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I am great, but only when I also want to dominate: Maladaptive narcissism moderates the relationship between adaptive narcissism and performance under pressure

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Abstract

Narcissism-performance research has focused on grandiose narcissism but has not examined the interaction between its so-called *adaptive* (reflecting over-confidence) and *maladaptive* (reflecting a domineering orientation) components. In this research, we tested interactions between adaptive and maladaptive narcissism using two motor tasks (basketball and golf in Experiments 1-2, respectively) and a cognitive task (letter transformation; Experiment 3). Across all experiments, adaptive narcissism predicted performance under pressure only when maladaptive narcissism was high. In the presence of maladaptive narcissism, adaptive narcissism also predicted decreased pre-putt time in Experiment 2 and an adaptive psychophysiological response in Experiment 3, reflecting better processing efficiency. Findings suggest that individuals high in both aspects of narcissism perform better under pressure thanks to superior task processing. In performance contexts, the terms "adaptive" and "maladaptive" – adopted from social psychology – are over-simplistic and inaccurate. We believe that *self-inflated narcissism* and *dominant narcissism* are better monikers for these constructs.

Keywords: grandiose narcissism, self-inflated narcissism, dominant narcissism, self-enhancement, processing efficiency

Introduction

Performing to a high standard is important in sport and in many facets of life. One's desire to perform well under high pressure typically evokes performance anxiety that often harms performance (Woodman & Hardy, 2001). Conversely, while performance pressure may be detrimental to those who are worried about the uncertainty of success (Eysenck, Derakshan, Santos, & Calvo, 2007), it may be beneficial for individuals who seek glory and pursue admiration from performance success. In the context of performing under pressure, one relevant personality trait is narcissism, especially in its grandiose form (see Roberts, Woodman, & Sedikides, 2018).

Here we conceptualize narcissism as a non-clinical personality trait that can be assessed on a continuous scale. We adopt the definition of narcissism as a self-centered, self-aggrandizing, entitled, dominant, and manipulative interpersonal orientation (Morf & Rhodewalt, 2001). Such a conceptualization focuses on grandiose narcissism from an agentic perspective and does not include communal narcissism (Gebauer, Sedikides, Verplanken, & Maio, 2012). Further, our conceptualization of grandiose narcissism does not consider vulnerable aspects of narcissism (e.g., Miller et al., 2011). From this point forward, when we use the term *narcissism* we refer to grandiose narcissism.

Narcissism and performance: An overview

Individuals high in narcissism are thought to have the ability to perform well because they possess attributes that are essential for performance success, such as confidence (Campbell, Goodie, & Foster, 2004), optimistic expectations (Farwell & Wohlwend-Lloyd, 1998), and a strong desire for dominance (Morf & Rhodewalt, 2001). Indeed, narcissists believe they are superior to others and consider themselves as exceptional performers (Gabriel, Critelli, & Ee, 1994). This grandiose belief is unfounded, however, as evidenced by research revealing no effect of narcissism on performance. For example, although narcissists typically view their work performance as outstanding, this inflated self-view is not matched by supervisor ratings (Judge, LePine, & Rich, 2006). These findings support the view that narcissists have substantial performance self-evaluation upward bias.

Although some research suggests that the performance of narcissists is unexceptional, an emerging body of research demonstrates a more nuanced position. Specifically, there appear to be two context-specific factors that moderate narcissists' performance. The first moderating factor is the self-enhancement opportunity afforded by the particular performance setting. Individuals high in narcissism are highly motivated by self-enhancement and so are keenly aware that different performance contexts vary in the opportunity for them to gain glory (Roberts, Woodman, et al., 2018). In a series of studies, for example, Wallace and Baumeister (2002) found that individuals high in narcissism improved performance more than those low in narcissism only when perceived self-enhancement was high. Support for this work is consistent in field (e.g., Roberts, Woodman, Hardy, Davis, & Wallace, 2013) and laboratory settings (e.g., Woodman, Roberts, Hardy, Callow, & Rogers, 2011).

The second factor that moderates the influence of narcissism on performance is ego threat. Narcissists attempt to eliminate the sources of threats and to re-establish dominance in social contexts through violence and aggression (Baumeister, Smart, & Boden, 1996), but they can adopt an alternative threat-elimination approach in the performance domain. Specifically, performance contexts provide narcissists with an opportunity to eliminate threat and to re-establish dominance by beating the competition. As such, one would expect individuals high in narcissism to perform well following ego threats. Supporting this position, Nevicka, Baas, and Ten Velden (2016) provided evidence that narcissism predicted not only a greater willingness to perform challenging tasks but also greater performance when ego threats emerged (see also Roberts, Woodman, Lofthouse, & Williams, 2015).

The distinction between adaptive and maladaptive components of narcissism

Overall, narcissism-performance research converges on narcissists' performance improving as the level of *glory opportunity* and *ego threat* increase. However, our current knowledge of narcissism in the performance domain is incomplete. One major limitation of this work is that, to date, narcissism-performance research has focused solely on global grandiose narcissism, without consideration of its multidimensional nature (see Roberts, Woodman, et al., 2018). Indeed, the original conceptualization of grandiose narcissism, based on the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979) comprises seven sub-dimensions: authority, self-sufficiency, exhibitionism, entitlement, exploitativeness, superiority, and vanity. Although this seven-factor structure has been difficult to replicate (e.g., Emmons, 1984), the distinction between so-called *adaptive* and *maladaptive* narcissism has been supported. Specifically, adaptive narcissism (*authority* and *self-sufficiency* on the NPI) is related to extraversion, self-esteem, and captures personal qualities such as confidence and self-awareness (Ackerman et al., 2011). By contrast, maladaptive narcissism (*exhibitionism*, *entitlement*, and *exploitativeness* on the NPI) is related to neuroticism, low empathy, and captures personal qualities such as a dominating orientation (Cai & Luo, 2018).

Substantial evidence supporting the distinction between adaptive and maladaptive narcissism shows that adaptive narcissism is more socially desirable than maladaptive narcissism. Specifically, maladaptive narcissism predicts increased conduct problems (Barry, Frick, & Killian, 2003), prolonged delinquency (Barry, Frick, Adler, & Grafeman, 2007), and aggression (Washburn et al., 2004). In contrast, adaptive narcissism predicts reduced problem behaviors and greater relationship satisfaction (Barry et al., 2010).

The use of such presupposed labelling, however, is a concern. Indeed, the terms, *adaptive* and *maladaptive* reveal the social/interpersonal outcomes to which they are related rather than their psychological features or attributes *per se* (Cai & Luo, 2018). We thus recommend using these labels with caution to reduce the likelihood of making misleading prejudgments (e.g., that one should encourage adaptive narcissism and discourage maladaptive narcissism). Equally, as there are no widely accepted alternative terms, we have retained the use of *adaptive* and *maladaptive* narcissism in this research[1]. In the next section, we focus more on the psychological attributes of these different components of narcissism rather than their presupposed outcomes. We then propose our theoretical position regarding how these components of narcissism may influence performance under pressure.

Adaptive and maladaptive narcissism and performance under pressure

Despite a plethora of work in the social domain, researchers have yet to consider the adaptive/maladaptive narcissism distinction in the context of performance. Equally, although both adaptive and maladaptive narcissism are relevant to performance (Roberts, Woodman, et al., 2018), these components may not necessarily predict performance under pressure. Typically, adaptive narcissism reflects high levels of confidence (Emmons, 1984), and confidence is commonly linked to better performance under pressure (Woodman & Hardy, 2001). Conversely, excess confidence can be detrimental to performance, as individuals may be overly assured of their potential and thus fail to allocate appropriate resources to facilitate performance (e.g., Beattie, Dempsey, Roberts, Woodman, & Cooke, 2017). As such, adaptive narcissism on its own is unlikely simply to lead to optimal performance.

Similarly, maladaptive narcissism, which reflects a strong sense of personal control and a willingness to dominate (e.g., Washburn et al., 2004), may not yield clear performance effects. Indeed, although maladaptive narcissism is linked to internalizing symptoms (e.g., anxiety; Cai & Luo, 2018) that are typically detrimental to performance under pressure (Zhang, Woodman, & Roberts, 2018), the willingness to dominate also serves an important motivational function (Nevicka et al., 2016). Studies of serial high achievers in the performance domain highlight the importance of such willingness to dominate in attaining the highest levels of excellence (e.g., Hardy et al., 2017). These contrasting viewpoints make it unlikely that there exists a simple relationship between maladaptive narcissism and performance under pressure.

Rather than exploring in parallel the performance effects of adaptive and maladaptive narcissism, we propose a more nuanced position; that the influence of adaptive narcissism on performance under pressure depends on the relative degree of maladaptive narcissism. Given that overconfidence can be detrimental to performance (e.g., Beattie et al., 2017), performers who hold an inflated self-view (i.e., high in adaptive narcissism) may only perform well when they also have the willingness to dominate (i.e., high in maladaptive narcissism). As such, we hypothesized that adaptive narcissism, reflecting (over)confidence, would not predict performance under pressure when maladaptive narcissism was low. However, when maladaptive narcissism is high, reflecting a strong willingness to dominate and have control over situations, we expected adaptive narcissism to predict performance because of the precise combination of confidence and willingness to dominate. We tested such an overarching hypothesis across three different experimental settings.

Mechanisms underlying narcissism and performance

Beyond examining the hypothesized interaction between adaptive and maladaptive narcissism on performance under pressure (Experiments 1-3), we also explored the mechanisms that might underlie this performance effect (Experiments 2-3). Recent research offers two accounts for why narcissists perform better in some situations than in others (see Roberts, Woodman, et al., 2018); one where narcissists improve performance as a result of investing greater effort for self-enhancement (hereafter *trying harder*), and one where narcissists improve as a result of a more efficient allocation of resources (hereafter *trying smarter*). The *trying harder* position rests on a prediction of Processing Efficiency Theory (Eysenck & Calvo, 1992); that performers can maintain or even improve performance under pressure if they invest substantial amounts of effort (at a cost to processing *efficiency*). Such a position, that effort can aid performance under pressure, has received considerable empirical support in the sport domain (e.g., Wilson, 2008). The *trying smarter* position is based on tenets of Attentional Control Theory (Eysenck et al., 2007); that performers can maintain or improve their performance under pressure via excellent regulation of processing resources within the capacity-limited working memory system (improved processing efficiency; see Wilson, 2008 for an overview of research investigating the effects of Attentional Control Theory in the context of sport).

Embracing the *trying harder* hypothesis, Wallace and Baumeister (2002) argued that a greater opportunity for glory drives narcissists to invest extra effort to perform. Providing evidence for this position, in a dart throwing task and a muscular endurance task, Roberts, Cooke, et al. (2018) found that effort invested on the task mediated the influence of narcissism on performance. The finding indicates that narcissists perform better when there is a self-enhancement opportunity (e.g., in a competition) because they try harder.

While the *trying harder* position has received some attention, the *trying smarter* position has yet to receive empirical support. Nonetheless, the *trying smarter* position is promising in explaining why narcissists perform better especially under high performance pressure. Eysenck et al. (2007) suggest that performance pressure impairs the goal-directed system and overly activates the stimulus-driven system, which disrupts task processing via shifting attention to task-irrelevant thoughts (e.g., worry) and impairs performance. However, narcissists' greater focus on success as opposed to failure make them more likely to remain goal-driven and less likely to be overwhelmed by task irrelevant thoughts (Elliot & Covington, 2001). Such an achievement orientation would ensure superior attentional control, enabling narcissists to perform well under pressure.

Although promising, these conceptualizations of the *trying harder* and the *trying smarter* positions are too simplistic as they fail to consider the potential adaptive ×

maladaptive narcissism interaction. Taking an interactionist perspective, one would expect that whether narcissists exert increased effort to perform under high pressure or not depends on the combination of adaptive and maladaptive narcissism. More specifically, the overly inflated self (associated with adaptive narcissism), in the absence of maladaptive narcissism, is unlikely to yield greater effort (cf. Woodman et al., 2011). Instead, high levels of maladaptive narcissism may drive the inflated self to strive for desirable states because of the willingness to dominate. Consequently, based on the *trying harder* position, adaptive narcissism will predict effort during task processing when maladaptive narcissism is high.

Equally, while narcissists may have the potential to achieve superior attentional control under pressure, adaptive narcissism in the absence of maladaptive narcissism may prevent this potential being realized. This is because narcissistic individuals believe their attentional control is already excellent. As maladaptive narcissism provides a strong desire to dominate, however, the link between adaptive narcissism and attentional control will likely strengthen. As such, the *trying smarter* position suggests that adaptive narcissism will predict better efficiency during task processing when maladaptive narcissism is high.

Present research

In sum, our theoretical stance suggests that maladaptive narcissism will moderate the relationship between adaptive narcissism and performance under pressure, and increases in effort and/or more effective task processing will help to explain such performance benefits. We tested these predictions across three laboratory experiments. In Experiment 1, we used a basketball free throw task to test the interaction between adaptive and maladaptive narcissism on performance under pressure. In Experiment 2, we used a golf-putting task to examine the replicability of the Experiment 1 results and employed self-report and behavioral measures to test both the *trying harder* and the *trying smarter* positions. In Experiment 3, we used a letter transformation task to test the generalizability of the results from the first two experiments.

Letter transformation relies on the storage and processing functions of working memory (Hamilton, Hockey, & Rejman, 1977), which are known to play a vital role in sport performance (Furley & Memmert, 2010). We employed psychophysiological measures to test further the two mechanistic perspectives. Across all experiments, we used a wide range of stimuli to create high-pressure experimental conditions.

Experiment 1

Method

Participants

Based on the effect sizes (ranging from .11 to .25) of Wallace and Baumeister's (2002) work examining the narcissism × pressure interaction on performance[2], we needed a minimum sample of 74 participants to have adequate power (.80) to detect a small-to-medium interaction effect, i.e., Cohen's $f^2 = .11$, at .05 alpha level (G*Power 3; Faul, Erdfelder, Lang, & Buchner, 2007). We recruited 80 male recreational basketball players ($M_{age} = 22.29$, $SD = 2.37$; $M_{years' experience} = 7.66$; $SD = 2.14$).

Task

We used a basketball free throw task. Participants completed the free throw task (see *Experimental conditions* section) using a regulation basketball (24.60cm in diameter) from the free throw line, 4.33m from the basket (45.00cm in diameter) at a regulation height of 3.05m. We assessed performance using Hardy and Parfitt's (1991) point system designed for this task. Participants scored "5" for a "clean" basket shot, "4" for rim and in, "3" for backboard and in, "2" for rim and out, "1" for backboard and out, and "0" for a complete miss. We summed participants' scores.

Design

We used a within-group design to reduce sampling error and to allow a better understanding of how performers respond to high-pressure environments. Participants completed the same experimental procedures in groups of ten. All participants completed experimental tasks under two conditions: low pressure (i.e., individual session) and high pressure (i.e., competition in front of audience, opportunity for monetary reward, public recognition). The individual session took place seven days before the competition.

Experimental conditions

Low-pressure condition. This condition consisted of twenty non-recorded warm-up throws and five recorded testing throws (Hardy & Parfitt, 1991). Each participant attended an individual session in an indoor sports hall. We introduced the scoring system and instructed participants to perform at their normal pace.

High-pressure condition. This condition consisted of twenty non-recorded warm-up free throws followed by five recorded free throws performed in front of an audience as part of a competition. We informed participants that the top three performers would receive cash prizes of £30, £20, and £10, and that we would place a congratulatory poster on the sports hall news wall, highlighting the winning participants. We also asked participants to watch other participants when they were not performing the task. We asked our 'audience' participants to stay in a pre-set audience zone that surrounded the free throw area and provided them with whistles and inflatable sticks to make similar noises to those during basketball matches. Before starting the free throws, we asked participants to perform the free throws at their normal pace.

Measures

Narcissism. We assessed narcissism using the Narcissistic Personality Inventory–16 (NPI-16; Ames, Rose, & Anderson, 2006). NPI-based measures of narcissism are considered the most appropriate assessments of the grandiose form of narcissism (Miller, Price, & Campbell, 2012). The NPI-16 manifests identical nomological networks to the most widely used measure of narcissism (i.e., NPI-40; Raskin & Hall, 1979), especially in relation to personality indices (e.g., the Big 5), intrapersonal outcomes, and interpersonal behaviors (Ames et al., 2006). It also demonstrates good test-retest reliability (r = .85). Given its reliability and convenience, the NPI-16 has been well used in sport narcissism research (e.g., Beattie et al., 2017). The NPI-16 contains sixteen forced-choice items from the NPI-40 and asks participants to choose between one narcissistic and one non-narcissistic statement (e.g., "I will be a success" vs "I am not too concerned about success"). Following Barry et al.'s (2003) recommendation, we generated an *adaptive* (five items; M = 2.58, SD = 1.80, α = .78) and a *maladaptive* (eight items; M = 4.80, SD = 2.39, α = .77) narcissism score.

Cognitive anxiety. We used the cognitive anxiety subscale of the Revised Competitive State Anxiety Inventory–2 (CSAI-2R; Cox, Martens, & Russell, 2003), which contains five items (e.g., "I am concerned that I may not do as well in this competition as I could") rated from 1 (*not at all*) to 4 (*very much so*). Cronbach's alpha was .90 in the current experiment.

Procedure

With institutional ethical approval, we recruited participants from a university basketball club. With the agreement from the club manager, we provided study information sheets to club members in a briefing session after a weekly club meeting. After the briefing session, club members who decided to participate provided consent, signed up for their sessions, and completed the NPI-16. On the day of the individual session, participants completed the CSAI-2R before starting their free throws. On completion of the throws, we thanked participants and reminded them of the group competition a week later. On the competition day, following the instructions (see *High-pressure condition* section) participants drew lots to decide the order of performance. They completed the CSAI-2R immediately before their individual performance. After the competition, we thanked and debriefed participants, and awarded prize money to winners.

Results

Preliminary analyses

There were no missing data. A paired *t* test revealed a significant increase in cognitive anxiety from low- (M = 8.93, SD = 3.13) to high-pressure conditions (M = 11.39, SD = 4.19), t (79) = 5.30, p = .001, 95% CI [1.54, 3.39], Cohen’s d = 0.59. According to Cohen's (1977) guidelines for effect sizes, the effect size we demonstrated reflects a medium (0.50) to large (0.80) effect in the pressure manipulation. Table 1 provides descriptive statistics and correlations between study variables.

Main analyses

To create a performance variable for analysis, we regressed the high-pressure performance on the low-pressure performance, with higher residual scores reflecting better performance under pressure. This residualized approach (see Castro-Schilo & Grimm, 2018) allowed us to account for participants’ performance capacity in low-pressure situations when considering their performance under pressure. Hereafter, we use the term *performance* to denote residualized performance.

To test our hypothesis that adaptive and maladaptive narcissism would interactively predict performance, we performed moderated hierarchical regression with 5,000 bootstraps and reported unstandardized regression coefficients and the ΔR^2 for each step of the hierarchical regression. Lower and upper bound 95% confidence intervals (CI) that do not encompass zero indicate significance at .05 for all effects. We probed significant interactions using both the ‘pick-a-point’ (or simple slope) approach (Cohen, Cohen, West, & Aiken, 2003) and the Johnson-Neyman (J-N) technique (Bauer & Curran, 2005). We analyzed and plotted simple slopes at *Mean* ± *1SD* to offer a straightforward comparison of the influence of the focal predictor on the outcome variable at high and low levels of the moderator. However, as the choice of simple slopes is somewhat arbitrary, we used the J-N technique to estimate the regions of significance to indicate the range of the moderator at which the effect of the independent variable was significant.

Following Jaccard and Turrisi's (2003) recommendation, we standardized variables using *z*-score transformation before the moderated regression analyses. Such an approach helps mitigate the potential collinearity issue in moderation analyses (Hayes, 2013) and is useful to check for univariate extreme values (i.e., three standard deviations from the mean). Further, we used Cook's distance (Cook & Weisberg, 1982) and leverage (Stevens, 2002) to screen multivariate outliers. We used the recommended cut-off value of greater than 1 Cook's distance and larger than $3*(k+1)/n$ leverage (where k is the number of predicators in the model and n is the sample size) as the criterion for multivariate outliers. We found no case with undue influence. Further, we calculated Cohen's f^2 (Cohen, 1977) as an effect size index for the interaction, with .02, .15, .35 reflecting small, medium, and large effects, respectively. The regression models satisfied the normality and homoscedasticity assumptions.

Performance. The overall model accounted for 41.6% variance in performance, F (3, 76) = 18.03, p = .001. Step 1 of the analysis revealed that adaptive narcissism significantly predicted performance, R^2 = .30, F (1, 78) = 34.15, B = .45, p < .001, CI [.21, .70]. In Step 2, maladaptive narcissism was not significant, ΔR^2 = .01, ΔF (1, 77) = 1.39, B = .15, p = .241, 95% CI [-.10, .39]. Importantly, the interaction between adaptive and maladaptive narcissism was significant, ΔR^2 = .10, ΔF (1, 76) = 12.86, B = .35, p = .001, 95% CI [.16, .55], Cohen's f^2 = .16. Simple slopes indicated that adaptive narcissism was significantly associated with performance under pressure when maladaptive narcissism was high (B = .79, p < .001, 95% CI [.50, 1.10]), not when maladaptive narcissism was low (B = .09, p = .550, 95% CI [-.22, .41]). Regions of significance revealed that the conditional effect of adaptive narcissism on performance was significant and positive only when maladaptive narcissism was *Mean* + .52 *SD* or over. Figure 1 (top) displays this interaction.

Experiment 2

Method

Participants

Based on the effect size in Experiment 1 (i.e., Cohen's $f^2 = .16$), power analysis indicated that we needed a minimum sample of 52 participants to have adequate power (.80) to detect our hypothesized interaction effect at .05 alpha level. We recruited 64 right-handed medium-handicap golfers ($M_{age} = 45.67$, $SD = 18.83$; $M_{handicap} = 15.88$; $SD = 2.26$; 48 men). We chose medium-handicap golfers because they are particularly sensitive to pressure manipulations (Mullen & Hardy, 2000). All participants reported that they had played competitions on a weekly basis over the previous 12 months (unless weather or illness/injury prevented participation).

Task and Apparatus

Participants performed a putting task on a 4.5 × 1.6-meter indoor putting green. We provided a standard (90cm) steel-shafted blade style putter and competition white golf balls (4.27cm diameter). We used a half-size target hole (5.5cm diameter) to increase the accuracy demands. We disguised a digital camera in a box at the end of the putting green, facing directly toward participants. The camera had a 10mm diameter lens and a shutter speed of 1/2000 second. We used the digital camera to measure pre-putt time and introduced the camera to participants as an additional source of pressure (see *High-pressure condition*).

Performance

We used an automated measuring system for putting performance, which we conceptualized as the distance between the center of the golf ball and the center of the hole. We took the mean distance of the balls from the target hole (in mm) to generate the mean radial error (MRE), with lower MRE representing higher accuracy. We recorded each successful holed putt as 0mm.

Design

Participants performed the task under practice, low pressure, and high pressure. Each participant attended an individual session to complete all experimental conditions.

Experimental conditions

Practice. This condition consisted of five blocks of nine putts (i.e., 45 putts in total) to familiarize participants with the task. Participants received the standardized instruction that the objective of the experiment was to examine the effect of using different putting positions in golf putting skills training and that they had been randomly assigned to the group that would follow a specific putting sequence. In reality, all participants followed the same randomized sequence of the three starting points within each putting block – 1.6, 2.2, 2.8, 2.8, 2.2, 1.6, 1.6, 2.2, and 2.8m from the target. The purpose of this training-related instruction was to blind participants from the real objectives of this experiment and to help achieve experimental manipulation. Before each putting block, we instructed participants to "relax and take your time to perform the putt as you want; try to acclimatize yourself with the task and get the ball ideally holed or make it as close to the hole as possible."

Low-pressure condition. This condition consisted of a single block of nine putts, with the same putting sequence as in practice. To minimize pressure, we reminded our participants of the experimental purpose we provided at practice. Prior to putting, we asked participants to "relax and take your time to perform the putt as you want; try to get the ball ideally holed or make it as close to the hole as possible".

High-pressure condition. This condition consisted of a final block of nine putts, using a putting sequence different from the previous blocks. To start, we informed participants that based on their putting performance in previous blocks they were to receive prize money of £5. However, to secure the £5, participants needed to achieve a "reasonable level of performance", which in reality was participants' MRE in the low-pressure condition minus a half standard deviation. We informed participants that they would lose the £5 if they failed to meet the basic standard. Moreover, we informed participants that they would receive £15 extra prize money if they achieved a "superior" performance standard, which in reality was their respective MRE in the low-pressure condition minus one standard deviation.

Furthermore, we informed participants that they would compete against each other in the final block. We asked participants to draw one of twelve task cards from an envelope we prepared. We explained that different task cards provided different levels of task difficulty. For example, repeating nine putts from the same starting point represents an easy task; completing three mini-blocks of three putts whilst repeating the same starting point in each mini-block represents a medium-level task; putting from a randomized sequence of the three different starting points represents a difficult task. We reminded participants that regardless of the level of difficulty, the participant who improved most from the previous block to the final block would win £50 and be recognized in congratulatory posters posted on the news boards in the golf club of which they were members. Additionally, we informed participants that we would release the top-ten and the bottom-ten rankings to all participants through emails based on their performance change from the previous block to the final block.

Despite instructing participants that different task cards provided different putting sequences, in reality, everyone completed the same task order: 2.2, 1.6, 2.8, 2.8, 2.2, 1.6, 2.2, 2.8, and 1.6m. After drawing the task card, we checked a pre-printed document in front of participants to provide a fake historical record revealing the likelihood of obtaining a prize. We told participants that about 50% of people had secured £5 and about 10% of people had earned the £15 extra prize, but that nobody had gained any prize when putting the same sequence as them.

Finally, we made participants aware of the video camera we had disguised. We informed participants that the recorded video materials would be assessed by an external expert, and selected records would be edited and used for promotional and educational purposes. We further reminded participants that they were free to withdraw from completing the final block if they were unhappy with anything. After participants confirmed their willingness to participate, we instructed them to "take your time, concentrate on the task in hand, try to get the ball ideally holed or as close as possible to the target to win a prize."

Measures

Narcissism. While the NPI-16 used in the Experiment 1 is a valid, reliable, and convenient measure of narcissism (Ames et al., 2006), due to its length, it may not capture all aspects of narcissism. Indeed, researchers recommend that the NPI-16 is a good alternative for the NPI-40 when the use of the longer measure is impractical but should not substitute the use of the NPI-40 in all situations. As such, in Experiment 2, we used the NPI-40 to ensure a more complete assessment of narcissistic personality traits. As in Experiment 1, we generated a score for adaptive narcissism (14 items; $M = 5.84$, $SD = 2.92$, $\alpha = .76$) and maladaptive narcissism (18 items; $M = 5.12$, $SD = 3.85$, $\alpha = .75$).

Cognitive anxiety. We used the Mental Readiness Form-L (MRF-L, Krane, 1994). The cognitive anxiety item asks participants to determine to what extent their thoughts are *worried* on a bipolar 11-point Likert scale from 1 (*calm*) to 11 (*worried*). The single-item format is less intrusive and thus more convenient to measure anxiety as close as possible to both the manipulative instructions and the subsequent performance.

Mental effort. We used the Rating Scale for Mental Effort (RSME, Zijlstra, 1993) to examine the *trying harder* position. The RSME is a vertical axis scale that asks participants to rate their mental effort from 0 to 150, with increments of 10 displayed on the left side of the scale and nine descriptive indicators from 3 (*no mental effort at all*) to 114 (*extreme mental effort*). The RSME is an effective measure of mental effort during the performance of various tasks, with a test-retest reliability of .78-.88 (Zijlstra, 1993).

Pre-putt time. We measured pre-putt time as a behavioral indicator of processing efficiency, in order to examine the *trying smarter* position. This approach was recommended by Eysenck and Calvo (1992) and has been adopted in performance-related research (see Zhang et al., 2018). Although longer pre-putt time was previously interpreted as greater effort, the relationship between pre-putt time and effort is not evidenced (Wilson et al., 2007). Also, according to the distraction theories of anxiety and performance (Eysenck & Calvo, 1992; Eysenck et al., 2007), anxiety in the form of worry distracts performance attention from task-relevant to task-irrelevant thoughts, occupying the cognitive resources that are essential to task processing. Such an adverse influence increases task processing time and impairs performance efficiency, which is not necessarily a sign of investing greater effort (Eysenck et al., 2007). Instead, reduced pre-putt time indicates a smooth execution for movement planning and motor response programming, likely due to an excellent regulation of attentional control and a superior management of processing recourses within the capacity-limited working memory system (Miyake et al., 2000). As such, reduced pre-putt time reflects better efficiency (e.g., Walters-Symons, Wilson, Klostermann, & Vine, 2018). We counted video frames (50Hz field rate) from the moment that participants prepared for the putting posture to the moment that participants initiated a "real" putt with the putter touching the golf ball. We transformed these video frames into pre-putt-time (in seconds).

Procedure

The experiment took place in a golf-putting laboratory. With institutional ethical approval, we advertised the study in local golf clubs and recruited club members given their informed consent. After welcoming participants to the laboratory, we asked participants to provide consent and to complete the NPI-40. Next, participants completed the experimental conditions of five blocks of practice, one block of low-pressure putts, and one final block of high-pressure putts. We asked participants to complete the MRF-L after our manipulations in the low- and high-pressure conditions and the RSME on completion of each condition. At the end of the experimental session, we fully debriefed participants about the details of the experiment, thanked all participants, and paid their prize money (if applicable).

Results

Preliminary analyses

There were no missing data. A paired *t* test revealed a significant increase in cognitive anxiety from the low ($M = 3.30$, $SD = 1.97$) to high anxiety condition ($M = 4.61$, $SD = 2.53$), $t\ (63) = 7.96$, $p < .001$, 95% CI [.98, 1.64], Cohen's $d = .99$. Table 2 provides descriptive statistics and correlations between study variables.

Main Analyses

As with Experiment 1, we generated the residualized scores for all of our outcome variables including performance (MRE), mental effort, and pre-putting time (hereafter we use the variable name to refer to the residualized scores, e.g., "performance" refers to residualized performance). We performed moderated regression analyses as in Experiment 1. There were no univariate or multivariate outliers. All assumptions for regression were met.

Performance. The overall model accounted for 17.5% variance in performance, $F\ (3, 63) = 4.23$, $p = .010$. Step 1 of the regression analysis revealed that adaptive narcissism did not account for a significant proportion of variance in performance, $R^2 = .01$, $F\ (1, 62) = 0.35$, $B = -.07$, $p = .555$, 95% CI [-.32, .18]. In Step 2, maladaptive narcissism was also not significant, $\Delta R^2 = .03$, $\Delta F\ (1, 61) = 1.33$, $B = -.15$, $p = .253$, 95% CI [-.41, .11]. In Step 3, the adaptive × maladaptive narcissism interaction was significant, $\Delta R^2 = .17$, $\Delta F\ (1, 60) = 10.74$, $B = -.43$, $p = .002$, 95% CI [-.69, -.17], Cohen's $f^2 = .22$. Adaptive narcissism was associated with better performance (i.e., reduced MRE) when maladaptive narcissism was high ($B = -.42$, $p = .010$, 95% CI [-.73, -.11]) but was related to impaired performance (i.e., increased MRE) when maladaptive narcissism was low ($B = .53$, $p = .008$, 95% CI [.14, .92]). Adaptive narcissism was associated with significantly better performance when maladaptive narcissism was *Mean* + .67 *SD* or over but with worse performance when maladaptive narcissism was *Mean* - .50 *SD* or below. Figure 1 (middle) displays this interaction.

Effort. The overall model accounted for 11.6% variance in effort, F (3, 63) = 2.63, p = .058. Step 1 revealed that adaptive narcissism was not significant, $R^2 < .01$, F (1, 62) = 0.01, B = -.01, p = .931, 95% CI [-.26, .24]). In Step 2, maladaptive narcissism accounted for a significant proportion of effort variance, $\Delta R^2 = .11$, ΔF (1, 61) = 7.63, B = .33, p = .008, 95% CI [.10, .59]). In Step 3, the adaptive × maladaptive narcissism interaction was not significant, $\Delta R^2 < .01$, ΔF (1, 60) = 0.34, B = .08, p = .512, 95% CI [-.14, .36].

Pre-putt time. The overall model accounted for 9.3% variance in pre-putt time, F (3, 63) = 2.05, p = .117. Step 1 of the analysis revealed that adaptive narcissism did not account for a significant proportion of variance in performance, $R^2 = .01$, F (1, 62) = 0.74, B = -.11, p = .423, 95% CI [-.38, .14]. In Step 2, maladaptive narcissism was also not significant, ΔR^2 = .01, ΔF (1, 61) = 0.46, B = .09, p = .645, 95% CI [-.19, .56]. In Step 3, the adaptive × maladaptive narcissism interaction was significant, $\Delta R^2 = .07$, ΔF (1, 60) = 4.88, B = -.31, p = .031, 95% CI [-.58, -.03], Cohen's $f^2 = .09$. Adaptive narcissism predicted significantly reduced pre-putt time, reflecting better efficiency, when maladaptive narcissism was high (B = -.38, p = .028, 95% CI [-.72, -.04]) but was not when maladaptive narcissism was low (B = .24, p = .261, 95% CI [-.19, .67]). The conditional effect of adaptive narcissism on pre-putt time became significant only when maladaptive narcissism was *Mean* + .71 *SD* or over. Figure 1 (bottom) displays this interaction.

Discussion

Experiments 1 and 2 consistently demonstrated that increased adaptive narcissism was related to better performance under pressure only when maladaptive narcissism was high. The data from Experiment 2 did not support the *trying harder* hypothesis because adaptive narcissism failed to predict effort regardless of the levels of maladaptive narcissism. Results offer support, however, for the *trying smarter* hypothesis. Adaptive narcissism predicted improved efficiency and performance only when maladaptive narcissism was high.

In Experiment 3, we employed a letter transformation task to examine the generalizability of findings from Experiments 1 and 2. This task requires participants to transform a random letter a given distance to obtain another letter under low- and high-pressure conditions. For example, the instruction 'A + 4' requires participants to transform the letter A to E. This process directly tests the functions of working memory (Hamilton et al., 1977), which is known to play a vital role in motor execution and performance under pressure (see Furley & Memmert, 2010). Another advantage of this task is that it permits recording of psychophysiological indices of processing efficiency such as heart rate variability. More specifically, r-MSSD (a time domain measure of heart rate variability) provides an index of cardiac vagal control (Achten & Jeukendrup, 2003), which is positively associated with affective regulation, attentional control, and goal-directed executive function (Thayer & Brosschot, 2005). We therefore employed r-MSSD as a measure of processing efficiency in Experiment 3.

In the interests of parsimony, we report much of Experiment 3 (i.e., method, analyses, tables) in the online supplement. We encourage readers who are interested in this innovative pressure manipulation (via a computerized testing program) to scrutinize those materials. We report the results below to evidence the replicability of the performance effect and to provide additional support for the underlying mechanism using psychophysiological data.

Experiment 3

Results

Performance. The overall model accounted for 18% of the variance in performance (i.e., the time taken), F (5, 111) = 4.87, $p < .001$. Step 1 of the analysis revealed that adaptive narcissism was significantly related to better performance (reduced time taken), $\Delta R^2 = .05$, F

(1, 113) = 6.16, B = -.23, p = .015, 95% CI [-.41, -.05]. In Step 2, maladaptive narcissism was not significant, ΔR^2 = .02, ΔF (1, 112) = 3.03, B = -.19, p = .084, 95% CI [-.40, .03]. Importantly, in Step 3, the adaptive × maladaptive narcissism interaction was significant, ΔR^2 = .05, ΔF (1, 111) = 6.05, B = -.20, p = .015, 95% CI [-.36, -.04], Cohen's f^2 = .05. Adaptive narcissism predicted performance (lower time taken) when maladaptive narcissism was high (B = -.30, p = .014, 95% CI [-53, -.06]) rather than low (B = .11, p = .464, 95% CI [-.18, .39]). Adaptive narcissism predicted performance only when maladaptive narcissism was *Mean* + .56 *SD* or over. Figure 2 (top) displays this interaction.

Effort. The overall model accounted for 4.3% variance in mental effort, F (5, 110) = 1.00, p = .424. The analysis revealed that adaptive narcissism was not significantly related to effort, ΔR^2 < .01, F (1, 112) < 0.01, B = -.01, p = .971, 95% CI [-.18, .18]. Maladaptive narcissism was also not significant, ΔR^2 = .02, ΔF (1, 111) = 1.98, B = .15, p = .163, 95% CI [-.06, .63]. The adaptive × maladaptive narcissism interaction was not significant, ΔR^2 = .01, ΔF (1, 110) = 1.51, B = .10, p = .222, 95% CI [-.06, .26].

Efficiency. The overall model accounted for 10.1% variance in the psychophysiological measure of mental efficiency (i.e., r-MSSD), F (5, 101) = 2.26, p = .054. The analysis revealed that adaptive narcissism was not significantly related to efficiency, ΔR^2 < .01, F (1, 103) = 0.66, B = -.07, p = .420, 95% CI [-.24, .10]. Maladaptive narcissism was also not significant, ΔR^2 < .01, ΔF (1, 102) = 0.25, B = .05, p = .617, 95% CI [-.15, .26]. Of more interest, the adaptive × maladaptive narcissism interaction was significant, ΔR^2 = .04, ΔF (1, 101) = 4.49, B = .17, p = .037, 95% CI [.01, .33], Cohen's f^2 = .05. Adaptive narcissism was not related to efficiency when maladaptive narcissism was high (B = .05, p = .655, 95% CI [-.18, .29]) but predicted reduced r-MSSD (an anxiety-induced reduction in efficiency) when maladaptive narcissism was low (B = -.28, p = .036, 95% CI [-54, -.02]). Regions of significance confirmed that this effect was significant only when maladaptive narcissism was *Mean* - .71 *SD* or below. Figure 2 (bottom) displays the nature of the interaction.

Discussion

Consistent with Experiments 1 and 2, adaptive narcissism was only associated with improved performance under pressure when maladaptive narcissism was high. In accord with Experiment 2, the effort data did not support the *trying harder* hypothesis. The r-MSSD data from the letter transformation task provide further support for the trying smarter hypothesis, as adaptive narcissism protected processing efficiency and predicted improved performance only when maladaptive narcissism was high.

General discussion

Although global grandiose narcissism as measured by the NPI has been the main focus of the narcissism-performance research, the performance effects of its so-called adaptive and maladaptive components had previously been unexplored. In the present research we examined the adaptive × maladaptive narcissism interaction on performance under pressure and tested potential mechanisms to explain these performance effects.

Across two motor tasks and one cognitive task, we provide the first evidence that adaptive narcissism is beneficial to performance under pressure only in the presence of maladaptive narcissism. The findings demonstrate that a one-dimensional conceptualization of grandiose narcissism is inadequate to explain the effects of narcissism on performance. We also investigated the mechanisms underlying these findings and provide the first support for the *trying smarter* proposition over the *trying harder* viewpoint (see Roberts, Woodman, et al., 2018). In the golf-putting and letter transformation tasks (Experiments 2 and 3), results consistently demonstrated that adaptive narcissism was unrelated to *effort* regardless of the levels of maladaptive narcissism. Conversely, adaptive narcissism predicted better *efficiency* and *performance* only when maladaptive narcissism was high. These findings suggested that adaptive narcissism in the presence of maladaptive narcissism is beneficial to performance because of the efficient task processing.

Trying harder *vs* Trying smarter

While evidence for the *trying harder* hypothesis has emerged in the existing narcissism-performance research (e.g., Roberts, Cooke, et al., 2018), our data add new insights to support the *trying smarter* hypothesis. Roberts, Cooke, et al. (2018) demonstrated that effort during a dart-throwing and a muscular endurance task mediated the narcissism-performance relationship. Three reasons may explain the different findings in our and Roberts, Cooke, et al.'s work. First, while Roberts, Cooke, et al. focused on grandiose narcissism (i.e., NPI total score), we focused on the interaction between adaptive and maladaptive aspects of grandiose narcissism. Since a high NPI score may reflect high levels of either or both adaptive and maladaptive narcissism, any effect observed in NPI total score is not equivalent to the effect of the precise combination of high adaptive and high maladaptive narcissism.

Second, Roberts, Cooke, et al.’s (2018) tasks used novice players (i.e., in dart throwing) and imposed high levels of physical demand (i.e., the muscular endurance task). However, our tasks involved participants with higher levels of task-related expertise (i.e., basketball players and skilled golfers) and imposed mental (i.e., letter transformation) rather than physical demand. Indeed, skilled performance requires less mental control (Masters & Maxwell, 2008), and cognitive compared to muscular endurance tasks are less physically demanding. Therefore, effort quantity plays a less critical role in our tasks compared to Roberts, Cooke, et al.'s tasks. Finally, the pressure manipulation in our tasks also offers an explanation for the difference in findings across studies. Roberts, Cooke, et al. used a performance climate to manipulate experimental conditions, but a performance climate does not necessarily create high pressure. Conversely, our tasks combined a range of stimuli to induce pressure during task performance. According to distraction theories of anxiety and performance (Eysenck & Calvo, 1992; Eysenck et al., 2007), additional effort is less likely to compensate for performance as performance pressure increases. As such, it is possible that *trying harder* could help achieve desired performance under relatively low levels of pressure and that *trying smarter* could optimize performance when pressure is higher. Such a position is worthy of consideration.

Theoretical and applied implications

The findings have several important implications. First, in performance contexts, it appears that *maladaptive narcissism* is sometimes *adaptive* because it can contribute to better performance under pressure. Given that adaptive narcissism was beneficial to performance under pressure only in the presence of maladaptive narcissism, the so-called *adaptive* and *maladaptive* monikers of the corresponding components in the NPI are misleading. We recommend the use of different terms to describe these aspects of narcissism and suggest using *self-inflated narcissism* and *dominant narcissism* instead. These alternative terms better tackle the psychological attributes of the so-called adaptive and maladaptive narcissism. Such denominations also minimize any presupposed effects on the dependent variables of interest. At the very least, researchers should not conceptualize adaptive narcissism as always being adaptive, and maladaptive narcissism as always being problematic.

Second, it is the precise interactive combination of adaptive and maladaptive narcissism that benefits performance under pressure. Such findings advance our current knowledge of a simple and positive relationship between global-level grandiose narcissism and performance. More generally, the interaction between different narcissism dimensions is worthy of consideration when attempting to understand the influence of narcissism in different contexts.

The finding that maladaptive narcissism plays an *adaptive* role in performance settings has ramifications for researchers and practitioners with an interest in personality. Indeed, performance environments operate within an intrapersonal and interpersonal context such that one would explore the potential benefits of maladaptive narcissism to best effect beyond the performance setting in isolation. For example, if narcissists behave aggressively and violently in a social environment because they do not recognize any alternative ways to eliminate any ego-threats and re-establish dominance (Baumeister et al., 1996), creating performance environments and fostering performance goals are likely to be particularly beneficial for those high in maladaptive narcissism. Although such a position requires empirical support, it provides an alternative route for alleviating the potential adverse influences of narcissism in social and interpersonal settings.

Additionally, the present data offer an insight into the mechanism that underlies optimization of narcissists' performance under pressure. Specifically, individuals high in both adaptive and maladaptive narcissism performed better under pressure thanks to their superior regulation of task processing rather than simply by investing greater effort during task performance. As such, we recommend that performance-focused practitioners consider interventions to enhance performers' regulation of task processing. Furthermore, considering the adaptive × maladaptive narcissism interaction on performance under pressure, it appears that high levels of confidence and performance motivation are equally important for achieving optimal performance.

Limitations

Although the findings are clear and offer important implications, we note several limitations that warrant attention. First, although our sample estimations aimed to provide sufficient power for detecting performance effects, they may have been imprecise for examining the underlying mechanisms of the performance effects. Indeed, some of our analyses, especially the examination of the *trying harder* hypothesis in Experiments 2 and 3 were subject to low statistical power. This is because the effect sizes in mental effort was smaller than our a priori estimations. However, the analyses on efficiency (i.e., pre-putt time, r-MSSD) achieved sufficient power and demonstrated larger effect sizes. As such, the *trying smarter* perspective likely plays a more vital role in performance under pressure over the *trying harder* perspective for those high in both adaptive and maladaptive narcissism, at least in tasks that require fine motor control (e.g., golf-putting) and working memory (e.g., letter transformation). Second, the cognitive task used in Experiment 3 might invite concern about the generalizability of the findings to sport contexts. However, such a concern is less of an issue because we used a letter transformation task that relies on the functions of working memory, which play a vital role in sport performance (see Furley & Memmert, 2010). As such, Experiment 3 findings have relevant performance implications for sport settings.

Suggestions for future research

The current research offers fruitful future research directions. For example, although the trying harder and trying smarter positions rest on the Processing Efficiency Theory (Eysenck & Calvo, 1992) and Attentional Control Theory (Eysenck et al., 2007), competing theories such as the Theory of Reinvestment (Masters & Maxwell, 2008) also provide important insight for future research. The Theory of Reinvestment states that performers under high pressure tend to reinvest attention to task processing through the use of explicit task-relevant knowledge (e.g., Mullen & Hardy, 2000) or step-by-step monitoring (e.g., Beilock & Carr, 2001) to avoid undesired performance. However, such reinvestment will regress effortless skilled performance to a de-automatized and more effortful form of control which results in performance failure (Masters & Maxwell, 2008). From a reinvestment perspective, since individuals high in narcissism are confident in their ability and seek to approach rather than to avoid performance settings (Zhang et al., 2018), they likely see themselves as so capable as to have no need for reinvestment to ensure good performance.

Therefore, narcissism likely protects against the reinvestment effects that commonly occur when performing in high-pressure environments. Our data support this position, especially that adaptive narcissism in the presence of maladaptive narcissism predicted reduced pre-putting time in golf-putting and less of a decrease in r-MSSD in letter transformation, which indicates automated task execution and lower levels of interference (see also Lam et al., 2010). This position clearly warrants further research attention.

Conclusions

The current research demonstrated that adaptive narcissism (reflecting assurance and over confidence) was related to better performance under pressure only when maladaptive narcissism (reflecting a strong willingness to dominate) was high. In the specific context of high-pressure performance, there is thus nothing *maladaptive* about maladaptive narcissism – quite the contrary. We thus urge researchers to abandon the use of *adaptive* and *maladaptive* narcissism in favor of *self-inflated* and *dominant* narcissism, respectively. The findings further support that the precise combination of adaptive and maladaptive narcissism contributes to the efficient use of processing resources such that individuals high in both components of narcissism perform well under pressure because they try smarter rather than try harder. Future research would do well to examine different forms of narcissism in performance settings, and beyond.

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Note

1. Based on the data reported in this paper, we suggest in the General Discussion that adaptive narcissism would be better labeled *self-inflated narcissism* and that maladaptive narcissism would be better labeled *dominant narcissism*. We believe these alternative monikers better describe the psychological attributes of the so-called adaptive and maladaptive components of narcissism, at least in the contexts of sport and performance.
2. This research is the first to examine the effect of adaptive and maladaptive narcissism interaction and thus no previous studies provide possible effect size of such an interaction. However, as we were interested in examining the effects of these aspects of narcissism on performance under pressure, we used the effect sizes for the previously reported interaction between narcissism and pressure on performance for the power analysis.

Table 1

*Descriptive statistics and correlations between study variables in the basketball set shot (*n *= 80)*

Measure	1	2	3	4	5	6	7	8	9
(1) Age	–	.49**	-.17	-.12	-.16	-.07	-.17	-.11	-.17
(2) Experience		–	-.01	-.14	.04	-.02	.02	.05	.01
(3) NPI-16			–	.85**	.92**	.29**	.24	.27*	.57**
(4) AN-5				–	.65**	.23*	.22	.07	.46**
(5) MN-8					–	.29*	.19	.27*	.51**
(6) Anxiety (LP)						–	.39**	.12	.31**
(7) Anxiety (HP)							–	.35**	.33**
(8) Performance (LP)								–	.65**
(9) Performance (HP)									–
Mean	22.41	7.61	8.05	2.58	4.80	8.93	11.40	16.16	16.58
SD	2.30	2.14	4.55	1.80	2.39	3.13	4.19	4.11	4.63

Note. Experience = Years of Experience; NPI-16 = 16-item Narcissistic Personality Inventory (range: 0-16); AN-5 = Adaptive Narcissism (range: 0-5); MN-8 = Maladaptive Narcissism (range: 0-8); LP = Low Pressure; HP = High Pressure; Range of Performance Scores: 0-25.

* $p < .05$; ** $p < .01$

Table 2

*Descriptive statistics and correlations between study variables in the golf-putting task (*n *= 64)*

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
(1) Age	–	.05	-.22	-.12	-.20	-.27*	-.29*	-.08	-.15	.09	-.01	.01	.03
(2) Handicap		–	.10	.09	.05	.04	.12	-.02	-.01	.01	.03	.41**	.46**
(3) NPI-40			–	.70**	.82**	-.04	-.04	-.08	-.02	-.02	.02	.34**	.11
(4) AN-14				–	.25*	.06	-.04	-.01	-.01	-.10	-.11	.26*	.15
(5) MN-18					–	-.05	.02	-.06	.04	.04	.11	.25*	-.01
(6) Anxiety (LP)						–	.86**	.12	.24	.02	-.02	-.03	-.04
(7) Anxiety (HP)							–	.12	.24	-.03	.01	.12	.06
(8) ME (LP)								–	.96**	.20	.23	-.01	-.12
(9) ME (HP)									–	.24	.31*	.02	-.13
(10) PrePT (LP)										–	.70**	-.02	-.10
(11) PrePT (HP)											–	.03	-.01
(12) MRE (LP)												–	.40**
(13) MRE (HP)													–
Mean	45.67	15.88	13.58	6.02	4.98	3.30	4.61	100.56	108.39	7.68	9.09	276.05	262.97
SD	18.82	4.25	7.08	3.24	3.74	1.97	2.53	34.95	35.58	3.04	4.37	73.45	75.69

Note. NPI-40 = 40-item Narcissistic Personality Inventory (range: 0-40); AN-14 = Adaptive Narcissism (range: 0-14); MN-18 = Maladaptive Narcissism (range: 0-18); LP = Low Pressure; HP = High Pressure; ME = Mental Effort; PrePT = Pre-putting Time (in second); MRE = Mean Radial Errors (in millimeter). * $p < .05$; ** $p < .01$

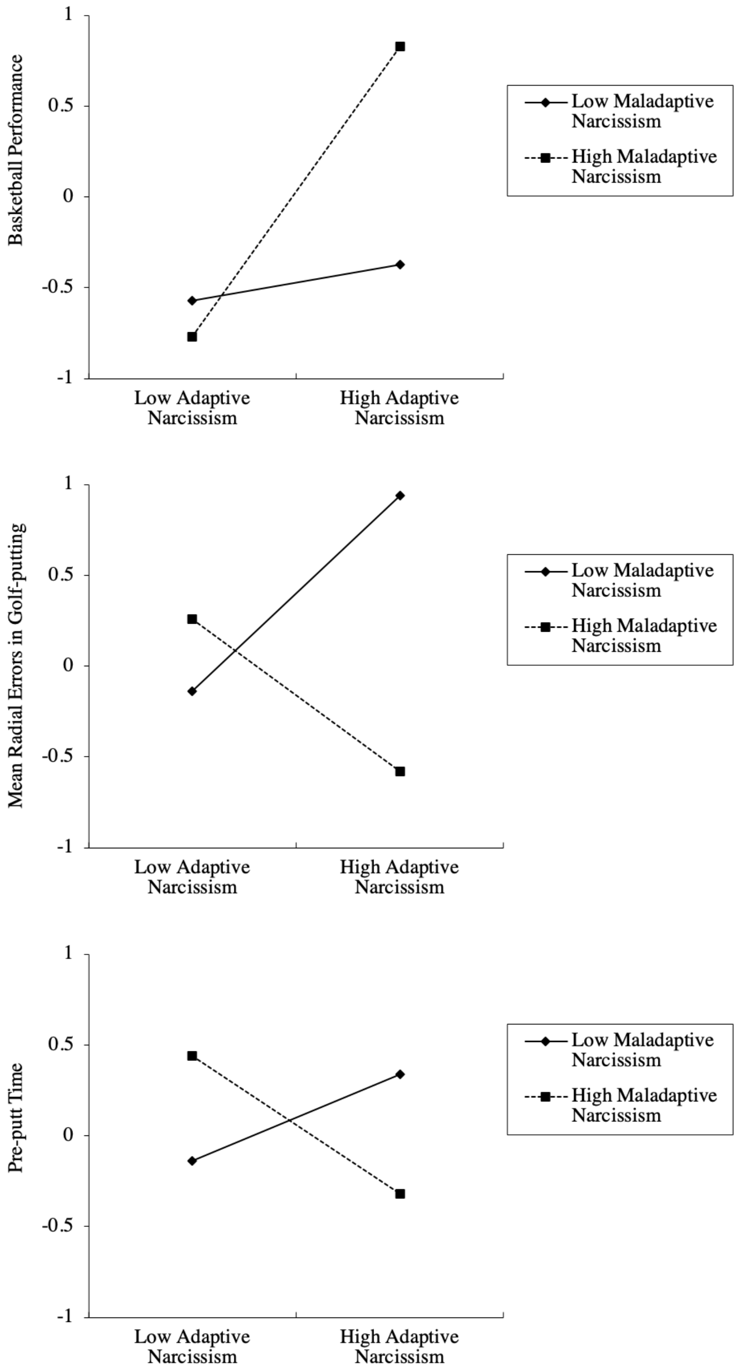

Figure 1. The interaction between adaptive and maladaptive narcissism on performance scores in basketball free throw (top) and mean radial errors (middle) and pre-putt time (bottom) in golf-putting. Regression slopes were derived from one standard deviation below the mean (low) and one standard deviation above the mean (high). All variables were standardized.

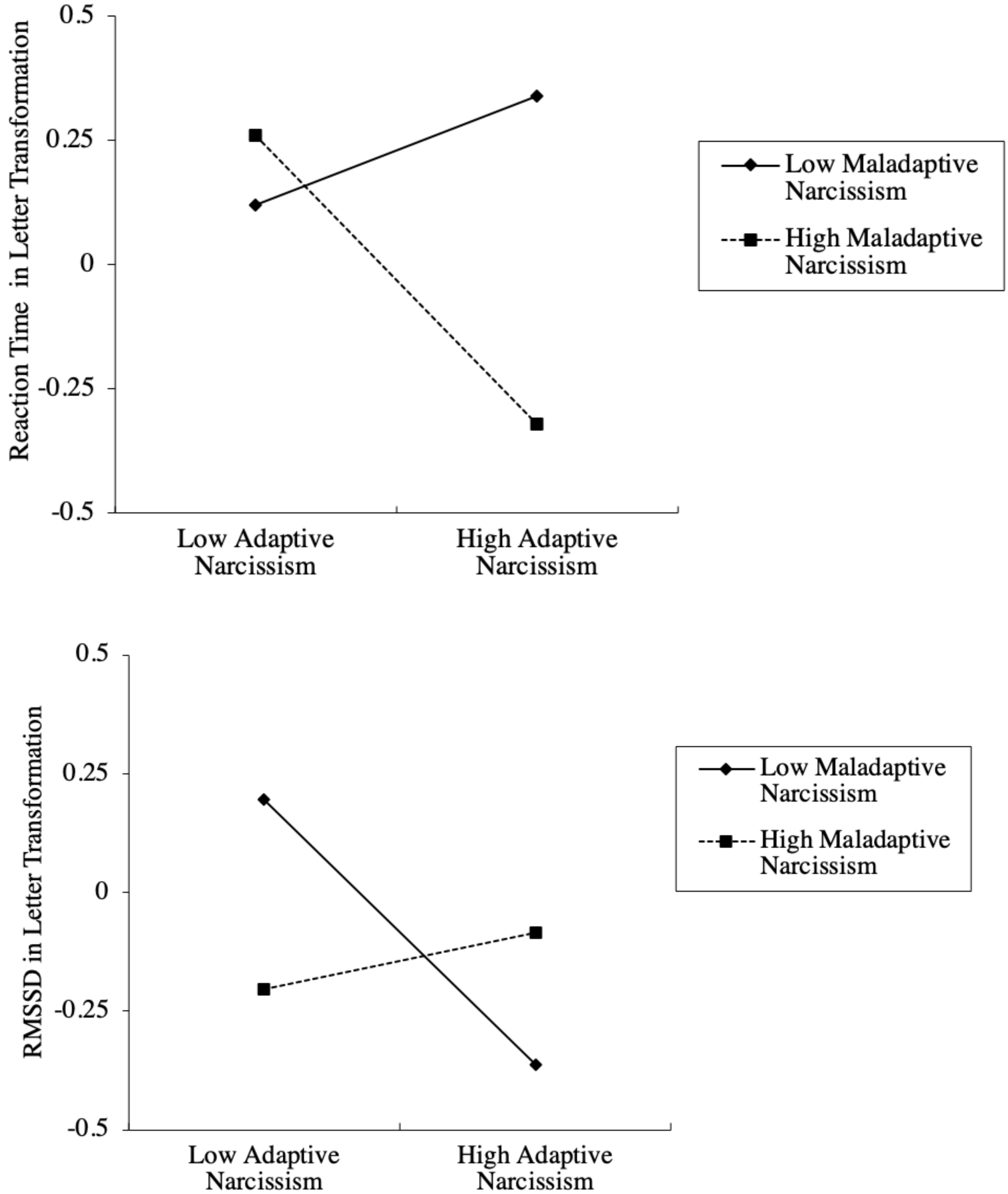

Figure 2. The interaction between adaptive and maladaptive narcissism on time taken in the letter transformation (top) and the r-MSSD during the letter transformation (bottom). Regression slopes were derived from one standard deviation below the mean (low) and one standard deviation above the mean (high). All variables were standardized.