Perfectionism and performance in competitive athletes: The role of achievement goals and goal attainment

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Background
Perfectionism is the disposition to regard anything short of perfection as unacceptable (Merriam-Webster, 2006). Consequently, perfectionists are characterized by a striving for flawlessness and set themselves the highest possible standards for performance (Flett & Hewitt, 2002; Gilman & Ashby, 2006). How perfectionism affects performance is highly debated, however, particularly in sports (Hall, 2006). While some researchers have identified perfectionism as a psychological characteristic that makes Olympic champions (Gould, Dieffenbach, & Moffett, 2002), others see perfectionism as a maladaptive characteristic that undermines, rather than helps athletic performance (Flett & Hewitt, 2005). Consequently, athletes may face what Flett and Hewitt call the “perfectionism paradox” where on the one hand, athletes are expected to deliver perfect performance outcomes in competitions, and on the other hand, perfectionism is related to attitudes that impede performance such as competitive anxiety, failure motivation, and a preoccupation with performance goals. Thus, perfectionism may be a psychological characteristic that seems desirable, but could in fact undermine performance and prevent competitive success. This view, however, neglects to differentiate between two forms of perfectionism: a positive form of perfectionism called “personal standards perfectionism” and a negative form called “evaluative concerns perfectionism” (see Stoeber & Otto, 2006, for a comprehensive review). The present research aimed to resolve the perfectionism paradox by showing that personal standards perfectionism predicts higher athletic performance and greater competitive success whereas evaluative concerns perfectionism predicts lower performance and failure. Moreover, it aimed to show that differences in athletes’ achievement goal orientations (consecutively referred to as achievement goals) and goal attainment expectancies (consecutively referred to as goal setting) explain why the two forms of perfectionism show opposite relationships with athletic performance and competitive success—and why only personal standards perfectionism helps athletes to achieve higher performance, better outcomes, and more success.

Objectives
Against this background, the research project had three main objectives:

(1) To investigate whether differences in perfectionism in athletes affect athletic performance and competitive success. It was expected that personal standards perfectionism would (characterized by perfectionistic striving) predict higher athletic performance and greater competitive success, whereas evaluative concerns perfectionism (characterized by perfectionistic concerns) would predict lower athletic performance and diminished competitive success.

(2) To investigate why adaptive and evaluative concerns perfectionism in athletes may show differential relationships with athletic performance and competitive success by examining the role of athletes’ goals (achievement goals, goal setting). It was expected that athletes with high levels of personal standards perfectionism would pursue functional goals (mastery- and performance-approach goals, higher goal setting) which would help their performance, whereas athletes with high levels of evaluative concerns perfectionism would pursue dysfunctional goals (mastery- and
performance-avoidance goals, lower goal setting) which would undermine their performance.

(3) To investigate how adaptive and evaluative concerns perfectionism via functional and dysfunctional goals would affect athletic performance and competitive success over the course of a competitive season. It was expected that athletes with high levels of personal standards perfectionism who follow functional goals would show growth in athletic performance and increased success in competitive tournaments over the season, whereas athletes with high levels of evaluative concerns perfectionism who follow dysfunctional goals would experience stagnation in athletic performance and decreased success in competitive tournaments.

**Study 1: Perfectionism, achievement goals, and triathlon race performance**

The aim of Study 1 was to investigate (a) whether perfectionism predicted race performance in triathlon beyond athletes’ previous performance level, (b) what role achievement goal orientations played in this prediction, and (c) what additional role goal setting played in this relationship.

Where achievement goal orientations were concerned, we followed the 2 × 2 framework (Elliot & McGregor, 2001) distinguishing between performance approach (striving to do better than others), performance avoidance (striving to avoid doing worse than others), mastery approach (striving to better than one has done previously), and mastery avoidance goals (striving to avoid doing worse than one has done previously).

**Method**

**Participants.** A sample of 339 athletes (281 male, 58 female) was recruited at two triathlon competitions (Windsor Nokia Triathlon, 15 June 2007; Bournemouth International Triathlon, 8 July 2007). The mean age of athletes was 37.2 years (SD = 7.9; range = 19-67 years). All athletes competed in the Olympic distance race (1.5 km swimming, 40 km cycling, 10 km running). Because in Windsor the return rate of questionnaires was lower than expected (38%), participants in Bournemouth were offered a raffle for two cash prizes of £100 which resulted in a significantly higher return rate (62%).

**Measures.** To measure perfectionism, we used the Personal Standards and Concern over Mistakes subscales of the Sport Multidimensional Perfectionism Scale (Sport-MPS; Dunn, Dunn, & Syrotuik, 2002; Dunn et al., 2006) with the items adapted to triathlon. As a measure of personal standards perfectionism (perfectionistic strivings) we used the Personal Standards subscale of the Sport-MPS; and as a measure of evaluative concerns perfectionism (perfectionistic concerns), we used the Concern over Mistakes subscale of the Sport-MPS (see Stoeber, Stoll, Salmi, & Tiikkaja, 2009). To measure the 2 × 2 achievement goal orientations, we used the Achievement Goals Questionnaire for Sport (AGQ-S; Conroy, Elliot, & Hofer, 2003) with the instructions adapted to refer to next day’s race. To measure performance level, we asked participants for their seasonal best (the times and distances of their best triathlon in the present season) and their personal best (the times and distances of their best triathlon ever). Finally, to measure goal setting, we asked athletes to indicate the performance they wanted to achieve in next day’s race (hours, minutes) and the outcome they wanted to achieve (rank). Race performance data (time to finish the race in hours, minutes, and seconds) were obtained from the official records after the race.

**Procedure.** All variables were measured the day before the race, except race performance which was taken from the race records after the race.

**Performance level.** In triathlon, race distances vary widely (from the Super Sprint distance of 400 m swimming, 10 km cycling, and 5 km running to the “Ironman” distance of 3.8 km swimming, 180 km cycling, 42 km running). Consequently, the times and distances that athletes reported as

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1Statistical abbreviations used in this report: SD = standard deviation, r = bivariate correlation, pr = partial correlation, z = standardized score, β = standardized regression coefficient, p = probability (values < .05 indicate statistical significance), ns = nonsignificant (p ≥ .05).
seasonal best and previous best were converted to average speeds (i.e., \( km/h = \text{distance in km divided by time in hours} \)) for swimming, cycling, and running which provides a good approximation of athletes’ performance level (see Stoeber, Uphill, & Hotham, 2009, for details).

Data screening. For a number of athletes, performance data were not available because athletes did not finish the race or experienced problems with the timing device. Other athletes did not report times and distances for seasonal best or personal best. Moreover, when analyzing the data, further athletes were identified as univariate or multivariate outliers and deleted from the regression mediation analyses. Consequently, for these analyses, the sample comprised 133 athletes (for the analyses using seasonal best to measure performance level) and 181 athletes (for the analyses using personal best). As the results were essentially the same for seasonal best and personal best (see Stoeber, Hotham, & Uphill, 2009), this report will focus on the results where seasonal best was used to measure performance level.

Results

Correlations. As expected, perfectionistic personal standards and concern over mistakes were highly correlated \((r = +.64, p < .001)\), indicating that the two aspects of perfectionism show considerable overlap: athletes who strive for perfection are also often concerned about making mistakes. Consequently, partial correlations were computed controlling for this overlap to investigate the unique relationships of perfectionistic standards and concern over mistakes.

In line with our expectations and with previous findings (Stoeber, Stoll, Pescheck, & Otto, 2008; Stoeber, Stoll, et al., 2009), results showed a differential pattern of partial correlations with achievement goals and goal setting. Perfectionistic personal standards showed significant positive correlations with approach goals (performance approach: \( pr = +.42; \) mastery approach: \( pr = +.38; \) but not with avoidance goals \((prs \leq +.03, ns)\)). Moreover, they showed positive correlations with goal setting (performance: \( pr = +.22; \) rank: \( pr = .41, \) both \( ps < .001)\). In contrast, perfectionistic concern over mistakes showed significant positive correlations with avoidance goals (performance avoidance: \( pr = +.26; \) mastery avoidance: \( pr = +.40; \) both \( p < .001)\) and with performance approach goals \((pr = +.22, p < .001)\), but not with mastery approach goals \((pr = .00, ns)\). Moreover, concern over mistakes showed a negative correlations with goal setting \((pr = -.12, p < .05)\).

Regarding race performance, as was expected, perfectionistic personal standards showed a positive correlation with race performance \((pr = +.32, p < .001)\) and concern over mistakes showed a negative correlation \((pr = -.18, p < .01)\). Moreover, perfectionism also showed significant correlations with athletes’ performance level where personal standards showed significant positive correlations with all indicators of performance level from \( pr = +.21 \) (seasonal best cycling) to \( pr = +.34 \) (seasonal best swimming), whereas concern over mistakes showed significant negative correlations only with seasonal best swimming \((pr = -.22)\), all \( ps < .01)\.

Because performance level showed high correlations with race performance \((+.56 \leq rs \leq .67, \) all \( ps < .001)\) and thus was a powerful predictor of race performance, our next step was to conduct hierarchical regression and mediation analyses, controlling for performance level, to investigate whether perfectionism predicted race performance beyond athletes’ performance level, and to examine what role achievement goals and goal setting played in this relationship.

Regression and mediation analyses. A series of hierarchical regression analyses was conducted, followed-up with mediation analyses, controlling for athletes’ performance level (see Stoeber, Uphill, & Hotham, 2009, for technical details). These analyses yielded three main findings. First, they showed that perfectionistic personal standards predicted race performance beyond athletes’ performance level \((\beta = +.20, p < .05)\); see Figure 1). In contrast, perfectionistic concerns had no effect \((ns)\). Second, performance goals predicted race performance beyond athletes’ perfectionism, with performance approach goals having a positive effect \((\beta = +.24)\) and performance avoidance goals having a negative effect \((\beta = -.22, \) both \( ps < .01)\). Consequently, a difference
score was calculated termed “performance approach-avoidance contrast” ([performance avoidance goals] minus [performance avoidance goals]) and included in a mediation analysis. Results showed that performance approach-avoidance contrast fully mediated the relationship between perfectionistic personal goals and race performance (see Figure 1).

Figure 1. The contrast between performance-approach and performance avoidance goals fully mediates the relationship between perfectionistic personal standards and residual race performance (race performance = residual race performance controlling for performance level). *p < .05, **p < .01, ***p < .001.

Third, the regression analyses showed that goal setting predicted race performance beyond perfectionism and achievement goals (performance: β = +.32; rank: β = +.31; both ps < .001). Moreover, as an additional mediation analysis showed, goal setting fully mediated the relationship between performance approach goals and race performance, suggesting that performance approach goals have a positive influence on race performance via higher goals setting.

Figure 2. Goal setting fully mediates the relationship between performance approach goals and race performance (race performance = residual race performance controlling for performance level). *p < .05, **p < .01, ***p < .001.

Study 1-X

Study 1-X (X for extra) was an additional study conducted to explore whether the results of Study 1 would generalize to sports other than triathlon. Study 1-X was not part of our original grant proposal, but was conducted in response to the reviewers’ feedback to our grant proposal which suggested to also investigate sport disciplines other than triathlon. Following this suggestion, Study 1-X investigated young British athletes competing at the 2008 Outdoor Athletics Championships of the British Universities Sports Association (BUSA).

Method

Participants. A sample of 192 athletes (122 male, 70 female) was recruited at the BUSA Outdoor Athletics Championships 2008 in Bedford, UK. The average age of the athletes was 20.7 years (SD = 2.3; range = 18-36 years). Athletes were asked to report only on their main discipline if taking part in more than one event. The events (and the percentage of the sample) that the athletes took part in were as follows: 800 m (14%); 100 m and 400 m (13% each); 1500 m (11%); long jump (6%); 200 m, 5000 m, 400 m hurdles, and high jump (5% each); 10000 m and discus (4% each); 100/110 m hurdles, triple jump, javelin, and hammer (3% each); and 2000/3000 m steeplechase (2%). As an incentive to return the questionnaire, a raffle for two cash prices of £100 was held among participants.
Measures. The same measures as in Study 1 were applied to measure perfectionism, 2 × 2 achievement goals, and goal setting except that all measures, instead of referring to triathlon, referred to the main discipline athletes were competing in at the BUSA championship.

To measures athletes’ performance level, athletes were asked to indicate their personal best performance they had achieved in past track and field competitions. For this, participants were asked to tick the box next to the event they were competing in (e.g., “100 m,” “10000 m,” “long jump”) and then fill in their personal best for this event in the space provided in front of the associated measurement units (e.g., “__sec __msec,” “__min __sec,” and “__m __cm,” respectively). For each athlete, championship performance data were obtained from the official records of the meeting. From these records, two pieces of variables were taken: absolute performance and qualification success.

Absolute performance represents the athlete’s actual performance in the first competition of the weekend and was recorded in min/s/ms for all running competitions (e.g., 100 m, 10000 m) and m/cm for all jumping and throwing competitions (e.g., long jump, javelin). If the competition included one or more “heats” (qualification rounds), absolute performance was always taken from the first heat. Moreover, if the competition included heats, a dichotomous variable “qualification success” (coded as 1 = yes, 0 = no) was computed capturing whether the athlete qualified for the next round (i.e., the next heat if there were two rounds of qualifications, or the final if there was only one round) or not.

Procedure. A stand was set up in the hall where teams registered for the championship upon arriving at the stadium. Athletes were approached individually by the researchers (the grant holder, the research associate, and two casual research assistants) and asked if they (a) were competing this weekend, (b) if they already had competed, and—if they responded “yes” to the first question and “no” to the second, (c) if they would like to participate in the study. Overall, 417 questionnaires were distributed of which 192 (46%) were returned.

IAAF Points. To make athletic performance comparable across different disciplines and gender (e.g., compare 10.92 s in the 100 m with 7.40 m in the long jump), performance data were converted to IAAF points using the respective tables for men and women (International Association of Athletics Federations: IAAF Scoring Tables of Athletics; Spiriev, 2008). These tables convert all times and distances for all athletic events to a point system based on previous real-life data. This was carried out for all three performance variables, personal best performance, personal performance goal, and championship performance times or distances.

Data screening. Of the 192 athletes who returned questionnaires, a number of athletes did not provide data for performance levels, dropped out of the competition, did not have any qualification heats, or were identified as multivariate outliers. Consequently, the final sample for the analyses comprised 161 athletes (for the analyses regarding absolute performance) and 141 athletes (for the analyses regarding qualification success).

Results

Correlations. Like in Study 1, perfectionistic personal standards and perfectionistic concern over mistakes showed a high correlation (r = +.51, p < .001) so that partial correlations were computed to control for the overlap between the two aspects of perfectionism and investigate the unique relationships of the two aspects with achievement goals, goal setting, and performance.

In line with Study 1, perfectionistic personal goals showed positive correlations with both performance approach (pr = +.34) and mastery approach goals (pr = +.44; both ps < .001). In addition, they showed a negative correlation with performance avoidance goals (pr = −.18, p < .05). Moreover, they showed positive correlations with goal setting (performance: pr = +.32; rank: pr = +.49; both ps < .001). In contrast, perfectionistic concern over mistakes again showed positive correlations both with avoidance goals (performance avoidance: pr = +.48; mastery avoidance: pr = +.45) and with performance approach goals (pr = +.30; all ps < .001).
from Study 1, however, concern over mistakes showed no significant negative correlations with goal setting.

Regarding the two indicators of performance, perfectionistic personal standards showed a significant positive correlation both with performance \((pr = +.27, p < .001)\) and with qualification success \((pr = +.24, p < .01)\). Perfectionistic concern over mistakes, in contrast, was not significantly correlated with performance \((all ns)\).

Because athletes’ performance level showed very high correlations with competition performance \((absolute performance: r = +.88; qualification success: r = +.60; both ps < .001)\) and thus was again a powerful predictor of race performance, our next step was to conduct hierarchical regression analyses to investigate whether perfectionism predicted race performance beyond athletes’ performance level, and to examine what role achievement goals and goal setting played in this relationship.

Regression analyses. A series of hierarchical regression analyses and (because qualification success was a dichotomous variable) logistic regression analyses was conducted. Results showed that neither perfectionism nor goal setting predicted variance in competitive performance beyond athletes’ performance level \((all ns)\). Achievement goals however did. As in Study 1, performance approach-avoidance contrast predicted competitive performance beyond athletes’ performance level both regarding absolute performance \((\beta = +.09)\) and qualification success \((\text{odds ratio} = +1.96, both ps < .05)\), confirming that the contrast between athletes’ performance approach and performance avoidance goals, that athletes show directly before a competition, is a significant predictor of competitive performance not only in triathlon, but also in track and field athletics.

Study 2

The aim of Study 2 was to follow up on Study 1 to investigate how perfectionism influences race performance in triathlon over a competitive season, and what role achievement goals and goal setting play in this. To this aim, a longitudinal study was conducted, covering the UK’s 2008 triathlon season, with three measurement points each spaced two months apart: Time 1 (T1) at the beginning of the season (May-June); Time 2 (T2) in the middle of the season (July-August), and Time 3 at the end of the season (September-October).

Method

Participants. A sample of 349 triathletes was recruited at the beginning of the 2008 triathlon season by (a) visiting tri clubs and tri events in the south-east of England and in the greater London area, (b) by contacting clubs via phone and email, and (c) by posting links/advertisements on triathlon forum websites frequented by triathletes. As an incentive for continued participation (i.e., completing all three measurements, T1-T3), participants’ clubs received £10 for each member who completed T1-T3. Moreover, a raffle for three cash prices of £100 was held among participants who completed T1-T3.

Measures. The same measures as in Study 1 were employed to measure participants’ perfectionism and 2 × 2 achievement goals, except that the latter was given with instructions adapted to refer to the next triathlon. To measure performance, participants were asked about their performance at the last triathlon they competed in (providing the times and distances for swimming, cycling, and running). To measure goal setting, they were asked about their personal goals for the next triathlon they were planning to compete in (providing times and distances for swimming, cycling, and running). All measures—perfectionism, achievement goals, previous performance, and goal setting—were measured at each of the three measurement points (T1-T3). As in Study 1, previous performance was converted to average speeds. Differently from Study 1, goal setting too was converted to average speeds because (unlike in Study 1 where the next race was the same distance for all athletes) the next race could be a different distance for some athletes. To combine average speeds for swimming, cycling, and running at T1-T3 to a single measure of race
performance at T1-T3, principal component analyses were conducted on the three performance indicators for each measurement point from which factor scores were computed. The same procedure was applied for goal setting.

**Procedure.** To facilitate access to the questionnaire (for those participants contacted via email) and to boost the number of follow-up assessments (T2-T3), the questionnaire was provided in two forms: as a paper-and-pencil questionnaire and as an online questionnaire (run on the department’s secure online Questionnaires Management System [QMS]). At T1, 71% completed the paper-and-pencil version and 29% the online version, but at T2 and T3 almost all participants completed the online version (T2: 96%; T3: 98%).

**Data screening.** Of the 349 participants who completed the T1 assessment, 252 also completed both follow-up assessments (T2 and T3). However, a number of participants provided data for previous performance and/or goal setting that had questionable validity (e.g., cycling 90 km in 90 min which would represent an average speed of 60 km/h [37 mph]) or that represented multivariate outliers (e.g., reporting very high speeds for some measures or measurement points, but very low speeds for others) and were deleted from the analyses. Consequently, the final sample for the analyses presented comprised 198 athletes.

**Analytic strategy.** Please note that performance at T1-T3 was the race performance at the last triathlon, that is, the race performance at the triathlon prior to the measurement of perfectionism, achievement goals, and goal setting at T1-T3. Consequently, race performance at T2 was predicted from perfectionism, achievement goals, and goal setting at T1 controlling for race performance at T1; and race performance at T3 was predicted from perfectionism, achievement goals, and goal setting at T2 controlling for race performance at T2.

**Results**

**Correlations.** As in Study 1 and 1-X, perfectionistic personal standards and concern over mistakes were highly correlated (T1-T3: \( r = .62, p < .001 \)). In addition, Study 2 found that perfectionism was highly stable across the season as indicated by high test-retest correlations from T1-T3 (personal standards: \( r = .82 \); concern over mistakes: \( r = .75 \); all \( p < .001 \)). As in the two preceding studies, partial correlations were inspected to control for the overlap between perfectionistic standards and perfectionistic concerns. Across all three measurement points (T1-T3), perfectionistic personal standards showed positive correlations with performance approach goals \( (+.47 \leq r < +.49, p < .001) \) and with mastery approach goals \( (+.45 \leq r < +.46, p < .001) \). In contrast, perfectionistic concern over mistakes showed positive correlations only with performance approach goals \( (+.19 \leq r < +.21, p < .01) \), and else showed positive correlations with performance avoidance goals \( (+.34 \leq r < +.45, p < .001) \) and with mastery goals \( (+.39 \leq r < +.46, p < .001) \). Moreover, only perfectionistic personal standards showed correlations with race performance \( (+.30 \leq r < +.32, p < .001) \) and with goal setting \( (+.32 \leq r < +.35, p < .001) \) across the competitive season. In contrast, perfectionistic concern over mistakes at T2 showed no significant correlations with race performance or goal setting (all \( n.s. \)). Consequently, only personal standards were included as a predictor of race performance in the following analyses.

**Regression and mediation analyses.** As in Study 1, a series of regression and mediation analyses was conducted to examine whether perfectionistic personal standards predicted increases in race performance over the competitive season, that is, performance increments from T1 to T2 and performance increments from T2 to T3. In addition, these analyses examined what role achievement goals and goal setting played in this relationships. As was predicted, and in line with Study 1’s findings, perfectionistic personal standards predicted performance increments from T1 to T2, \( \beta = +.15, p < .05 \) and perfectionistic personal standards at T2 predicted residual performance increments from T2 to T3, \( \beta = +.14, p < .01 \) (see Figures 3 and 4).
Goal setting was again found to be a strong and consistent mediator because it fully mediated the relationship between personal standards and increased performance both from T1 to T2 and from T2 to T3 (see Figures 3 and 4). Athletes who had higher levels of perfectionistic personal standards set themselves higher goals for the next race, and by that achieved a higher race performance than athletes who had lower levels of perfectionistic personal standards.

Figure 3. Goal setting at T1 fully mediates the relationship between perfectionistic personal standards at T1 and increments in race performance from T1 to T2. *p < .05, **p < .01, ***p < .001.

Figure 4. Goal setting at T2 fully mediates the relationship between perfectionistic personal standards at T2 and increments in race performance from T2 to T3. **p < .01, ***p < .001.

Examining whether achievement goals and/or goal setting mediated the relationship between perfectionistic personal standards and increased performance, results showed that achievement goals did not play the major role they played in Study 1. As in Study 1 and Study 1-X, performance approach goals and performance approach-avoidance contrast predicted performance increments, but only performance increments from T2 to T3 (both βs = +.12, p < .05), not performance increments from T1 to T2 (both ns). Moreover, they did not mediate the relationship between perfectionistic personal goals and performance increments.

Path analyses and cross-lagged model. Finally, a path analysis was conducted using AMOS 16 (Arbuckle, 2007) to combine all three measurement points into one model and investigate the effects of perfectionistic personal standard and goal setting on race performance across the competitive season taking into account autocorrelations (i.e., the variables’ correlations with themselves across time) and cross-lagged effects (i.e., reciprocal influences over time, e.g., how goal setting influences race performance and race performance influences goal setting). Figure 5 displays the final accepted model (i.e., the model where all nonsignificant paths were deleted).

In addition to confirming the results from the regression and mediation analyses that perfectionistic personal standards has a positive influence on race performance via higher goal setting (cf. Figures 3 and 4), the path model showed reciprocal effects of performance on goal setting. Not only did goal setting influence race performance, but race performance also influenced goal setting: Setting higher goals led to higher performance, and higher performance led to higher goal setting (see Figure 5). In contrast, perfectionistic personal standards were highly stable across the competitive season—and were unaffected by race performance or goal setting. The finding suggests that perfectionism in athletes is a stable personality characteristic that has an effect on athlete’s goal setting and competitive performance, but is itself not affected by athletes’ recent race performance and their goal setting for the next race.
Summary, Evaluation, and Conclusion

The project achieved all three objectives that it set out to achieve (see p. 1). Regarding how perfectionism influences competitive performance, the project demonstrated that personal standards perfectionism influences athletic performance and competitive success. Perfectionistic personal standards (a defining component of personal standards perfectionism) had a positive influence on race performance in triathlon: athletes who have perfectionistic personal standards in the pursuit of triathlon achieve higher race performances in individual competitions (Study 1) and across competitive seasons (Study 2) compared to athletes who do not hold such high standards. Regarding what role achievement goals and goal setting play in the relationship between perfectionism and competitive performance, the project demonstrated that achievement goals and goal setting play an important role in how perfectionism influences competitive performance: athletes who have perfectionistic personal standards achieve higher competitive performance by orienting more towards performance approach goals (striving to do better than others) than towards performance avoidance goals (striving to avoid doing worse than others) (Study 1) and by setting higher goals (faster times) for the upcoming race (Studies 1 and 2). Regarding how perfectionism influences growth in athletic performance over a whole season, the project demonstrated that perfectionistic personal goals lead to increased race performance over a competitive season via higher goal setting across three measurement points of the 2008 triathlon season (Study 2).

Unfortunately the project failed to find that the positive effects perfectionistic personal standards had on competitive performance in triathlon, can be generalized to other sport disciplines (see Study 1-X). Moreover, the project did not find evidence that evaluative concerns perfectionism had a detrimental effect on competitive performance (Studies 1, 1-X, and 2). While perfectionistic concern over mistakes (a defining component of evaluative concerns perfectionism) was associated with higher levels of avoidance goal orientations (striving to avoid doing worse than others, striving to avoid doing worse than one’s previous performance) and with lower goal setting, it did not have a detrimental influence on athletes competitive performance. Thus, the perfectionism paradox (Flett & Hewitt, 2005) seems to be a paradox of conflicting emotions and motivations (see, e.g., Sagar & Stoeber, in press; Stoeber & Becker, 2008; Stoeber
et al., 2008), but does not seem to negatively affect athlete’s performance (see also Stoll, Lau, & Stoeber, 2008).

Despite these limitations, the present findings make important contributions to the literature on perfectionism, achievement, and goal setting in the sport psychology literature and beyond, as they are the first to demonstrate (a) that perfectionistic personal standard have a positive effect on competitive performance, (b) that the contrast between approach and avoidance orientations in performance goals plays a central role in the prediction of competitive performance, and (c) that a focus on approach performance goals and higher goal setting are the pathways by which perfectionistic personal goals help athletes achieve a competitive performance that is higher than what is expected from their previous performance level alone.

Activities

Results were presented at the two major international conferences on sport psychology: the 12th Congress of the European Federation of Sport Psychology (FEPSAC) in Halkidiki, Greece, 5-9 September 2007; and the 23rd Annual Conference of the Association for Applied Sport Psychology (AASP) in St. Louis, USA, 23-27 September 2008. At both conferences, a paper presentation was given. At the FEPSAC conference, a paper was presented on the findings from a pilot study to the present research (Stoeber & Uphill, 2007). At the AASP conference, a paper was presented on the findings of Study 1 of the present research (Stoeber, Uphill, & Hotham, 2008).

Outputs

The findings of Study 1 have been published in the *Journal of Sport & Exercise Psychology* (Stoeber, Uphill, & Hotham, 2009), which is the highest-ranking journal in sport psychology (Journal Citation Records: Social Sciences 2008). Two further publications—on regarding the findings of Study 1-X (Stoeber & Crombie, 2009a) and another one regarding the findings of Study 2 (Stoeber & Crombie, 2009b)—are in preparation. The data sets of the three studies, once fully documented and analyzed, will be deposited in the ESRC Data Archive.

Impacts

There are to date no instances of the research results being applied outside the project. However, it is intended to make the research results available to be used by sports organizations, coaches, and athletes for training and education purposes.

Future Research Priorities

Regarding future research priorities, an area that arises from the present project that might be profitably pursued is to develop a training program to help athletes focus on approach orientated goals (and disregard avoidance orientated goals). This is because the present project found that the contrast between approach and avoidance orientations in performance goals that athletes have immediately before a competition predicted performance in that subsequent competition beyond their performance level.
References


