

*Highlighting the difference between
approach and avoidance motivation
enhances the predictive validity of
performance-avoidance goal reports*

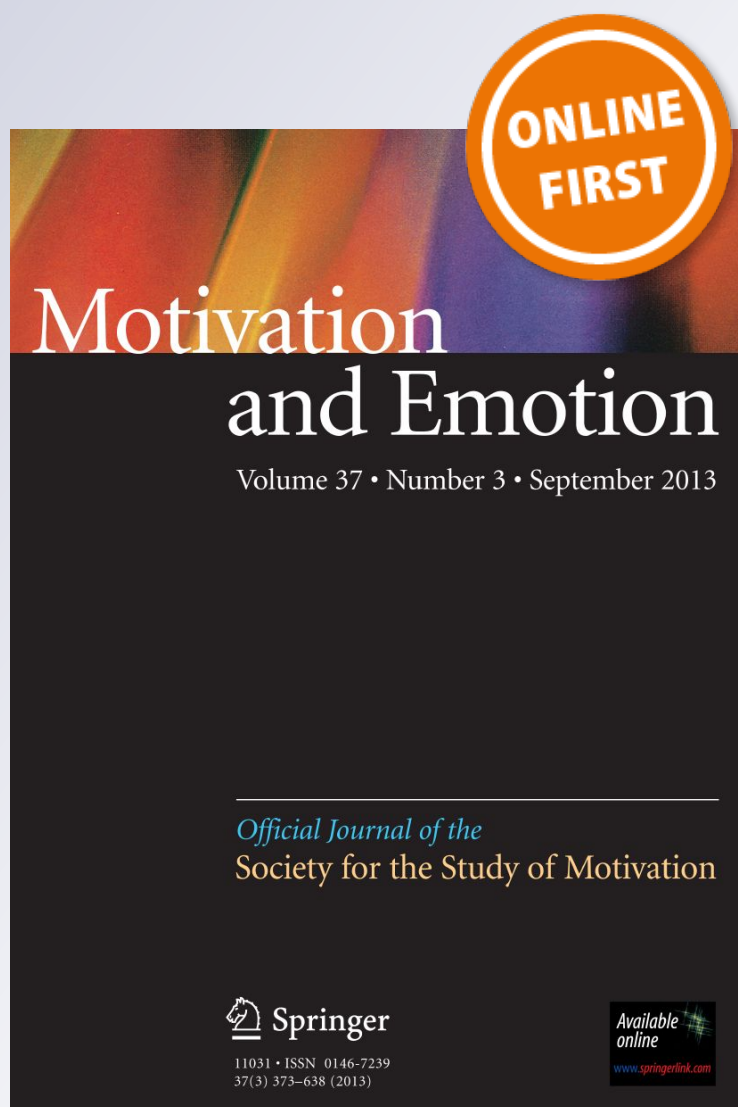
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Highlighting the difference between approach and avoidance motivation enhances the predictive validity of performance-avoidance goal reports

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Abstract

This research investigated whether highlighting the difference between norm-based approach and avoidance motivation impacts performance goal reporting accuracy. Participants were randomly assigned to receive no instructions, or reading materials indicating that norm-based approach and avoidance motivation are the same (Same condition) or different (Different condition). In Study 1 (N = 978), experimental condition was tested as a moderator of the relation between antecedent variables and performance goal reports. In Study 2 (N = 957), experimental condition was tested as a moderator of the predictive utility of performance goal reports. Both studies showed that while relations with performance-approach goals remained unaffected, experimental condition moderated the relation between performance-avoidance goal reports and their antecedent variables (Study 1), and their process and outcome variables (Study 2). The strongest associations (the most accurate goal reports) came from the different condition. Highlighting the difference between approach and avoidance enhanced the predictive validity of performance-avoidance goal reports. Implications for understanding and measuring achievement goals are discussed.

Keywords Approach motivation · Avoidance motivation · Performance-approach · Performance-avoidance · Achievement goals

Introduction

The achievement goal approach to achievement motivation is a well-established framework for explaining and predicting educational, athletic, and other achievement-relevant outcomes (see meta-analyses by Cellar et al. 2011; Huang 2012; Lochbaum and Gottard 2015; Richardson et al. 2012; Van

Yperen et al. 2014). One primary type of achievement goal is a performance goal (Dweck 1986; Nicholls 1984), with two different variants: performance-approach—trying to obtain a positive competence outcome relative to others—and performance-avoidance—trying to avoid a negative competence outcome relative to others (Elliot and Church 1997)¹. An emerging area of research in the achievement goal literature focuses on the interrelation between performance-approach and performance-avoidance goals, and how reports of these goals are to be understood and interpreted (Hulleman et al. 2010; Law et al. 2012; Linnenbrink-Garcia et al. 2012). In the present research we conducted two studies designed to investigate whether highlighting the difference between approach motivation and avoidance motivation influences the interrelation between and the reporting of performance-approach and performance-avoidance goals.

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¹ Some conceptualizations of performance goals also include a demonstration or appearance component, whereby performance-approach goals include trying to demonstrate that one is competent and performance-avoidance goals include trying to demonstrate that one is not incompetent (Elliot 2005; Urda and Mestas 2006).

The performance goal intercorrelation

Meta-analytic data indicate that performance-approach and performance-avoidance goals are positively correlated on average at $r = .40$ in educational contexts (Hulleman et al. 2010) and at $r = .45$ in the sport domain (Lochbaum et al. 2017). However, this correlation is variable, with some studies demonstrating inter-goal correlations above $r = .70$ (Linnenbrink-Garcia et al. 2012). At least part of the reason for this intercorrelation is the conceptual overlap between performance goals. Both performance-approach and performance-avoidance goals use a normative standard (comparison to others) in defining and evaluating competence, and this shared standard undoubtedly results in shared adoption of the two goals. However, it is also clear that the two performance goals are conceptually distinct, in that one focuses on the positive possibility of doing well relative to others while the other focuses on the negative possibility of doing poorly compared to others. In addition, empirically, these goals have different nomological networks. First, performance-approach and performance-avoidance goals have different patterns of antecedents. Perceived competence and self-efficacy positively predict performance-approach goals, but negatively predict performance-avoidance goals (Cury et al. 2006; Liem et al. 2008). Approach temperament positively predicts performance-approach goals, whereas avoidance temperament positively predicts performance-avoidance goals (Elliot and Thrash 2001). Although fear of failure is a positive predictor of both performance goals, need for achievement is a positive predictor of performance-approach goals only (Elliot and Church 1997; Neff et al. 2005; Zusho et al. 2005). Second, performance goals differ in the processes and outcomes they facilitate. Performance-approach goals largely predict adaptive processes and outcomes, such as pride (Pekrun et al. 2009), help seeking (Tanaka et al. 2002), and performance attainment (Senko and Harackiewicz 2005; see reviews by; Harackiewicz et al. 2002; Linnenbrink-Garcia et al. 2008). Performance-avoidance goals, however, largely predict negative processes and outcomes, such as feelings of anxiety (Huang 2011), self-handicapping (Urdan 2004), avoidance of help-seeking (Middleton and Midgley 1997), and low interest and academic performance (Harackiewicz et al. 2008; Rawsthorne and Elliot 1999).

One line of research on the performance goal interrelation has moved beyond examining the magnitude of the relation between the two goals to test moderator variables. Documented moderators include type of achievement goal measure (the intercorrelation is lower for the Achievement Goal Questionnaire; Huang 2012; Hulleman et al. 2010), sex of respondent (the intercorrelation is lower for males;

Lochbaum et al. 2017), and perceived competence (the intercorrelation is lower for those with high perceived competence; Law et al. 2012). Most pertinent to the present research, beliefs about the distinctiveness of approach and avoidance motivation moderate the performance goal intercorrelation (Hangen et al. 2018). Both individual differences and experimental manipulations that encourage discrimination between norm-based approach and avoidance motivation are associated with a weaker performance goal correlation compared to individuals who believe or are led to believe that approach and avoidance motivation are the same.

Performance-approach and performance-avoidance goal reports

As indicated above, beliefs and manipulations of the distinctiveness of norm-based approach and avoidance motivation moderated the performance goal intercorrelation. Research also suggests that these manipulations of distinctiveness lead to differences in reports of performance-avoidance, but not performance-approach goals (Hangen et al. 2018). That is, compared to highlighting the similarity between approach and avoidance motivation, highlighting the difference between approach and avoidance motivation not only decreased the performance goal correlation, but also lowered reports of performance-avoidance goals. This suggests that the experimental manipulations may have influenced the performance goal correlation through its impact on performance-avoidance goal reports.

A critical, yet unexplored, next question is whether manipulating beliefs about the distinctiveness of approach and avoidance motivation affects the *quality* of performance goal reports, especially for performance-avoidance goals. Specifically, does the mean level drop in performance-avoidance goal reports indicate increased accuracy, decreased accuracy, or have no bearing on how accurately performance-avoidance goals are reported? Addressing this question is the main focus of the present research, and not only promises to provide insight into the performance goal correlation, but may also have implications for the assessment of achievement goals.

The present research

Two studies investigated whether beliefs about approach and avoidance motivation impacted the predictive validity of performance goal reports. Both studies manipulated beliefs about approach and avoidance motivation and had participants report their performance-approach and performance-avoidance goals. Experimental materials

highlighting the difference between approach and avoidance were designed to encourage individuals to more clearly perceive and understand the distinction between performance-approach and performance-avoidance goals. This enhanced discernment was hypothesized to facilitate more accurate reports of performance-avoidance goals. Accuracy was assessed via predictive validity (Cronbach and Meehl 1955)—associations with empirically established, conceptually-grounded antecedents and processes/outcomes. Study 1 assessed known antecedents of performance goals prior to measuring the goals themselves, and Study 2 assessed known processes and outcomes of performance goals after measuring the goals themselves. If, as posited, experimental materials highlighting the distinctiveness of approach and avoidance motivation elicit more accurate reports of performance-avoidance goals, then individuals who receive these materials should report performance-avoidance goals that show significantly *stronger* associations with their known antecedents (Study 1) and significantly *stronger* associations with their known processes and outcomes (i.e. greater predictive utility; Study 2).

In prior research, manipulation of the distinctiveness of approach and avoidance motivation was found to influence performance-avoidance, but not performance-approach, goal reports (Hangen et al. 2018). Thus, we predicted that this manipulation would improve the accuracy of performance-avoidance, but not performance-approach, goal reports, as indicated by enhanced predictive validity. However, given the dearth of research in this area and the possibility that the absence of mean-level change in performance-approach goals could mask bi-directional change (e.g., Fryer and Elliot 2007), we only tentatively held the null prediction for performance-approach goals.

Study 1

Study 1 tested whether highlighting the difference between norm-based approach and avoidance motivation via experimental manipulation would lead to (1) a lower performance goal intercorrelation (replication of Hangen et al. 2018), (2) lower mean-levels of performance-avoidance, but not performance-approach, goal adoption (replication of Hangen et al. 2018), and (3) a change in the strength of associations between performance-avoidance goals and their hypothesized antecedents, namely high fear of failure, high avoidance temperament, and low self-efficacy. As an ancillary aim, we assessed response times for the performance-approach and performance-avoidance goal items as a potential behavioral measure of respondents' comprehension of the goal items.

Method

Participants

An a priori power analysis was used to estimate the number of participants needed to identify moderation by experimental condition of the relation between performance goal antecedents and self-reported performance goals (primary analysis), and to replicate the previously documented effect of experimental materials on self-reported performance-avoidance goals. Using a small effect size ($f = .10$) and a target power level of .80, a minimum of 969 participants was set as the target sample size. To account for removal of participants who might fail an attention screen question (see Maniaci and Rogge 2014), we exceeded the target sample, acquiring 1038 participants. Participants were restricted to those within the United States and were recruited through Turk Prime, a research platform associated with Amazon's Mechanical Turk (see Litman et al. 2017). Of the 1038 participants, 22 (<3%) participants were removed a priori because they did not complete the study, and an additional 38 (<4%) were excluded a priori due to their failure on the attention screen question (see measures). Thus, analyses were performed on 978 participants (539 female, 437 male, 2 other) ranging in age from 18 to 74 years ($M = 36.6$, $SD = 12.4$ years).

Procedure

In both this and the following study, all data exclusions, manipulations, and measures analyzed are reported, and all data were collected (and omissions attended to) before any analyses were conducted. Participants were directed to the online study. In the study, participants filled out measures of performance goal antecedents including need for achievement, fear of failure, approach and avoidance temperament, and self-efficacy. Preceding the measure of self-efficacy, participants were asked to choose the achievement domain that they would be focusing on (i.e. their job, school classes, or a hobby) and reported their self-efficacy within the selected domain.

Following the antecedent measures, participants were randomly assigned to one of three conditions (*Same*, *Different*, or *Control*). To manipulate the salience of either the difference or similarity between approach and avoidance motivation, we had participants read an excerpt from a fictitious scientific article in which researchers described norm-based approach motivation ("*trying to do well compared to others*") and norm-based avoidance motivation ("*trying to avoid doing poorly compared to others*") as being the same (Same condition) or different (Different condition). Participants assigned to the Control condition did not receive any article excerpt to read (see Hangen et al. 2018). Following

the excerpt, participants in the Same and Different conditions were asked a question regarding the material they had read, as a comprehension check. All participants then completed performance goal measures regarding the domain (job, school, or hobby) that they had previously selected (with item response times collected), an attention screen question, and demographic questions.

Materials

Need for achievement

Participants completed a 16-item measure assessing their need for achievement using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (Jackson 1974). Items included “I enjoy difficult work” and “I don’t mind working while other people are having fun.” Responses were averaged across all items ($\alpha = .84$).

Fear of failure

Participants completed a nine-item measure assessing their fear of failure using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (Thrash and Elliot 2003). Items included “Sometimes I think it is better not to have tried at all, then to have tried and failed.” Responses were averaged across all items ($\alpha = .90$).

Approach and avoidance temperament

Participants completed a 12-item measure assessing their approach and avoidance temperament using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale (Elliot and Thrash 2010). Responses to the six approach temperament items (e.g., “Thinking about the things I want really energizes me”) were averaged to form an index of approach temperament ($\alpha = .83$). Likewise, responses to the six avoidance temperament items (e.g., “By nature, I am a very nervous person”) were averaged to form an index of avoidance temperament ($\alpha = .90$).

Self-efficacy

The eight-item General Self-Efficacy Scale (Chen et al. 2001) was modified to include the stem “In my [job/school classes/hobby],...” to measure self-efficacy with respect to the achievement domain that respondents had selected. Participants responded to items such as “In my [job/school classes/hobby], I will be able to achieve most of the goals that I have set for myself” using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale. Responses were averaged across items ($\alpha = .92$).

Comprehension check

Immediately following the experimental materials, participants in the Same condition were asked “True or False: Researchers believe that the goal of trying to avoid doing poorly compared to others is basically the SAME as the goal of trying to do well compared to others”, while participants in the Different condition were asked “True or False: Researchers believe that the goal of trying to avoid doing poorly compared to others is NOT THE SAME as the goal of trying to do well compared to others.” Thus, answering “True” indicated that participants read and understood the excerpt, whereas answering “False” indicated that participants failed to read or understand the excerpt.

Performance goals and response times

Participants were asked to report their performance goals in the domain of achievement that they had previously selected: job, school classes, or a hobby. The six performance goal items from Elliot and Murayama’s (2008) Achievement Goal Questionnaire-Revised (AGQ-R) were used to assess performance-approach (e.g., “My goal is to perform better than other people.”) and performance-avoidance (e.g., “My aim is to avoid doing worse than other people.”) goals. Participants responded on a 1 (*not at all true of me*) to 7 (*very true of me*) scale, and the items were averaged to form the performance-approach ($\alpha = .79$) and performance-avoidance ($\alpha = .92$) goal indexes. Additionally, response times for each performance goal item were recorded.

Attention screen

Given that the study was administered online and involved an experimental manipulation, we included the following attention check: “Please select option 2 to show that you are paying attention” (Maniaci and Rogge 2014).

Results

A majority of participants in the experimental conditions (98%) successfully completed the comprehension check. All analyses were conducted across the three achievement domains (job $N = 475$, school classes $N = 111$, and hobbies $N = 392$).

Preliminary analyses

Before conducting primary analyses, we sought to replicate moderation of the performance goal relation and mean-level differences in performance-avoidance goal reports as observed in previous research (Hangen et al. 2018).

Condition effects on the performance goal intercorrelation Performance-approach goals were regressed onto performance-avoidance goals, the focal contrast (1 Same, 0 Control, -1 Different), the contrast orthogonal to the focal contrast (1 Same, -2 Control, 1 Different), and the two performance-avoidance goal by contrast interactions (all predictors forming interaction terms were mean-centered). The intercorrelation between the two performance goals was significant in all conditions: Same $\beta = .57$, $t(972) = 10.20$, $p < .001$; Control $\beta = .56$, $t(972) = 10.44$, $p < .001$; Different $\beta = .24$, $t(972) = 4.75$, $p < .001$. However, the relation between performance-approach and performance-avoidance goals differed as a function of experimental condition, $\beta = .13$, $t(975) = 4.51$, $p < .001$. Critically, moderation of the performance goal relation was driven by a lower intercorrelation in the Different condition. The Different condition had a significantly lower performance goal correlation than the Control condition, $\beta = .13$, $t(972) = 4.47$, $p < .001$, whereas the Same and Control conditions did not differ, $\beta = .004$, $t(972) = .14$, $p = .887$.

Condition effects on performance goal adoption A one-way analysis of variance (ANOVA: Same versus Control versus Different) revealed an effect of condition on self-reported performance-avoidance goal adoption, $F(2, 975) = 62.33$, $p < .001$. As expected, protected LSD contrasts revealed that participants in the Different condition reported significantly less performance-avoidance goal adoption ($M = 2.97$, $SD = 1.90$) than participants in the Same condition ($M = 4.22$, $SD = 1.80$), $p < .001$, $CI_{95\%} = [-1.53, -0.97]$, and than participants in the Control condition ($M = 4.43$, $SD = 1.81$), $p < .001$, $CI_{95\%} = [-1.74, -1.18]$. There was no significant difference in performance-avoidance goal adoption between participants in the Same and Control conditions, $p = .152$, $CI_{95\%} = [-0.50, 0.08]$. Unlike performance-avoidance goals, there were no significant mean-level differences in self-reported performance-approach goal adoption between the conditions, $F(2, 975) = 0.45$, $p = .635$.

Primary analyses

To test whether experimental condition moderated the relation between performance goals and their antecedents, multiple regression models were conducted. Specifically, for each performance goal and antecedent we ran two regression models to test whether (1) the antecedent-goal association differed between the experimental conditions (Same condition versus Different condition), and (2) whether the antecedent-goal association differed between each experimental condition and the Control condition (Same condition versus Control condition, Different condition versus Control condition). In the first iteration of the models, the Control condition served as the reference group while the

Same condition (0 Control, 1 Same, 0 Different) and Different condition (0 Control, 0 Same, 1 Different) were dummy coded. In the second iteration of the models, the Different condition served as the reference group while the Same condition (0 Different, 1 Same, 0 Control) and Control condition (0 Different, 0 Same, 1 Control) were dummy coded. The performance goal of interest (performance-approach or performance-avoidance) was regressed onto the antecedent of interest (mean-centered), the two relevant dummy codes, and the resulting two interaction terms (i.e. each dummy code by mean-centered antecedent) in both models.

For example, to test whether the relation between fear of failure and performance-avoidance goals differed between the Same and Different conditions, performance-avoidance goals were regressed onto fear of failure (mean-centered), the dummy code for the Same condition (0 Different, 1 Same, 0 Control), the dummy code for the Control condition (0 Different, 0 Same, 1 Control), the interaction of fear of failure by the dummy-coded Same condition, and the interaction of fear of failure by the dummy-coded Control condition.

Performance-avoidance goals Antecedents predicting performance-avoidance goals. Before testing moderation, we tested the direct relation between the antecedents and performance-avoidance goals collapsed across conditions. As expected, fear of failure, $\beta = .21$, $t(976) = 6.73$, $p < .001$ and avoidant temperament, $\beta = .23$, $t(976) = 7.46$, $p < .001$, positively predicted performance-avoidance goal adoption; self-efficacy, although in the expected direction, did not predict performance-avoidance goal adoption, $\beta = -.02$, $t(976) = -.61$, $p = .539$. Need for achievement marginally predicted performance-avoidance goal adoption, $\beta = -.06$, $t(976) = -1.95$, $p = .052$, and approach temperament did not predict performance-avoidance goal adoption, $\beta = .02$, $t(976) = .62$, $p = .538$.

Condition effects on how well antecedents predicted performance-avoidance goals. Consistent with hypotheses, how well the expected antecedents predicted performance-avoidance goals significantly differed between the Same and Different conditions: Experimental condition significantly moderated how fear of failure, $\beta = -.12$, $t(972) = -2.81$, $p = .005$, avoidant temperament, $\beta = -.09$, $t(972) = -2.17$, $p = .030$, and self-efficacy, $\beta = .13$, $t(972) = 2.64$, $p = .008$, predicted performance-avoidance goal adoption. Experimental condition also significantly moderated how need for achievement, $\beta = .08$, $t(972) = 2.05$, $p = .041$, and approach temperament, $\beta = .10$, $t(972) = 2.45$, $p = .015$, predicted performance-avoidance goals.

When testing differences between the Control and Different conditions, significant differences emerged in how fear of failure, $\beta = -.096$, $t(972) = -2.35$, $p = .019$, and self-efficacy, $\beta = .109$, $t(972) = 2.47$, $p = .014$ (but

Table 1 Standardized regression coefficients (β) from simple slope analyses of antecedents predicting performance-avoidance goals

	Need for achievement	Fear of failure	Avoidant temperament	Approach temperament	Self-efficacy
Same	.01	.12*	.15**	.11*	.07
Control	-.02	.15**	.23***	.05	.06
Different	-.14**	.32***	.31***	-.07	-.13*

* $p < .05$, ** $p < .01$, *** $p < .001$

not avoidance temperament, $\beta = -.043$, $t(972) = -1.09$, $p = .277$), predicted performance-avoidance goals. No significant differences were observed between the Different and Control conditions in how approach temperament, $\beta = .067$, $t(972) = 1.57$, $p = .118$, and need for achievement, $\beta = .065$, $t(972) = 1.57$, $p = .118$, predicted performance-avoidance goals.

When testing differences between the Same and Control conditions, there were no significant differences in how any of antecedents predicted performance-avoidance goals (β s $< |0.05|$, p s $> .30$).

Simple slope analyses revealed that the relation between antecedents and performance-avoidance goals was consistently the strongest in the Different condition. Specifically, the Different condition had the strongest absolute relation between self-reported performance-avoidance goals and their anticipated antecedents: fear of failure $\beta = .32$, $t(972) = 6.32$, $p < .001$, avoidant temperament $\beta = .31$, $t(972) = 6.24$, $p < .001$, and self-efficacy $\beta = -.13$, $t(972) = -2.26$, $p = .024$ (see Table 1 for coefficients of simple slopes across all conditions).

Need for achievement $\beta = -.14$, $t(972) = -2.73$, $p = .006$, was also significant, and approach temperament was unrelated to performance-avoidance goal adoption in the Different condition $\beta = -.07$, $t(972) = -1.34$, $p = .181$. In the Same condition, approach temperament significantly and positively predicted performance-avoidance goal adoption, $\beta = .11$, $t(972) = 2.12$, $p = .034$, an association that would be expected for performance-approach goals (Elliot and Thrash 2010).

Performance-approach goals *Antecedents predicting performance-approach goals.* Before testing moderation, we tested the direct relation between the antecedents and performance-approach goals collapsed across conditions. As expected, need for achievement, $\beta = .30$, $t(972) = 9.87$, $p < .001$, approach temperament, $\beta = .25$, $t(972) = 8.12$, $p < .001$, and self-efficacy, $\beta = .31$, $t(972) = 9.70$, $p < .001$, positively predicted performance-approach goal adoption. Fear of failure, $\beta = -.14$, $t(972) = -4.41$, $p < .001$, negatively predicted performance-approach goal adoption, and avoidant temperament did not predict performance-approach goal adoption, $\beta = -.02$, $t(972) = -0.53$, $p = .596$.

Condition effects on how well antecedents predicted performance-approach goals. Across all models, how well antecedents predicted self-reported performance-approach goals did not significantly differ between the Different and Same conditions, β s $< |0.07|$, p s $> .15$.

Ancillary analyses

Response time To treat response time outliers, item responses that were greater than three standard deviations from the mean were removed from that item ($< 2\%$). Performance-approach and performance-avoidance goal response times were averaged across their three respective item response times, excluding any participant who did not have at least two out of the three response times ($< 1\%$; all decisions regarding outliers were made a priori).

ANOVA's were conducted to test condition effects on responses times. No main effect of condition was observed for performance-approach goal response times, $F(2, 971) = 1.18$, $p = .308$. However, a significant difference between conditions was observed for performance-avoidance goal response times, $F(2, 974) = 6.25$, $p = .002$. Protected LSD contrasts revealed that participants in the Different condition ($M = 6.22$ s, $SD = 3.32$ s) responded quicker to performance-avoidance goal items than participants assigned to the Same ($M = 6.99$ s, $SD = 3.75$ s), $p = .009$, $CI_{95\%} = [-1.34, -0.19]$, and Control ($M = 7.18$ s, $SD = 4.13$ s), $p = .001$, $CI_{95\%} = [-1.52, -0.39]$ conditions.

Study 2

Study 1 revealed that highlighting the difference between approach and avoidance motivation led respondents to provide performance-avoidance goal reports that had the strongest relations with their hypothesized antecedents. The purpose of Study 2 was to test whether the predictive utility of performance-avoidance goals would also be moderated by experimental condition. Specifically, if highlighting the difference between approach and avoidance motivation leads to higher quality performance-avoidance goal reports, then these performance-avoidance goal reports should have the strongest predictive utility. As with Study 1, replication of moderation of the performance goal intercorrelation and

lower performance-avoidance goal reports was tested. The robustness of the response time findings from Study 1 was also tested.

Method

Participants

Following a priori power calculations presented in Study 1, the targeted sample size was $N=969$. Again, we oversampled to account for anticipated omissions due to completion and attention screen failures. Thus, $N=1072$ U.S. participants were recruited to participate through Turk Prime. Of these, 81 (<9%) participants were removed because they did not complete the study, and an additional 23 participants (<3%) were removed because they failed the attention check. Thus, analyses were performed on 957 participants (525 female, 430 male, 2 other) ranging in age from 18 to 85 years ($M=36.2$, $SD=12.09$).

Procedure

Participants were randomly assigned to one of three conditions (*Same*, *Different*, or *Control*) as in Study 1. Immediately following the experimental materials, participants completed a measure of performance goals within an achievement domain of their choosing: vocation ($N=445$), academics ($N=117$), or hobby ($N=395$). Response times were collected during completion of the performance goal items and the attention screen question was introduced among these items. Next participants completed the following outcome measures within their chosen achievement domain: feelings of pride and anxiety, interest and engagement, and help seeking/help avoidance. Participants reported demographics at the end of the study.

Materials

Performance goals and response times

Performance goals and response times were measured with the same materials and procedure as in Study 1. The goal indexes exhibited adequate reliability: performance-approach ($\alpha=.81$) and performance-avoidance ($\alpha=.91$).

Pride

Items from the class-related pride subscale of the Achievement Emotions Questionnaire (Pekrun et al. 2002) were modified to measure pride within the achievement domain participants had selected. Participants responded to nine items such as “I am proud of myself in my [job/school classes/hobby]” using a 1 (*strongly disagree*) to 7 (*strongly*

agree) scale. Responses were averaged across items to form a domain-specific index of pride ($\alpha=.90$).

Anxiety

Items from the class-related anxiety subscale of the Achievement Emotions Questionnaire (Pekrun et al. 2002) were modified to measure anxiety in the achievement domain participants had selected. Participants responded to 12 items such as “I feel nervous in my [job/school classes/hobby]” using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale. Responses were averaged across items to form a domain-specific index of anxiety ($\alpha=.94$).

Interest

The six-item intrinsic motivation inventory (Ryan 1982) was adapted to assess interest and enjoyment in the achievement domain participants had selected. Participants responded to items such as “I enjoy my [job/school classes/hobby] very much” using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale and responses were averaged across items ($\alpha=.92$).

Engagement

Items from the Job Engagement Scale (Rich et al. 2010) were modified to measure engagement in the achievement domain participants had selected. Participants responded to six items such as “I devote a lot of energy to my [job/school classes/hobby]” using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale. Responses were averaged across items to form the domain-specific index of engagement ($\alpha=.94$).

Adaptive help seeking

Six items were used to measure students’ self-reported help seeking in academic situations (see Karabenick and Knapp 1991; Ryan and Pintrich 1997) and were modified to measure help seeking in the achievement domain participants had selected. Participants responded to items such as “If I need help in my [job/school classes/hobby], I ask someone for advice rather than have them do it” using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale and responses were averaged across items ($\alpha=.91$).

Help avoidance

Six items were used to measure students’ self-reported avoidance of help seeking in academic situations (see Karabenick and Knapp 1991; Ryan and Pintrich 1997) and were modified to measure help avoidance in the achievement domain participants had selected. Participants responded to items such as “I don’t ask for help with my [job/school

classes/hobby], even if it is too hard to do on my own” using a 1 (*strongly disagree*) to 7 (*strongly agree*) scale and responses were averaged across items ($\alpha = .92$).

Results

A majority of participants in the experimental conditions (98%) successfully completed the comprehension check. All analyses were conducted across the three achievement domains (job $N = 445$, school classes $N = 117$, and hobbies $N = 395$).

Preliminary analyses

Condition effects on the performance goal intercorrelation The same regression analyses were conducted as in Study 1 to examine condition effects on the performance goal intercorrelation. The interrelation between performance goals was significant in all conditions: Same $\beta = .47$, $t(951) = 9.05$, $p < .001$, Control $\beta = .62$, $t(951) = 12.13$, $p < .001$, and Different $\beta = .32$, $t(951) = 5.98$, $p < .001$. The relation between performance-approach and performance-avoidance goals differed between the Same and Different conditions, $\beta = .06$, $t(951) = 1.97$, $p = .049$. Again, moderation of the performance goal relation was driven by the lower performance goal interrelation in the Different condition: the Different condition had a significantly weaker performance goal intercorrelation than the Control condition, $\beta = .12$, $t(951) = 4.03$, $p < .001$. The Same condition also exhibited a weaker association than the Control condition, $\beta = -.06$, $t(951) = -2.09$, $p = .037$.

Condition effects on performance goal adoption² A one-way ANOVA revealed an effect of condition on performance-avoidance goal adoption, $F(2, 954) = 46.66$, $p < .001$. As expected, protected LSD contrasts revealed that participants in the Different condition reported less performance-avoidance goal adoption ($M = 3.22$, $SD = 1.79$) than participants in the Same ($M = 4.32$, $SD = 1.83$), $p < .001$, $CI_{95\%} = [-1.39, -0.82]$, and the Control ($M = 4.52$, $SD = 1.86$), $p < .001$, $CI_{95\%} = [-1.59, -1.02]$ conditions. No difference in performance-avoidance goal adoption between participants in the Same and Control conditions was observed, $p = .160$,

$CI_{95\%} = [-0.49, 0.08]$. Unlike performance-avoidance goals, no condition effect on performance-approach goal adoption emerged, $F(2, 954) = 0.17$, $p = .843$.

Primary analyses

To test whether experimental condition moderated the predictive utility of performance goals, multiple regression models were conducted. For each outcome four regression models were run, two for each the performance goal. One model was used to test whether the predictive utility of the performance goal differed between experimental conditions (Same condition versus Different condition). If significant differences emerged, a second model was used to test whether the predictive utility of the performance goal differed between each experimental condition and the Control condition (Same condition versus Control condition, Different condition versus Control condition). In the first iteration of the models, the Different condition served as the reference group while the Same condition (0 Different, 1 Same, 0 Control) and Control condition (0 Different, 0 Same, 1 Control) were dummy coded. In the second iteration of the models, the Control condition served as the reference group while the Same condition (0 Control, 1 Same, 0 Different) and Different condition (0 Control, 0 Same, 1 Different) were dummy coded. The outcome of interest (e.g. pride, anxiety, etc.) was regressed onto performance-approach goals (mean-centered), performance-avoidance goals (mean-centered), the two relevant dummy codes, and the resulting two interaction terms (i.e. each dummy code by the mean-centered performance goal of interest) in both models.

For example, to test whether performance-avoidance goals predicted anxiety differently between the two experimental conditions (Same versus Different conditions), anxiety was regressed onto performance-approach goals (mean-centered), performance-avoidance goals (mean-centered), a dummy code for the Same condition (0 Different, 1 Same, 0 Control), a dummy code for the Control condition (0 Different, 0 Same, 1 Control), and two interaction terms: the products of each dummy code with mean-centered performance-avoidance goals.

Performance-avoidance goals *Predictive utility of performance-avoidance goals.* As expected, performance-avoidance goal adoption (collapsed across conditions and controlling for performance-approach goals) positively predicted anxiety, $\beta = .29$, $t(954) = 8.24$, $p < .001$, showed a trend towards positively predicting help avoidance, $\beta = .07$, $t(954) = 1.82$, $p = .070$, and negatively predicted interest, $\beta = -.14$, $t(954) = 3.84$, $p < .001$ and engagement, $\beta = -.10$, $t(954) = -3.06$, $p = .002$. Performance-avoidance goals also negatively predicted pride $\beta = -.07$, $t(954) = -2.15$,

² We also tested whether there were conditions effects of the experimental materials on all measured motivation outcomes (i.e. pride, anxiety, etc.). No significant differences between conditions emerged for any of the processes and outcomes associated with performance-approach goals: for pride $F(2, 954) = 1.07$, $p = .34$, engagement $F(2, 954) = 1.86$, $p = .16$, nor help seeking $F(2, 954) = 0.20$, $p = .82$. Nor did any significant differences between conditions emerge for any of the processes and outcomes associated with performance-avoidance goals: anxiety $F(2, 954) = 0.26$, $p = .77$, help avoidance $F(2, 954) = 0.25$, $p = .78$, nor interest $F(2, 954) = 0.40$, $p = .67$.

Table 2 Standardized regression coefficients (β) from simple slope analyses of performance-avoidance goals predicting outcomes

	Anxiety	Interest	Engagement	Pride	Help avoidance	Help seeking
Same	.31***	-.21***	-.13*	-.10	-.02	.16**
Control	.27***	-.09	-.04	-.03	-.03	.02
Different	.35***	-.14*	-.10	-.05	.28***	-.05

* $p < .05$, ** $p < .01$, *** $p \leq .001$

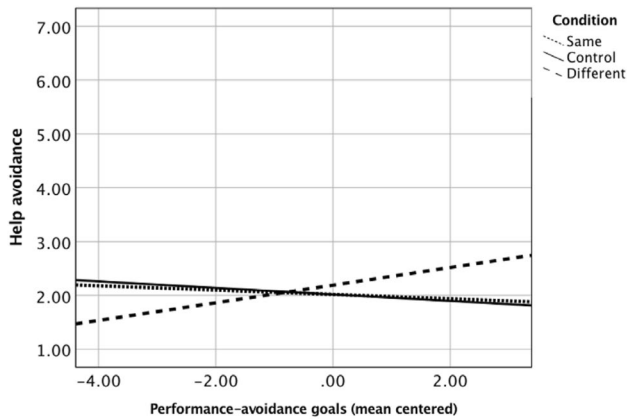


Fig. 1 Performance-avoidance goals predicting help avoidance by condition

$p = .032$, and did not significantly predict help seeking, $\beta = .03$, $t(954) = 0.92$, $p = .359$.

Condition effects on the predictive utility of performance-avoidance goals. There was no significant difference between the Same and Different conditions on the predictive utility of performance-avoidance goals on anxiety, $\beta = -.02$, $t(950) = -0.48$, $p = .635$, interest, $\beta = -.04$, $t(950) = -0.86$, $p = .388$, engagement, $\beta = -.02$, $t(950) = -0.42$, $p = .671$, or pride $\beta = -.03$, $t(950) = -0.62$, $p = .537$. However, experimental condition did moderate how well performance-avoidance goals predicted help avoidance, $\beta = -.17$, $t(950) = -3.58$, $p < .001$, and help seeking, $\beta = .12$, $t(950) = 2.51$, $p = .012$ (see Table 2 for coefficients of simple slopes across all conditions).

Performance-avoidance goals predicted help avoidance more strongly in the Different condition than the Control condition, $\beta = -.18$, $t(950) = -3.76$, $p < .001$, whereas there was no significant difference between the Same condition and the Control condition, $\beta = -.009$, $t(950) = -0.19$, $p = .851$. Simple slope analyses revealed that performance-avoidance goals positively predicted help avoidance in the Different condition, $\beta = .28$, $t(950) = 4.65$, $p < .001$, but not in the Same condition nor the Control condition, β s $< .1031$, p s $> .60$ (see Fig. 1).

No significant differences were observed for how performance-avoidance goals predicted help seeking between the Different condition and the Control condition, $\beta = .041$, $t(950) = 0.88$, $p = .382$, nor between the Same condition and

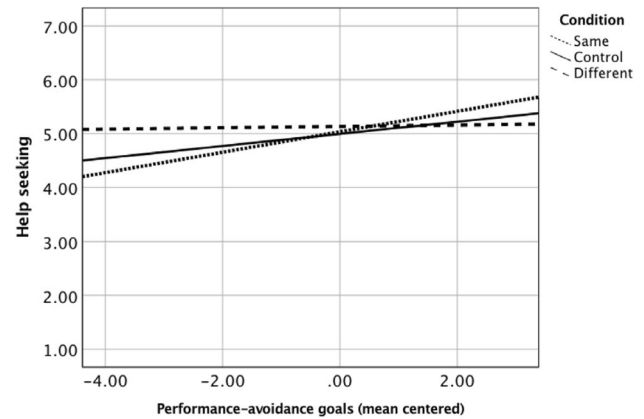


Fig. 2 Performance-avoidance goals predicting help seeking by condition

the Control condition, $\beta = -.077$, $t(950) = -1.67$, $p = .095$. Simple slope analyses revealed that performance-avoidance goal adoption did not predict help seeking in the Different condition, $\beta = -.05$, $t(950) = -0.81$, $p = .419$ and the Control condition, $\beta = .02$, $t(950) = 0.39$, $p = .699$ (see Fig. 2). However, performance-avoidance goals positively predicted help seeking in the Same condition, $\beta = .16$, $t(950) = 2.66$, $p = .008$, a pattern usually demonstrated for performance-approach goals (Tanaka et al. 2002).

Performance-approach goals Predictive utility of performance-approach goals. As expected, performance-approach goal adoption (collapsed across conditions and controlling for performance-avoidance goals) positively predicted pride, $\beta = .43$, $t(954) = 13.12$, $p < .001$, engagement, $\beta = .35$, $t(954) = 10.22$, $p < .001$, and help seeking, $\beta = .21$, $t(954) = 6.07$, $p < .001$. Performance-approach goals also positively predicted interest, $\beta = .12$, $t(954) = 3.49$, $p = .001$, negatively predicted help avoidance, $\beta = -.11$, $t(954) = -3.12$, $p = .002$, and were not significantly related to anxiety, $\beta = -.06$, $t(954) = -1.61$, $p = .108$.

Condition effects on the predictive utility of performance-approach goals. There was no significant difference between the Same and Different conditions for the predictive utility of performance-approach goals on any of the outcomes: pride $\beta = -.03$, $t(950) = -0.66$, $p = .508$, interest $\beta = -.02$, $t(950) = -0.36$, $p = .722$, engagement $\beta = -.01$, $t(950) = -0.29$, $p = .773$, help seeking $\beta = .02$, $t(950) = 0.40$,

$p = .688$, help avoidance $\beta = -.02$, $t(950) = -0.53$, $p = .600$, nor anxiety $\beta = -.02$, $t(950) = -0.37$, $p = .715$.

Ancillary analyses

Response time Response time outliers were treated the same way as in Study 1; item responses that were greater than three standard deviations from the mean were removed from that item ($< 2\%$). Performance-avoidance and performance-approach goal response times were averaged across their three respective item response times, excluding any participant who did not have at least two out of the three response times ($< 1\%$).

ANOVA's were conducted to test condition effects on responses times to both performance-avoidance and performance-approach goals. No main effect of condition was observed for performance-avoidance goal response times, $F(2, 952) = 0.73$, $p = .484$, nor performance-approach goal response times, $F(2, 951) = 1.44$, $p = .238$.

General discussion

The present research revealed that providing participants with instructions highlighting the similarity or difference between approach and avoidance motivation impacted the *quality* of goal reports. In Study 1, participants randomly assigned to the Different condition exhibited stronger associations between performance-avoidance goals and their antecedents (avoidance temperament, fear of failure, low self-efficacy) than participants assigned to either the Same or Control conditions. Likewise, in Study 2, performance-avoidance goals from the Different condition had the strongest predictive utility on two of the six processes and outcomes: help avoidance and help seeking. Additionally, this research replicated previous findings by showing that participants assigned to the Different condition reported a lower performance goal intercorrelation and a lower level of performance-avoidance goals than the other conditions (Hangen et al. 2018).

One benefit of comparing predictive validity across conditions is that the current findings can rule out the potential alternative explanation that social desirability biases were driving the observed effects. The social desirability explanation is as follows: When participants in the Different condition more clearly see the difference between the two performance goals, they recognize that performance-avoidance goals are unpopular or undesirable forms of regulation and edit their reports to appear as if they held fewer performance-avoidance goals. However, this explanation would predict *weaker*, not stronger (as was observed), predictive validity in the Different condition. Thus, the

performance-avoidance goal reports in the Different condition seem to represent actual self-regulation, not mere self-presentation.

No condition effects on performance-approach goals were observed in either study. We think that performance-avoidance goals were uniquely affected because these goals are more complex and more likely to be misunderstood than performance-approach goals. Structurally, avoidance-based goals represent something to get or stay away from, unlike approach-based goals that represent something to move *toward* and guide regulation more precisely (Elliot 2006). In addition, the wording of performance-avoidance goal items has a complexity similar to double negatives (e.g., “striving to *avoid* performing *worse* than others”). Furthermore, avoidance goals focus on the negative possibility of failure, whereas the prototypic understanding of “goal” for many individuals may be an aim that focuses on a positive possibility (i.e., success) to approach. Indeed, both research on goal-setting (Locke and Latham 1990) and early achievement goal theorizing (Ames and Archer 1988; Dweck and Leggett 1988; Nicholls 1989) focused solely on approach-based goals, suggesting that approach goals are more intuitive and prototypic than avoidance goals for motivational researchers and theorists, as well as lay people. Given these considerations, it seems likely that some respondents may construe a performance-avoidance goal as a complementary component of a performance-approach goal rather than a unique goal in its own right, or they may mentally reconfigure performance-avoidance goal phrasing from a focus on failure (“avoid performing worse”) to a focus on success (“perform better”; Karabenick et al. 2007). Such processes, enacted to make performance-avoidance goals seem more concrete and straightforward, actually lead to a misrepresentation of the goal altogether; these processes would not be necessary for performance-approach goals which are already concrete and straightforward.

In the present studies, the highest quality goal reports came from respondents who received experimental materials that focused on the differences between approach and avoidance motivation. Interestingly, across many different literatures, the degree to which approach and avoidance motivation are distinct and independent and, more specifically, details regarding when they are more or less distinct and independent, remains an open question. For instance, the biopsychosocial (BPS) model of challenge and threat delineates how appraisals of coping resources and task demands interact to determine approach-motivated challenge states and avoidance-motivated threat states, and also specifies the physiological responses that accompany challenge and threat (see Jamieson et al. 2017, for a review). In such a model, it would not be possible to be simultaneously approach- (challenge) and avoidance- (threat) oriented. However, models that do not emphasize physiological responses and motivated

behavioral outputs can more easily accommodate the notion that an individual can simultaneously hold approach and avoidance goals and rapidly switch between appetitive and aversive foci in goal pursuit. Regardless of the actual independence between approach and avoidance motivation, the present research reveals that the way respondents *think* about the independence of approach and avoidance motivation can significantly impact the quality of their self-reports of performance-avoidance goals.

Lastly, supplying brief reading materials on the distinctiveness of approach and avoidance motivation helped lower the performance goal intercorrelation while enhancing (or at least maintaining) the predictive validity of goal reports. Lowering the performance goal intercorrelation is valuable in that it signifies that individuals are more adroitly uncoupling a largely adaptive form of self-regulation (performance-approach) from a largely maladaptive form of self-regulation (performance-avoidance). Thus, for teachers and other socialization agents (coaches, bosses, parents) who use instructional sets likely to evoke performance-approach goals, it may be worth including a brief mention of the distinctiveness of approach and avoidance motivation to lessen the likelihood of performance-avoidance goals being unintentionally evoked with their approach-based counterparts. Indeed, given the enhanced predictive validity of performance-avoidance goals in the Difference condition, achievement goal researchers may consider incorporating a variant of the Difference condition information into the instructions of their achievement goal measures. Of course, more research is needed before such a bold methodological move is warranted, but the present work raises promising practical possibilities for goal assessment.

Limitations and future directions

It is important to note that findings are limited to *normative* performance goals, specifically, those measured by the Achievement Goal Questionnaire-Revised (AGQ-R; Elliot and Murayama 2008). Whether or not these findings extend to performance goals defined by the appearance or demonstration of competence (Korn and Elliot 2016) is unknown. Moreover, meta-analytic data indicate that the performance goal correlation is weakest when measuring goals with the AGQ, hence there is a real need for future work to extend these findings to performance goals where the correlation is more pronounced (e.g., goals defined by evaluation; Hulleman et al. 2010). The approach and avoidance dimension has also been applied to mastery goals (Elliot and McGregor 2001), and beliefs about task-based approach and avoidance motivation has been shown to influence the mastery goal correlation (Hangen et al. 2018). Thus, future work is also needed to test whether the quality of mastery goal reports

is also moderated by the approach-avoidance manipulations used herein.

In the Same and Different conditions, individuals were encouraged to attend to the differences or commonalities between approach and avoidance motivation. In the Control condition, individuals did not receive any reading materials but were allowed to freely vary in their lay beliefs about the (dis)similarity between approach and avoidance motivation. For this reason, comparisons between the experimental conditions and the Control condition are best interpreted cautiously, given that the Control condition data will vary from study to study as a function of the lay beliefs of the individuals assigned to that condition. The fact that assignment to condition was random and the fact that the findings for the performance goal intercorrelation and for the performance goal means were consistent across the two studies of the present work (and prior work; Hangen et al. 2018), helps mitigate concerns about this issue.

Our research cannot determine whether beliefs about the distinctiveness of approach and avoidance motivation impact goal intercorrelations, means, and predictive validity similarly across all achievement domains or uniquely within particular domains. In our research, moderation was tested by combining measures across achievement domains (vocations, academics, and hobbies). The samples that we recruited did not afford sufficient power to test the interactions needed to investigate whether moderation differed by achievement domain. Thus, we do not know whether the impact of the experimental materials might be exacerbated or muted across domains. In addition, we investigated a number of difference antecedents and consequences of performance goals, but we did not investigate performance attainment in this work. Future research would do well to incorporate this important outcome variable.

A final limitation is rooted in our mixed response time findings. Response times to performance goal items were a potential behavioral measure of respondents' comprehension of the goal items—faster responses indicating better comprehension. In Study 1, participants in the Different condition responded to performance-avoidance goal items more quickly than participants in the other conditions. However, in Study 2, no differences in response times were found. Further work is needed to assess whether response time can be a meaningful behavioral tool for assessing performance goal comprehension.

Conclusions

The present research is the first to show that highlighting the difference between norm-based approach and avoidance motivation not only reduces the performance goal intercorrelation, but also enhances the predictive validity

of performance-avoidance goal reports. Individuals displayed a lower performance goal intercorrelation and more accurately reported their performance-avoidance goals after they read about the distinctiveness of, rather than the commonalities between, approach and avoidance motivation. These findings facilitate a deeper understanding of the nature of performance-based goal reports, as well as lay thinking about approach and avoidance motivation more generally. Our findings also raise promising real world possibilities for separating performance-approach and performance-avoidance goal pursuit, and more accurately assessing achievement goals.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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