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Improving Low Achievers' Academic Performance at University by Changing the Social Value of Mastery Goals

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Recent research has shown that, in a university context, mastery goals are highly valued and that students may endorse these goals either because they believe in their utility (i.e., social utility), in which case mastery goals are positively linked to achievement, or to create a positive image of themselves (i.e., social desirability), in which case mastery goals do not predict academic achievement. The present two experiments induced high versus neutral levels of mastery goals' social utility and social desirability. Results confirmed that mastery goals predicted performance only when these goals were presented as socially useful but not presented as socially desirable, especially among low achievers, those who need mastery goals the most to succeed.

KEYWORDS: mastery goals, academic performance, social desirability, social utility, social value

Does the desire to learn predict achievement in academic contexts? This question may appear incongruous for many teachers and students who would probably think that the answer is unambiguously “yes.” Indeed, common sense—and a great deal of scientific discourse—suggests that motivation toward learning is a key element of every educational setting (Ames, 1992; Dweck, 1986; Elliot & Church, 1997; Elliott & Dweck, 1988; Nicholls, 1984). However, and surprisingly, three decades of achievement goal

research have failed to provide a definitive answer to this apparently obvious but critical question (Barron & Harackiewicz, 2000; Elliot, 2005; Senko, Hulleman, & Harackiewicz, 2011; Urdan, 2004).

In this article, we will show that the link between the desire to learn—named *mastery goals* in the achievement goal framework—and performance in an academic context does not spontaneously appear and that research in the area of achievement goals has failed to observe it in a consistent manner. We will then provide a theoretical framework in terms of social value of achievement goals to explain this inconsistency. Indeed, achievement goals are not expressed in a social vacuum, and students may be influenced by the social system to which they belong—here, the university system—when they report their goal endorsement (Darnon, Dompnier, & Poortvliet, 2012; Poortvliet & Darnon, 2010). As we will argue, this is especially true for mastery goals, which are particularly valued at university (Darnon, Dompnier, Delmas, Pulfrey, & Butera, 2009). Finally, to substantiate this claim, we will report two experiments that show for the first time how it is possible to influence the value attributed to mastery goals and thereby act upon the link between mastery goals and academic performance.

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The Inconsistent Effects of Mastery Goals in Educational Contexts

Achievement goals are defined as “the purpose of achievement behavior” (Ames, 1992, p. 261) and are classically organized into two main categories: mastery versus performance goals (Dweck, 1986; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Nicholls, 1984). Mastery goals correspond to the desire to learn, that is, to acquire new knowledge and skills; performance goals correspond to the desire to attain competence in comparison with others. In addition to this distinction, more contemporary research has proposed to differentiate achievement goals as a function of their approach/avoidance tendencies, leading to a 2×2 framework (Elliot & McGregor, 2001; Elliot & Murayama, 2008). Mastery-approach goals refer to the initial definition of mastery goals, while mastery-avoidance goals correspond to the desire not to learn less than expected. Performance-approach goals correspond to the desire to outperform others and performance-avoidance goals to the desire not to perform more poorly than others.

Abundant research has been conducted to document the effects of achievement goals on various achievement-related outcomes, and important recommendations to teachers have been made accordingly. In particular, although rather unclear prescriptions are made for performance goals—in particular, performance-approach goals, which are often debated in the literature—a very large consensus appears concerning mastery goals, in particular, mastery-approach goals. Indeed, because of the many beneficial consequences of such goals in educational contexts, including interest, efforts, intrinsic motivation, deep learning strategies, and cooperative behaviors (Barron & Harackiewicz, 2000; Dweck, 1986; Hulleman, Schrage, Bodmann, & Harackiewicz, 2010; Pintrich & Schunk, 2002; Poortvliet & Darnon, 2010; Urdan, 2004), most authors recommend to promote mastery-approach goals in classrooms.

Surprisingly, however, in spite of this large consensus, research has not yet demonstrated unambiguously that mastery-approach goals were positively related to achievement. Indeed, even if the correlation between mastery goals and performance outcomes across studies appeared to be low but positive (for a recent meta-analysis, see Hulleman et al., 2010), many studies reported a nonsignificant relationship between these goals and achievement measures (Linnenbrink-Garcia, Tyson, & Patall, 2008). Such an inconsistency led some researchers to claim that “the role played by mastery[approach] goals in performance processes remains something of a mystery” (Pekrun, Elliot, & Maier, 2009, p. 131). Since the present research is concerned with this inconsistency, we will focus on mastery-approach goals and—for fluency reasons—we will use the simpler term *mastery goals*.

Recent research has proposed that this inconsistency may be due to the fact that achievement goal theory has often overlooked the social context in which achievement goals—and more particularly, mastery goals—are

expressed by students (Darnon et al., 2012; Poortvliet & Darnon, 2010). Therefore, the reality of the empirical results notwithstanding, consistent recommendations to promote mastery goals have been made to teachers, without replacing achievement goal theory within its social and organizational context, namely, educational systems.

The Social Value of Mastery Goals in Educational Contexts

Why do students endorse achievement goals to a higher or lower extent in educational settings? A possible way to answer this question may be to consider the societal functions that educational systems have to fulfill in modern societies (Darnon et al., 2009). Obviously, one of the main functions of school, including university, is to educate people by helping them to acquire new competences and knowledge (see Dornbusch, Glasgow, & Lin, 1996). Thus, it appears that mastery goals are particularly relevant within such a system. On the one hand, mastery goals fit its educational function because of their role in students' involvement in learning. On the other hand, these goals fit its typical ideology of learning, and contrary to performance goals, they are perceived by most teachers and researchers as morally acceptable ways to face achievement situations.

Such a fit between mastery goals and both the ideology and the functional constraints of the university system led Darnon et al. (2009) to hypothesize that students who endorse these goals should be positively judged on the two fundamental dimensions of social judgment (Abele, Cuddy, Judd, & Yzerbyt, 2008). Many different labels have been used to describe these dimensions: social desirability and intellectual desirability (Rosenberg, Nelson, & Vivekananthan, 1968), warmth and competence (Fiske, Cuddy, & Glick, 2007), communion and agency (Abele & Wojciszke, 2007), or social desirability and social utility (Beauvois, 2003; Beauvois & Dubois, 2009; Pansu & Dompnier, 2011). Among these various theoretical approaches, the conceptual framework proposed by Beauvois and Dubois is particularly relevant to address the question of the effects of achievement goal endorsement on social judgment. According to Beauvois (2003), social value, which is assumed to be the product of the social environment, is organized by two dimensions. The first one, social desirability, is defined as individuals' capacity to satisfy the various motivations of the members of a given social group and corresponds to the degree to which individuals are liked. The second dimension, social utility, is defined as individuals' capacity to satisfy the functional requirements of a given social environment or organization and corresponds to the degree to which individuals can succeed within this social environment.¹

Within this theoretical framework, Darnon et al. (2009) argued that because mastery goals are in accordance with the university ideology, these goals should be positively valued on social desirability. In addition, because

mastery goals satisfy the requirements of the university system and, more particularly, its educational functions, these goals should be positively valued in terms of social utility. Results showed that students, who were asked to put themselves in the shoes of their university teachers, judged a fictitious student who highly adopted mastery goals as being both socially desirable (e.g., nice and diligent) and socially useful (e.g., competent and likely to succeed; Darnon et al., 2009, Experiment 2). Moreover, students increased their mastery goal endorsement under social desirability instructions (i.e., to answer in order to be appreciated by their teachers) and under social utility instructions (i.e., to answer in order to show their teachers that they have all the qualities to succeed at university), compared to a condition where they were asked to answer under standard instructions (Darnon et al., 2009, Experiment 1). In sum, this research revealed that students have a clear knowledge of mastery goals' social value and that they can use this knowledge to influence their teachers' judgments in the desired direction on each dimension of social value.

These results offer new ways to look at results obtained during the past 20 years in the field. With this new perspective, mastery goal endorsement, as expressed through self-report measures, may be conceived of not only as the empirical translation of students' psychological latent goals or desires—as assumed by classical achievement goal theorists—but also as social behaviors that students display in order to be positively judged by their teachers. In a way, this conceptualization of mastery goals is in line with research on “goal complexes”: As noted by Elliot (2006),

the goal complex may be characterized in the propositional form: “[goal] in order to [underlying reason].” Different goal complexes are posited to lead to different processes and outcomes, even when the goal is the same. Stated differently, goal pursuit feels different and has different effects when it is impelled by different underlying motivations. (p. 114)

In this research, we assumed that social desirability and social utility could be some of the reasons behind mastery goal endorsement. This approach also offers some key features to explain unexpected or inconsistent results observed in the literature. More particularly, the high social value attached to mastery goals could explain why research has found difficulties to unambiguously demonstrate that mastery goal endorsement was related to learning and success at university.

Social Value as a Moderator of the Mastery Goals–Academic Performance Link

Based on the theoretical framework proposed by Darnon et al. (2009), Dompnier, Darnon, and Butera (2009) argued that students can endorse mastery goals for at least two nonexclusive reasons. On the one hand,

they can report a high level of goal endorsement because they really pursue them and they believe in their efficiency to succeed at university. Thus, students' goal endorsement can be based on the conviction that mastery goals are highly socially useful. On the other hand, students can also endorse mastery goals because they know that they are highly appreciated by their teachers and they want to be positively judged by them. In this case, students' goal endorsement would be motivated by the perception that mastery goals are highly socially desirable. If these statements are correct, then the social utility and social desirability considerations used to endorse mastery goals should dramatically change the very concept measured by self-report mastery goal scales. While social utility would induce a goal report based on a true commitment with mastery goals, social desirability would induce a goal report based on a social approval motive and thus would not reflect the level of genuine mastery goals.

The implications for the mastery goal–academic performance relation of such a social value framework have been empirically examined by Dompnier et al. (2009) in a longitudinal study conducted on 1st-year psychology students. In this research, participants answered a mastery goal scale at the beginning of an academic semester under three different instructions: standard instructions, social desirability instructions (i.e., in order “to be appreciated” by their teachers), and social utility instructions (i.e., in order to show their teachers that they have “all the qualities to succeed at university”). Their results revealed that the relationship between mastery goal endorsement and academic performance depended on the participants' perceptions of mastery goals' social desirability and social utility but in reverse directions. Indeed, while the relationship between mastery goal endorsement and academic performance was inhibited by the students' perceptions of these goals' social desirability, it was facilitated by their perceptions of these goals' social utility. In other words, mastery goals predicted academic performance when these goals were perceived as efficient tools for reaching success at university (i.e., high social utility) but not when they were perceived as a way to garner teachers' appreciation (i.e., high social desirability). These results have been fully replicated by Smeding et al. (2015) with high school students. In sum, these results indicate that mastery goals do predict academic performance only if they are endorsed for “right” reasons, namely, because one believes in the social utility of these goals for learning and not because one wants to appear as a nice student in his or her teachers' eyes.

Changing Mastery Goals' Social Value

Despite their high level of ecological validity, the above results rely upon the measure of the student's preexisting beliefs about the social utility and social desirability of mastery goals and leave unanswered the

fundamental question of the influence that can be exerted on the social value of mastery goals. This is both a theoretical and a practical question, to the extent that it connects to the abundant literature on the promotion of achievement goals in the classroom (Meece, Anderman, & Anderman, 2006), and it refers to the tools that can be used in the classroom to create a climate in which students endorse mastery goals (e.g., Maehr & Midgley, 1991; Urdan, 2004; Urdan & Schoenfelder, 2006; Urdan & Turner, 2005).

The above analysis in terms of social value in fact transforms the question of how to promote mastery goals and leads to consider that too strong a promotion of mastery goals can have counterproductive effects. Indeed, teachers heavily insisting on the promotion of mastery goals might convey the notion that mastery goals are high in social desirability, with little impact on their social utility. One can expect such a climate to encourage students to endorse mastery goals for self-presentation purposes, in which case they should not predict academic performance, as noted above. This theoretical reappraisal of what might mean to promote mastery goals implies the challenge of influencing students' beliefs that mastery goals are an efficient strategy to learn while discouraging them to adopt such goals for self-presentation purposes. In the present study, we argue that this can be done by explicitly changing mastery goals' social value, namely, by enhancing mastery goals' social utility without enhancing mastery goals' social desirability.

It is worth noting that addressing this issue would also complement previous research in two important ways. First, the correlational nature of the design used in the aforementioned studies prevents from drawing conclusions on the causal role played by social value on the mastery goals–academic performance link. The present research will experimentally manipulate mastery goals' social desirability and social utility, which should clarify this point. Second, the above research tested the moderating role of social value on the mastery goals–performance relationship through a longitudinal design based on a semester-long time lag between goal endorsement and performance outcome. Even if such a temporal delay is essential to demonstrate that genuine mastery goals have long-term consequences on success and learning at university across numerous learning situations over time, it does not allow assessing the immediate effect of mastery goal endorsement on a single learning event. Thus, in the present studies, learning outcomes were assessed directly after the learning phase.

Overview and Hypotheses

In the present research, we tested the impact of the manipulation of social desirability (high vs. neutral) and social utility (high vs. neutral) of mastery goals on the relation between mastery goal endorsement and learning outcomes. As reported above, the moderating effects of mastery goals' social desirability and social utility are additive but in opposite directions:

an inhibiting effect of social desirability and a facilitating effect of social utility. Thus, in two studies, we expected the relationship between mastery goal endorsement and learning outcomes to be more positive when students were experimentally induced to perceive these goals as socially useful but not socially desirable than in the three other conditions. Study 1 used a computer-supported method, whereas Study 2 was conducted during a real course at university.

Study 1

Method

Participants

One hundred and fifty-nine 1st-year students (mean age = 21.53, $SD = 2.43$) from a French-speaking Swiss university participated in this study. The sample consisted of 111 women and 47 men; one participant did not report his or her gender. Participants were enrolled in various university departments (e.g., Economy, Geography, Law, Psychology, Social Sciences) at different academic levels (from 1st-year students to master's students).

Material and Procedure

Participants were recruited on a university campus to participate in a study on e-learning; they were informed that they would have to read some texts and answer a set of questions on these texts. Participants were seated in individual cubicles, and the procedure was completely computer based, consisting of three different phases. The first phase was aimed to measure participants' initial level of performance in reading comprehension. First, participants read with no time limit an excerpt from a social psychology text (i.e., the social proof phenomenon; from Cialdini, 1990; 1,686 words). Then, they took a test (Test 1) consisting of 10 multiple-choice questions on the text content; each question comprised four possible answers, of which only one was correct. These questions were created to capture the participants' knowledge of different key concepts presented in the text, as typically done in academic exams.² Participants' score on this test was computed by summing the number of correct answers given; thus, the score varied from 0 (no correct answer) to 10 (all answers correct).

The second phase included the experimental manipulation of the social value of mastery goals. It is important to note that this is a manipulation not of the nature of the goals—the manipulation always concerns mastery goals—but rather of the reasons behind these goals. This manipulation was operated by using the authority of science as a source of influence. Indeed, in modern societies, science plays a central role in the elaboration

of commonsense knowledge and has supplanted other traditional sources of information, such as religion (Bangerter, 2000; Courvoisier, Clémence, & Green, 2013). In addition, past research showed that university students' attitudes and beliefs were influenced by the scientific content they learned during their studies (Guimond, 2001; Guimond & Palmer, 1996). Thus, after answering Test 1, participants were informed that they would carry out a filler task, allegedly in order to empty working memory between the two learning tasks. During this task, they were asked to read a bogus scientific article describing the effect of mastery goal endorsement on both learning and teachers' appreciation. The research results presented in this article varied according to a 2 (mastery goals' social desirability: high vs. neutral) \times 2 (mastery goals' social utility: high vs. neutral) design. More particularly, mastery goals' social utility was manipulated by presenting a set of research showing that endorsing these goals had positive effects or no effect on learning at university. Thus depending on the condition, participants could read the following paragraph:

As far as learning at University is concerned, many studies have shown that individuals who highly endorsed mastery goals [had/did not have] a better performance on exams than those with a low endorsement of these goals (Smith & Aronson, 1995). Thus a better performance [is/is not] observed among students who are strongly convinced of the importance of the desire to learn, to understand the problem, to acquire new knowledge, and to increase task mastery. This [positive/lack of] effect of mastery goal endorsement on exams has been observed in children (Stanley, Dirk, & Seymour, 1999) and adults (Linden & Read, 2002), in ecological (Crawford & Hidi, 2001) and experimental contexts (Anderson & Chen, 1998). Such results therefore suggest that bringing students to massively endorse such goals [should/should not] enable them to increase their ability to learn at University.

In the same vein, mastery goals' social desirability was manipulated by presenting a set of research showing that endorsing publicly these goals had positive effects or no effect on teachers' judgment. Depending on the condition, participants could read the following paragraph:

Concerning social judgment, research has demonstrated that individuals who strongly put forward their commitment to mastery goals [were/were not] more appreciated by their teachers than those who said they did not adhere to these goals. These results have been observed whether the judges were teachers (Epstein, 1993) or students (Uberty & Kluger, 2000), whether the targets were real persons (Alicke, Rothermund, & Williams, 1997) or fictitious targets (Spence & Taylor, 2001). These results reveal that bringing students to publicly embrace such goals [should/should not] enable them to increase their ability to be appreciated by their teachers.

Participants were randomly assigned to one of the four experimental conditions (n s between 37 and 42). Thus, depending on the experimental condition, mastery goals were presented as having (a) a positive effect on teachers' appreciation and on learning and success at university (high desirability/high utility of mastery goals), (b) a positive effect on teachers' appreciation and no effect on learning and success at university (high desirability/neutral utility of mastery goals), (c) no effect on teachers' appreciation but a positive effect on learning and success at university (neutral desirability/high utility of mastery goals), or (d) no effect on teachers' appreciation and no effect on learning and success at university (neutral desirability/neutral utility of mastery goals). The presentation order of the information relative to mastery goals' social desirability and social utility was counterbalanced across participants.

After reading the bogus scientific article, participants completed a judgment task in order to measure the impact of the experimental manipulation on their perceptions of mastery goals' social value. More particularly, they were asked to put themselves in the shoes of their university teachers and to judge a fictitious student who highly endorsed mastery goals on a mastery goal scale (see Darnon et al., 2009, Study 2, for a similar procedure). This scale consisted of three items extracted from the French version of Elliot and McGregor's (2001) achievement goal scale (Darnon & Butera, 2005). The target showed a high level of agreement with each of the three items: The scores 6, 5, and 6 on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*) were circled. The participants' task was to describe this target on six personality traits referring to social desirability (i.e., pleasant, likeable, and nice; $\alpha = .90$) and social utility (i.e., intelligent, gifted, and competent; $\alpha = .73$) on scales ranging from 1 (*not at all*) to 7 (*very much*). This judgment task was presented to participants as part of the filler task but was in fact a manipulation check.

After the judgment task was completed, participants answered a mastery goal scale with standard instructions ($\alpha = .78$; 7-point scales). This scale was similar to those used in the judgment task but was phrased to capture mastery goals related to the upcoming task. This measure was the main measure of this phase as it allowed us to assess the participants' mastery goal endorsement just after the experimental induction.

The third phase aimed to measure participants' final performance in reading comprehension. Participants read a second text, again with no time limit, on a different social psychology topic (i.e., the scarcity principle in persuasion; from Cialdini, 1990; 1,963 words), and answered 10 multiple-choice questions on the text content. Thus, participants' final performance in reading comprehension varied from 0 (no correct answer) to 10 (all answers correct).

Table 1
Means, Standard Deviations and Correlations Among
Continuous Variables (Study 1)

Measure	<i>M</i>	<i>SD</i>	Correlations					
			1	2	3	4	5	
1. Social desirability score	4.57	1.10	—					
2. Social utility score	4.82	0.88	.61***	—				
3. Mastery goal endorsement	5.48	0.90	.19*	.23**	—			
4. Initial performance (Test 1)	5.83	1.58	.09	.08	.00	—		
5. Final performance (Test 2)	5.80	1.78	.11	.01	-.01	.29**	—	

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

Results

Means, standard deviations, and correlations between all continuous variables are presented in Table 1.

Manipulation Checks

A preliminary step before testing our main hypothesis was to demonstrate the effectiveness of our experimental manipulation of mastery goals' social desirability and social utility. Thus we looked at the participants' trait judgments of the fictitious student made just after reading the bogus scientific article. More particularly, we expected this student—who highly endorsed mastery goals—to be judged as being more socially desirable in the high-desirability conditions than in the neutral-desirability conditions. In addition, we expected this student to be judged as being more socially useful in the high-utility conditions than in the neutral-utility conditions.

We conducted a first 2 (mastery goals' social desirability: high vs. neutral) \times 2 (mastery goals' social utility: high vs. neutral) analysis of variance with the social desirability score as dependent variable. This analysis revealed, as expected, a main effect of social desirability manipulation, $F(1, 155) = 31.63$, $p < .001$, $\eta_p^2 = .17$, 90% CI [.0869, .2532], indicating that the target was judged as being more socially desirable in the high-desirability conditions ($M = 5.02$, $SD = 1.02$) than in the neutral-desirability conditions ($M = 4.12$, $SD = 0.99$). No other effect reached significance, $F_s(1, 155) < 2.09$, $p_s > .15$.

A second analysis of variance, with the same factors, was conducted on the social utility score and revealed a main effect of the social utility manipulation, $F(1, 155) = 9.06$, $p < .01$, $\eta_p^2 = .06$, 90% CI [.0111, .1208]. As

expected, the target was judged as being more socially useful in the high-utility conditions ($M = 5.03$, $SD = 0.74$) than in the neutral-utility conditions ($M = 4.62$, $SD = 0.96$). The analysis also indicated a significant effect of the social desirability manipulation, $F(1, 155) = 21.60$, $p < .0001$, $\eta_p^2 = .12$, 90% CI [.0516, .2019], showing that the fictitious student was judged as being more socially useful in the high-desirability conditions ($M = 5.12$, $SD = 0.73$) than in the neutral-desirability conditions ($M = 4.51$, $SD = 0.91$). The interaction effect was not significant, $F(1, 155) < 1$. In sum, our experimental manipulations effectively influenced the participants' beliefs about the social utility and social desirability of mastery goals.

Performance in Reading Comprehension

In order to test our main hypothesis on the effects on the manipulation of mastery goals' social value on the relationship between mastery goals and final performance, we conducted a regression analysis using generalized least squares (GLS) and including categorical and continuous variables. The four experimental conditions were coded using three orthogonal contrasts based on the specificity of our hypothesis (i.e., Helmert coding). Indeed, we predicted that the positive relationship between mastery goal endorsement and final performance would be stronger in the neutral-desirability/high-utility condition than in the other three conditions. Thus, the first contrast (CONT1) opposed the neutral-desirability/high-utility condition (coded 3) to the other three conditions (each coded -1). The two other contrasts tested the residual effect of the experimental manipulation. The second contrast (CONT2) opposed the high-desirability/high-utility condition (coded 2) to the high-desirability/neutral-utility and the neutral-desirability/neutral-utility conditions (each coded -1). The third contrast (CONT3) opposed the high-desirability/neutral-utility condition (coded 1) to the neutral-desirability/neutral-utility condition (coded -1). The participants' initial level of performance was also included in the model as a covariate to control for individual differences in reading comprehension. Thus, the regression model tested included 15 predictors: the participants' initial performance score, their mastery goal endorsement, the three orthogonal contrasts, and all interaction products between these terms. All continuous variables were centered. According to our hypothesis, we expected the interaction between mastery goal endorsement and CONT1 to be significant and positive, indicating that the mastery goals-final performance link is more positive in the neutral-desirability/high-utility condition than in the other three conditions.

The regression analysis first revealed a moderate but highly significant effect of initial performance on final performance, $b = .38$, $F(1, 143) = 16.56$, $p < .0001$, $\eta_p^2 = .10$, 90% CI [.0341, .1724], showing that the higher

the performance on Test 1, the higher the performance on Test 2. From a measurement perspective, this effect provided evidence for the convergent validity of the two performance measures (Messick, 1995). Second, the regression analysis indicated that the predicted interaction between mastery goal endorsement and CONT1 was positive but marginally significant, $b = .21$, $F(1, 143) = 3.47$, $p < .07$, $\eta_p^2 = .02$, 90% CI [.0000, .0721]. This interaction revealed, as expected, that the relation between mastery goals and final performance was more positive in the neutral-desirability/high-utility condition than in the other three conditions. Finally, the regression model revealed that the interaction between mastery goal endorsement, CONT1, and initial performance was negative and significant, $b = -.20$, $F(1, 143) = 4.55$, $p < .05$, $\eta_p^2 = .03$, 90% CI [.0011, .0827]. This three-way interaction indicated that the mastery goal endorsement by CONT1 interaction increased as the participants' initial level of performance decreased. This interaction is illustrated in Figure 1. No other main effects or interactions reached significance, $F_s(1, 143) < 1.29$, $p_s > .25$.

We conducted simple slope analyses to estimate the relationship between mastery goal endorsement and final performance within each experimental condition and at different levels of initial performance. As illustrated by Figure 1, the relationship between mastery goal endorsement and final performance was positive and significant for low achievers (-1 SD: 4.25) only in the neutral-desirability/high-utility condition, $b = 1.80$, $F(1, 143) = 7.08$, $p < .01$. It was marginally significant for average achievers ($+0$ SD: 5.83), $b = .69$, $F(1, 143) = 2.82$, $p < .10$, but nonsignificant for high achievers ($+1$ SD: 7.41), $b = -.43$, $F(1, 143) = .39$, $p < .54$. In all other conditions, no relationship reached significance whatever the participants' level of initial performance, $-.34 < b_s < .14$, $F_s(1, 143) < 1.55$, $p_s > .21$.

Discussion

This first study was conducted to test the effect of induced mastery goals' social value on the relation between mastery goal endorsement and performance. Moving beyond the correlational approach of previous research (Dompnier et al., 2009; Smeding et al., 2015), and in order to conclude on the causal role played by social value on the mastery goals–performance link, we manipulated experimentally these goals' social value. Results obtained on manipulation checks showed that the experimental induction successfully altered the participants' perceptions of mastery goals' social desirability and social utility in the expected direction.

It should be noted that the social desirability manipulation also influenced how the fictitious target was judged in terms of social utility. Such an effect could indicate that participants thought that the way teachers judge their students' academic abilities is biased to some extent by social desirability, which could explain why students may be tempted to use mastery goal

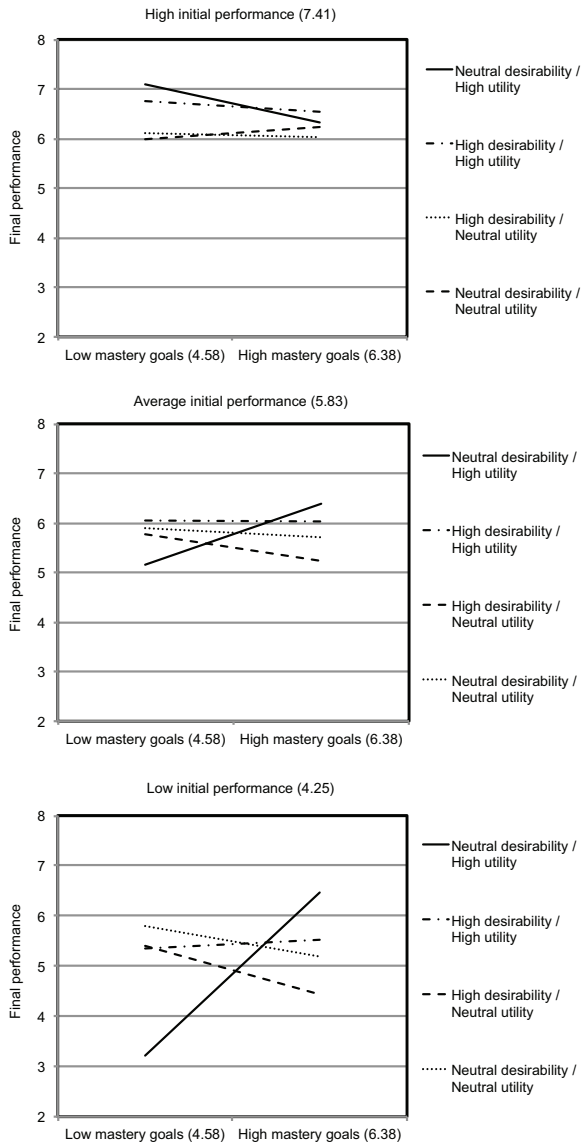


Figure 1. Final performance as a function of mastery goal endorsement, experimental conditions, and initial performance (Study 1).

endorsement as a self-presentation strategy. We can speculate that this might represent a self-presentational use of the well-known halo effect, which

describes people's tendency to judge others on a given dimension with information relative to another distinct—but related—dimension (Judd, James-Hawkins, Yzerbyt, & Kashima, 2005; Rosenberg et al., 1968; Thorndike, 1920). Thus, when endorsing mastery goals for social desirability reasons, students may try to be appreciated by their teachers but also to influence their teachers' judgment on their competence level in class and—in the long run—the grades they will obtain on tests based on their teachers' subjective evaluations (see Dompnier, Pansu, & Bressoux, 2006).

As far as the main analyses are concerned, this study revealed, in line with our main hypothesis, that the experimental manipulation of mastery goals' social desirability and social utility modified the relationship between these goals and performance in reading comprehension. Indeed, even if it was only marginally significant, the positive interaction between mastery goal endorsement and the contrast CONT1 indicated that the relationship between these goals and performance on Test 2 was stronger in the condition where they were described as a means to learn and succeed at university (high social utility) but not as a means to garner teachers' appreciation (neutral social desirability). Thus, these results replicate in an experimental design what had so far been observed only in correlational designs (Dompnier et al., 2009; Smeding et al., 2015); in other words, these results allow for the first time to argue that social value has a causal impact on the relationship between mastery goals and academic performance, with caution due to the marginal interaction effect.

Unexpectedly, but interestingly, this interaction appeared to be significantly moderated by the participants' initial level of performance. Indeed, it appeared that this interaction was stronger as the participants' level of initial performance decreased. As indicated by simple slope analyses, the relationship between mastery goals and final performance was positive and significant only in the neutral-desirability/high-utility condition for low achievers (it is worth noting that these are participants who clearly failed on the first test) and marginally significant for average achievers. Even if the moderation by the level of initial performance was not predicted a priori, it may offer new insights on the context of validity of the effects obtained in this research. Indeed, this may indicate that low achievers could have been particularly sensitive to our experimental manipulation. As a matter of fact, achievement goal research has already shown that low achievers use more strategies than high achievers (Anderman & Danner, 2008). A possible explanation for this tendency could therefore be that compared to students who already succeed, low achievers are highly motivated to improve their performance score. In this respect, one particularity of our experimental manipulation was that in the neutral-desirability/high-utility condition, mastery goal endorsement was presented as an efficient strategy in learning situations. Thus, in the context of this condition, students who clearly failed on the first test could have been highly motivated to improve their performance on the

second test and thus more motivated than other students to implement this learning strategy when studying the second text.

If we relate these results to the existing literature on achievement goals, it is possible to suggest that high achievers might not “need” mastery goals since they do not have to improve their level of performance, contrary to low achievers. In line with such an interpretation, some goal research has shown that mastery goals are more beneficial for low achievers than for high achievers (Bergin, 1995; Butler, 1993; Gabriele & Montecinos, 2001). More generally, it was often shown in this literature that mastery goals benefits are stronger in case of difficulty, namely, on confusing texts (Licht & Dweck, 1984), when the task is demanding (Graham & Golan, 1991), when uncertainty is high (Darnon, Butera, & Harackiewicz, 2007), and in classes that are considered as particularly difficult and challenging (Elliot & McGregor, 1999; Grant & Dweck, 2003). Utman’s (1997) meta-analysis found that the advantage of mastery goals (compared to performance goals) is greater when the task is difficult than when the task is easy (see also Linnenbrink-Garcia et al., 2008). This could explain why in the present study, the students who benefit from mastery goals, in the expected condition (neutral desirability/high utility), are the low achievers, namely, those who might experience the present task as more difficult than high achievers, those who “need” the most to improve their level of mastery.

Despite the coherence of these results with our hypotheses and the theoretical and practical interest of the unexpected moderation by the level of initial performance, more evidence is needed to conclude definitively on the moderating role of social value on the mastery goals–performance relationship and on the role of initial performance. In particular, the fact that our hypothesis received support especially among low achievers could be explained by some of the peculiarities of this study. For instance, one could argue that this interaction could be observed because of a possible ceiling effect on the final performance measure. Another possible explanation could be that the participants in our sample had specific motivational properties due to a self-selection bias. Indeed, due to standard experimental constraints, the sample of this study consisted exclusively of students who accepted to volunteer in an experiment on e-learning. These students could have been highly motivated to learn from the materials, especially after failing on the first performance test, and could represent a peculiar subset of the university student population.

In order to rule out these possible alternative explanations, to replicate the expected effects, and to study whether the initial level of performance is indeed a meaningful moderator of these effects, we conducted a second study based on the same manipulation of mastery goals’ social value but carried out in a real university course. In addition, we used a different performance measure directly related to this course’s content. As in Study 1, we expect the link between mastery goals and performance to be more positive

in the neutral-desirability/high-utility condition then in the other three conditions. Moreover, and on the basis of Study 1's results, we also expected this moderation to depend on the participants' initial level of performance, replicating Study 1's results in a more ecological learning situation.

Study 2

Method

Participants

One hundred and ninety-four 1st-year psychology students (mean age = 20.25, $SD = 2.69$) from a French-speaking Swiss university participated in this study. The sample consisted of 160 women and 30 men; four participants did not report their gender.

Material and Procedure

Data were collected during a 2-hour-long 1st-year psychology course. At the beginning of this course, students were asked by an experimenter to participate in a study on the transmission of scientific knowledge. Participants, seated in their usual classroom, received a booklet containing the same materials used in the experimental phase of Study 1. On the first page, participants could read that this study was conducted to understand how students acquired knowledge from scientific research. On the second page, the participants found one of the four versions of the bogus scientific article. As in Study 1, this article manipulated mastery goals' level of social desirability (high vs. neutral) and social utility (high vs. neutral), and participants were randomly assigned to one of the resulting four experimental conditions (n s between 46 and 51). On the third page, participants were asked to complete the same judgment task—with the same identification instructions, namely, to put themselves in the shoes of their university teachers—as in Study 1, which was presented as the main task of the experiment. They had to judge a fictitious student who highly endorses mastery goals on the same social desirability (i.e., pleasant, likeable, and nice; $\alpha = .90$) and social utility traits (i.e., intelligent, gifted, and competent; $\alpha = .81$) as in Study 1. On the fourth page, participants were asked to indicate their personal endorsement of mastery goals on the same three items used in Study 1 (Darnon & Butera, 2005), phrased to capture mastery goals related to that psychology course ($\alpha = .83$). Finally, on a fifth page, participants reported sociodemographic and identification information.

Once they completed the booklet, the experimenter informed the participants that the experiment was over and that they would receive the results obtained in this study later in the semester. Then, the experimenter left the class and the teacher, who was involved in the experiment but was not

aware of the hypotheses, taught the programmed course of the day for 40 minutes. The general topic of this course was basic principles in methodology, and the focus of the day was measurement issues (e.g., validity of measurement tools). At the end of the course, the participants completed a test on the content of course they just followed, which was not unusual given the continuous assessment system used in several courses, including this one, that comprises several tests during the semester. This test included 20 multiple-choice questions, each time presented with four possible answers, of which only one was correct. Thus, the participants' scores on this test varied from 0 to 20. This measure was used as an indicator of the participants' final performance.

Participants were then debriefed and informed that they took part in an experiment from the beginning of the course to the end. They were also told that the test they just completed was not going to count in their final grade. Then, they were thanked and informed that if they did not want their answers to be included in this research, they just had to inform the experimenter. No participant asked to be excluded from the sample.

Finally, once the experiment was completed, the course teacher provided the experimenter with the participants' scores on a test they took in this class a week before the experiment. This test, which was part of a continuous evaluation conducted during the semester, was used as an estimation of the participants' initial level of performance in this course prior to the experimental manipulation. These scores varied from 0 to 6, which is the standard exam scale in Switzerland, with 4 as the pass level.

Results

Means, standard deviations, and correlations between all continuous variables are presented in Table 2.

Manipulation Checks

As in Study 1, two 2 (mastery goals' social desirability: high vs. neutral) \times 2 (mastery goals' social utility: high vs. neutral) analyses of variance were conducted to check the effectiveness of the experimental manipulation of mastery goals' social value. The first analysis of variance, which was conducted with the social desirability score as dependent variable, showed a main effect of the social desirability manipulation, $F(1, 190) = 21.56, p < .0001, \eta_p^2 = .10, 90\% \text{ CI } [.0428, .1711]$. As expected, the fictitious student was judged as being more socially desirable in the high-desirability conditions ($M = 4.65, SD = 1.18$) than in the neutral-desirability conditions ($M = 3.91, SD = 1.04$). No other effects did reach significance, $F_s(1, 190) < 1$.

The second analysis of variance was conducted on the social utility score and revealed a main effect of the social utility manipulation, $F(1, 190) = 11.36, p < .001, \eta_p^2 = .06, 90\% \text{ CI } [.0146, .1156]$. This effect indicated, as

Table 2
**Means, Standard Deviations, and Correlations Among
 Continuous Variables (Study 2)**

Measure	<i>M</i>	<i>SD</i>	Correlations				
			1	2	3	4	5
1. Social desirability score	4.28	1.17	—				
2. Social utility score	4.67	0.97	.48***	—			
3. Mastery goal endorsement	5.33	0.99	.06	.04	—		
4. Initial performance (Test 1)	4.17	1	.00	.00	.09	—	
5. Final performance (Test 2)	10.69	3.39	.11	-.02	.13†	.25**	—

† $p < .10$. ** $p < .01$. *** $p < .001$.

predicted, that that target was judged as being more socially useful in the high-utility conditions ($M = 4.87$, $SD = .80$) than in the neutral-utility conditions ($M = 4.45$, $SD = 1.08$). In addition, the analysis indicated a main effect of the social desirability manipulation, $F(1, 190) = 18.35$, $p < .0001$, $\eta_p^2 = .09$, 90% CI [.0335, .1549]. As observed in Study 1, the fictitious student was judged as being more socially useful in the high-desirability conditions ($M = 4.94$, $SD = .85$) than in the neutral-desirability conditions ($M = 4.40$, $SD = 1.01$). Finally, the interaction effect also reached significance, $F(1, 190) = 4.22$, $p < .05$, $\eta_p^2 = .02$, 90% CI [.0004, .0661], showing that when associated with the neutral-utility condition, the difference between the high-desirability condition and the neutral-desirability condition ($M = 4.85$, $SD = 0.94$, vs. $M = 4.03$, $SD = 1.07$) was bigger than when these conditions were associated with the high-utility condition ($M = 5.02$, $SD = 0.75$, vs. $M = 4.73$, $SD = 0.83$).

Performance in Course Comprehension

A regression analysis using GLS was conducted with the final performance score as dependent variable. The model included the same 15 predictors as in Study 1: the participants' mastery goal endorsement, the same three orthogonal contrasts codes coding the four experimental conditions (CONT1, CONT2, and CONT3), the participants' score of initial performance (as measured by their score on the test completed in the class the week before the experiment), and all interaction products between these variables. All continuous variables were centered. As in Study 1, we expected to observe a positive Mastery Goal Endorsement \times CONT1 interaction. In addition, we expected this interaction to be negatively moderated by the participants' level of initial performance, replicating the results of Study 1.

The regression analysis revealed first a moderate but highly significant effect of initial performance on final performance, indicating that the higher the participants' level of initial performance, the higher their score on final performance, $b = .85$, $F(1, 178) = 11.99$, $p < .001$, $\eta_p^2 = .06$, 90% CI [.0162, .1195], and thus convergent validity for the two performance measures. Second, the interaction between mastery goals endorsement and CONT1 did not reach significance, $b = .05$, $F(1, 178) = .09$, $p < .77$. However, the analysis revealed, as expected, a significant negative interaction between mastery goal endorsement, CONT1, and the participants' level of initial performance, replicating the results of Study 1, $b = -.34$, $F(1, 178) = 3.96$, $p < .05$, $\eta_p^2 = .02$, 90% CI [.0001, .0640]. This interaction indicated that the Mastery Goal Endorsement \times CONT1 interaction increased as the participants' level of initial of performance decreased and is represented in Figure 2. No other main effects or interactions reached significance, $F_s(1, 178) < 1.86$, $p > .17$.

Analyses of simple slopes indicated, as in Study 1, that the relationship between mastery goal endorsement and final performance in the neutral-desirability/high-utility condition was positive and significant for low achievers (-1 SD: 3.17), $b = 1.75$, $F(1, 178) = 4.21$, $p < .05$, but not for average achievers ($+0$ SD: 4.17), $b = .51$, $F(1, 178) = .95$, $p < .33$, and for high achievers ($+1$ SD: 5.17), $b = -.74$, $F(1, 178) = .93$, $p < .34$. This relationship was not significant in all other conditions, whatever the participants' level of initial performance, $.01 < b_s < .83$, $F_s(1, 178) < 1.91$, $p_s > .16$. It is interesting to remind that the official pass level in Swiss universities is 4, which implies that the low achievers of this sample are in the range of failure.

Discussion

The aim of this second study was to replicate the results obtained in Study 1, and generalize them to a different student sample, with another performance measure and in a more ecological learning situation. Overall, Study 2 confirmed the results obtained in Study 1. Analyses conducted on manipulation checks again demonstrated the effectiveness of the experimental induction on mastery goals' social desirability and social utility.

More importantly, this study also confirmed that mastery goals' social value moderated the relationship between mastery goals and performance among low achievers. Indeed, the interaction between mastery goal endorsement, CONT1, and the participants' level of initial performance perfectly patterned the interaction obtained in Study 1: The mastery goal endorsement–performance relationship appeared to be positive and significant only in the neutral-desirability/high-utility condition—where mastery goals were described to students as having a high level of social utility but a low level of social desirability—and among students who failed on the test completed the week before the experiment. Thus, Study 2 replicated

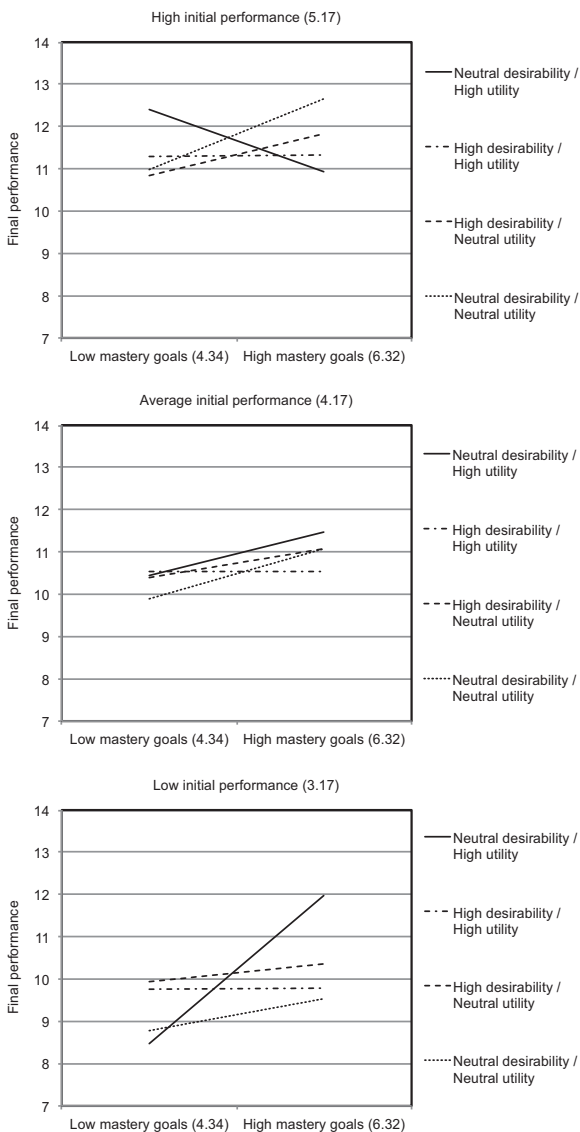


Figure 2. Final performance as a function of mastery goal endorsement, experimental conditions, and initial performance (Study 2).

the findings obtained in Study 1 and enables to rule out the aforementioned alternative explanations based on some possible peculiarity of Study 1.

Contrary to our initial expectations, however, Study 2 did not replicate the Mastery Goals \times CONT1 interaction. While this interaction was only marginally significant in Study 1, it failed to reach significance in Study 2. However, it should be noted that the inclusion in a regression analysis of a significant higher-order interaction term changes the meaning of each of its lower-order components (Aiken & West, 1991; Judd & McClelland, 1989). More particularly, in such models, every lower-order term—simple effect or interaction—is a conditional effect depending on the mean of the additional centered variables included in the higher-order interaction term. Thus, even if in both studies the Mastery Goals \times CONT1 interaction corresponded to the estimate of this interaction at the average level of initial performance, this level varied across studies in relative values. When correcting for the scale range used in each study, it appears that average achievers of Study 2 obtained a higher relative level of initial performance (4.17 on a 6-point scale: 69.5% of the maximum score) than those of Study 1 (5.83 on a 10-point scale: 58.3% of the maximum score). Thus, one possible explanation for the discrepancy between the two studies is that contrary to average achievers of Study 1, average achievers of Study 2 obtained a better initial performance score and knew that they succeeded in the exam the week before the experiment. Indeed, for these students, their average level on initial performance was above the standard pass criteria of 4 on a 6-point scale. With this knowledge in mind, these students would not have been motivated to use mastery goals as a learning strategy during the learning phase. However, low achievers, who clearly obtained a score below the pass level, may have been particularly sensitive to the experimental induction and thus may have used mastery goals to improve their performance in this course. Thus, even if Study 2 failed to replicate all the results obtained in Study 1, it offers convergent support to the main discovery of the present research that students must have instrumental reasons to use the learning strategy promoted in the neutral-desirability/high-utility condition, which is to pursue genuine mastery goals.

General Discussion

In the past 25 years, achievement goal research has shown that mastery goals are related to many achievement-related outcomes but failed to clearly demonstrate that mastery goals facilitate learning and performance in academic settings. Recent research has proposed to explain the inconsistency of the mastery goals–academic performance link by taking into account the social context in which achievement goals are expressed and the social value that this context attaches to these goals (Dompnier et al., 2009; Dompnier, Darnon, & Butera, 2013; Smeding et al., 2015). By providing a theoretical articulation between classical achievement goal theory and the social judgment literature, this social value approach offers new insights on some

of the reasons behind the students' achievement goal endorsement (see also Elliot, 2006; Elliot & Fryer, 2008; Elliot & Thrash, 2001; Hulleman & Senko, 2010; Vansteenkiste et al., 2010). More particularly, this perspective is in line with the multiple effects model (Urda & Mestas, 2006), which assumes that endorsing goals for different reasons would produce multiple interpretations of these goals, resulting in multiple, unpredictable outcomes. The social value perspective developed here goes one step further by showing experimentally that multiple reasons for goal endorsement leads to multiple goal meanings that produce multiple but predictable consequences. From this perspective, it is assumed that at least two nonexclusive reasons may motivate students to report pursuing mastery goals: to succeed in their studies (a reason in line with social utility motives) or to be appreciated by their teachers (a reason in line with social desirability motives).³ Thus, taking into account the mastery goals' social value "allows discriminating students who endorse these goals for different reasons, namely for self-presentation purposes (social desirability) or for success purposes (social utility), and enables to quantify a qualitative change in the meaning of participants' answers to an achievement goal scale" (Dompnier et al., 2013, p. 594).

However, as developed above, this previous research was based on correlational studies and could not be conclusive on the important question of whether it is possible to influence students to adopt mastery goals for the "right" reasons. The present research fills this gap: The two studies presented here experimentally demonstrate that a manipulation designed to influence mastery goals' social value clearly affected the link between these goals and performance in the students who needed the most to succeed. The present studies thus document the causal role played by social value on the mastery goals–academic performance link. Let us analyze this role. In both studies, when this relationship was measured in the experimental cell that corresponds to mastery goals' ecological social value, namely, the high-desirability/high-utility condition (Darnon et al., 2009, demonstrated that mastery goals are considered by default as high in both social desirability and social utility), the results obtained were similar to those obtained by most of the achievement goal research, that is, a relationship close to zero (cf. Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Harackiewicz, Barron, Tauer, & Elliot, 2002). From a social-value perspective, this lack of relationship is explained by the simultaneous presence of the facilitating factor (high social utility) and the inhibiting factor (high social desirability). In such a situation, students' mastery goal endorsement may be due to both social utility and social desirability reasons, simultaneously increasing and decreasing the overall trend. However, when the students were placed in a social context in which the inhibiting factor was suppressed, namely, the neutral-desirability/high-utility condition, the relationship between mastery goals and performance outcomes appeared, as assumed by classical achievement goal research (Dweck, 1986; Elliott & Dweck, 1988), to the extent that

students really needed to improve their performance. In this virtual situation, mastery goal endorsement would be the consequence of social utility reasons only. Taken together, these results stress the importance for achievement goal theory to take into account the social value that underlies achievement goal endorsement to understand the psychological meaning underlying students' achievement goal endorsement.

Why, then, did previous research on which the present studies were based find that the mastery goal endorsement–performance relation was moderated by the social value attributed to mastery goals (Dompnier et al., 2009; Smeding et al., 2015), whereas both experiments reported here revealed that this interaction effect was further qualified by the students' level of initial performance? As stated above, past research studied the moderating role of social value using long-term performance measures with time lags of several months between mastery goal measures and learning outcomes (Dompnier et al., 2009; Smeding et al., 2015). On the contrary, the two studies reported here used short-term performance measures with time lags of some minutes. Thus, a possible explanation could be that genuine mastery goal endorsement may have immediate positive consequences on a single learning event especially for low achievers (as in the present research), such as helping them to use deep learning strategies during the encoding phase (Biggs, Kember, & Leung, 2001; Biggs & Tang, 2007; Graham & Golan, 1991; Grant & Dweck, 2003) but also beneficial effects for all students in the long run (as in previous research), such as encouraging and sustaining interest in the topic over time and across learning situations (Harackiewicz et al., 2000; Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Hulleman & Harackiewicz, 2009). More generally, such a discrepancy between past and present research findings underlines the importance of taking into account the type of outcomes used to measure academic achievement as well as the processes underlying them (Elliot & McGregor, 1999). Thus future research should be designed to more directly address this question by identifying the mediating variables that explain the moderating effects of mastery goals' social value for different types of learning outcomes.

Future research should also investigate the impact of mastery goals' social value on learning outcomes from a multiple goal perspective (Barron & Harackiewicz, 2001; Senko et al., 2011). Indeed, research has shown that performance goals—and more particularly, performance-approach goals—could share some common variance with mastery goals (Hulleman et al., 2010) and moderate their effects on several outcomes (Darnon, Dompnier, Gilliéron, & Butera, 2010; Midgley, Kaplan, & Middleton, 2001). Furthermore, research has demonstrated that performance-approach goals had specific properties in terms of social desirability and social utility (Darnon et al., 2009) that varied as a function of the social relationships between targets and judges (Dompnier, Darnon, Delmas, & Butera, 2008) and moderated the relationship

between these goals and academic achievement to the same extent as in the case of mastery goals (Dompnier et al., 2013). Thus, an avenue for future research will be to simultaneously take into account mastery and performance goals' social value to gain a deeper understanding of the meaning of—and the reasons behind—students' achievement goal endorsement.

Finally, the fact that the expected effect was unexpectedly moderated by the level of initial performance in both studies may be seen as a limitation; we argue, however, that this result in fact strengthens the original hypothesis, by bringing a deeper understanding of the phenomenon at hand, with the collateral benefit of allowing to tackle the fundamental question of how to improve low achievers' performance at university. In particular, the present results confirm the benefit of endorsing mastery goals for low achievers but specify that this benefit appears to the extent that mastery goals are clearly presented as a tool for success and not as a self-presentation device. Several researchers have already argued and demonstrated that mastery goals should be promoted in classrooms (for reviews, see Meece et al., 2006; Urdan & Turner, 2005). The present research concurs with this idea but adds that mastery goals will help low achievers only if they are endorsed for the "right" reasons, namely, because students believe in their social utility for learning and not for self-presentation purposes. In other words, interventions designed to encourage mastery goals endorsement will be insufficient, and in fact counterproductive, if they promote an all-purpose positive vision of mastery goals likely to stress the belief in their social desirability; effective interventions need, on the contrary, to convince students that mastery goal endorsement is not socially desirable but is an efficient learning strategy to succeed in the educational system.

Notes

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¹The "social utility" concept (Beauvois, 2003) has to be differentiated from the "utility value" concept (Hulleman, Durik, Schweigert, & Harackiewicz, 2008). Even if these two notions could appear as semantically similar, they concern different processes and objects. Indeed, while *social utility* refers to persons and their level of fit with the constraints of a given social environment, *utility value* refers to tasks that are "useful and relevant beyond the immediate situation, for other tasks or aspects of a person's life" (Hulleman et al., 2008, p. 398).

²The material used in Study 1 and in Study 2 is fully available on request from the first author.

³Of course, other reasons may also underlie mastery goal endorsement, such as personal curiosity or intrinsic interest, and create some specific goal complexes different than those we investigated in this research. However, given that the social-value approach presented here focused exclusively on social desirability and social utility, we will not evoke these reasons more extensively in the current paper.

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Mastery Goals and Academic Performance

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