Interactive Effects of Different Visual Imagery Perspectives and Narcissism on Motor Performance

Abstract

Two studies examined the interactive effects of different visual imagery perspectives and narcissism on motor performance. In both studies participants completed the Narcissistic Personality Inventory (NPI-40: Raskin & Hall, 1979) and were assigned to either an internal visual imagery or external visual imagery group. Participants then performed a motor task (dart throwing in Study 1 and golf putting in Study 2) under conditions of practice, low self-enhancement, and high self-enhancement. Following completion of the respective tasks, participants were categorized into high and low narcissistic groups based on their NPI-40 scores. In both studies, high narcissists using external visual imagery significantly improved performance from the low to the high self-enhancement condition, whereas high narcissists using internal visual imagery did not. Low narcissists remained relatively constant in performance across self-enhancement conditions, regardless of perspective. The results highlight the importance of considering personality characteristics when examining the effects of visual imagery perspectives on performance.

Keywords: narcissist, internal visual imagery, external visual imagery, selfenhancement

Interactive Effects of Different Visual Imagery Perspectives and Narcissism on Motor Performance

Within the imagery research literature two visual imagery perspectives have been examined: internal visual imagery and external visual imagery. Internal visual imagery (IVI) is described as the view that performers would get if they imagined looking out through their own eyes, and external visual imagery (EVI) is described as the view performers would get if they imagined watching themselves performing a task from a third person perspective, such as on television (e.g., Nordin & Cumming, 2005; Roberts, Callow, Hardy, Markland, & Bringer, 2008).

The effects of these visual imagery perspectives on performance have been investigated in line with the theoretical rationale that imagery exerts a beneficial effect on performance only to the extent that the images created provide more information to a performer than would otherwise be available (see Hardy, 1997; Holmes & Collins, 2001). In line with this rationale, research has demonstrated that the relative effectiveness of both IVI and EVI is moderated by task characteristics. To expand, EVI is more beneficial to performance than IVI in tasks where form of body movement is important, such as gymnastics (Hardy & Callow, 1999). The superior performance of EVI in these types of task has been attributed to EVI allowing a performer to see the desired shape associated with the correct movement, thereby providing them with more information (cf. Hardy, 1997; Holmes & Collins, 2001). Conversely, for slalom-based tasks that require a performer to follow a “line”

around a set course (such as canoe or ski slalom), where accuracy is important, IVI is more beneficial for performance than EVI (White & Hardy, 1995). This is because IVI allows a performer to rehearse the precise spatial and temporal locations at which key movements need to be initiated with reference to the performer's actual location on the line (White & Hardy, 1995).[AUQ1] In accord with this rationale, one might expect other motor tasks such as dart throwing and golf putting not to favor one particular perspective. For example, in these sorts of tasks, EVI may provide information relating to the form required to successfully perform the movement and IVI may provide useful information about the line of the throw or putt, and the distance to the target from the point of view of the thrower.

While the aforementioned literature indicates that task characteristics are an important moderator of the visual imagery perspective-performance relationship, it is possible that other more basic individual differences (i.e., personality) may also play a moderating role. Indeed, personality characteristics are considered as fundamental attributes for psychological preparation, and have been proposed to interact with psychological skills in order for peak performance to be achieved (Hardy, Jones, & Gould, 1996). Therefore, personality may influence the effectiveness of psychological skills used by athletes (cf. Hardy, Roberts, Thomas, & Murphy, 2010). Although literature in this area is sparse, Woodman, Zourbanos, Hardy, Beattie, and McQuillan (in press[AUQ2]) demonstrated in two studies that the personality trait of extraversion moderated the effects of goal setting on distractibility in training. Specifically, extraverts (talkative and active individuals

who are prone to distraction; Costa & McCrae, 1992; Pervin & John, 2001) benefited more from the use of goal setting than did introverts. Although the results from Woodman et al. provide initial support for Hardy et al.'s (1996, 2010) proposals, further research is required to examine how personality may interact with other commonly used psychological skills, such as imagery.

One particular personality variable that should influence the effectiveness of imagery is narcissism. In clinical settings, narcissism is defined as "a pervasive pattern of grandiosity, need for admiration, and a lack of empathy" (*Diagnostic and Statistical Manual of Mental Disorders,* 4th ed. text revision [DSM-IV TR]; American Psychiatric Association, 2000 p. 714). In line with this definition, research in normal (i.e., subclinical) settings has revealed that narcissism[1] is associated with a grandiose self-view and feelings of entitlement (e.g., Brown, Budzek, & Tamborski, 2009). Narcissists think highly of their own abilities (Gabriel, Critelli, & Ee, 1994; John & Robins, 1994) and report high levels of confidence (Campbell, Goodie, & Foster, 2004). They also enjoy focusing attention on themselves and displaying their (perceived) talents to others (Morf & Rhodewalt, 2001). Further, narcissists take pleasure in looking at themselves from the point of view of others (Robins & John, 1997), and one of the underlying components of narcissism is an admiration of the self from an external point of view (i.e., vanity; Raskin & Terry, 1988).

Despite narcissists' beliefs that they are exceptional performers, literature examining the effects of narcissism on performance has revealed that narcissists generally do not perform any better on tasks than low narcissists (e.g., Gabriel et al., 1994; John

& Robins, 1994). However, Wallace and Baumeister (2002) suggest that the performance of narcissists will be moderated by the degree of self-enhancement opportunity afforded by the task. More specifically, narcissists should perform better in tasks that offer a high degree of self-enhancement opportunity (e.g., performing difficult tasks, performing under pressure, or performing in front of an audience), than tasks that do not offer a self-enhancement opportunity. This is because these situations offer an opportunity for narcissists to display their perceived superiority and to gain admiration. In a series of four experiments, each using different selfenhancement situations and criterion tasks (for example, performing a motor task under varying degrees of pressure), Wallace and Baumeister (2002) consistently demonstrated that narcissists performed better when self-enhancement opportunity was high rather than low.

To the best of our knowledge, research has yet to consider the role of narcissism within a sporting environment. This is surprising, as the competitive arena within which sport takes place provides clear opportunities for glory, and thus provides an ideal forum for examining the effects of the narcissistic personality on performance. Thus, research exploring the impact of narcissism within a sport setting would appear to be particularly worthwhile.

In the present context, given that narcissists perform better when the opportunity for self-enhancement is high as opposed to low, one might expect that as long as self-enhancement opportunity is manipulated, the use of either IVI or EVI may lead to performance improvements for narcissists. However, we suggest that narcissists will

only perform better in high self-enhancement conditions when EVI is used. This is because when narcissists look at themselves performing a task from an external point of view, such as in a mirror or on video, their self-enhancement motive is activated (Robins & John, 1997). Thus, the use of EVI may provide a similar opportunity. That is, when using an external perspective, narcissists could see *themselves* performing a task successfully. With this in mind, it seems reasonable to suggest that when self-enhancement opportunity is high, narcissists using EVI will perform better than when self-enhancement opportunity is low because their selfenhancement motives are activated through the use of EVI. In contrast, the use of IVI would not allow narcissists to see *themselves* performing. As a result, it is unlikely that self-enhancement motives would be activated through the use of IVI. Thus, performance would be no better when self-enhancement is high than when it is low. Low narcissists are less affected by self-enhancement (cf. Morf & Rhodewalt, 2001; Wallace & Baumeister, 2002), so one might expect that the performance of low narcissists would remain relatively consistent under conditions of low and high self-enhancement opportunity.

Consequently, the aim of the present research was to explore the role of narcissism in the imagery perspective-performance relationship. Two studies examined whether narcissism would moderate the effects of different visual imagery perspectives on performance, under conditions of low and high self-enhancement opportunity. In both studies we hypothesized interactions between imagery perspectives and narcissism. More specifically, we hypothesized that use of EVI would result in an

improvement in performance across the two self-enhancement conditions for high narcissists, whereas the use of IVI would not. For low narcissists, we hypothesized that performance would remain relatively constant across conditions.

Study 1: Methods

Participants

An opportunistic sample of fifty-four kinesiology students from a British University (*M* age = 20.09 years, *SD* = 1.83; *n* = 24 males, *n* = 30 females) volunteered to take part in the study. All participants were novices, defined as never having played darts competitively, and not having played socially in the previous 12 months. Institutional ethics approval was obtained, and all participants provided written consent before participating.

Task and Apparatus

Participants took part in a dart throwing task. Dart throwing was chosen, as in accord with the task characteristics information presented in the introduction, dart throwing did not appear to favor one particular perspective. That is, IVI could provide useful information about the line of the throw and the distance to the dart board from the point of view of the thrower, and EVI could provide information relating to the form required to successfully throw the dart. Participants were required to throw darts from a distance of 6 feet (from the oche, or "toe line") to a board that was placed 5 feet 8 inches from the ground (cf. Nordin & Cumming, 2005).

Design

A mixed model design was employed. Specifically, participants were randomly allocated to one of two treatment groups: an IVI group or an EVI group. Participants completed the experimental task under three conditions: practice, low selfenhancement opportunity, and high self-enhancement opportunity.

Experimental Conditions

Practice.

This condition consisted of 30 trials, which were not recorded. This number of trials was decided upon based on recommendations in the imagery literature (e.g., Nordin & Cumming, 2005). Participants received standardized instructions regarding the scoring system (see performance) and then completed 15 trials to gain practice at the task. The experimenter then administered an imagery script to participants that corresponded to their treatment group (i.e., participants in the IVI group received a script written from an IVI perspective). The scripts[2] contained both stimulus and response propositions (cf. Cumming, Olphin, & Law, 2007). Participants read the script to themselves twice while seated and then imaged performing the task. They then listened to the primary experimenter read the script (approximately 65 s) and imaged "dynamically" while in their throwing position. Participants were asked to image dynamically (i.e., image in their throwing position and holding the dart), as this has been shown to increase the vividness of imagery experiences, in comparison with imaging while staying still (cf. Callow, Roberts, & Fawkes, 2006; Holmes & Collins, 2001). Finally, participants were then asked to image dynamically before

each trial. No time restrictions were placed on participants when reading the script and imaging while seated, and when imaging dynamically before each trial.

Low Self-Enhancement Condition.

The low self-enhancement condition consisted of 24 trials which were recorded. This number of trials was again decided upon based recommendations in the imagery literature (cf. Nordin & Cumming, 2005). Before the first trial the experimenter administered the same imagery script from the practice condition. As in practice, participants read the script twice and then imaged while seated, and subsequently imaged dynamically as they listened to the experimenter read the script. Following this, participants then imaged (dynamically) from their particular perspective before each trial. Again, no time restrictions were placed on participants when reading the script and imaging when seated, or when imaging before each trial.

High Self-Enhancement Condition.

This condition also consisted of 24 trials which were recorded. To create a condition that offered the opportunity for self-enhancement, participants received standardized instructions informing them that this condition was actually a competition. Participants were informed that cash prizes of £30 (approx. US $45), £20 (US $30), and £10 (US $15) were available to the three participants who obtained the greatest composite score (a combination of total performance across the low and high selfenhancement conditions and performance improvement from the low to high

selfenhancement condition). Furthermore, participants were informed that congratulatory poster boards would be placed around campus highlighting the winning participants. Such manipulations of self-enhancement are consistent with previous narcissism-performance research (Wallace & Baumeister, 2002). Before the first trial, participants followed the same procedures for imaging the task as used in the low self-enhancement condition.

Performance

To provide parity with previous research, performance was assessed using the points system used by Wallace and Baumeister (2002). The dart board was split into seven concentric circles, with each circle representing a different score. The bull's-eye, the most central circle, was worth one point, and as the circles moved further away from the center the value of each circle was increased by a point at a time, so that the furthest circle from the center of the board was worth seven points (darts that missed the board completely received a score of 8). Participants were instructed to aim for the center of the board.

Measures

Vividness of Movement Imagery Questionnaire–2 (VMIQ-2; Roberts et al., 2008).

The VMIQ-2 is a revision of the original VMIQ (Isaac, Marks, & Russell, 1986) and comprises 12 items that assess the ability to image a variety of movements visually and kinesthetically. The visual aspect is further subdivided into EVI and IVI. Participants are required to image each of the 12 items in three ways, using IVI, EVI,

and kinesthetic imagery. The vividness of each item imaged is rated on a scale of 1 (*perfectly clear and vivid*) to 5 (*no image at all*). The VMIQ-2 displays acceptable factorial, concurrent, and construct validity (Roberts et al., 2008). Cronbach's alphas for the current study were .92 (IVI), .94 (EVI), and .93 (kinesthetic imagery).

Narcissistic Personality Inventory–40 (NPI-40; Raskin & Hall, 1979).

The NPI-40 is a 40 item forced choice inventory. Each item consists of two statements, one narcissistic and one non-narcissistic. For each item, participants are asked to choose the statement that best represents their own feelings. The total number of narcissistic responses is summed to give a total score. An example item from the NPI-40 is as follows:

A. I have a natural talent for influencing people

B. I am not good at influencing people

Considerable evidence exists (e.g., see Raskin & Terry, 1988 for a review) supporting the internal consistency, factorial validity, and construct validity of the NPI. Cronbach's alpha for the current study was .82.

Postexperimental Questionnaire.

On completion of the low and high self-enhancement conditions, participants completed a postexperimental questionnaire. This questionnaire comprised five questions and assessed the following: the extent to which the particular imagery perspective was adhered to; the suitability of the imagery perspective for the task; the

extent to which the imagery perspective aided their confidence to complete the task; and the extent to which participants switched between imagery perspectives. These questions were scored on a Likert-type scale from 1 (*not at all*) to 11 (*greatly*). Participants were also asked if they used any other strategies to aid their performance. This question was left open ended with space for participants to write their responses.

Procedure

Two weeks before the start of the experiment participants completed the consent form, the VMIQ-2, and the NPI-40. To ensure participants could image proficiently, only participants who scored below 36 on each of the subscales of the VMIQ-2 were considered for the study. This score corresponds to participants' ability to produce images that are at least moderately clear and vivid. Similar cutoff criteria have been used in previous studies and have resulted in significant effects for imagery interventions (e.g., Hardy & Callow, 1999). Four participants did not meet these criteria; thus, 50 participants completed the three experimental conditions.

Participants Were Tested Individually.

On arrival at the laboratory participants received standardized instructions informing them that the purpose of the study was to examine the effects of different imagery perspectives on dart throwing performance. Participants then completed the practice condition. On completion of the practice condition participants were given a fiveminute break. Following the break participants entered the low self-enhancement

condition. On completion of this condition participants completed the postexperimental questionnaire and were given a five-minute break. After this the high self-enhancement condition was performed. Participants were read the standardized instructions and then performed the 24 trials in this condition. On completion of these trials participants completed the postexperimental questionnaire for a final time. They were then fully debriefed about the study and thanked for their participation.

Study 1: Results

Manipulation Check

Inspection of the postexperimental questionnaire revealed that 15 of the 50 participants reported being unable to adhere to their treatment group, or reported switching excessively between imagery perspectives during the experimental conditions. These data were excluded from further analysis, leaving a sample of 35 participants. Participants were categorized into one of two groups based on NPI-40 scores (M = 12.06, SD = 6.06). Those above the median were grouped as high in narcissism (n = 6 IVI, n = 8 EVI, M = 8.14, SD = 2.59) and those below the median were grouped as low in narcissism (n = 11 IVI, n = 10 EVI, M = 17.93, SD = 4.89). An independent samples t test confirmed a significant difference in NPI scores between these two groups ($p < .001$).

Performance

A 2 (narcissism; high/low) × 2 (imagery perspective; IVI/EVI) × 2 (selfenhancement opportunity; low/high) ANOVA with repeated measures on the selfenhancement opportunity factor was used to analyze the performance data. Box's M test for the equality of covariance matrices and Mauchly's test of sphericity were satisfied for this analysis. The three-factor ANOVA revealed a significant condition main effect, F (1, 31) = 9.39, p < .01, η^2 = .18, 1-β = .84. Of more central interest, a significant three-factor interaction was revealed, F (1, 31) = 8.06, p < .01, η^2 = .15, 1-β = .79. Figure 1 (top and bottom) displays the nature of the interaction. No other effects were significant. To follow up the significant three-factor interaction we performed separate two-factor (imagery perspective × self-enhancement opportunity) mixed model ANOVAs for high and low narcissists. For low narcissists, no significant main or interactive effects emerged (all p's > .05). However, for high narcissists a significant condition main effect, F (1, 12) = 11.30, p <. 01, η^2 = .40, 1-β = .87, and interaction was revealed, F (1, 12) = 5.10, p <. 04, η^2 = .18, 1-β = .55. Follow-up Tukey tests performed on the interaction indicated that high narcissists using EVI significantly improved their performance from the low to high self-enhancement condition (indicated by lower scores), whereas high narcissists using IVI did not (see Figure 1 top).

\ insert Figure 1 \

Postexperimental Questionnaire.

Two questions from the postexperimental questionnaire required statistical analysis. These were the questions relating to suitability and confidence. These questions were also analyzed using three-factor mixed model ANOVAs, with a Bonferroni adjusted alpha level of .025. No significant main effects or interactions emerged for suitability and confidence (all p's > .025). In general, participants reported finding the treatments suitable (low self enhancement M = 8.00, SD = 2.16; high self enhancement M = 7.94, SD = 2.07), and beneficial in aiding their confidence to perform the task (low self enhancement M = 7.63, SD = 2.00; high self enhancement M = 7.67, SD = 2.45).

Study 1: Discussion

The aim of Study 1 was to examine narcissism as a potential moderator of the efficacy of imagery perspectives on performance. Results supported the hypotheses; narcissists using EVI improved their performance across conditions, when narcissists using IVI did not. Further, the performance of low narcissists was relatively unchanged across conditions

The improved performance of high narcissists in the EVI group can be interpreted in line with the view that EVI may have served to activate narcissists' self-enhancement motives (cf. Robins & John, 1997) because they may have been able to see themselves performing using EVI. The fact that high narcissists using IVI did not improve could have been because IVI failed to enhance narcissists' selfenhancement motives. Thus, the present findings are consistent the view that the performance of

narcissists is dependent on self-enhancement opportunity (Wallace & Baumeister, 2002). However, the present findings also highlight the moderating role of imagery perspective within the narcissism-performance relationship.

While these results are encouraging, the exploratory nature of this research means that replication would be desirable. Indeed, the imagery literature has previously been criticized for failing to systematically design studies so as to allow for the potential for replication and extension with research programs (see Goginsky & Collins, 1996). Further, on closer inspection of Study 1, a number of potential limitations can be identified with the design of the study, thus making replication appropriate. First, it could be argued that the self-enhancement manipulation used was rather limited in its similarity to actual sport competition. More specifically, the self-enhancement manipulation in Study 1 only provided an opportunity for gain (i.e., participants could win money if they improved performance). However, sport provides the opportunity for both gain and loss. Thus, we felt that a stronger selfenhancement manipulation would provide an opportunity for gain (e.g., winning money as a result of good performance) as well as loss (e.g., losing money for a poor performance). This type of self-enhancement manipulation was adopted in Study 2. Second, we did not assess the extent to which kinesthetic imagery was experienced by participants. Kinesthetic imagery can have beneficial effects on performance over and above that provided by visual imagery (Hardy & Callow, 1999), and so it might be possible (although unlikely) that differences in kinesthetic imagery could explain the results. Thus, in Study 2, experience of kinesthetic imagery was assessed. Finally, to check the

perceived effectiveness of imagery scripts, it has been suggested that postexperimental manipulation checks include questions that gauge participants' ability to image the content of the imagery scripts (e.g., see Cumming et al., 2007; Nordin & Cumming, 2005). This question was also included in the postexperimental questionnaire in Study 2.

Study 2: Methods

Participants

An opportunistic sample of 47 right-handed male novice golfers from the UK (*M* age = 22.14 years, *SD* = 4.75) was recruited for the study. To be considered as novices, participants were required to have not played a full round of golf within the previous 12 months, or fewer than 5 rounds in their entire life. All participants gave their written informed consent to take part in the study. Ethics approval was obtained from the School's ethics committee.

Task and Apparatus

A golf putting task, performed on an indoor putting green, was employed for the current study. Participants were required to putt golf balls into a hole 10.8 cm in diameter from a distance of 2.26 m. To increase task difficulty, there was an incline of 25% between the participant and the hole. Standard golf balls and a standard putter (Prosimmon "X" series) were used by all participants. A digital camera placed on the

ceiling directly above the hole was used to measure the distance each putt finished from the hole.

Design

As in Study 1 we employed a mixed model design, where participants were randomly allocated to either the IVI or EVI group, and performed the task under three conditions (practice, low self-enhancement opportunity, high self-enhancement opportunity)

Experimental Conditions

Practice.

The practice condition consisted of 50 putting trials which were not recorded by the computer. To provide participants with experience of the task, they performed more than double the number of trials commonly used with more experienced performers (e.g., Beilock, Carr, MacMahon, & Starkes, 2002). Participants received standardized instructions informing them that they would receive £10 (approximately US $15) if a satisfactory performance level was achieved throughout the experiment. Participants were given short breaks (i.e., five minutes) after 20 and 40 putts. For the first 40 practice putts participants did not use imagery. However, for the last 10 practice trials the primary experimenter administered an imagery script to participants that corresponded to their treatment group (i.e., participants in the IVI group received an IVI script). As in Study 1, the scripts[2] contained both stimulus and

response propositions (cf. Cumming et al., 2007). The identical procedure from Study 1 was followed for this. Thus participants read the script to themselves twice and imaged while seated, and then listened to the primary experimenter read the script and imaged dynamically (the experimenter took approximately 75 s to read the script). Participants were then asked to image performing the task, while in their putting position, before each putt. As in Study 1, no time restrictions were placed on participants when reading the script and imaging when seated, and when imaging before each trial.

Low Self-Enhancement Condition.

The low self-enhancement condition consisted of 20 putts which were recorded by the computer. Based on previous putting studies in the literature (e.g., Beilock et al., 2002) 20 putts were deemed a sufficient number for this condition. Before the first putt the experimenter administered the same imagery script as in the practice condition. As in practice, participants read the script twice while seated, and then imaged in position as they listened to the experimenter read the script. Participants were then asked to image performing the task from their particular perspective before each trial.

High Self-Enhancement Condition.

The high self-enhancement condition also consisted of 20 putts which were recorded. To create a condition that offered the opportunity for gain and loss, participants

received standardized evaluative instructions informing them that their intended payment of £10 (US $15) for achievement of a satisfactory performance level could change during the 20 putts. Specifically, participants were told that for every putt that they holed, 70 pence (US $1.05) would be added to their total, thereby making a total payment of £24 (US $36) available. However, they were also informed that for every putt missed, £1 (US $1.5) would be removed from the starting payment of £10 (US $15). Furthermore, participants were told that another prize was available for taking part in the study: £15 (US $30) was available for the best score; £10 (US $20) for the second best and £5 (US $10) for the third best score. Finally, participants were informed that their scores would be made public, by posting them on department notice boards, and that their performance was to be videoed (by a video camera placed at the end of the putting surface) for later analysis by a golf professional.

Before starting the first putt participants followed the same procedures for imaging the task as used in the low *SE* condition.

Performance

Performance was assessed using mean radial error (MRE). MRE is a twodimensional error score, which calculates the distance the ball lies from the hole using both *x* and *y* coordinates (see Hancock, Butler, & Fischman, 1995), and was used to measure accuracy. Mean MRE scores were calculated for the low and high self-enhancement conditions.

Measures

The same measures from Study 1 were used with the addition of two questions to the postexperimental questionnaire. Participants were asked to report the extent to which they experienced kinesthetic imagery (on the same 11 point Likert-type scale used in Study 1), and were asked to report their ability to image the content of the scripts. To provide continuity with previous research (e.g., Cumming et al., 2007; Nordin & Cumming, 2005), this question was scored on a Likert-type scale from 1 (*very hard*) to 7 (*very easy*).

Procedure

Two weeks before the start of the experiment participants completed the consent form, the VMIQ-2, and the NPI-40. To ensure participants could image proficiently, only participants who scored below 36 on each of the subscales of the VMIQ-2 were considered for the study. All participants fulfilled these criteria.

Participants were tested individually. On arrival at the laboratory participants received standardized instructions informing them that the purpose of the study was to examine the effects of different imagery perspectives on golf putting performance and that we intended to pay them £10 if they achieved a satisfactory performance level. Participants then completed the practice condition. On completion of the practice condition participants were given a five-minute break.

Following the break, participants entered the low self-enhancement condition. On completion of this condition participants completed the postexperimental

questionnaire and were given a five minute break. After this the high selfenhancement condition was performed. Participants were read the standardized evaluative instructions and then performed the 20 putting trials in this condition. On completion of these trials participants completed the postexperimental questionnaire for a final time. They were then fully de-briefed about the study, thanked for their participation, and were given any money won.

Study 2: Results

Manipulation check

Inspection of the postexperimental questionnaire revealed that 11 of the 47 participants reported either being unable to adhere to their particular treatment group, or switched excessively between imagery perspectives during the experimental conditions. These data were excluded from further analysis. Data screening also revealed one outlier in the data set. This was subsequently removed, leaving a sample of 35 participants. High and Low narcissistic groups were created based on NPI-40 scores (M = 13.05, SD = 8.83). Those above the median were grouped as narcissists (n = 7 IVI, n = 9 EVI, M = 21.00, SD = 7.00), and those below were grouped as low narcissists (n = 10 IVI, n = 7 EVI, M = 6.12, SD = 2.71). Two participants' scores lay on the median and so data from these individuals was excluded from further analysis. An independent samples t test confirmed a significant difference in NPI scores between the two groups ($p < .001$).

Performance

A 2 (narcissism; high/low) × 2 (imagery perspective; IVI/EVI) × 2 (selfenhancement opportunity; low/high) ANOVA with repeated measures on the selfenhancement opportunity factor was used to analyze the MRE data. Box's M test for the equality of covariance matrices and Mauchly's test of sphericity were satisfied for this analysis. The three-factor mixed model ANOVA revealed a trend toward significance for the condition main effect, F (1, 29) = 3.70, $p < .06$, $\eta^2 = .09$, 1-β = .46, and a significant three-factor interaction, F (1, 29) = 6.19, $p < .02$, $\eta^2 = .16$, 1-β = .67. Figure 2 displays the nature of the interaction[AUQ4]. Separate two-factor (imagery perspective × self-enhancement opportunity) repeated-measures ANOVAs were performed for low and high narcissists to follow up the significant 3-factor interaction. For low narcissists, no significant interaction or main effects emerged (all p's > .05). However, for high narcissists the two-factor interaction was significant, F (1, 14) = 8.40, $p < .01$, $\eta^2 = .34$, 1-β = .77. Tukey's tests revealed that high narcissists using EVI were significantly more accurate (indicated by lower MRE scores) in the high self-enhancement condition compared with the low selfenhancement condition. High narcissists using EVI were also significantly more accurate in the high self-enhancement condition compared with high narcissists using IVI. No other effects were significant.

\ insert Figure 2 \

Postexperimental Questionnaire

Four questions from the postexperimental questionnaire required statistical analysis. These were the questions relating to suitability, confidence, kinesthetic imagery, and ability to image script content. These questions were also analyzed using 3-factor repeated-measures ANOVAs, with a Bonferroni adjusted alpha level of .0125. The analyses revealed no significant main effects or interactions for any of the analyses (all p's > .0125). Inspection of the mean data indicated that participants felt that the imagery treatments were generally suitable (low self-enhancement M = 8.86, SD = 1.7; high self-enhancement M = 9.00, SD = 1.53) and aided their confidence to perform the task (low self-enhancement M = 7.71, SD = 2.15; high self-enhancement M = 7.47, SD = 2.29). Participants also reported experiencing kinesthetic imagery in both conditions (Low self-enhancement M = 7.69, SD = 2.19; High selfenhancement M = 7.14, SD = 2.53). Finally, the scripts were appeared to be relatively easy to image (low self-enhancement M = 5.36, SD = 0.99; high selfenhancement M = 5.55, SD = 1.12)

Study 2: Discussion

The findings from Study 2 replicated those of Study 1. That is, narcissists using EVI improved their performance across self-enhancement conditions, whereas the performance of narcissists using IVI and low narcissists did not change. In line with recommendations in the literature (cf. Goginsky & Collins, 1996) the methodological changes made for Study 2 allowed for an appropriate replication and extension of the

first study using a more sport-relevant (in terms of potential for both gain and loss) self-enhancement manipulation. Moreover, the other methodological considerations employed in Study 2 indicated that kinesthetic imagery (although experienced to some extent by participants) was not experienced to a greater or lesser extent by any particular treatment group, and did not influence the results in any way. Finally, participant responses concerning the ability to image the scripts indicated that no one treatment group appeared to find it easier to image the scripts, suggesting that both the IVI and EVI scripts used here were appropriate and relatively effective. Thus, taken together, the findings from Study 2 are further confirmation of the beneficial effects of EVI for high narcissists, and the importance of self-enhancement within the narcissism-performance relationship.

General Discussion

The aim of the present research was to examine the potential moderating role of narcissism on imagery perspective effectiveness. Narcissism has yet to be fully considered within the sporting context, despite the fact that sport provides an ideal opportunity to explore the effects of the narcissistic personality. Results in both studies were consistent with the a priori hypothesis that narcissists using EVI would improve their performance across self-enhancement conditions, whereas narcissists using IVI would not. Furthermore, as expected, the performance of low narcissists was relatively unaffected by changes in self-enhancement.

As noted in the discussion of Study 1, the improved performance of narcissists using EVI in these studies can be interpreted with the view that EVI activates narcissists' self-enhancement motives. Thus, the present data confirm the importance of self-enhancement within the narcissism-performance relationship (cf. Wallace & Baumeister, 2002). However, these data actually extend the literature on narcissism and performance. Indeed, as only high narcissists using EVI displayed improved performance, it would seem that the self-enhancement effect only appears to hold when narcissists are able to get some form of feedback on themselves performing (in the this instance, through the use of EVI).

The performance of low narcissists in both studies revealed the expected result, as there was no change in performance across conditions. However, the postexperimental data revealed two interesting findings. First, low narcissists thought that their imagery treatments were just as suitable for the task as high narcissists. Therefore, despite no performance improvement, these participants thought using imagery was a suitable strategy. Second, across both studies there was no difference between high and low narcissists in the extent to which participants reported that their respective imagery interventions aided confidence to perform the experimental tasks. Thus, imagery appeared to aid the confidence of low narcissists to the same extent as high narcissists. As low narcissists lack the confidence of high narcissists (cf. Rhodewalt & Morf, 1995), this intriguing result highlights the possibility of using imagery as a strategy to aid the confidence of low narcissistic individuals. However, given that the confidence measures in the present research only required single item

responses, it would be worth investigating whether imagery does aid the confidence of low narcissists using validated measures.

Several applied implications are associated with the present research. First, taking our findings together with those obtained by Woodman et al. (in press)[AUQ5], there is emerging evidence to support the view that some characteristics of personality do moderate the effectiveness of psychological skills (cf. Hardy et al., 1996; 2010). As such, practitioners may wish to consider such personality characteristics when recommending and implementing psychological skills (e.g., goal-setting, imagery, etc.) with athletes. Second, practitioners may wish to consider the narcissistic tendencies of the performer when recommending the use of particular imagery perspectives. Although the data support this recommendation, it does not take into account the potential for athletes to switch between perspectives. Indeed, as participants who reported switching imagery perspectives in the present studies were not included in any analyses, it is not known how narcissism may moderate the effects of switching between IVI and EVI. On a related note, practitioners would likely benefit from being aware of whether (and if so when) athletes switch imagery perspectives, as switching between perspectives may be of benefit in certain situations (cf. Callow & Hardy, 2005[AUQ6]). Finally, considering that the performance of narcissists is dependent on self-enhancement opportunity (cf. Wallace & Baumeister, 2002), strategies that limit the self-enhancement opportunity for narcissistic athletes should perhaps be avoided. Of course, these implications need to be treated with some caution given the preliminary nature of the research and

because only novices were used in the present studies; the findings may not fully generalize to experts. Furthermore, this research did not incorporate a longitudinal design involving substantial imagery practice (see Callow, Hardy, & Hall, 2001, for an example of such an approach), and so it is not completely clear how the imagerynarcissism relationship might transpire over time. Nonetheless, we believe these implications remain pertinent issues that are worthy of consideration for applied practitioners.

A number of strengths and limitations can be associated with the present studies. The use of detailed manipulation checks enabled greater experimental control, and resulted in the removal of participants who were unable to comply with their treatments. The manipulation check data concerning suitability of treatments, and the relative ease with which the scripts were imaged (Study 2) suggests that the imagery manipulations used in the current research were appropriate. Indeed, the values reported for ability to image the scripts were similar to previous research that has employed this manipulation check (see Cumming et al., 2007; Nordin & Cumming, 2005).

In addition to the manipulation checks, using specific imagery ability criteria with which to accept or reject participants for the study allowed for any differences in imagery ability to be minimized. Due to the removal of participants in both studies, the resulting sample sizes were relatively small. Nonetheless, they were sufficiently large enough to yield significant interactions (with large effect sizes, cf. Cohen, 1988) within complex experimental designs, and were reliably replicated across studies.

Finally, the nature of the self-enhancement manipulations was consistent with previous narcissism-performance studies (Wallace & Baumeister, 2002). Providing clear opportunities for glory (e.g., prize money) allowed for the creation of conditions that we would expect to appeal to narcissists. Moreover, the use of congratulatory posters allowed for a public evaluation of performance. This was considered a key aspect of the manipulations given that narcissists are primarily motivated by a desire to demonstrate their perceived ability to others, as opposed to themselves (see Morf & Rhodewalt, 2001). As such, the posters provided narcissists with an opportunity to gain the public admiration they crave (cf. Wallace & Baumeister, 2002).

Despite these apparent strengths, a number of issues deserve comment. First, although the use of manipulation checks, and subsequent participant removal, led to enhanced experimental control, this process did limit the external validity of the research somewhat. Indeed, given that those participants who reported switching between imagery perspectives (25% of participants across both studies) were removed from the sample before analysis, the findings reported in this manuscript are only strictly applicable to individuals who do not switch perspectives. Further to this the laboratory-based nature of the study also limits the generalizability of these findings to other competition related settings, or situations where athletes use imagery over an extended period of time. However, given the preliminary nature of this research, we felt that our laboratory-based design and manipulation check procedures were the most appropriate. Second, the lack of a counterbalanced design in both studies might lead to the conclusion that order effects may be accounting for

the results. The nature of our self-enhancement manipulations (i.e., the use of financial incentives for good performance) meant that the high self-enhancement condition had to follow the low self-enhancement condition. Such a procedure is common in other areas of psychological research (e.g., anxiety and performance, cf. Mullen, Hardy, & Oldham, 2007) where authors are hypothesizing interactions, as was the case here. The nature of our *a* priori hypotheses, and subsequent supporting results, means that order effects cannot be an issue (if they were, the interactions we obtained would not be present; only main effects would occur). Furthermore, given that the effects were reliably replicated across two studies, it would seem that they are robust. These issues notwithstanding, future research may wish to consider the use of other manipulations of self-enhancement that can be counterbalanced, and that have greater generalizability to competition, so as to remove these potential confounds. On a related note, the analyses used could also be considered a limitation. Our interests in this study centered on how individuals who were relatively high in narcissism performed under different conditions of selfenhancement (i.e., a within-subjects comparison), when using different imagery perspectives, and so the repeated measures design used allowed us to address this question. However, creating groups based on NPI scores meant that we did not retain the full range of NPI scores in our samples. Although previous research (e.g., Rhodewalt, Tragakis, & Finnerty, 2006) has also created high and low narcissistic groups based on NPI scores, future research may wish to consider cross-sectional designs to further the relationship between narcissism and imagery so as to retain the continuous nature of the NPI data.

As this is the first research to examine the role of personality on the effects of imagery perspectives on performance, future research should look to replicate and extend these findings in a different setting to be able to fully understand the relationships between imagery perspectives, narcissism, self-enhancement, and performance. For example, it would be useful to ascertain whether these effects generalize to expert performers (cf. Greenspan & Feltz, 1989) and across longitudinal designs, where athletes undertake a substantial amount of imagery practice. Furthermore, there is now evidence that both task (cf. Hardy, 1997) and personality characteristics, in the form of narcissism, appear to moderate the effect of imagery perspectives. Therefore, future research may wish to investigate the interactive effects of imagery perspectives and narcissism on a task with particular characteristics (e.g., form or slalom based). This would enable researchers to ascertain if task or personality characteristics, or indeed a combination of both, have the greatest impact on the effectiveness of imagery perspectives on motor performance. At a more general level, the issue of switching between imagery perspectives warrants attention. For example, an understanding of when switching perspectives is efficacious to performance, alongside an examination of the cognitive processes involved in switching would be extremely worthwhile. Finally, as to the best of our knowledge, this is the first study to examine the effects of narcissism on performance within a sporting environment; future research may wish to further explore the effects of this personality variable on sport performance.

Notes

Within the current study, *narcissism* refers to the continuous personality variable, as opposed to the clinical personality disorder. Throughout the rest of the article the terms *narcissists* or *high narcissists* are used interchangeably to describe individuals scoring highly on measures of "normal" (i.e., subclinical) narcissism, such as the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1979[AUQ7]). The term *low narcissist* is used to describe individuals with low scores on the NPI.

Imagery scripts can be obtained from the first author on request.

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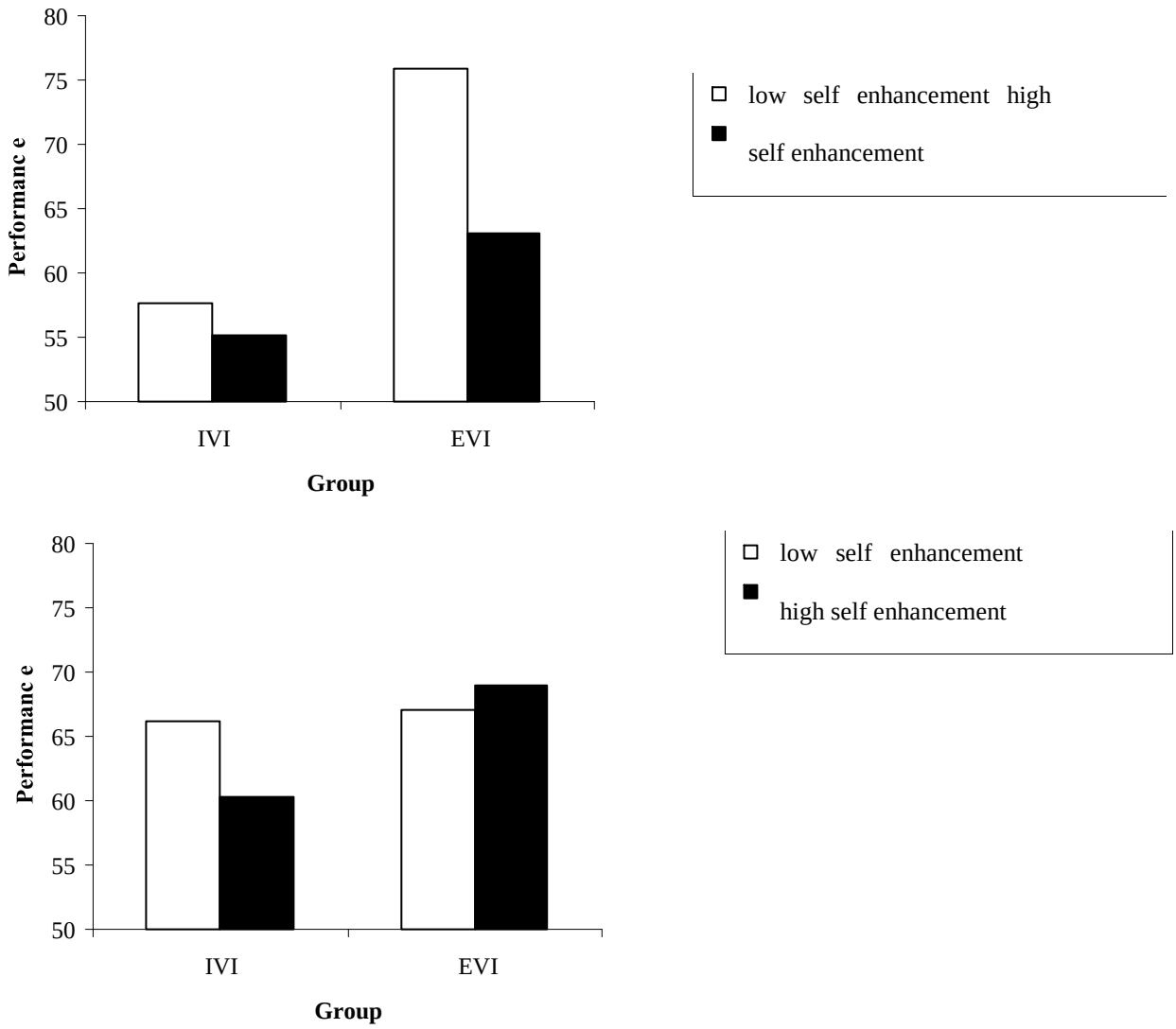

Figure 1 — Performance scores of high narcissists (top graph) and low narcissists

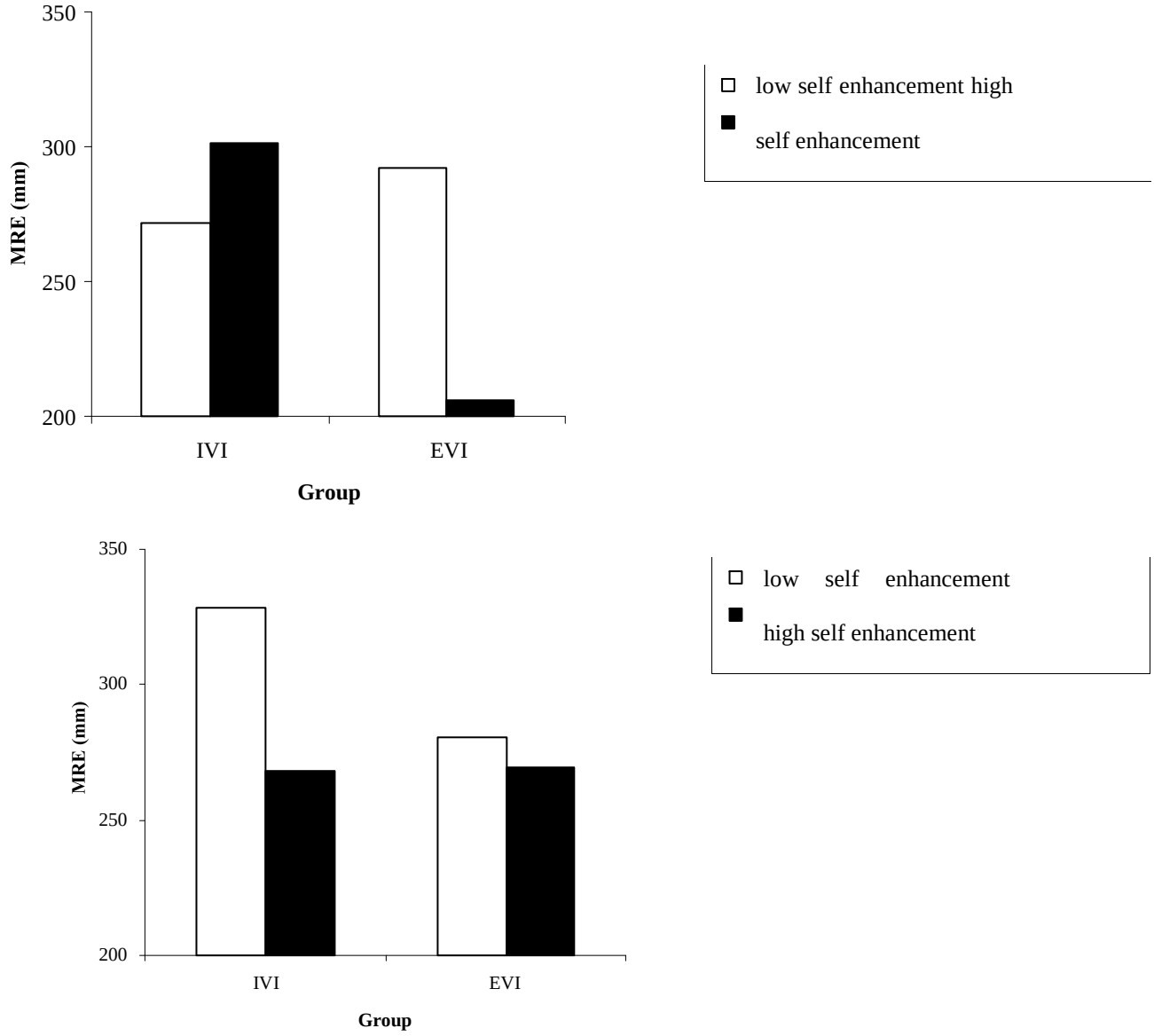

Figure 2 — Mean radial error (MRE) scores (in millimeters) of high narcissists (top graph) and low narcissists (bottom graph) for Study 2.