

Achievement Goals, Performance Contingencies, and Performance Attainment: An Experimental Test

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This research examines the effect of achievement goals on performance attainment and the moderating role of performance contingencies. Results from 3 experiments strongly support the authors' hypotheses. Performance-avoidance goals undermined performance relative to performance-approach and mastery goals, regardless of contingency condition. Performance-approach goals had a more positive effect on performance than did mastery goals in the presence, but not in the absence, of a contingency. Furthermore, the presence of a contingency accentuated the effects of performance-based goals on performance and had little impact on the effect of mastery goals on performance. These results speak directly to a current conundrum in the achievement goal literature and highlight the need for a rigorous, systematic examination of the link between achievement goals and performance that takes into consideration features of the achievement task, context, and situation.

Keywords: achievement, goals, performance, contingencies, motivation

The achievement motivation literature focuses on the prediction and explanation of competence-relevant behavior. This literature has enjoyed a long and robust history due to the centrality of competence-relevant processes for human functioning and well-being and the broad applicability of these processes to such domains as school, sports, and work. One of the primary questions addressed by the achievement motivation literature is how achievement motivation influences performance attainment.

At present, the most prominent account of the link between achievement motivation and performance is that proffered by the achievement goal approach. *Achievement goals* are conceptualized as the competence-relevant purposes or aims that individuals strive for in achievement settings, and these different purposes or aims are posited to lead to differential performance outcomes (for

related but distinct conceptualizations of the achievement goal construct see Dweck, 1986; Elliot, 1997; Nicholls, 1984). Although early reviews of the achievement goal literature portrayed the links between achievement goals and performance as clear and straightforward, recent work has highlighted the need for a reanalysis of this portrait (see Elliot, 2005; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002).

In this article, we overview the extant research on achievement goals and performance attainment, and we present research that puts this relationship to experimental test. In addition, we draw on theoretical work by Raynor (Raynor, 1969, 1970) to examine the concept of instrumentality or "contingent future" (Raynor & Rubin, 1971, p. 37) within the achievement goal approach. Accordingly, the research that we present not only focuses on the direct relationship between achievement goals and performance but also on a "second generation question" (Molden & Dweck, 2000; Zanna & Fazio, 1982): How do instrumentalities or performance contingencies influence the relationship between achievement goals and performance?

Achievement Goals and Performance Attainment

Initial theoretical and empirical work on achievement goals used a dichotomous framework grounded in the mastery–performance distinction (Dweck, 1986; Nicholls, 1984): mastery goals focused on the development of competence and performance goals focused on the demonstration of competence. More recent theoretical and empirical work has used a trichotomous framework grounded in both the mastery–performance distinction and the distinction between approach motivation (striving toward a positive possibility) and avoidance motivation (striving away from a negative possi-

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bility; Elliot & Church, 1997).¹ The trichotomous framework is comprised of the following achievement goals: mastery (an approach goal focused on attaining task-based or intrapersonal competence), performance approach (an approach goal focused on attaining normative competence), and performance avoidance (an avoidance goal focused on avoiding normative incompetence). The present research used the trichotomous framework, thus we limit our review of the literature to this model.

In the trichotomous framework (see Elliot, 1997; Elliot & Harackiewicz, 1996), mastery goals are characterized as a challenge-based form of regulation that evokes a host of positive processes (effort expenditure, persistence, task absorption) that facilitate many positive outcomes. However, these goals are not viewed as consistent facilitators of performance attainment. Performance excellence often requires attention to external evaluative considerations that are beyond the task/intrapersonal focus of mastery goal regulation, and performance assessments are often ill-matched to the type of processes facilitated by mastery goals. Performance-approach goals are viewed as evoking many of the same positive processes evoked by mastery goals (e.g., effort expenditure, persistence), as both goals represent approach forms of regulation fueled by challenge appraisals. However, the use of others as performance referents in these goals fosters a more external focus on the evaluative environment and on what is needed for optimal performance attainment. This external focus is not optimal for some processes and outcomes (e.g., deep processing, intrinsic interest), but it is presumed to enable these goals to facilitate performance in a broader range of situations and on a broader range of tasks than mastery goals. Performance-avoidance goals entail regulating according to a negative normative possibility that is posited to evoke a host of negative processes (distraction, anxiety, self-protective divestment) that undermine performance in most achievement settings.

Empirical work on achievement goals may be separated into two types—studies that measure existing achievement goals and experiments that manipulate achievement goals. Both of these types of research are important in examining the relationship between achievement goals and performance attainment. Measurement-based studies yield information regarding achievement goals in naturally occurring settings and allow achievement goals to be examined across time and context, whereas manipulation-based studies afford an examination of the causal influence of achievement goals and provide information regarding the amenability of achievement goals to environmental influence (an issue integral to the viability of goal interventions).

In terms of observed empirical patterns, measurement-based studies that have used the trichotomous framework have yielded somewhat inconsistent results for mastery goals and performance attainment, with some indicating a positive relationship (see Sideridis, 2004; Tanaka & Yamauchi, 2001; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2004) but others producing null results (see Brett & VandeWalle, 1999; Lee, Sheldon, & Turban, 2003; Malka & Covington, 2005; Skaalvik, 1997). A rather clear pattern has emerged for performance-based goals: performance-approach goals are typically positive predictors of performance (see Church, Elliot, & Gable, 1999; Lopez, 1999; Wolters, 2004; Urdan, 2004), whereas performance-avoidance goals are typically negative predictors of performance (see Elliot, McGregor, & Gable, 1999; Halvari & Kjormo, 1999; Pajares & Valiante, 2001; Zusho, Pin-

trich, & Cortina, 2005). Manipulation-based research that uses the trichotomous framework has barely begun. Only two experiments have been conducted, and the performance results were ambiguous in both instances (Barker, McInerney, & Dowson, 2002; Van Yperen, 2003). This ambiguity may be due to the fact that performance-avoidance goal participants in both experiments were instructed to focus on getting answers correct (as opposed to not getting answers wrong; this instruction was part of the general procedure in the Van Yperen experiment, but was actually part of the performance-avoidance goal manipulation in the Barker et al. experiment). This instruction is likely to dilute the impact of a performance-avoidance goal manipulation.

In the present research, we sought to address this conspicuous gap in the achievement goal literature by experimentally manipulating the goals of the trichotomous model and examining their effect on performance attainment. Our predictions were based on the aforementioned theorizing: Performance-avoidance goals were expected to undermine performance relative to mastery and performance-approach goals, and performance-approach goals were expected to be as positive for performance as mastery goals, or, in some instances, even more positive for performance than mastery goals.

Achievement Goals and Performance Contingencies

In a series of important articles, Raynor (1969, 1970) highlighted the need to consider the concept of instrumentality or “contingent future” (Raynor & Rubin, 1971, p. 37) when examining how achievement motivation predicts outcomes such as performance. Raynor noted that achievement motivation research focused exclusively on situations in which only immediate success or failure was at stake. He argued that in most achievement activities in real life, immediate success or failure has instrumental implications for future strivings and outcomes, and that models of achievement motivation must take this into account.

Raynor’s critique was directed at the predominant approach to achievement motivation at the time, the achievement motive approach (McClelland, Atkinson, Clark, & Lowell, 1953). The motive disposition construct was the central construct in this approach, and two achievement motives were posited: the need for achievement (a tendency to approach success because one anticipates pride upon success) and the fear of failure (a tendency to avoid failure because one anticipates shame upon failure; Atkinson, 1957). The need for achievement was portrayed as an approach form of motivation typically leading to positive achievement outcomes, and fear of failure was portrayed as an avoidance form of motivation typically leading to negative achievement outcomes (McClelland et al., 1953; Birney, Burdick, & Teevan, 1969). Raynor (1969, 1970) posited that performance contingencies should accentuate these empirical patterns, because they should add to both the appetitive desire to attain success and the aversive desire to avoid failure. Specifically, he contended that individuals high in need for achievement should be more strongly

¹ Even more recently, a fourth goal, mastery-avoidance, has also been posited. This goal was not included in the present research because it was presumed to be less relevant to the central processes under consideration (especially instrumentalities; see Elliot & McGregor, 2001, for information on mastery-avoidance goals and when they most likely to be operative).

motivated to approach success when future, as well as immediate, success is at stake, which should lead to better performance; whereas individuals high in fear of failure should be more strongly motivated to avoid failure when future, as well as immediate, failure is at stake, which should lead to worse performance.

Raynor put his hypotheses to test in an experiment devised to be a laboratory analog of real-world instrumental achievement situations (Raynor & Rubin, 1971). Participants were informed that they would be completing an arithmetic activity. Those in the contingency condition were told that they must do well on a first set of problems in order to move on to the next set, whereas those in the noncontingency condition were told that they could do the full set of problems regardless of their initial performance. Prior to the experimental session, participants' need for achievement and fear of failure were assessed. Results conformed to predictions. High need for achievement participants performed significantly better in the contingency than in the noncontingency condition, whereas high fear of failure participants performed significantly worse in the contingency than in the noncontingency condition.

Although the achievement goal construct was proposed, in part, as a reconceptualization of the achievement motive construct (Dweck & Elliott, 1983; Maehr & Nicholls, 1980), and the achievement goal approach emerged shortly after Raynor's important research, achievement goal researchers have paid little attention to the concept of instrumentality or performance contingency. It is only in the last few years that the relationship between achievement goals and instrumentality-based constructs has been considered. A few researchers have written conceptual pieces arguing for the need for and value of attending to the links between achievement goals and constructs such as contingent future orientation, perceived instrumentality, future time perspective, and utility value (see Husman & Lens, 1999; Lens, Simmons, & Dewitte, 2001; Miller & Backman, 2004). The shared message articulated by these researchers is that instrumentalities and performance contingencies are not necessarily incompatible with the pursuit of achievement goals and need not be considered detrimental to performance. The few empirical studies that have been conducted in this area have focused primarily on the influence of perceived instrumentalities on achievement goal adoption (Greene, Miller, Crowson, Duke, & Akey, 2004; Miller, DeBacker, & Greene, 1999; Miller, Greene, Montalvo, Ravindran, & Nichols, 1996; Simons, Dewitte, & Lens, 2000; Vansteenkiste et al., 2004) and on instrumentalities and achievement goals as simultaneous predictors of performance (Malka & Covington, 2004; Miller et al., 1996; Vansteenkiste et al., 2004). No research to date has examined whether any form of instrumentality-based construct moderates the link between achievement goals and performance.

In the present research, we conducted a conceptual replication of Raynor and Rubin's (1971) experiment, replacing the achievement motive construct with the achievement goal construct. Specifically, we sought to examine whether performance contingencies in a controlled laboratory setting would moderate the influence of the trichotomous achievement goals on performance attainment. We expected performance-based goals to be sensitive to the addition of a performance contingency to the achievement context because these types of goals are inherently focused on external evaluation and are presumed to be responsive to the external constraints and affordances of the achievement environment (Elliott & Thrash, 2001). We did not expect mastery goals to be sensitive to the

addition of a performance contingency because the task/intrapersonal focus inherent in these goals seems unlikely to foster attention to external constraints and affordances in the achievement environment.

On this basis, two sets of predictions were proffered, the first regarding the influence of achievement goals within contingency condition and the second regarding the influence of contingency within achievement goal condition. For the first set of predictions, we anticipated that the negative focus of performance-avoidance goals would undermine performance relative to performance-approach and mastery goals, regardless of contingency condition. However, we expected the predictive utility of performance-approach relative to mastery goals to vary as a function of contingency condition. If, as proposed, performance-approach goals are responsive to the inclusion of a performance contingency, but mastery goals are unaffected, it is likely that performance-approach and mastery goals would have similar effects on performance in the absence of a performance contingency, but that performance-approach goals would have a more positive effect on performance than mastery goals in the presence of a performance contingency. For the second set of predictions, we anticipated (in line with Raynor's original hypothesis) that the inclusion of a performance contingency would enhance the appetitive desire to attain normative success for performance-approach goal participants and lead to better performance, whereas the inclusion of a performance contingency would enhance the aversive desire to avoid normative failure for performance-avoidance goal participants and lead to worse performance. The effect of mastery goals was posited to be unaffected by the presence or absence of a performance contingency.

Experiment 1

Experiment 1 examined the direct effect of achievement goals on performance attainment in the absence of a performance contingency. Two separate samples were acquired, yielding Experiments 1A and 1B. These experiments are presented sequentially in the following paragraphs.

Experiment 1A

Method

Participants. One hundred one (57 male and 44 female) high school (public gymnasium) students in Germany voluntarily participated in the experiment (no additional incentive was provided). The age of the participants varied between 15 and 21 with a mean of 17.31.

Design. A one-way between-participants factorial design was used with achievement goal (performance-approach vs. performance-avoidance vs. mastery) as the independent variable and gender and grade point average as covariates. Task performance served as the dependent measure.

Procedure. The experiment was conducted in group sessions (ranging from 10 to 30 participants) as part of normal class time in student participants' actual classrooms. At the beginning of the session, the teacher of the class introduced the experimenter and explained that the experimenter would be conducting an important research study related to current class lessons. The experimenter then randomly distributed packets that contained the task instructions, the manipulation, the task, and a final questionnaire. Finally, the experimenter guided participants through the packet, beginning with a description of the experimental task.

The experimental task was the math subtest of the Intelligence Structure Test (IST) 2000, a German intelligence test (Amthauer, Brocke, Liepmann, & Beauducel, 1999). Participants were instructed that the task was part of an intelligence test and involved the completion of ordered number sequences. For each item, a list of numbers was provided to participants, and they had to identify the rule underlying the list and write down the number that completed the sequence. Participants were told that they would have 5 min to solve 10 items. Subtests of the IST 2000 have been used successfully in prior experimental research (Försterling & Morgenstern, 2002).

Next, participants were told that the next page of their packet contained information regarding the purpose of the study. They were instructed to turn to this page and to read (and then reread) the material on the page, which contained the achievement goal manipulation.

The achievement goal manipulation was based on that used by Elliot and Harackiewicz (1996). Participants in the two performance goal conditions were informed, "The purpose of this study is to compare high school students with one another in their ability to solve these problems." In the performance-approach goal condition they were then told that previous work had indicated that most high school students are fairly comparable in their ability to solve the problems but that some students stand out because they do exceptionally well. Thus, the session would provide the opportunity "to demonstrate that you are an exceptional problem solver." In the performance-avoidance goal condition they were then told that previous work had indicated that most high school students are fairly comparable in their ability to solve the problems, but that some students stand out because they do so poorly. Thus, the session would provide the opportunity "to demonstrate that you are not a poor problem solver." Participants in the mastery goal condition were informed, "The purpose of this study is to collect data on high school students' reactions to the problems." They were additionally told that the session would provide them with the opportunity to "get to know these problems and learn how to solve them well."

All participants were informed that they would receive personal feedback after they completed the task. In the performance-approach condition they were told that they would be informed "whether you did well compared with others," in the performance-avoidance condition they were told that they would be informed "whether you did poorly compared to others," and in the mastery goal condition they were told that they would be informed "whether you learned how to solve the problems well."

After participants read the manipulation, the experimenter started them on the task. After completing the task, participants filled out a questionnaire containing a manipulation check and a few demographic items. For the manipulation check, participants were asked "What was the goal that you were given for this task?," and they responded with one of the following: "To demonstrate that I am an exceptionally good problem solver," "To demonstrate that I am not an extremely poor problem solver," or "To learn how to solve the problems."

After the experiment had been completed, all participants were provided with positive performance feedback, regardless of their actual performance. All participants also received a thorough debriefing on the purposes of the experiment.

Results and Discussion

Preliminary analyses. A chi-square test of independence was calculated to determine whether participants' achievement goal reports corresponded to their achievement goal conditions. The analysis yielded a significant effect, $\chi^2(1, N = 101) = 7.36, p < .01$, indicating that this was indeed the case.

Primary Analyses

In an initial omnibus analysis, a unifactorial (achievement goal: performance-approach vs. performance-avoidance vs. mastery) between-participants analysis of covariance (gender and grade

point average as covariates) was conducted on participants' task performance. To examine our specific hypotheses, planned comparisons (Fisher least significant difference [LSD] tests) followed the omnibus analysis.

The omnibus analysis revealed a significant main effect for achievement goal condition, $F(2, 96) = 3.65, p < .05$. Gender was also significant, $F(1, 96) = 6.26, p < .05$, indicating that males performed better than females. Planned comparisons indicated that performance-avoidance goal participants ($M = 5.82$) performed worse than did performance-approach goal participants ($M = 7.12$), $t(67) = 2.01, p < .05$, and mastery goal participants ($M = 7.22$), $t(62) = 2.21, p < .05$. There was no difference between performance-approach and mastery goal participants. See Table 1 for a summary of these results.

Experiment 1B

Method

Participants. Thirty-six (15 male and 21 female) high school (public gymnasium) students in Germany voluntarily participated in the experiment (no additional incentive was provided). The age of the participants varied between 16 and 20 with a mean of 16.97.

Design and procedure. The same design and procedure used in Experiment 1A was used in this experiment. The main difference between the two experiments was the type of experimental task used. In this experiment, the task was the verbal subtest of the IST 2000. Participants were instructed that the task was part of an intelligence test and involved the placement of words into categories. For each item, a set of five words was provided to participants, and they had to select the two words that shared a common category. Participants were told that they would have 3.5 min to solve 10 items.

Results and Discussion

Preliminary analysis. A chi-square test of independence was calculated to determine whether participants' achievement goal reports corresponded to their achievement goal conditions. The analysis yielded a significant effect, $\chi^2(1, N = 36) = 9.53, p < .01$, indicating that this was indeed the case.

Primary analyses. The analyses for this experiment were conducted in the same way that they were conducted in Experiment 1A. The omnibus analysis revealed a significant main effect for achievement goal condition, $F(2, 31) = 4.24, p < .05$. Planned comparisons were then conducted to examine the differences between the achievement goal means. These analyses indicated that performance-avoidance goal participants ($M = 5.11$) performed worse than did performance-approach goal participants ($M =$

Table 1
Means and Standard Deviations for Math Performance as a Function of Achievement Goal Condition

Achievement goal condition	<i>M</i>	<i>SD</i>
Performance-approach (<i>n</i> = 38)	7.12 _a	2.01
Performance-avoidance (<i>n</i> = 30)	5.82 _b	2.75
Mastery (<i>n</i> = 33)	7.22 _a	2.19

Note. Means with different subscripts are significantly different at $p < .05$ by the Fisher least significant difference test. Means were adjusted for gender and grade point average.

7.07), $t(22) = 2.80, p < .05$, and mastery goal participants ($M = 7.31$), $t(22) = 2.17, p < .05$. In the performance-approach versus performance-avoidance goal comparison, gender was marginally significant, $t(22) = 2.01, p < .06$, and grade point average was significant, $t(22) = 2.18, p < .05$; these results indicate that males tended to perform worse than females and that higher grades were a positive predictor of performance. There was no difference between performance-approach and mastery goal participants. See Table 2 for a summary of these results.

In summary, the results for Experiments 1A and 1B are in accord with our hypotheses. In the absence of a performance contingency, performance-avoidance goals undermined performance relative to performance-approach and mastery goals, and performance-approach goals were as positive for performance as mastery goals. These effects were observed across two different types of experimental tasks—math and verbal subtests of an intelligence test.

Experiment 2

Experiment 2 sought to replicate the effects of Experiments 1A and 1B by using a third experimental task. Most important, Experiment 2 was designed to examine the role of performance contingency as a moderator of the effect of achievement goals on performance attainment.

Method

Participants. Sixty-one (22 male and 39 female) U.S. college students in an introductory level psychology class voluntarily participated in the experiment for extra course credit. The age of the participants varied between 18 and 45 with a mean of 20.30.

Design. A 3×2 between-participants factorial design was used with achievement goal (performance-approach vs. performance-avoidance vs. mastery) and contingency (contingent vs. noncontingent) as independent variables and gender as a covariate (participants' grade point average was not obtained in this experiment). Task performance served as the dependent measure.

Procedure. Participants were randomly assigned to one of the six conditions prior to arriving at the laboratory and were run through the experimental procedure one at a time. Upon arrival for the experiment, participants completed a consent form that stated that the research involved puzzle solving with word games. Participants were then provided with a description of the experimental task.

The experimental task was a lexically based activity similar to the game Scrabble. Participants were told that the task involved rolling a set of dice containing letters and then building words from the available letters. Different letters represented different point values, and the object was to

score as many points as possible with the letters available from each dice roll. Participants were told that they would have 8 min to score as many points as they could and that an unlimited number of rolls were allowed during the performance period. This type of task has been used successfully in prior experimental research (Folger, Rosenfield, & Hays, 1978).

Next, the experimenter read from a form that contained the achievement goal manipulation, followed by the contingency manipulation. The achievement goal manipulation was essentially the same as that used in Experiments 1A and 1B. Participants in the two performance goal conditions were informed that "The purpose of this study is to compare college students with one another in their ability to solve these puzzles." In the performance-approach goal condition they were then told that previous work had indicated that most college students are fairly comparable in their ability to solve puzzles but that some students stand out because they do exceptionally well. Thus, the session would provide the opportunity "to demonstrate that you are an exceptional puzzle solver." In the performance-avoidance goal condition they were then told that previous work had indicated that most college students are fairly comparable in their ability to solve puzzles but that some students stand out because they do so poorly. Thus, the session would provide the opportunity "to demonstrate that you are not a poor puzzle solver." Participants in the mastery goal condition were informed that "The purpose of this study is to collect data on college students' reactions to this game." They were then told that the object of the session was "to learn how to play this game well."

The contingency manipulation was based on that used by Raynor and Rubin (1971; see also Entin & Raynor, 1973). In recruiting participants, individuals were told that they would receive up to five extra credit points for participation in the experiment. In the experimental session, all participants were informed they would perform the task for 8 min followed by the receipt of feedback. Participants in the contingent condition were told that they would receive three extra credit points for doing the initial 8-min task and that if they did well enough they could do the task again for 3 min to earn two more extra credit points. *Well enough* was defined in terms of the participant's goal: In the performance-approach goal condition, participants were told that if they were "exceptional," they would have the opportunity to do the task again for more extra credit; in the performance-avoidance condition, participants were told that if they were "not one of the poor puzzle solvers," they would have the opportunity to do the task again for more extra credit; and in the mastery goal condition, participants were told that if they "mastered this task" they would have the opportunity to do the task again for more extra credit. Participants in the noncontingent condition were simply told that after doing the initial 8-min task they would do the task again for 3 min. Thus, participants in the contingent condition were led to believe that they could do both tasks and earn all five extra credit points only if they attained a certain quality of performance on the initial task, whereas those in the noncontingent condition were led to believe that they could do both tasks and earn all five extra credit points independent of the quality of their performance on the initial task.

After reading the manipulation, the experimenter confirmed that participants understood the information and then started participants on the task. After completing the 8-min task, participants filled out a questionnaire containing manipulation checks and a few demographic items. For the achievement goal manipulation check, participants were asked "What was your goal for this task?," and they responded with one of the following: "To prove that you are an exceptional player," "To prove that you are not one of the worst players of this game," or "To learn to play the game." For the contingency manipulation check, participants were asked "Was there anything that you had to do on the first task to get to move on to the second task?," and they responded with "yes" or "no."

Following completion of the questionnaire, all participants were provided with positive performance feedback, regardless of their actual performance. All participants also received five extra credit points and a thorough debriefing on the purposes of the experiment.

Table 2
Means and Standard Deviations for Verbal Performance as a Function of Achievement Goal Condition

Achievement goal condition	<i>M</i>	<i>SD</i>
Performance-approach ($n = 13$)	7.07 _a	1.57
Performance-avoidance ($n = 10$)	5.11 _b	2.12
Mastery ($n = 13$)	7.31 _a	1.44

Note. Means with different subscripts are significantly different at $p < .05$ by the Fisher least significant difference test. Means were adjusted for gender and grade point average.

Results and Discussion

Preliminary analyses. Chi-square tests of independence were calculated to determine whether participants' achievement goal and contingency reports corresponded to their achievement goal and contingency conditions. The achievement goal analysis yielded a significant effect, $\chi^2(1, N = 61) = 53.26, p < .01$, as did the contingency analysis, $\chi^2(1, N = 61) = 49.65, p < .01$, indicating that this was indeed the case.

Primary analyses. In an initial omnibus analysis, a 3 (achievement goal: performance-approach vs. performance-avoidance vs. mastery) \times 2 (contingency: contingent vs. noncontingent) between-participants factorial analysis of covariance (gender as a covariate) was conducted on participants' task performance. To examine our specific hypotheses, planned comparisons (LSD tests) followed the omnibus analysis.

The omnibus analysis revealed a significant effect for achievement goal condition across contingency condition, $F(2, 54) = 34.83, p < .01$. Planned comparisons were then conducted to examine the differences between the achievement goal means. These analyses indicated that performance-avoidance goal participants ($M = 81.01$) performed worse than did performance-approach goal participants ($M = 146.34$), $t(38) = 5.61, p < .01$, and mastery goal participants ($M = 120.07$), $t(37) = 5.33, p < .01$. Performance-approach goal participants performed better than mastery goal participants, $t(38) = 2.07, p < .05$. The main effect for contingency was not significant.

More important, this achievement goal main effect was qualified by a significant Achievement Goal \times Contingency interaction, $F(2, 54) = 16.30, p < .01$. Two sets of planned comparisons were then conducted. In the first set, the difference between the achievement goal conditions was examined within each contingency condition. The analyses within the noncontingent condition (i.e., the condition directly analogous to Experiments 1A and 1B) indicated that performance-avoidance goal participants ($M = 93.71$) performed worse than did performance-approach goal participants ($M = 115.64$), $t(18) = 2.19, p < .05$, and mastery goal participants ($M = 122.04$), $t(17) = 2.97, p < .01$. There was no difference between performance-approach and mastery goal participants. The analyses within the contingent condition indicated that performance-avoidance goal participants ($M = 68.31$) performed worse than did performance-approach goal participants ($M = 177.04$), $t(17) = 7.54, p < .01$, and mastery goal participants ($M = 118.10$), $t(17) = 4.59, p < .01$. In addition, performance-approach goal participants performed better than did mastery goal participants, $t(17) = 2.34, p < .05$; gender was also significant in this analysis, $t(17) = 2.48, p < .05$, indicating that males performed better than females. See Table 3 for a summary of the results.

In the second set of planned comparisons, the difference between the contingency conditions was examined within each achievement goal condition. The analyses indicated that performance-approach goal participants performed better in the contingent condition ($M = 177.04$) than in the noncontingent condition ($M = 115.64$), $t(18) = 4.37, p < .01$. Conversely, performance-avoidance goal participants performed worse in the contingent condition ($M = 68.31$) than in the noncontingent condition ($M = 93.71$), $t(18) = 2.66, p < .05$. Mastery goal participants did not evidence any performance differences as a function of contingency condition. See Table 3 for a summary of these results.

Table 3
Means and Standard Deviations for Puzzle Performance as a Function of Achievement Goal and Contingency Condition

Achievement goal condition	Contingent		Noncontingent	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Performance-approach	177.04 _{aA}	41.23	115.64 _{aB}	18.32
Performance-avoidance	68.31 _{bA}	17.44	93.71 _{bB}	26.39
Mastery	118.10 _{cA}	19.94	122.04 _{aA}	18.06

Note. For the performance-approach/noncontingent condition, $n = 11$; for all other conditions $n = 10$. Within the contingency condition, achievement goal means with different lowercase subscripts are significantly different at $p < .05$ by the Fisher least significant difference test. Within the achievement goal condition, contingency means with different uppercase subscripts are significantly different at $p < .05$ by the Fisher least significant difference test. Means are adjusted for gender.

In summary, the results from this experiment are in accord with our hypotheses. In the absence of a performance contingency, the achievement goal results replicated those of Experiments 1A and 1B, but in the presence of a performance contingency performance-approach goals were shown to have a more positive effect on performance than mastery goals. Furthermore, the presence of a performance contingency was shown to accentuate the effects of performance-approach and performance-avoidance goals on performance and was shown to have little impact on the effect of mastery goals on performance.

General Discussion

The results of the present experiments provided strong support for our hypotheses. In Experiments 1A and 1B, the effect of achievement goals on performance attainment was examined in the absence of a performance contingency. Performance-avoidance goals were shown to undermine performance relative to performance-approach and mastery goals. Performance-approach and mastery goals exhibited no performance differences. In Experiment 2, the effect of achievement goals on performance attainment was examined in both the absence and the presence of a performance contingency. In the absence of a performance contingency, performance-avoidance goals were shown to undermine performance relative to performance-approach and mastery goals, and performance-approach and mastery goals displayed no performance differences. Thus, these results replicated the results of Experiments 1A and 1B and showed that these effects are robust across two age groups (high schoolers and college undergraduates) and two countries (Germany and the United States). The findings for achievement goals were different in the presence of a performance contingency. Although performance-avoidance goals were again shown to undermine performance relative to performance-approach and mastery goals, performance-approach goals were found to have a more positive effect on performance than mastery goals. The effect of the presence or absence of a performance contingency was also examined for each individual achievement goal. Performance-approach goal participants performed better in the presence of a contingency than in the absence of a contingency, whereas performance-avoidance goal participants performed worse in the presence of a contingency than in the absence of a

contingency. The effect of mastery goals on performance was not influenced by the presence or absence of a performance contingency.

The results obtained for each of the goals in the trichotomous model are highly consistent with those observed in the extant research with measured achievement goals, and, importantly, they firmly establish the causal influence of these goals on performance attainment.² The most robust finding in the measurement-based literature on achievement goals and performance is that performance-avoidance goals are negatively related to performance attainment. The present research documented this relationship emphatically, in showing that a brief, avoidance-based framing manipulation can undermine performance on a standardized intelligence test. Furthermore, the present research points to a likely reason that the undermining influence of performance-avoidance goals is so consistently observed in the existing measurement-based studies: These goals are inimical for performance regardless of whether a performance contingency is present or absent in the achievement context. Thus, our findings add to a growing body of empirical work attesting to the negative and widespread influence of avoidance-based regulation in achievement settings.

Our results for performance-approach goals clearly document their positive influence on performance, an issue that has been a source of contention in the measurement-based literature (Harackiewicz et al., 2002; Midgley, Kaplan, & Middleton, 2001). The cumulative evidence seems undeniable at this point that performance-approach goals can facilitate performance, and the present findings indicate that they are particularly likely to do so when performance contingencies are present in the achievement context. Given the prevalence of such contingencies in real-world achievement contexts, it may be tempting to suggest that the positive impact of performance-approach goals is widespread. However, further research is needed to empirically examine the generalizability of the observed effects. As will be detailed shortly, the conditions for performance-approach goals in the present experiments may have been quite optimal, and it remains to be seen whether positive performance results would be obtained with a creativity-based task, with a long-term indicator of performance attainment, with the prior provision of failure feedback, or with younger, less able, or less committed participants (see Elliot & Moller, 2003; Midgley et al., 2001).

Our results for mastery goals shed light on a conundrum in the achievement goal literature. Specifically, recent reviews of the literature have expressed puzzlement over the inability of mastery goals to facilitate performance to the same degree as performance-approach goals (Brophy, 2004; Midgley et al., 2001). Our achievement goal results within contingency condition indicated that mastery and performance-approach goals were equal facilitators of performance in the absence of a performance contingency and that it was when a contingency was added to the achievement context that performance-approach goals evidenced a performance advantage. These results suggest that mastery goals may be impervious to certain potentially facilitative influences in the evaluative environment but, importantly, mastery goals may also be impervious to potentially debilitating influences that are sometimes encountered in achievement settings such as strong self-presentation or self-validation cues, harsh or stringent evaluative structures, and so forth (Ames, 1992; Maehr & Midgley, 1991). As such, the task focus of mastery goals may not be beneficial for performance in

some instances, but it may serve an important prophylactic role in others, and subsequent research would do well to explore this possibility. It is also important to note that regardless of their effects on performance, mastery goals have been shown to facilitate other desirable outcomes in achievement settings (see later in this discussion for details), thereby unequivocally and emphatically establishing their importance and value.

Our contingency results within achievement goal condition conceptually replicated those obtained by Raynor and Rubin (1971) with achievement motives. Like the need for achievement, performance-approach goals were more positive predictors of performance in the presence of a contingency, and like fear of failure, performance-avoidance goals were (even) more negative predictors of performance in the presence of a contingency. Mastery goals, despite being an approach form of motivation like the need for achievement and performance-approach goals, did not evidence a performance increment in the presence of a contingency. This empirical correspondence between Raynor's need for achievement data and our performance-approach (but not mastery) goal data raises questions about the qualitative nature of the motivation assessed by the classic need for achievement measure. Although this measure has been portrayed as assessing a purely mastery-based form of achievement motivation (Koestner & McClelland, 1990; McClelland, 1985), the juxtaposition of our results with those of Raynor suggests otherwise. Indeed, careful scrutiny of the categories within this measure reveals a strong focus on normative, prestige-oriented competence, and it is interesting to note that in the process of developing the measure, McClelland relied on achievement arousing situations characterized as "ego involving" (McClelland et al., 1953, p. 102). This highlights the need to attend to the performance-mastery distinction at both the motive and the goal level of analysis, a process that was started by Spence and Helmreich (1983) with regard to explicit need for achievement, but it is one that has been completely ignored, to date, with regard to implicit need for achievement.

In the present research, we operationalized the concept of instrumentality in terms of performance contingencies in close temporal proximity to the task at hand. This operationalization yielded important insights into the effect of achievement goals on perfor-

² Our experimental manipulation of achievement goals afforded the documentation of a causal relationship between goals and performance attainment, but potential limitations of these manipulations may be noted. In focusing performance-approach goal participants on average or exceptional performance and performance-avoidance goal participants on average or poor performance, we may have elicited differential competence expectancies as well as differential valenced foci, and we did not test for this possibility. However, prior work that has used similar achievement goal manipulations (Cury, Elliot, Sarrazin, Da Fonseca, & Rufo, 2002; Elliot & Harackiewicz, 1996, Experiment 1) has examined this possibility and found that this type of goal manipulation has no effect on competence expectancies. A related point is that our goal manipulations were rather strong, such that performance-approach participants may have felt somewhat sheltered from potential failure, and performance-avoidance participants may have felt somewhat restrained from potential success. However, prior work (Elliot & Harackiewicz, 1996, Experiment 2) has found that similar results are obtained when this type of strong achievement goal manipulation and a weaker manipulation that simply mentions the possibility of success or failure are used.

mance attainment and represents the first study to manipulate and examine the joint effects of achievement goals and instrumentalities. Furthermore, our research contains the first avoidance-based manipulation of instrumentality (i.e., the performance-avoidance-contingent cell) reported in the achievement motivation literature. It is important to note, however, that there are other types and dimensions of instrumentalities, as well as other temporal proximities, that warrant research attention. For example, researchers have articulated distinctions between intrinsic and extrinsic (Lens, 2001), endogenous and exogenous (Husman & Lens, 1999), and internally regulated and externally regulated (Lens & Rand, 1997) instrumentalities and documented their differential influences on motivational processes (Husman, Derryberry, Crowson, & Lomax, 2004; Simons et al., 2000; Vansteenkiste et al., 2004). In addition, researchers have discussed and examined the effects of instrumentalities containing multiple, rather than single, contingent paths (Raynor, 1981) and have examined the impact of concerns in the distant, rather than near, future (Gjesme, 1981; Nuttin, 1984). Attending to such distinctions in subsequent research promises to yield a more complete understanding of the achievement goal-instrumentality interface.

Broadly stated, a “take home” message from the present research is that the relationship between achievement goals and performance attainment, and the attainment of competence more generally, is complex. A clear understanding of this relationship would seem to require consideration of the match between the structure of and processes evoked by achievement goals, and factors such as (a) the standard used in evaluating competence, (b) the public or private nature of competence evaluation, (c) the type of processing and engagement needed for the attainment of competence, (d) the interest value of the task, (e) the timing and source of competence feedback, (f) the time frame of competence outcomes, and, of course, (g) the presence or absence of instrumentalities. These and, undoubtedly, other factors are posited to have an important impact on the link between achievement goals and the attainment of competence.

This point may be illustrated with regard to the question of when performance-approach goals are likely to facilitate the attainment of competence to a greater degree than mastery goals. Mastery goals use a positive task/intrapersonal standard in competence evaluation which is presumed to evoke challenge appraisals and an interest-based absorption in task engagement. Performance-approach goals, on the other hand, use a positive normative standard in competence evaluation that is presumed to evoke many of the same positive processes as mastery goals but is also thought to foster a more external focus on the evaluative environment and on what is needed to attain competence. As such, the facilitative influence of these goals is likely to be observed across a broader range of tasks, contexts, and situations. Specifically, the advantage of performance-approach goals over mastery goals is most likely to be observed when (a) competence is evaluated using a normative standard, (b) competence is evaluated publicly, (c) shallow processing is needed for the attainment of competence, (d) the task is boring, (e) competence feedback is acquired from an external source, (f) short-term outcomes are considered, and (g) instrumentalities are present.

With regard to performance-avoidance goals, these goals use a negative normative standard in competence evaluation that is presumed to evoke a host of aversive processes based in anxiety,

self-protection, and relational insecurity that undermine competence attainment across most tasks, contexts, and situations. These goals are likely to be most debilitating when (a) competence is evaluated using a normative standard, (b) competence is evaluated publicly, (c) deep processing is needed for the attainment of competence, (d) the task is boring, (e) competence feedback is acquired from an external source, (f) long-term outcomes are considered, and (g) instrumentalities are present. Are performance-avoidance goals detrimental to competence outcomes in any and all situations? Not necessarily. There are likely to be some circumscribed instances in which these goals can benefit performance, such as when one is winning near the end of a competition and conservatism becomes more prudent than risk-taking (see Elliot & Conroy, 2005).³ However, such occasions are clearly exceptions to the general principle, amply documented in the literature, that performance-avoidance goals are inimical to performance.

Given the positive results observed for performance-approach goals in our experiments, it is reasonable to ask whether these data lead to the conclusion that performance-approach goals should be promoted or encouraged by teachers, administrators, and parents. We do not think that such a conclusion is warranted for several reasons. First, this conclusion would be premature. More research is needed to examine the generalizability of our results across the aforementioned factors and other situation-specific (e.g., perceived competence), domain-general (e.g., implicit theories of ability), dispositional (e.g., fear of failure), and demographic (e.g., age) variables. Second, it is important to reiterate that the present research focused on one of many important outcomes in achievement settings. Although performance attainment is, of course, an outcome of great importance, other outcomes such as task choice, creativity, intrinsic motivation, well-being, information retention, and learning itself must be weighed when considering the benefits and costs of goal pursuit. Research indicates that performance-approach goals do not facilitate many of these other desired outcomes and that mastery goals are vital in this regard (Butler, 1987; Elliot & McGregor, 1999; Graham & Golen, 1991; Harackiewicz et al., 2002; Heyman & Dweck, 1992; Midgley et al., 2001; Van Yperen, 2003). Accordingly, an important question is whether performance-approach and mastery goals can be pursued together (e.g., with performance-approach goals facilitating performance attainment and mastery goals facilitating other desired outcomes) or whether performance-approach goals “drive out” mastery goals (Midgley et al., 2001, p. 83). On a related note, our research does not address the question of how performance contingencies interact with different combinations of achievement goals in affecting achievement outcomes. Future research on these “multiple goals” issues would be welcomed (see Barron & Harackiewicz, 2001; Pintrich, 2000).

³ Although avoidance-based goals may not undermine, and can even facilitate, performance under certain circumscribed conditions, a separate question concerns the phenomenological implications of such goal pursuit. Avoidance regulation, even when effective for performance, is likely to be associated with aversive experiential states (e.g., anxiety, distraction, rumination) that would undoubtedly undermine persistence, enjoyment, and performance in the long run.

Finally, empirical research demonstrates what is at present; it is mute as to what could or should be in the future. It is critical to keep this distinction in mind when interpreting data from achievement goal research. Even if the empirical profile displayed by performance-approach goals is positive (to whatever degree), metatheoretical or philosophical considerations may keep one from supporting these goals (Elliot & Moller, 2003). For example, those who yearn for more cooperative as opposed to competitive societal structures may contend that advanced industrial societies are so rife with competition already that the last thing needed is an additional fostering of normative striving (Kohn, 1986; Nicholls, 1989; Orlick, 1979; see Urdan's [2003] excellent discussion of idealists vs. realists in this regard). In short, a temperate stance is called for regarding performance-approach goals. Our data indicate the need for a deeper and more intricate consideration of these goals and their effects, and, for some, our data may suggest that an antagonistic stance toward any and all forms of performance-approach goals, in any and all achievement contexts, is unnecessary. However, and importantly, our data in no way suggest a move from the long-time and modal position of encouraging the adoption of mastery goals (Ames, 1992; Maehr & Midgley, 1991) or the more recently articulated position of discouraging the adoption of performance-avoidance goals (Elliot, 1999).

In conclusion, the present research highlights the need for a more rigorous, systematic examination of the effects of achievement goals on performance attainment. For many years, achievement goal researchers assumed that mastery goals exert a positive influence and performance goals exert a negative influence on performance. However, the present experimental research, in accord with recent field research, indicates that it is performance-avoidance goals, not performance goals in general, that have a negative influence on performance. Furthermore, our research documented that the relative impact of mastery and performance-approach goals on performance depends on the presence or absence of performance contingencies. Clearly, the achievement goal-performance relationship is more complex than initially anticipated, and a full understanding of this important relationship awaits additional experimental and field research attending to various features of the achievement task, context, and situation.

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