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Achievement Goals, Self-Handicapping and Performance: A 2 x 2 Achievement Goal Perspective

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Abstract

Elliot et al. (2006) examined the effects of experimentally-induced achievement goals, proposed by the trichotomous model, on self-handicapping and performance in physical education. Our study replicated and expanded Elliot et al.'s study by experimentally promoting all four goals put forth by the 2 x 2 model (Elliot & McGregor 2001), by measuring the participants' own situational achievement goals, by using a relatively novel task, and by testing the participants in a group setting. We used a randomized experimental design with four conditions that aimed to induce one of the four goals advanced by the 2 x 2 model. The participants (*N*=138) were British undergraduate university students who engaged in a dart throwing task. The results pertaining to self-handicapping partly replicated Elliot et al.'s findings by showing that experimentally-promoted performance-avoidance goals resulted in less practice. In contrast, the promotion of mastery-avoidance goals did not result in less practice in comparison to either approach goals. Dart throwing performance did not differ among the four goal conditions. Personal achievement goals did not moderate the effects of experimentally induced goals on self-handicapping and performance. The extent to which mastery-avoidance goals are maladaptive is discussed, as well as the interplay between personal and experimentally-induced goals.

Conceptual and empirical work on achievement motivation in sport has been prolific due to the inherent competitive nature of the setting. Recent research on achievement motivation in sport has employed Elliot's (e.g., Elliot, 1997; Elliot & McGregor 2001) revised achievement goal theory framework. Elliot (1997) argued that the dichotomous achievement goal approach (e.g., Nicholls, 1989) has a number of limitations, including the failure to distinguish between approach and avoidance motivation (Atkinson, 1964). In his trichotomous model, Elliot proposed three types of achievement goals. The first is a mastery goal, conceptually similar to a task achievement goal (Nicholls, 1989), which refers to a focus on developing self-referenced competence and skill mastery. Elliot also proposed two performance goals, which in contrast to ego orientation proposed by Nicholls (1989), incorporate both approach and avoidance tendencies. A performance-approach goal reflects involvement in an activity in order to demonstrate normative competence, whereas a performance-avoidance goal reflects a focus on avoiding the demonstration of normative incompetence. More recently, Elliot and McGregor (2001) argued that mastery goals can also have an avoidance component. With mastery-avoidance goals the focus is on avoiding demonstrating self- or skill-referenced incompetence, for example, making errors during task execution or underperforming compared to past own performances. According to Elliot and McGregor (2001), such goals might result from perfectionistic tendencies (e.g., striving to avoid doing anything wrong or incorrectly), or because individuals reach the latter parts of their careers or lives and start losing their skills or memory.

The trichotomous and 2 x 2 approaches to achievement motivation have been empirically tested in the education context and, to a lesser extent, in sport (e.g., see Elliot, 2005; Roberts, Treasure, & Conroy, 2007). Insofar as mastery-approach goals are concerned, it is widely accepted in the literature that they result in a number of positive motivational consequences, such as intrinsic interest, positive affect and positive attitudes toward practice

(e.g., see Kaplan & Maehr, 2007). In contrast, the role of performance-approach goals has been the subject of a debate (e.g., see the exchange between Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002, and Midgley, Kaplan, & Middleton, 2001). The emerging evidence suggests that performance-approach goals can be adaptive when predicting certain outcomes, in particular performance. For performance-avoidance goals, it is widely accepted that they play a maladaptive role, because they relate to outcomes such as anxiety, surface learning, and low performance (Kaplan & Maehr, 2007). Lastly, in terms of mastery-avoidance goals, Elliot and McGregor (2001) posited that these goals have a more negative motivational profile than mastery-approach goals, but a more positive role compared to performance-avoidance goals. The research evidence regarding mastery-avoidance goals is limited but growing. In sport, longitudinal findings by Conroy, Kaye, and Coatsworth (2006) indicated that mastery-avoidance goals were positively related to increases in low and non self-determined motivation of participants in a summer swimming league over a six-week period. However, there is no evidence linking mastery-avoidance goals with sport performance. A study by Curry, Elliot, DaFonseca, and Moller (2006) in classroom settings showed that mastery-avoidance goals were unrelated to academic performance, whereas mastery-approach goals were positively related to performance.

Performance is a key outcome variable not only in education settings but also in sport and physical education contexts. A study by Elliot, Cury, Fryer, and Huguet (2006) examined the effects of experimentally-induced goals from the trichotomous model on basketball dribbling performance in a sample of 101 French school physical education students. Elliot et al. also examined the effects of such goals on self-handicapping. The latter is a proactive anticipatory attribution strategy that precedes performance and functions as preparation for possible failure (Ommundsen 2001). Those who self-handicap create real or claim imaginary obstacles to performance with the purpose of deflecting the cause of potential failure away

from their competence and on to the obstacles (Martin, Marsh & Debus, 2003). This is a strategy that aims to protect or enhance self-esteem. Empirical evidence suggests that self-handicapping is a negative predictor of long-term performance (Martin et al., 2003; Rhodewalt, 1990) given the debilitative achievement strategies utilised. The participants in the Elliot et al. experiment were randomly allocated into a condition that aimed to elicit, via specific instructions, one of the three goals advanced by the trichotomous model. The performance of all students was measured a month before the experiment to establish a baseline measure. The results showed that students allocated to the performance-avoidance goal condition performed significantly worse during the experiment and displayed higher levels of self-handicapping than the students allocated to the performance-approach or mastery conditions. The performance scores of the latter two conditions were not significantly different from each other.

Elliot et al. measured self-handicapping a behavioural and a cognitive indicator. The behavioural indicator was the amount of practice undertaken during a practice period, with lower scores indicating higher self-handicapping. Amount of practice or exerted effort have often been utilised in the literature as manifestations of self-handicapping because they represent a modifiable impediment to successful performance (e.g., Martin et al., 2003; Pyszczynski & Greenberg, 1983; Rhodewalt, Saltzman & Wittmer, 1984; Tice & Baumeister, 2001). For example, in two studies of intercollegiate swimmers and golfers prior to important competitions, Rhodewalt et al. found that those with lower scores on a questionnaire assessing individual differences in self-handicapping attended fewer practices and were rated lower in terms of their effort by their coaches, compared to swimmers and golfers with higher scores on the self-handicapping scale. The cognitive manifestation of self-handicapping utilised by Elliot et al. was the reported competence valuation for the experimental task, in other words, how much the participants purportedly valued performing well in the dribbling task, with

higher scores on competence valuation reflecting higher self-handicapping in the form of verbal excuses. Although previous studies have not looked at competence valuation as an indicator of self-handicapping, it has been established that competence valuation is also a self-presentation strategy (Elliot, Faler, McGregor, Campbell, Sedikides, & Harackiewicz, 2000). Further, self-handicappers are likely to discount ability attributions in the event of failure (Feick & Rhodewalt, 1997). One way to deflect attributions away from ability is to report that one does not care about doing well and displaying competence at a particular task. Interestingly, Elliot et al. found that both practice time and competence valuation mediated the effects of the experimentally-induced achievement goals on performance.

The results of the Elliot et al. (2006) study are in line with Harackiewicz et al.'s (2002) arguments that performance-approach goals have a positive effect on performance, whereas performance-avoidance goals have a negative effect. Insofar as the effects of mastery-approach goals on performance are concerned, Harackiewicz et al.'s review showed that such effects are mixed, being positive in some studies and non-significant in others. The findings by Elliot et al. pertaining to the relationships between mastery-approach, performance-approach and performance-avoidance goals with performance and self-handicapping make conceptual sense. When the emphasis is on avoiding displaying normative incompetence, an individual will be likely to show low behavioural investment and discount the importance of doing well on the task at hand. Such practices often undermine performance. In contrast, when an individual aims to display task mastery or normative competence, he/she would be less likely to engage in maladaptive practices that can undermine performance.

No other studies in the physical domain have examined the relationship between experimentally induced achievement goals, self-handicapping and performance. However, Standage, Treasure, Hooper, and Kuczka (2007) examined perceptions of experimentally

induced goals, personal achievement goals and self-handicapping in British physical education classes. They found perceptions of experimentally induced ego goals were positive predictors of self-handicapping (measured as the degree of agreement with a list of 20 commonly claimed self-handicapping strategies), whereas perceptions of task-induced goals were unrelated to self-handicapping. However, the example items presented by Standage et al. are not clear in terms of whether they tap approach or avoidance goals. Further, Standage et al. examined how personal dispositional achievement goals relate to self-handicapping. A negative, albeit weak, relationship was found between task achievement goals (which have many conceptual similarities with mastery approach goals) and self-handicapping. Further, a non-significant relationship was found between ego achievement goals (tapping a performance approach dimension) and self-handicapping. The findings pertaining to personal dispositional achievement goals and self-handicapping are identical to those reported by Ommunsden (2001) with Norwegian students.

The findings of the Elliot et al. (2006) study are interesting and compelling however they need to be replicated and extended. First, the role of mastery-avoidance goals in terms of predicting self-handicapping and performance should be examined and contrasted with the role of the other three goals put forth by the 2 x 2 framework. Second, in the Elliot et al. study it was implicitly assumed that the participants' situational achievement goals were identical to the achievement goals promoted by a particular experimental condition. However, significant results from manipulation checks indicate that the participants have understood the experimental instructions but not necessarily that they have fully endorsed them. Thus, it is important that experimental studies that aim to induce certain achievement goals also examine how participants' own situational achievement goals predict the outcomes of interest, as well as whether there are any significant interactions between experimentally-promoted and personally held situational achievement goals. A significant interaction would imply that the

effect of a personal achievement goal on a particular dependent variable varied across experimental instructions, implying that in some experimental conditions the personal achievement goal was sidelined.

A third reason why the Elliot et al. findings should be replicated and expanded is that in that study performance goals were induced by highlighting social comparison and a public display of performance, yet the participants were tested individually and their performance was videotaped. In most sport situations, however, athletes compete against or alongside other athletes, in most cases in front of spectators. We believe that social comparison and public display of performance should be more salient in such group situations. Thus, achievement goals in sport should preferably be induced in experimental situations involving multiple participants and/or an audience. According to Utman's (1997) meta-analysis on the effects of experimentally induced achievement goal orientations on academic performance, mastery goals were more beneficial than performance goals when peers were present in comparison to when participants performed tasks alone. Lastly, it is not clear whether the school students in the Elliot et al. (2006) experiment had any previous experience with basketball dribbling. We suspect that given the popularity of the sport in France (Rialland, 2006), the task, which is a fundamental skill in basketball, was not novel for most of the students. We believe that when learning a new task one would be less concerned with making errors than when one has some experience with the same task, because in the former situation there are no past personal performances against which to compare current performance. Thus, mastery-avoidance goals would perhaps be less likely to induce self-handicapping and undermine performance when the task is novel.

In summary, the present study aimed to address the four aforementioned issues by replicating the Elliot et al. (2006) experiment using the 2 x 2 goal framework, by assessing situational personal goals, by having the participants perform in the presence of other

participants, and by using a relatively novel task for the participants (dart throwing). We made the following hypotheses based on the current evidence in the literature:

a) There would be a significant approach versus avoidance goal contrast in that mastery and performance-approach induced goals would result in higher performance levels and lower self-handicapping than the corresponding avoidance goals. We also expected a significant mastery versus performance induced goal contrast primarily because we believed that mastery-avoidance goals would be less maladaptive than performance-avoidance goals. We did not expect a significant difference between mastery and performance-approach goals.

b) Self-handicapping, both in terms of practice time and competence valuation, would predict follow-up performance, controlling for baseline performance. Further, self-handicapping would mediate the effects of induced achievement goals on performance.

c) In terms of personal situational achievement goals, we expected: i) mastery approach goals to positively predict performance and negatively predict self-handicapping, ii) performance approach goals to be positive predictors of performance and be probably (see Ommundsen, 2001) unrelated to self-handicapping, iii) mastery avoidance goals to be unrelated to performance and self-handicapping, and iv) performance avoidance goals to be negative predictors of performance and positive predictors of self-handicapping. Due to lack of available evidence, we did not make a hypothesis as to whether the interaction between induced and personal achievement goals would be significant or not.

Method

Participants

The participants were 138 (females *n*= 87; males *n* = 51) British first year undergraduate students with a mean age of 19.31 years (*SD*= 1.15). Almost all (99%) were Caucasian. These students ticked the "none or hardly any" option in a screening questionnaire that asked them to indicate their previous experience with dart throwing. The participants were selected from a larger sample of 174 students from the same year group who also took part in the study. The excluded 36 students played darts occasionally (about once every two months *n* = 23; about once every month *n* = 10; or about twice or more a month *n* = 3).

Procedure

All participants were treated according to the APA ethical guidelines. Consent for this study was obtained by a University ethics committee. Participants were invited to sign up to one of a number of laboratory sessions of maximum 20 participants each, as part of their degree course. The participants were not aware that each session would be allocated to a different experimental condition. Not all sessions reached maximum capacity. Upon arrival at the laboratory, the students were told that they would participate in a dart throwing experiment. They were then offered a very brief live demonstration of dart throwing tips with the emphasis being on stance, dart grip, and throw. An identical demonstration by the same demonstrator was used in all sessions. Subsequently, all students performed five practice throws, followed by ten throws, the sum of which represented the students' baseline performance. At baseline we also recorded the participants' gender, age, and experience in dart throwing.

All students within each session were then given the same written instructions on a computer that aimed to induce one of the four achievement goals (depending on the condition their session had been allocated to). The instructions were an adaption and expansion of those used by Elliot et al. (2006). Specifically, those in the mastery-approach condition were told:

This research is being conducted in order to better understand how students engage in a new task. The intention is to determine the teaching quality of the dart throwing instructions to see if they can be used to predict students' progress in dart throwing. Similar instructions have been used in previous studies. The aim of this session is to see if you can improve your own dart throwing performance. At the end of the study, you will be provided with information regarding your performance scores. Your scores will not be compared against the scores of other people in this lab.

Those in the mastery-avoidance condition were told:

This research is being conducted in order to better understand how students engage in a new task. The intention is to determine the teaching quality of the dart throwing instructions to see if they can be used to examine students' mistakes when learning dart throwing. Similar instructions have been used in previous studies. The aim of this session is to see if you can avoid making mistakes that can hinder your own dart throwing performance. At the end of the study, you will be provided with information regarding your performance scores. Your scores will not be compared against the scores of other people in this lab.

As was verbally explained, "mistakes" in the instructions referred to errors in stance, dart grip and throw.

Those in the performance-approach condition were told:

This research is being conducted in order to better understand how students engage in a new task. The intention is to compare students to one another (separately for each gender) according to their dart throwing ability. A similar protocol has been used in previous studies in order to identify students who are the best in dart throwing. If your performance is better than the majority of students, you will demonstrate that you have

a high level of dart throwing ability. At the end of the study, a spreadsheet will be provided with information regarding everyone's performance scores.

Lastly, those in the performance-avoidance condition were told:

> This research is being conducted in order to better understand how students engage in a new task. The intention is to compare students to one another (separately for each gender) according to their dart throwing ability. A similar protocol has been used in previous studies in order to identify students who are the worst in dart throwing. If your performance is worse than the majority of students, you will demonstrate that you have a low level of dart throwing ability. At the end of the study, a spreadsheet will be provided with information regarding everyone's performance scores.

Following the administration of these instructions, the participants in all conditions were asked to answer four questions that served as a manipulation check. They were then instructed that there would be a 10-minute break, followed by ten more dart throws, the sum of which would represent their follow-up performance score. The students were also told that during the break they could do whatever they wished, for example, practise dart throwing, chat to their friends, leave the room or read various popular magazines that were made available to them. To remove barriers that could have prevented self-handicapping, the participants in all conditions were given the following written instructions before the break, adapted from Elliot et al. (2006):

> Although the task seems a good measure of dart throwing ability, it is affected by the amount of practice. In other words, students who have not had much practice during the break, when they do the task again tend to get a score that is below their true level of dart throwing ability. Consequently, in our analysis we will statistically control for the amount of practice in determining each student's true level of dart throwing ability. Thus, for each student we will record the amount of time spent practicing and their

> performance score after practice. We will then be able to more accurately establish the relationship between the performance score and the amount of practice. You can practise as much or as little as you wish before the second trial.

It should be clarified here that in reality we did not statistically control for the amount of practice in determining each student's performance. Further, there were enough dart boards in the lab for each student to practise continually during the break if he/she wished. Practice times were recorded by undergraduate and postgraduate assistants. Before the break, the participants were also asked to respond to two short measures of competence valuation and perceived competence. Finally, following the second trial, the participants completed a measure of the situational achievement goals they had pursued in the lab, which might or might not have been compatible with the instructions they were given.

After the data were collected from all labs, the participants were fully debriefed. None of the students reported that they had realized during the experiment that their session was allocated to one of several experimental conditions.

Measures

Manipulation checks. To ensure that the students had correctly understood the instructions in each condition, we asked them to indicate the purpose of the experiment by rating four items, modified from Elliot et al. (2006), on a 7-point scale (1=*strongly disagree*, 7=*strongly agree*). These items were: "to identify the students with the best dart throwing ability" (performance-approach); "to identify the students with the worst dart throwing ability" (performance-avoidance); "to examine whether students can improve their dart throwing skills" (mastery-approach); and "to examine whether students can avoid mistakes in a dart throwing task" (mastery-avoidance)".

Self-handicapping. Similar to Elliot et al. (2006), we used a behavioural and a self-report index of self-handicapping. The behavioural index was the amount of time (measured in

seconds) the students spent practicing dart throwing during the 10-minute break. The duration of the break was decided based on pilot testing which indicated that this time interval is not only pragmatic, but also sufficiently long enough to avoid any ceiling effects that could be obtained with smaller time intervals, given the relative novelty and appeal of the task. The self-report index of self-handicapping was a measure of competence valuation with two items, adapted from Elliot et al. (2006; e.g., "It is important for me to perform well in the follow-up task"). The items were measured on the same 7-point scale as the one used for the manipulation checks. Similar to Elliot et al., we assumed that the less the students practised and the less they reported that they cared about performing well in the task, the more they engaged in self-handicapping.

Perceived Competence. Perceived competence was measured with one item, adapted from Elliot et al. (2006): "How do you think you will perform in the follow-up task?" A 7-point scale was used (1=*very poorly*, 7=*very well*).

Dart throwing performance. The dartboard was divided into five sections similar to an archery target. Each section was worth a different amount of points. The lowest score (0 points) was given for any throws on the black outer of the board or for missing the board altogether. The highest score (40 points) was given for targeting the middle two rings of the dart board (the inner and outer bull).

Achievement Goals. As argued earlier, it is possible that the participants understood the experimental instructions (as tested by the manipulation checks) but without necessarily fully endorsing them. To examine the latter possibility, we asked the participants in each condition to report, at the end of the experiment but before the debriefing, the personal achievement goals they held during the experiment, regardless of the instructions they were given. Personal mastery approach (e.g., "It was important to me to perform as well as I possibly could"), mastery avoidance (e.g., "I worried that I might not perform as well as I possibly could"),

performance-approach (e.g., “It was important to me to do well compared to others”), and performance avoidance goals (e.g., “I just wanted to avoid performing worse than others”) were measured with the Achievement Goals Questionnaire for Sports (AGQ-S; Conroy, Elliot, & Hofer, 2003). The questionnaire includes three items for each of the four goals and uses a 7-point scale (1= *not at all like me*; 7= *completely like me*). Conroy et al. (2003) provided evidence for factorial invariance, temporal stability, and external validity.

Data Analysis

First, descriptive statistics, internal reliability coefficients and correlation coefficients were calculated, and the distribution of gender across the four conditions was examined. Then, manipulation checks were carried out to examine whether the participants had understood the purpose of their allocated condition. To facilitate the comparison of our findings with those reported by Elliot et al. (2006), we followed their analytic strategy when examining the effects of the experimental conditions. Specifically, Elliot et al. performed simultaneous regression analyses with a set of orthogonal contrasts as predictors. These contrasts compared the different experimental conditions in terms of self-handicapping and follow-up performance. We adapted these contrasts to make them appropriate for the 2x2 model (Elliot, personal communication, December 12, 2007). Specifically, we entered as predictors the approach-avoidance main effect (with the code 1 for the two approach and -1 for the two avoidance goals), the mastery-performance main effect (1 for the two mastery and -1 for the two performance goals), and an interaction term (1 for mastery-approach and performance-avoidance goals and -1 for mastery-avoidance and performance-approach goals). Similar to Elliot et al., we controlled for gender and perceived competence. When predicting follow-up performance, we also controlled for baseline performance.

We also examined the effects of the four personal achievement goals on performance and the two indices of self-handicapping in separate regression analyses, controlling for the

same variables as in the respective analyses where the experimental conditions were used as predictors. Further, we tested the interactions between the three contrast effects and the four achievement goals, following the guidelines of Cohen, Cohen, Aiken and West (2003) for testing interactions between nominal and continuous variables.

Results

Preliminary Analyses

Descriptive statistics and correlations for all variables are presented in Tables I and II, respectively. The mean scores for baseline and follow-up performance were approximately in the middle of the possible range of scores. The participants practised on average for approximately 6 minutes. The mean scores for competence valuation, perceived competence and the four personal achievement goals were around the midpoint of the 7-point scale. The skewness and kurtosis values for most variables were below 1. All internal reliability coefficients were good. The correlation between the two indices of self-handicapping was small (r = .19; p < .05), substantially smaller than that reported by Elliot et al. (2006; r =.52; p <.01). There was a moderate to large correlation between the baseline and follow-up performance scores (r = .60; p < .01). The correlations among the four personal goals did not indicate multicollinearity as they ranged from r= .31 to r = .64 (p < .01, in all cases).

The distribution of the students across the four conditions was as follows: mastery-approach n= 31*;* mastery-avoidance n= 35*;* performance-approach n= 43*;* performance-avoidance n= 29. There was no significant difference in the distribution of males and females across the four conditions (χ^2 (3) = 6.39; p > .05).

A manipulation check was conducted involving a one-way MANOVA test with condition as the independent variable and the four manipulation check items as the dependent variables. The MANOVA was significant (Wilk's λ = .03; F (12, 344) = 81.32; p < .001) and so were all subsequent Bonferroni- adjusted univariate F analyses. Post-hoc tests showed that

the instructions in each condition resulted in significantly higher scores for the item tapping the intended achievement goal than the items tapping the other three goals (see Table III). Such differences were particularly large in the mastery avoidance and the two performance goals conditions. Further, another one-way MANOVA test was carried out with condition as the independent variable and the four personal achievement goals as the dependent variables. The MANOVA was not significant (Wilk's $\lambda = .94$; F (12, 347) = .74; $p > .05$), indicating that the means of personal achievement goals within each condition were equivalent.

Did the experimental instructions predict follow-up performance?

The regression model was significant (F (6, 131) =14.39 p< .01; adjusted $R^2 = .37$). The significant predictors that emerged were baseline performance (β= .46; p< .01) and gender (β= .22; p< .01; males had higher scores). Perceived competence and the three contrast terms were not significant predictors, indicating that there were no significant differences in follow-up performance as a result of the experimental instructions. Thus, tests for the hypothesized mediations were not pursued.

Did the experimental instructions induce self-handicapping?

The same predictors as above, with the exception of baseline performance, were used to answer this question. We performed two regression analyses, one for practice time (behavioural self-handicapping) and another for competence valuation (cognitive self-handicapping). With regard to the former dependent variable, the regression model was significant (F (5, 132) =3.09 p < .05; adjusted $R^2 = .07$). The only significant predictor that emerged was the mastery-performance contrast (β= .31; p< .01). Bonferroni-adjusted follow-up contrasts showed that students in the performance-avoidance condition practised significantly less than those in the mastery-approach (β= -.35; p< .01) and mastery-avoidance (β= -.37; p< .01) condition. All other group comparisons were not significant. The regression

analyses predicting competence valuation was also significant (F (5, 132) =3.77; $p < .05$; adjusted $R^2 = .09$). Only perceived competence was a significant predictor (β= .36; $p< .01$).

Did self-handicapping predict follow-up performance?

To answer this question we performed a simultaneous regression analyses with both practice time and competence valuations as predictors of follow-up performance, controlling for gender and baseline performance. The regression model was significant: F (5, 132) =19.44; $p< .05$; adjusted $R^2 = .40$. Gender (β= .21; $p< .01$) and baseline performance (β= .48; $p< .01$) were again significant predictors of follow-up performance. Further, practice time (β= .14; $p< .05$) but not competence valuation (β= .07; $p> .05$) predicted follow-up performance.

What was the role of personal achievement goals?

As stated earlier, one of the ways in which this study expanded on previous work was by asking the participants to indicate the achievement goals they pursued during the experiment. This information was explored in two ways. First, we examined whether the four achievement goals put forth by the 2 x 2 model (Elliot & McGregor 2001) could predict follow-up performance and the two indices of self-handicapping. This was tested in three simultaneous regression analyses in which the predictors were the four achievement goals, sex, perceived competence, and baseline performance (the latter was used only in the first regression predicting follow-up performance). The results showed that none of the four achievement goals significantly predicted follow-up performance. Practice time was predicted by mastery-approach goals only (β = .31; $p <.01$), whereas competence valuation was predicted by both mastery (β = .38; $p <.01$) and performance (β = .25; $p <.05$) approach goals.

A second question we explored was whether there were any interaction effects between the experimental instructions and the personal achievement goals in predicting follow up performance and the two indices of self-handicapping. This was examined by testing in separate regressions the interactions between the three contrast terms, used in the

previous analyses of the experimental instructions, with each of the four personal achievement goals. None of the interaction effects were significant indicating that the effects of personal achievement goals on the dependent variables did not differ between the mastery and performance conditions, between the approach and avoidance conditions, or between the mastery-approach/performance-avoidance and mastery-avoidance/performance-approach conditions.

Discussion

The purpose of this study was to examine whether experimentally-induced and personally held achievement goals proposed by the 2 x 2 achievement goal framework (Elliot & McGregor 2001) could predict performance and self-handicapping tendencies in a relatively novel sport task.

Insofar as performance is concerned, the results did not support our first hypothesis in that there were no significant differences among any of the four conditions that aimed to induce one of the four achievement goals. This is in contrast to the Elliot et al. (2006) finding which showed that performance in a basketball dribbling task was significantly worse among physical education students allocated to a performance-avoidance condition than those students assigned to a performance-approach or a mastery condition. A similar pattern of non-significant findings was found when we examined the degree to which personally held achievement goals could predict performance. Given the relative novelty of the task for all of the participants and the limited amount of time they had to practise, it is likely that it would have been very difficult to obtain significant improvements in performance purely due to the different instructions the participants were given or due to their personally held achievement goals in that situation. In the Elliot et al. (2006) study, baseline scores were obtained a month before the experiment; it is possible that some of the participants had practised in the interim on their own initiative. In fact, the correlation between baseline and follow-up performance

scores in the Elliot et al. study was weaker (r = .39) than the correlation we obtained in our study (r = .60). It is also interesting to note that perceived task-specific competence did not predict performance in our study, although it was a significant predictor in the Elliot et al. study. Our finding is in line with Wood and Bandura's (1989) arguments that competence-based estimations are often poor predictors of performance for novel tasks. The relative novelty of the task and the short duration of practice might also explain the weak effects of practice time and competence valuation on performance. While the short duration of the task was unavoidable due to practical constraints, we purposefully chose a relatively novel task to test the extent of generalisability of Elliot et al.'s findings.

In addition to investigating performance, we also examined whether experimentally-induced goals could predict two indices of self-handicapping; practice time and competence valuation. In terms of practice time, the results indicated that there was a significant mastery versus performance goals contrast. As we expected, performance-avoidance goals resulted in less practice, and thus greater behavioural self-handicapping, than the two mastery goal conditions. The maladaptive role of performance-avoidance goals is in line with previous findings in studies embedded in Elliot's revised achievement goal framework (see also Harackiewicz et al., 2002). When individuals are placed in an environment where the emphasis is placed on avoiding showing inferiority compared to others, these individuals may refrain from practicing in order to protect their displayed competence (i.e., engage in 'save facing' tactics). This is more likely to be the case if there are opportunities for their performance not to be affected by limited practice, as was supposedly the case in our experiment, in which all participants were told that their performance scores would be statistically adjusted to account for limited practice.

We did not expect mastery-avoidance goals to be particularly maladaptive because we believed (despite the lack of previous empirical evidence) that when learning a new task

individuals are not likely to be concerned about avoiding showing self-referenced incompetence. This argument possibly accords with Elliot's (2005) remark that mastery-avoidance goals are salient in fewer achievement situations compared to the other three goals. However, we believe that mastery-avoidance goals would be more maladaptive in situations where individuals have a certain degree of experience with a particular task (e.g., Adie, Duda, & Ntoumanis, 2008). In such cases, concerns about the adequacy of self-referenced competence compared to past standards will be relevant, although, similar to Elliot and McGregor (2001), we do not believe that mastery-avoidance goals will be as maladaptive as performance-avoidance goals.

Elliot et al. (2006) reported a more adaptive role for performance-approach goals, when compared to performance-avoidance goals, in terms of practice time. Further, the authors also reported a non-significant difference between performance-approach and mastery goals. In our study performance-approach goals lay in between the other goals; they were not significantly better than performance-avoidance goals but at the same time there were not significantly worse than the two mastery goals. This is most likely the reason why the approach-avoidance contrast was not significant. The discrepancy between our findings and Elliot et al.'s findings in terms of the role of performance approach goals might be due to the conditions under which participants were tested. In the Elliot et al. study, the participants were tested on their own, whereas in our study the participants were tested alongside other participants. We believe that the latter is a more realistic representation of a sport situation. When individuals are placed in an environment where the performance of others is visible and easily comparable, and where the salient motivational overtone is that "you should do better than others" (i.e., performance approach), individuals will be preoccupied with the adequacy of their competence. In such circumstances these individuals may resort, to some extent, to

self-handicapping and other ‘save-facing’ strategies (see also Harackiewicz et al., 2002; Midgley et al., 2001).

Mastery-approach goals were found to be motivationally adaptive in terms of predicting practice time in our study. First, in accordance with our expectations, induced mastery-approach goals were part of the significant mastery-performance contrast discussed earlier. Second, when examining personally held achievement goals, only mastery-approach goals were significant positive predictors of practice time. These findings are in accordance with previous findings in physical education (Ommundsen, 2001), and corroborate extensive empirical evidence in demonstrating the adaptive role of mastery (task) goals in sport in terms of behavioural investment and adaptive learning strategies (Duda & Hall, 2001).

For practical reasons, it was not possible to allow the participants to practise on their own. One could argue that practice time might have been affected by audience effects. Whilst this might be true, a counter-argument is that in most sports athletes practise in the presence of other people. Further, the participants practised under the presence of others in all four conditions, therefore, none of the conditions should have been unduly affected by audience. Lastly, the mean score for practice time in this study was very similar to the mean score reported in the study by Elliot et al. (2006) in which participants practised on their own.

Similar to Elliot et al. (2006), we also used a cognitive indicator of self-handicapping, that is, competence valuation. This variable taps the extent to which participants reported that they cared about performing well in the task; we believe that this variable has more face validity as an indicator of self-handicapping when individuals have not heavily invested in a particular activity. Interestingly, although our participants had very little experience with dart throwing, the descriptive statistics indicated that the students valued somewhat the importance of performing competently on this activity. Unlike practice time and contrary to our expectations, none of the experimental condition contrasts predicted competence valuation.

However, both personal mastery-approach and performance-approach personal goals were positive predictors of competence valuation. The discrepancy in the findings between induced and personally held goals might be due to the possibility that personal reports of how much individuals value being competent in a task might be influenced more by their own personal views about the concept of competence (i.e., their achievement goals) rather than views/ messages transmitted by the environment (i.e., induced achievement goals). Perhaps in a sporting environment with an established coaching motivational climate, the motivational views transmitted by the coach will have an impact on athletes' competence valuation reports. Essentially, the role of contextual motivational factors in predicting reports of competence valuation may depend upon the degree of familiarity of the athlete with the environment (e.g., a contrived laboratory setting versus an established coaching environment). Insofar as performance-approach personal goals are concerned, their positive effect on competence valuation reports is consistent with previous findings in the literature (for a review, see Elliot & Moller, 2003). It is not surprising that both mastery and performance-approach goals were positively related to competence valuation as their underlying motivational focus is on becoming better as opposed to avoiding becoming worse (although "better" and "worse" are defined in different ways).

Extending past research, we also examined the interaction between experimentally-induced and personally held achievement goals. It is often assumed in the achievement goal literature that experimental instructions override personal goals in affecting various motivation-related outcomes (Ntoumanis & Biddle, 1999). However, this might not always be the case (for an example from the goal setting literature, see Giannini, Weinberg, & Jackson, 1988). In our study we found no significant interactions between personal and experimentally-induced goals. If a significant interaction was found, this would have indicated that the effect of a particular personal goal on a dependent variable was salient in some conditions, whereas

in other conditions this achievement goal was marginalised. Further, if the significant interaction was such that the effect of the achievement goal on the outcome variables was stronger in the condition that aimed to elicit this goal than in the other conditions, this would have offered support for the matching hypothesis (Harackiewicz & Sansone, 1991). This hypothesis argues that the beneficial effects of achievement goals depend on the general context in which they are pursued. However, empirical support for this hypothesis is non-existent. Thus, the implication of our findings is that experimental participants, whilst understanding and following to some extent the instructions they are given, they might also have their own personal "agenda" in terms of what they aim to demonstrate in an achievement situation. Therefore, both sets of goals should be examined in order to better understand variations in motivation-related outcomes. Obviously, our findings are preliminary and further replication is clearly needed in different contexts and with different types of participants.

Limitations, future directions and implications

It could be argued that our experiment should have included a control condition in which participants were not given any instructions that aimed to induce a particular achievement goal. Such a control condition has not been typically utilised in the achievement goal literature as the emphasis is on the relative effects of different achievement goal conditions. Further, in such a control condition the participants would have been guided by their own personal achievement goals. In essence, a "no achievement goal" condition is not very meaningful. Future research is needed to further investigate the links between mastery-avoidance gaols and novelty/familiarity of a task. For novel tasks, it could assess errors in skill execution (in terms of stance, dart grip and throw) in an effort to maximize the approach-avoidance contrast. Further, it would be interesting to create conditions where multiple goals are promoted (see also Pintrich, 2000), and contrast those with conditions in which single goals are emphasized. Lastly, the correlation between the two indicators of self-handicapping,

practice time and competence valuation, was quite low (r = .19). We included these two measures in our study because we wanted to compare our findings with those found by Elliot et al. Although practice time/exerted effort is a widely accepted indicator of self-handicapping, there is much less evidence as to the role of competence valuation as an index of self-handicapping. Future studies should further examine how competence valuation may be linked to self-handicapping tendencies and actions.

In conclusion, our study offers additional insights into how achievement goals predict self-handicapping and performance in sport, and qualifies the generalisability of previous relevant findings reported by Elliot et al. (2006). Essentially, our findings pertaining to self-handicapping reinforce the notion that mastery approach goals are adaptive and performance avoidance goals are maladaptive. The findings also offer weak support for the adaptive role of performance approach goals and indicate that mastery avoidance goals might not be particularly detrimental when one is learning a new task. On the basis of these findings, we suggest that coaches promote mastery approach goals in their athletes.

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Table I

Descriptive Statistics and Internal Consistency Coefficients

	α	*M*	*SD*	Possible Range	Skewness	Kurtosis
Baseline Performance	-	193.41	52.48	0-400	-.30	-.32
Follow-up Performance	-	211.52	48.25	0-400	-.32	-.35
Practice Time	-	355.46	175.75	0-600	-.27	-.93
Competence Valuation	.83	4.25	1.25	1-7	-.29	-.12
Perceived Competence	-	4.31	.98	1-7	-.26	1.25
Mastery-approach Personal Goal	.83	4.69	1.24	1-7	-.64	-.06
Mastery-avoidance Personal Goal	.91	3.96	1.32	1-7	-.18	-.48
Performance-approach Personal Goal	.89	3.93	1.37	1-7	-.28	-.33
Performance-avoidance Personal Goal	.86	4.18	1.29	1-7	-.17	-.69

Table II

Intercorrelations Among the Study Variables

	1	2	3	4	5	6	7	8
1. Baseline Performance								
2. Follow up Performance	.60**							
3. Practice Time	-.02	.14						
4. Competence Valuation	.11	.16*	.19*					
5. Perceived Competence	.43**	.36**	.09	.38**				
6. Mastery-approach Personal Goals	.09	.21**	.36**	.56**	.25**			
7. Mastery-avoidance Personal Goals	-.06	.06	.30**	.34**	.05	.58**		
8. Performance-approach Personal Goals	.19*	.26**	.22**	.60**	.28**	.64**	.47**	
9. Performance-avoidance Personal Goals	-.06	.04	.19*	.36**	-.02	.31**	.44**	.61**

Note: * $p < .05$ ** $p < .01$

Table III

Descriptive Statistics for Perceived Manipulated Goal in Each Condition

	Manipulated Goal			
Condition	MAp	MAv	PAp	PAv
Map	6.70_{a} (.28)	4.49_{b} (.26)	5.50_{c} (.24)	4.62_{bc} (.29)
MAv	2.65_{a} (.28)	6.66_{b} (.26)	2.17_{a} (.24)	2.72_{a} (.29)
Pap	1.23_{a} (.23)	1.51_{ac} (.21)	5.98_{b} (.19)	2.31_{c} (.23)
PAv	1.07_{a} (.21)	1.37_{a} (.19)	2.17_{b} (.18)	5.93_{c} (.21)

Note: Means sharing the same subscript in the same row do not differ significantly at $p < .05$. MAP= Mastery approach goal; MAV= Mastery avoidance goal; PAP= Performance approach goal; PAV= Performance Avoidance Goal