life (e.g., parents or significant others) will not have access to any of your data. After taking part in the study, a random identification number will be assigned to each participants' responses.
3. There are no benefits and few mental or physical risks associated with taking part in this project. However, symptoms associated with some health conditions can sometimes be exacerbated by screen time. As a result, individuals currently dealing with such health conditions (i.e., concussions) should not partake in this study.
4. When completing the questionnaires, you can choose to not answer or skip any questions at your discretion. You can also choose to stop taking part in the study without any consequence at any point prior to the submission of your questionnaire responses. After you submit your questionnaire responses, we will not be able to remove them from the study. This is due to the complete anonymity of the questionnaire responses.
5. Please note that SurveyMonkey® is hosted by a server located in the USA. The US Patriot Act permits U.S. law enforcement officials, for the purpose of anti-terrorism investigation to seek a court that allows access to the personal records of any person without the person's knowledge. Therefore, we cannot guarantee the full confidentiality of participants' data.

Data Usage, Data Storage and Study Summaries
1. All data collected for this study will be used for the purpose of Mikayla Grant's MSc thesis. There is no intention to commercialize study findings and there are no conflicts of interests on the part of the research team.
2. Once the study is completed, all data will be securely stored for a minimum of five years on password-protected hard drivers managed by Dr. John Gotwals (School of Kinesiology, Lakehead University). The survey will then be deleted from SurveyMonkey®.
3. Findings from this study will be presented in Ms. Grant's MSc thesis. It is also our intention to publish the findings in peer-reviewed journals and to present them at academic conferences. In any of these cases, your identity and individual responses will be kept confidential.
4. At the end of the online survey you will be given the opportunity to indicate interest in receiving a summary of the study's findings. It is anticipated that this report will be available by July of 2022.

Research Ethics Board Review and Approval
We will be happy to discuss any aspect of the study with you at any time. If you have any questions or concerns, feel free to contact any member of the research team. The study has also been reviewed and approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the

research team, please contact Sue Wright at the Research Ethics Board (1-807-343-8283; research@lakeheadu.ca)

Thank you for your consideration,

Mikayla Grant	Dr. John Gotwals
MSc. Kinesiology Candidate	Associate Professor
(807)-474-6243	(807)-346-7952
mkgrant@lakeheadu.ca	john.gotwals@lakeheadu.ca

Appendix L: Participant Informed Consent Form

Informed Consent Form

Title of Study:	**The relationship between perfectionism and creativity in competitive dancers: The moderating role of autonomy-supportive teachers**
Primary Researcher	**Ms. Mikayla Grant**
Faculty Supervisor:	**Dr. John Gotwals**
Committee Members:	**Dr. Sanna Nordin-Bates & Dr. Carlos Zerpa**

Instructions: Please review the information about this study that is provided below. After doing so, if you agree to take part in the study, then please indicate so by clicking "next" to begin the survey.

Study Information
I have reviewed the information letter for this study and understand:

- The risks and benefits of taking part in this study.
- That I am a volunteer. When completing the study's questionnaires, I may choose not to answer any question. I can also withdraw from the study at any time prior to the submission of my questionnaire responses.
- The data will be securely stored with Dr. John Gotwals (School of Kinesiology, Lakehead University) for a minimum period of 5 years following the completion of the study.
- That a summary of the study's findings will be made available to me upon request.
- The strategies that are in place to protect my anonymity and the confidentiality of my data.
- That I have been given an opportunity to ask questions and agree that all my questions have been appropriately answered.

By clicking "next", I am indicating that I have not waived any rights to legal recourse in the event of research-related harm, that I have read and agree to the above information, and that I agree to participate in this study.