Trait Anxiety and Achievement Goals as Predictors of Self-Reported Health in Dancers

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Abstract

Psychological characteristics associated with interpreting situations as stressful can impact people's physical health. The present investigation focused on trait anxiety and achievement goals as two such characteristics that may predict health outcomes in dancers, a group prone to chronic stress and injury. Students enrolled in a university dance program (N = 109) completed measures of trait anxiety, achievement goals for dance classes, and current health at the start of an academic term. Health was assessed again at the end of the term. Greater trait anxiety predicted poorer health at the end of the term when controlling for initial health. In addition, the more dancers wanted to avoid performing worse than others (performance-avoidance goals), the poorer was their physical health at term's end. It is concluded that anxiety and performance-avoidance goals may hinder dancers' ability to cope with the physical stress associated with a dance career.

Dancers are subject to intense physical and psychological stress stemming from frequent rehearsals as well as highly competitive auditions and performances.[1-6] Like others with careers that involve being evaluated on strenuous physical activity, individuals pursuing a career in dance must be able to withstand the pressure of daily training and performances. Rigorous daily schedules mean that health problems related to exhaustion and injury are common, can be debilitating, and can even end a dancer's career.[4,7-9] The purpose of this study was to examine several psychological factors that may predict physical health in dancers.

Recent research shows that not only objective situations themselves, but also how they are subjectively interpreted, can influence physical health.[10-15] For example, in a study that compared mothers with a healthy child and others with a chronically-ill child, the perception of stress, rather than the objective health status of the child, predicted physiological markers associated with poor health and aging.[10] Among dancers, life stress combined with a perceived lack of social support has been found to predict greater risk of injury.[16] Further, psychological characteristics that influence perceptions of events, such as optimism and pessimism, have been shown to influence both self-reported and objective indicators of physical health and morbidity.[12-15] Altogether, this evidence suggests that characteristics associated with the tendency to interpret situations as stressful are likely to have implications for physical health outcomes.

In the present investigation we focused on anxiety and achievement goals as two such characteristics in dancers. Dance offered a unique opportunity to examine the relationship between psychological characteristics and physical outcomes in a population of generally healthy people who undergo unusual chronic stress and who are prone to injuries.[1-6,17] Among physical health outcomes, injuries were of particular interest because they are common in dancers and can result both from intense physical activity and from factors related to mental health and anxiety, such as eating disorders, that weaken bone and muscle structures.[4,9] Further, a relatively small percentage of dancers experience the majority of injuries, and thus individual differences may explain the tendency to be injured.[17] Because poor health and injuries are potentially damaging to the careers of dancers,[4,7-9] identifying factors that predict these outcomes may help dancers take preventative measures to enhance their health and promote career longevity.

Health is impacted, and ultimately determined, by a number of physical and psychological factors. One factor that may influence dancers' health is trait anxiety, characterized by the tendency to appraise potential

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threats as exceeding one's ability to cope. People high in trait anxiety experience frequent feelings of anxiety and stress.[5,18,19] It was included as a potential predictor of health in the present investigation because it has been consistently linked to health problems.[20-23] In fact, the links between trait anxiety and health appear so strong as to cause some theorists to suggest that it is one component of a disease-prone personality.[21] Anxiety can also interfere with cognitive processing, reducing the ability to avoid health risks.[23-25] Trait anxiety has been shown to hinder performance and may be particularly important in a performance art such as dance.[5,10] Based on past evidence of the association between anxiety and poor health, we expected trait anxiety to predict worsening health in dancers.

The achievement goals that people focus on in specific situations are another psychological factor with the potential to influence physical health. Achievement goal theory in sport psychology specifies that people's definition of success is reflected in the types of goals they pursue.[26-28] According to this perspective, people focus on either mastery (i.e., task) or performance (i.e., ego) goals in achievement contexts, and this focus has implications for cognition, emotion, and behavior within such contexts.[27,29-33] People who hold mastery goals focus on learning a skill or concept and improving their performance. In contrast, people who hold performance goals focus on performing better than others engaged in the same task. Multiple studies suggest that mastery goals are associated with positive outcomes in athletes relative to performance goals, including greater enjoyment, more persistence, and more effective coping.[29-33]

Research suggests that it may also be important to consider people's approach motivations (i.e., the desire to attain positive outcomes) and avoidance motivations (i.e., the desire to avoid negative outcomes) in achievement contexts.[34,35] Like mastery and performance goals, approach and avoidance motivations appear to influence people's ability to regulate their emotions and behavior during stressful situations. Compared to approach motivations, avoidance motivations generally lead to less success in challenging tasks and to the experience of more negative emotions during failure.[36-40] Elliot and McGregor[41] and Elliot and Conroy[42] argued that to fully characterize people's goals in achievement settings it is important to consider that a focus on mastery might reflect either approach or avoidance motivations; similarly, a focus on performance might reflect either of these motivations. This results in a 2x2 achievement framework in which people can be characterized as focusing primarily on one of four types of goals. Mastery-approach goals focus on attaining mastery of a task (e.g., to learn a particular dance movement) and are associated with challenge appraisals and positive emotions.[43,44] Mastery-avoidance goals focus on avoiding failure to master a task (e.g., to avoid failing to learn as much as possible about a movement) and are associated with relatively mild negative emotions.[45,46] Performance-approach goals focus on performing better than others (e.g., to perform a movement better than another student) and are often associated with negative outcomes, although not as severe as those associated with performance-avoidance goals.[43] Finally, performance-avoidance goals focus on avoiding performing worse than others and are associated with poor outcomes in academic achievement contexts, negative emotions, and reduced intrinsic motivation.[47-49]

Performance-avoidance goals may also have especially pernicious health effects, although no studies to date have examined these links in athletic populations. One study examined self-reported physical health outcomes in college students over an academic term. The results showed that negative emotions associated with avoidance goals, but not approach goals, predicted worsening health (this study did not include performance and mastery goals).[50] In another study, Elliot and McGregor found that greater performance-avoidance goals for an upcoming exam predicted more visits to health centers around examination time for college students.[41] The influence of performance-avoidance goals on health center visits was especially strong if students also did not set mastery-approach goals. However, students' goals were assessed nine days before, and health center visits only at the time of, the examination. The fact that a measure of health was obtained at only one time point is problematic because without the ability to control for general or initial health, it is not known whether poor health preceded or followed the goals students set for the exam. For example, students who were experiencing more health symptoms prior to the exam may have been more prone to set performance-avoidance goals because their illness lowered their intrinsic interest in the course. To better understand the association between achievement goals and health, it is important to conduct longitudinal research examining health symptoms that control for initial health.

Based on prior findings, we expected that focusing on performance-avoidance goals in dance courses would predict worsening health in dancers. Goals were included as potential predictors of health because they have been linked to physical health outcomes in college age populations.[41,50] In addition, the goals that dancers focus on in their dance courses seemed particularly likely to relate to health outcomes because dance students spend a substantial portion of their time each day involved in dance classes.[51] The present investigation thus extends Elliot and McGregor's initial examination of goals and health to explore whether achievement goals predict worsening health over time in an athletic population.

Theory and prior research also suggest that the achievement goals people set may be related to their level of anxiety at a particular point in time (that is, state anxiety).[52-56] The relation between general trait anxiety and achievement goals is less well-studied, but trait anxiety in particular contexts has been addressed. In one study trait test anxiety at the start of

an academic term predicted a greater focus on performance-achievement goals in exams at the end of the term.[54] Other studies have shown that performance anxiety in academic and athletic contexts predicts greater focus on performance goals and less focus on mastery goals, although the causal direction of the relationships in these primarily correlational studies is unclear.[43,55,57,58] As mentioned previously, general trait anxiety is strongly linked to health outcomes, and thus general trait anxiety, rather than anxiety in a particular context, was examined in the present investigation. Because prior studies have not examined the relationship between general trait anxiety and achievement goals, we did not have specific hypotheses concerning whether or how these factors would interact.

In summary, based on prior theory and research, we predicted that dancers with high trait anxiety and those who focused on performance-avoidance goals would experience worsening health over time. To test this hypothesis we asked dancers at the start of the academic term about trait anxiety, goals for their dance courses, and their health. These factors were examined as predictors of health at the end of the term. The longitudinal design of the study allowed us to trace the unfolding relations among trait anxiety, achievement goals in potentially stressful situations, and physical health symptoms over time.

Methods

Participants

Participants (N = 109) were undergraduates enrolled in a highly competitive university dance program that trains career-oriented students. Of the 148 students who were contacted for the study (representing all students in the dance program), 81% gave informed consent and agreed to participate. Thirteen subjects were later excluded because they did not complete the majority of the initial or follow-up measures. These subjects did not differ on any available measure from those who did complete the measures.

Participants' average age was 20.12 years (range: 18 to 33 years; SD = 2.53), and 86% were female. Their ethnicities were representative of students in the Dance Department, with 67% Caucasian, 24% Asian American, 6% Hispanic, and 3% multiethnic. Ballet levels are standardized by judges within the dance program and used to categorize the skill level of all dancers for appropriate course registration, regardless of their dance specialization. The ballet levels of participants, with Level Five being the most skilled, were: 8% Level One, 27% Level Two, 39% Level Three, 20% Level Four, and 5% Level Five. Participants also varied in the number of years they had taken dance (from 1 to 28 years, M = 11.04, SD = 5.84), and years of dance was positively correlated with ballet level: $r(102) = .66$, $p < .001$. Results of all analyses remained identical to those reported when controlling for ballet level. Most participants (74.3%) reported that they were pursuing a career in dance. Because the subjective importance of dance courses may influence the degree to which goals in dance courses predict students' general health, we also conducted all analyses for only students interested in a dance career. The results were virtually identical to those reported for all participants, so all participants were included in the final analyses.

Procedure

This study used repeated assessments to examine factors that predicted health over time. Participants were first contacted during the third week of a 10-week term. At this time they completed measures of trait anxiety, the goals they held during their dance classes, and physical health. The third week was chosen as Time 1 because students were no longer permitted to change classes after that time. During the eighth week of the same 10-week term participants completed measures of their recent physical health. The eighth week was chosen as Time 2 because it was near the end of the 10-week academic term but prior to the time that dance students would be taking final examinations in non-dance courses (an event that can influence physical health outcomes).[50,59,60] Previous investigations have demonstrated that physical health changes can be detected within similar time frames in college students.[50,59,60] This investigation was approved by the University of California, Irvine Institutional Review Board.

Time 1

Students were invited to participate during classroom visits and received an emailed link to an online survey. Participants completed the trait portion of the State-Trait Anxiety Inventory (STAI), a measure that has demonstrated acceptable reliability and validity in student populations.[61] This measure was chosen over others specific to sports participation or performance anxiety[62,63] because it measures the tendency to experience anxiety across contexts, and thus allowed for an examination of the relationships among general trait anxiety, achievement goals, and health in an athletic population. Participants were instructed as follows: "A number of statements which people have used to describe themselves are given below. Please indicate how you generally feel." They rated how often they generally experienced each of the ten items (e.g., "I feel nervous and restless") on a scale ranging from 1 (almost never) to 4 (almost always): alpha = .90.

The Achievement Goals Questionnaire for Sports (AGQ-S), a measure with established psychometric properties in athletic populations,[45,46] was used to assess participants' goals.[41] Subjects were instructed to focus on the dance class they attended most recently and were told: "Below is a list of goals that dancers may hold in their dance classes. Please answer each of the questions about the goals you set in class." They then rated the extent to which they agreed with 12 statements about their potential goals in the dance class (e.g., "I just want to avoid doing poorly in this class"; "It is important for me to perform well compared to others in the class"; "I want to learn as much as possible from this class"; "My goal in this class

is to avoid performing below my potential"). For each item they rated the degree to which they set each goal on a scale ranging from 1 (not at all) to 7 (completely). Items were combined into performance-approach scores (alpha = .82), performance-avoidance scores (alpha = .75), mastery-approach scores (alpha = .81), and mastery-avoidance scores (alpha = .70).

For the assessment of physical health participants completed the Rand 36-item health survey concerning physical functioning, bodily pain, general health, fatigue, emotional states, and mental health in the last four weeks.[64] The health survey includes both subjective health indicators (e.g., "how much bodily pain have you had?") and relatively more objective health indicators (e.g., "how often have you had difficulty performing work or other activities because of physical health?"). It captures physical health issues that may arise from injuries (e.g., bodily pain) as well as those that may arise from a generally deteriorated condition or illness (e.g., fatigue). The measure yields a composite score of general functioning that ranges from 0 to 100, with a score of 100 indicating perfect health. Because it uses multiple stems and measurement scales, alphas are not calculated.[65] However, such self-report health measures have been supported as reliable and valid.[66,67] Indeed, the Rand health survey has been validated in a number of populations, and is used by managed care and Medicare for outcome assessments in adult patients.[66,67]

Time 2

Five weeks later the same dance students again received an emailed link to an online survey. They completed the Rand 36-item health survey with reference to their physical health over the past two days.[64] This two-day time frame was chosen in order to assess current physical functioning rather than general health or beliefs about health (e.g., "I am a healthy person"), and because evidence suggests the measure is valid with varying time frames.[64-67]

Results

Means, standard deviations, and correlations among study variables are presented in Table 1. Dancers' health did not, on average, differ at the start of the term compared to the end of the term, $t(102) = .59$, n.s., and initial and final health were positively correlated with one another. As shown in Table 1, all goals were positively correlated with one another, consistent with past research findings.[41,43] An ANOVA revealed significant differences in the extent to which dancers endorsed particular achievement goals, $F(3, 312) = 145.97$, $p < .001$. Post hoc contrasts with a Bonferoni correction revealed that dancers endorsed mastery-approach goals more than mastery-avoidance goals, $t(104) = 5.75$, $p < .001$, mastery-avoidance goals more than performance-avoidance goals, $t(104) = 7.20$, $p < .001$, and performance-avoidance goals more than performance-approach goals, $t(104) = 8.03$, $p < .001$. Trait anxiety and performance approach goals were negatively correlated with health at both time points. In addition, trait anxiety was positively correlated with performance-approach goals.

To examine predictors of change in health over the term we conducted a hierarchical regression analysis, with anxiety and achievement goals as predictors of health at the end of the term, controlling for initial health. These analyses controlled for initial health in order to examine predictors of variation in health at the end of the term that could not be accounted for by initial differences in health. In other words, including initial health in the analyses allowed us to rule out the possibilities that health at the end of the semester was due to initial health or to a tendency to make positive or negative reports about health. The results of this analysis are shown in Table 2.

As would be expected, dancers with better initial health also had better health at the end of the term. Greater trait anxiety predicted worse physical health at the end of the term, controlling for initial health. Greater focus on performance-avoidance goals predicted worse physical health at the end of the term, controlling for initial health. In contrast, focusing on performance-approach goals, mastery-avoidance goals, and mastery-approach goals did not predict health at the end of the term. Unadjusted R^2 values indicated that initial health accounted for 49% of the variance in health at the end of the semester, anxiety accounted for an additional 3% (change in $R^2 = .03$, $F[1,100] = 6.25$, $p < .05$), and goals accounted for an additional 3% (change in R^2 for performance avoidance goals = .02, $F[1,99] = 3.86$, $p = .05$), for a total of 55% of the variance when all predictors were included (adjusted R^2s are reported in Table 2). Follow up analyses revealed no evidence of moderation or mediation effects related to goals or anxiety as predictors of health. Thus, both anxiety and performance-avoidance

Table 1 Means, Standard Deviations, and Correlations Among Study Variables

Variable	Mean	SD	2	3	4	5	6	7
1. Anxiety	2.22	(0.62)	.30‡	.11	.03	.07	-.59§	-.56§
2. Performance approach	3.34	(1.62)	—	.47§	.30‡	.37§	-.32‡	-.23†
3. Performance avoidance	4.67	(1.66)	—	—	.25†	.44§	-.19*	-.00
4. Mastery approach	6.22	(1.00)	—	—	—	.73§	-.13	-.14
5. Mastery avoidance	5.76	(1.19)	—	—	—	—	-.15	-.09
6. Initial health	59.55	(14.37)	—	—	—	—	—	.70§
7. Final health	59.00	(16.08)	—	—	—	—	—	—

*p < .10; †p < .05; ‡p < .01; §p < .001

Table 2 Results of Regressions Predicting Reported Health Scores at the End of the Academic Term

	Step 1	Step 2	Step 3
Model Statistics			
F	98.18†	54.77†	19.53†
df	(1, 101)	(2, 100)	(6, 96)
Adjusted R^2	.49	.51	.52
Predictors		Standardized Betas	
Initial Health	.70†	.57†	.58†
Trait Anxiety	-	-.22*	-.22*
Performance-approach goals	-	-	.03
Performance-avoidance goals	-	-	-.16*
Mastery-approach goals	-	-	.11
Mastery-avoidance goals	-	-	-.03

*p ≤ .05; †p < .001.

goals contributed independently to worsening health over the course of the term.

Discussion

The present study examined the extent to which trait anxiety and achievement goals predicted changes in dancers' health over a five-week period during an academic term. Trait anxiety predicted worsening health, consistent with prior research showing that prolonged anxiety and trait anxiety can impair health.[5,18-26] The achievement goals that dancers focused on in their dance classes also predicted changes in their health. Specifically, the more dancers endorsed performance-avoidance goals for their dance classes, the worse their physical health became over the term. These findings are consistent with prior work demonstrating that performance-avoidance goals predict poor performance and negative emotions by showing that these goals are also associated with negative health outcomes.[47-49] The findings also extend the results of a recent study, which showed that performance-avoidance goals were negatively associated with health outcomes in an academic context by demonstrating similar effects in physically active populations (athletes and performers).[41] Further, the present investigation controlled for initial health, which allowed us to examine predictors of change in health rather than simply an association between goals and health at a single time point. Achievement goals predicted subsequent changes in health outcomes over five weeks, suggesting that they contribute to health over time.

There are likely multiple physical and psychological predictors of health outcomes in athletic populations. The current findings suggest that trait anxiety and achievement goals are two such psychological factors. It is possible that athletes involved in the performing arts, where the execution of each movement is valued rather than the result of a competition, may be particularly susceptible to setting performance-avoidance goals. Dancers, and others in the performance arts, may thus be unwittingly encouraged to set performance-avoidance goals that may have negative consequences for their health. Generally, athletes and performers may benefit from understanding that the goals they hold may influence their health.

Past theory and research has suggested that focusing on performance goals, particularly performance-avoidance goals, is associated with greater anxiety in specific contexts, including performance anxiety and test anxiety.[43,52-58] In the present investigation only a focus on performance-approach goals was positively correlated with anxiety; no significant relationship was found between anxiety and other achievement goals. The finding that performance-approach goals related to anxiety but performance-avoidance goals did not supports arguments to treat these as two separate types of goals because they appear to have different correlates.[41] Also, in analyses examining the relationship between trait anxiety and health, and between goals and health, there was no suggestion of moderation or mediation between trait anxiety and goals. The lack of a relationship between trait anxiety and achievement goals suggests that in general individual characteristics, such as trait anxiety, may not relate to the goals people focus on in specific contexts. Trait anxiety may predict a general tendency to focus on certain types of goals across situations, however. Future research should examine this possibility by assessing the relations between trait anxiety and a general tendency to focus on certain types of goals,[26-29,33] as well as the relations between state anxiety and goals that are specific to a particular context.

Future research should also focus on identifying the mechanisms through which anxiety and achievement goals influence health outcomes. Because all analyses controlled for dancers' initial health reports, the present investigation was able to rule out as an explanation the possibility that people high in trait anxiety, or with performance-avoidance goals, tend to have a negative view of their own health. Thus it will be important to investigate other psychological and physiological mediators of these relationships. Recent evidence suggests that people's perception of situations as stressful and the resulting negative emotions, rather than objective levels of stress, can influence cells, hormones, and immune responses.[10,68,69,70] Future research may elucidate whether psychological factors that are associated with the tendency to perceive situations as stressful and experience negative emotions, such as anxiety and performance goals, have similar consequences. It would also be useful for future investigations to include a wider range of potential psychological predictors of health, such as depression and hostility, in order to develop a more complete model of predictors of health outcomes in athletic populations.

Another important avenue for future research is whether interventions

designed to encourage dancers and athletes to adopt mastery-approach goals improve health outcomes. Trait characteristics, including trait anxiety, by definition reflect stable individual characteristics and are thus difficult to change. To the extent that goals are situational, however, there is reason to expect that interventions targeted at achievement goals may have beneficial consequences. For example, interventions directed toward teaching people who coach young athletes to create an atmosphere consistent with mastery goals may be successful. In a study examining the efficacy of one such intervention, coaches of groups of basketball players were taught to create mastery motivational climates. The players in these groups were more likely to set mastery goals than players in the control groups.[71] The present findings suggest that such an intervention may not only affect performance, but may also have positive consequences for athletes' health over time.

This study represents an important step toward identifying psychological factors that predict health outcomes in dancers. Limitations should be noted, however. Although this study followed participants over an academic term, results may have varied had the outcomes been studied for a longer period of time. There is existing evidence, for example, that the tendency to experience anxiety may make people more cautious about their health, producing some long-term benefits.[23-25] Importantly, approach goals may be significant predictors of better health when evaluated over a longer time frame, as the associations between approach goals and health were positive even over a 5-week period.

In addition, the present investigation focused narrowly on a group of student dancers in the United States. Future research might include students and professionals engaged in other highly stressful occupations and individuals from other countries. Dancers, because of their focus on bodily presentation, may be particularly likely to notice and report changes in physical health. In future research it will be important to assess the extent to which the present findings generalize to other athletic and community populations.

Finally, the present investigation incorporated a measure of general trait anxiety in order to examine the relationship between individual differences in the tendency to experience anxiety and health outcomes. However, there are other measures of anxiety specific to sport and athletic situations.[62,63] Several of these scales separate cognitive from somatic anxiety, and these two forms of anxiety may have different relationships to health outcomes and may act through different mechanisms to affect health. Thus, future research should examine the relationship between such measures of context-specific anxiety and health outcomes over time.

In conclusion, it is important to consider the implications of psychological factors, such as trait anxiety and achievement goals, for athletes' health. The current investigation demonstrated that, for dancers, trait anxiety and a focus on performance-avoidance goals were associated with worsening health over time. Teaching coaches and instructors to create climates that encourage dancers, and athletes generally, to lower anxiety and set mastery goals may have benefits for health as well as performance. Understanding the psychological characteristics that relate to perceiving situations as stressful may be critical to explaining individual differences in athletes' experience of poor health and injuries.

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