Are Academic Discounting and Devaluing Double-Edged Swords?
Their Relations to Global Self-Esteem, Achievement Goals, and Performance Among Stigmatized Students

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Often taken for granted, the coexistence of benefits and costs of discounting and devaluing has never been tested. Yet, not only are there inconsistent findings about the relations between these processes and global self-esteem, but little is known about their relations to motivation and performance. Here we simultaneously examined how academic discounting and devaluing relate to global self-esteem, achievement goals, and grades. Conducted among a diverse sample of stigmatized secondary-school students, the present study showed that discounting was positively related to global self-esteem (even more for students with lower academic self-esteem) and unrelated to achievement goals and grades. Devaluing was unrelated to global self-esteem, negatively related to all achievement goals, and associated with lower grades through mastery-approach goals. These findings suggest that discounting is a true self-protective strategy, buffering self-evaluation without decreasing achievement motivation. On the contrary, devaluing appears as a maladaptive strategy, with no benefit at all for self-evaluation and major costs for achievement motivation and grades.

Keywords: discounting, devaluing, global self-esteem, achievement goals, performance

Over the past two decades, social psychologists have devoted increasing attention to social stigma from the perspective of the stigmatized individuals. Research has shown that these individuals actively attempt to cope with their self-threatening social situations (facing with negative stereotypes, poor outcomes, and blocked opportunities) in order to protect their self-image (Crocker & Major, 1989; Crocker, Major, & Steele, 1998; Levin & van Laar, 2006). Psychological disengagement is viewed as one possible self-protective strategy. It refers to the detachment of global self-esteem from the domain in which one’s group membership is stigmatized so that one’s self-esteem is no longer affected by negative stereotypes or poor feedback (Major, Spencer, Schmader, Wolfe, & Crocker, 1998; Schmader, Major, & Gramzow, 2001; Steele, 1997). Although disengagement can be used by anyone to protect from negative outcomes, it has proved especially prevalent among stigmatized groups like ethnic minority students, because they face additional group-level threats due to negative stereotypes. For example, research shows that Black and Latino American college students are more likely to have disengaged from academics than White students (Major & Schmader, 1998; Major et al., 1998; Osborne, 1997; Schmader et al., 2001).

Psychological disengagement can be the result of one or both of two processes (Major & Schmader, 1998; Major et al., 1998; Schmader et al., 2001). The discounting process involves viewing negative feedback, poor outcomes, and tests as being biased and thus as underestimating one’s competence. The devaluing process, in constrast, consists of decreasing the importance or relevance of competencies in the threatening domain for the self so that success or failure in this domain does not matter anymore. Although either process can lead to disengagement, discounting and devaluing are conceptually and psychometrically distinct, are associated with

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Schmader et al. (2001) showed that ethnic minority students disengaged more from academics than ethnic majority students because they discount their test scores as biased and not because they devalue the importance of academic success.
different antecedents, and are thus both worth studying in order to provide a better understanding of the disengagement process (Schmader et al., 2001; Tougas, Rinfret, Beaton, & de la Sablonnière, 2005). Discounting is considered as a more temporary and less radical strategy than devaluing (Lesko & Corpus, 2006; Major & Schmader, 1998; Tougas et al., 2005). Whereas devaluing implies a withdrawal from the threatening domain, discounting allows individuals to detach their self-esteem from negative feedback in a given domain while remaining identified with it. Furthermore, individuals generally report greater discounting than devaluing (Régner & Loose, 2006; Schmader et al., 2001; Stone, Lynch, Sjomeling, & Darley, 1999; Tougas et al., 2005), suggesting that it is more difficult to devalue a domain than to discredit poor feedback, especially when the domain (such as academics) is highly valued in the society (Crocker & Major, 1989; Steele, Spencer, & Aronson, 2002).

Of particular interest for the present article, many authors have speculated that discounting and devaluing are double-edged swords, with benefits on global self-esteem coexisting with costs on motivation and performance (Crocker et al., 1998; Major & Schmader, 1998; Schmader et al., 2001). Although this hypothesis is often taken for granted, things may not be as simple as they seem. First of all, research has failed to consistently support the positive relations between each disengagement process and global self-esteem, with most findings indicating nonsignificant or even negative relations (Lesko & Corpus, 2006; Major & Schmader, 1998, 2001; Tougas et al., 2005). Second, no study tested how discounting and devaluing relate to performance, and only two studies examined their relations with motivation-related behaviors, showing either negative (Forbes, Schmader, & Allen, 2008) or positive associations (Nussbaum & Steele, 2007). The aims of the present study were thus to address these inconsistencies as well as to offer the first test of the “double-edged sword” hypothesis by simultaneously investigating the relations of discounting and devaluing with global self-esteem, achievement motivation, and performance. This research was conducted in the academic domain among stigmatized secondary-school students.

Benefits of Discounting and Devaluing on Global Self-Esteem: Some Inconsistent Findings

By definition, both discounting and devaluing should benefit global self-esteem. Either process can allow individuals to psychologically distance themselves from a particular domain, which should help them to maintain or even to boost their self-image despite threatening feedback (Crocker et al., 1998; Major & Schmader, 1998; Schmader et al., 2001). Research, however, generally found discounting and/or devaluing to be unrelated to global self-esteem (Lesko & Corpus, 2006; Major & Schmader, 1998, 2001; Tougas et al., 2005). Even more puzzling, some studies showed a negative relation between either discounting (Tougas et al., 2005) or devaluing (Major & Schmader, 2001) and global self-esteem. Post hoc explanations were provided for these unexpected results.

Tougas et al. (2005) suggested that the negative relationships between discounting and global self-esteem occurred in their study because their participants were in fact high self-esteem individuals. On the basis of research showing that individuals with high self-regard can have fluctuating and even counterproductive self-regulation in evaluative situations (Baumeister, Heatherton, & Tice, 1993; Blaine & Crocker, 1993; Kernis, Greenier, Herlocker, Whisenhunt, & Abend, 1997), Tougas et al. proposed that discounting could have a ripple (null or negative) effect specifically on these individuals. In other words, discounting could be counterproductive to individuals who do not need to self-protect but use this strategy for other reasons. This suggestion is consistent with Robins and Beer’s (2001) findings. They showed that some students self-evaluate themselves so high that they need discounting to maintain these unrealistically high standards. These students being aware that their teachers do not share their positive self-views, they discarded the validity of teachers’ evaluations in order to self-enhance. This strategy, however, did not lead to an increase of self-esteem but rather to decreased levels of both self-esteem and well-being. According to Robins and Beer (2001), these students were simply not able to maintain such unrealistically high self-views in the face of increasingly high academic demands and contradictory evaluations by teachers. On this basis, we predicted a null or negative relationship between discounting and global self-esteem for students with high self-views in the academic domain, that is, for those with high academic self-esteem. On the contrary, discounting should play a self-protective role among students with lower academic self-esteem. Thus, we predict a positive relationship between discounting and global self-esteem for students with lower academic self-esteem.

The null or negative relations between devaluing and self-esteem were mainly explained by the difficulty to benefit from depreciating success in a domain that is highly valued in the society (Crocker & Major, 1989; Major & Schmader, 2001; Tougas et al., 2005). Consistent with this, the only positive association between devaluing and self-esteem was found in a study conducted among participants working in a nonprestigious domain (i.e., Canadian aging civil servants; Tougas, Lagacé, Laplante, & Bellehumeur, 2008). There is thus enough empirical evidence to suggest that devaluing is less likely than expected to buffer self-esteem. Especially for prestigious domains, the devaluing process can hardly boost self-esteem even for individuals who do seek self-protection (i.e., with low domain-specific self-esteem). Academics being a highly valued domain, we thus predict that devaluing would not be positively related to global self-esteem, regardless of students’ level of academic self-esteem.

Discounting and Devaluing: Their Link to Achievement Goals and Performance

At first glance, both discounting and devaluing can be expected to result in decreased achievement motivation and, ultimately, in lowered performance (Schmader et al., 2001). As outlined by Crocker and Major (1989), motivation to achieve is a function of both the value of the goal and the perceived likelihood of attaining that goal (Atkinson & Feather, 1966; Eccles, 1987). This seems to fit well with the discounting and devaluing facets of disengagement. Why would students still be motivated if they consider that the likelihood of attaining academic success is low because their grades underestimate their true competence (discounting)? Likewise, how could they be motivated to achieve academic success if they consider that academic competence has little or no value (devaluing)? Here again, however, things may not be as simple as they seem. Not only is there little research on the link between
each disengagement process and motivation (Forbes et al., 2008; Nussbaum & Steele, 2007), but the findings are inconsistent. In Forbes et al.’s (2008) study of stigmatized college students, devaluing was found to operate at a motivational level by decreasing error monitoring during a task described as diagnostic of intelligence. This result supports that motivation to succeed depends directly on the value placed in the domain. On the contrary, discounting did not affect students’ motivation to monitor their performance online but rather operated later by increasing self-doubt and the perceived difficulty of the task.

In Nussbaum and Steele’s (2007) study, disengagement was found to be positively (not negatively) associated with motivation. White (nonstigmatized) and African (stigmatized) American students received failure feedback on a task that was described as either diagnostic or nondiagnostic of academic abilities. They were then given the opportunity to persist on the task (the motivation-related measure) and asked to report their level of discounting, devaluing, and global disengagement. Only African American students in the diagnostic (stereotype threat) condition reported greater disengagement, which in turn resulted in higher persistence on the task. According to Nussbaum and Steele (2007), disengaging from negative feedback may allow stigmatized students to cope with stereotype threat (i.e., the fear of confirming the negative stereotype; Steele & Aronson, 1995). By avoiding the internalization of unfavorable feedback, this strategy may help them to maintain their self-worth as well as their motivation to engage in the larger academic domain. Although these authors did not analyze the link between discounting and persistence, they noted that discounting (not devaluing) was highly correlated with their global disengagement measure. This strongly suggests that discounting had something to do with the positive relationship between disengagement and this motivation-related variable.

Taken together, these findings about the relations of discounting and devaluing with motivation appear quite puzzling. To shed some light on these results, we focus here on the different types of achievement goals (i.e., reasons individuals are pursuing an achievement task) that have proved to motivate students and to influence various achievement behaviors and outcomes (e.g., Elliot, 1999; Elliot & McGregor, 2001; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997). Two types of achievement goals—mastery and performance goals—are conceptually distinguished. Whereas mastery goals orient students toward development of competence and self-improvement through task mastery, performance goals, rather, orient them to maintain their self-worth and to demonstrate their competence by outperforming others (Ames, 1992; Dweck, 1986; Elliot, 1999; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Midgley, Kaplan, & Middleton, 2001; Nicholls, 1984). More recently, mastery and performance goals have been divided into approach goals (focused on competence) and avoidance goals (focused on avoiding incompetence), resulting in four achievement goals: mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals (Elliot & McGregor, 2001). The very fact that competence is conceptually much closer to performance goals than to mastery goals. Indeed, mastery goals define competence with absolute (the requirements of the task) or intrapersonal (feeling to have learned something or developed a skill) standards, but not with normative ones. As such, discounting might be unrelated to mastery goals (or, at best, negatively related). On the contrary, both performance goals and discounting define competence with normative and external standards like academic feedback (e.g., Elliot & McGregor, 2001; Nicholls, 1984; Senko, Durik, & Harackiewicz, 2008). This conceptual closeness might result in a stronger relationship between discounting and performance goals. As students who make use of discounting believe that grades are not diagnostic, they might minimize normative comparisons that are at the core of performance goals. A negative relationship between discounting and performance goals can thus be expected.

However, other arguments support the hypothesis of a positive relationship. Indeed, students who discount grades cannot ignore that these grades will still be used by teachers, parents, and peers to evaluate them. Consequently, discounting might increase their motivation to show others that they are in fact much more competent than what their grades indicate. Indeed, Nussbaum and Steele (2007) found that the higher the disengagement from a failure feedback, the greater the persistence in the task. Likewise, stereotype threat research shows that stigmatized individuals are motivated to disconfirm negative intellectual stereotypes (Inzlicht & Kang, 2010; Steele & Aronson, 1995). Discounting can be useful as it avoids the internalization of unfavorable feedback (Crocker et al., 1998; Forbes et al., 2008), thereby helping individuals to maintain their feelings of competency. In line with this, we favor the hypothesis that discounting will be positively related to performance goals.

A different prediction can be made for devaluing. Although the different types of achievement goals represent distinct ways of thinking about competence, they all reflect a valuing of competence either through its development or through its demonstration relative to others (Elliot & McGregor, 2001; Harackiewicz et al., 2002; Senko & Harackiewicz, 2005). In line with this, Elliot and McGregor (2001) found that competence valuation, which represents the quantity of achievement motivation, was positively and significantly related to all types of achievement goals, which represent the qualitative manifestations of achievement motivation. Accordingly, the link between devaluing and the four achievement goals is likely to be quite simple: The more students devalue competence, the less they would be motivated to develop their competence (mastery-approach goals), to avoid task-based or intrapersonal incompetence (mastery-avoidance goals), to demonstrate competence relative to others (performance-approach goals), and to avoid demonstrating incompetence relative to others (performance-avoidance goals). Not only would such a finding support and extend Forbes et al.’s (2008) results, but it would also provide the most direct evidence to date that devaluing is a general and

2 In addition to discounting and devaluing processes that are supposed to lead to disengagement, Nussbaum and Steele (2007) assessed global disengagement itself through three separate items (e.g., “I really don’t care what tests say about my intelligence”; Major & Schmader, 1998).
damaging strategy that is likely to impair various forms of motivation.

Finally, although the authors agree that these two facets of disengagement should be negatively related to academic performance, no study has investigated these relationships (Crocker et al., 1998; Major & Schmader, 1998; Schmader et al., 2001). Thus, we tested in the present study whether discounting and devaluing are associated with poorer academic grades, either directly or indirectly via achievement motivation. Indeed, as academic success requires strong identification with academic achievement and sustained achievement motivation, decreased motivation to achieve in an academic domain is likely to result in decreased academic performance (Crocker et al., 1998; Steele, 1997). Past research has shown that avoidance goals are hardly related to performance (occasionally, a negative effect of performance-avoidance goals has been observed), whereas both mastery-approach and performance-approach goals can positively predict performance above and beyond prior level of achievement (for a review, see Linnenbrink-Garcia, Tyson, & Patall, 2008). We expect the two approach goals to mediate the relationships between discounting/devaluing and grades.

Overview of the Hypothesized Model

Figure 1 displays a theoretical model depicting the expected relationships between the potential predictors measured at Trimester 2 (T2) of the academic year (T2 discounting and devaluing), covariates (prior academic T2 grades, T2 academic self-esteem, and gender), and dependent variables (global self-esteem, achievement goals, and subsequent grades all measured at Trimester 3 [T3] of the academic year). Concerning the relationships between disengagement and achievement goals, discounting was hypothesized to be positively related to performance goals but unrelated (or even negatively related) to mastery goals. As a general damaging strategy, devaluing was expected to be negatively associated with all achievement goals. Mastery-approach and performance-approach goals were expected to predict T3 grades. Finally, only performance-approach goals were expected to mediate the relationships between T2 discounting and T3 grades, and both approach goals were hypothesized to mediate the relationships between T2 devaluing and T3 grades. Using structural equation modeling (SEM) and controlling for students nesting within schools, we assessed how well this model fits the data from a diverse sample of stigmatized students attending secondary schools in France. This study is the first to simultaneously test the relationships between the above-mentioned variables. We also tested whether the relationship between discounting and global self-esteem was moderated by T2 academic self-esteem: Whereas this relation should be positive for students with low academic self-esteem, it should be either null or negative for those with high academic self-esteem. Conversely, devaluing was expected to be
unrelated to global self-esteem, whatever student’s level of academic self-esteem.

Method

Participants

Another originality of the present study was to rely on a more representative sample of stigmatized students than previous studies through the inclusion of students from an understudied group in this area of research: Ethnic majority students from low socioeconomic status (SES) families. Indeed, research on stigmatized students generally focuses on ethnic minorities despite that stigmatized students can also be found in ethnic majorities. Not only do low-SES students often underperform compared with their high-SES counterparts, but they also face negative stereotypes of intellectual inferiority (Croizet & Claire, 1998; National Center for Education Statistics, 1999; Régner & Monteil, 2007; Régner, Monteil, & Huguet, 2001). As such, these students are also likely to psychologically disengage from school.

Participants were 369 seventh- and eighth graders (214 girls and 155 boys; mean age = 14.90, SD = 0.75) attending five secondary schools within the same geographical area in France. The sample included 159 North African French students (ethnic minority) and 210 European French students (ethnic majority), both coming from low-SES families, as indicated by parental occupations (i.e., manual laborers, low-grade administrators, or unemployed). All agreed to participate in a study on students’ perceptions of school. Informed consent was obtained from all appropriate authorities (parents, school administrators, and teachers).

Procedure

Participants were met twice in the academic year in their usual classroom. At the end of T2 (end of March), they were asked to complete a questionnaire designed to measure academic self-esteem, discounting and devaluing. The second questionnaire was administered 3 months later at the end of T3 (end of June) to assess participants’ global self-esteem and achievement goals. A code specific to each student was used so that T2 and T3 cases could be matched, while keeping the answers anonymous.

Measures

Academic achievement. Grades instead of standardized tests were used because grades are much more familiar and meaningful for secondary-school French students. T2 and T3 grades (which were not cumulative) were taken from the school records and ranged from 0 (fail) to 20 (excellent). Students’ global levels of academic achievement at T2 and T3 were estimated by three indicators reflecting their academic performance in sciences (comprising mathematics, physics, and biology), language (comprising French and foreign-language classes), and humanities (comprising history and geography).

T2 academic self-esteem. The Performance State Self-Esteem Scale (Heatherton & Polivy, 1991) was used, which consisted of seven items such as “I am satisfied with my school grades,” and ratings were made on a 5-point scale (1 = strongly disagree, 5 = strongly agree). Negative items were reverse scored so that a higher score reflected a higher academic self-esteem (α = .83).

T2 academic discounting and devaluing. Students rated six items modeled after those used by Schmader et al. (2001). Discounting was assessed with three items: “The grades I obtain at school provide a valid evaluation of my achievement level” (reverse coded); “The grades I obtain correctly reflect my academic abilities” (reverse coded); and “The grades I obtain are below my real skills.” Devaluing was assessed with three reverse-coded items: “Succeeding in school is important for my future life”; “Being good at school is an important part of who I am”; and “Academic success is very valuable to me.” All ratings were made on a 5-point scale (1 = strongly disagree, 5 = strongly agree). Negative items were reverse scored so that higher scores indicated greater discounting (α = .71) and devaluing (α = .80).

T3 global self-esteem. Nine items from the Rosenberg Global Self-Esteem Scale (Rosenberg, 1965) were used to measure students’ global self-esteem (e.g., “On the whole, I am satisfied with myself”). One of the 10 original items was deleted due to its

3 Although our main reason for recruiting ethnic minority and majority low-income participants was to ensure the generalizability of the results, we conducted post hoc tests to verify that the results from the final models were fully invariant across ethnic groups. Extended tests of measurement and structural multiple-group invariance were thus conducted on the basis of the final retained CFA and SEM models. The results from these tests confirm that invariance assumptions were reasonably met in the present study. Due to space limitations and small sample size in each group (i.e., low power), these results are not reported in the present study but are available upon request from the third author. However, group-based effects were still controlled for through the control that was used for students nesting within schools as each school included either ethnic minority or majority students, but never both.

4 It is now recognized that instruments including negatively worded items, particularly self-esteem instruments, pose specific challenges in latent variables models due to the need to a priori recognize the existence of method artifacts linked to the inversion of items (e.g., DiStefano & Motl, 2006; Tomás, & Oliver, 1999). Generally, these artifacts are handled by the inclusion of either two method factors linking the positively and negatively worded items or CUs representing these same method factors. When the method factors themselves present no substantive interest, the CUs method is generally recommended as yielding more stable solutions (Marsh & Grayson, 1995). In the present study, a preliminary CFA confirmed that CUs were required and that both self-esteem instruments presented a satisfactory fit to the data once these CUs were added to the model: academic self-esteem, χ²(12) = 18.61, p > .05; CFI = .99; TLI = .99; RMSEA = .04; SRMR = .03; global self esteem, χ²(11) = 21.75, p > .05; CFI = .95; TLI = .93; RMSEA = .05; SRMR = .02. However, including these CUs represents an added level of complexity and implies the estimation of multiple additional parameters. As the sample size available in the present study was already low compared with the number of parameters needed to be estimated (especially given the nesting of participants in a low number of schools that also needed to be controlled for), three parcels were created from the manifest indicators of both self-esteem instruments. Items presenting the highest CUs were combined to avoid the need for CUs in the remaining model and to ensure that the resulting parcels would be reasonably one dimensional (Bandalos & Finney, 2001; Little, Cunningham, Shahar, & Widaman, 2002). This is in line with Little et al.’s (2002) observation that when the objective is to study the effects of latent variables (structural relations), parceling may sometimes help to minimize the effects of nuisance factors at a lower level of generality (measurement).
negative emotional valence that was inappropriate for seventh and eighth graders (“All in all, I am inclined to feel that I am a failure”). Ratings were made on a 5-point scale (1 = strongly disagree, 5 = strongly agree). Negative items were reverse scored so that a higher score indicated a higher global self-esteem ($\alpha = .75$).

**T3 achievement goals.** Orientations toward mastery-approach, performance-approach, mastery-avoidance, and performance-avoidance goals at school were assessed with the 12-item scale of Elliot and McGregor (2001). Three items assessed each goal (e.g., “I want to learn as much as possible in class”: mastery-approach goals, $\alpha = .78$; e.g., “It is important for me to do better than other students of my class”: performance-approach goals, $\alpha = .78$; e.g., “I worry that I may not learn all that I possibly could in class”: mastery-avoidance goals, $\alpha = .69$; e.g., “I just want to avoid doing poorly in class”: performance-avoidance goals, $\alpha = .54$). All ratings were made on 5-point scales (1 = strongly disagree, 5 = strongly agree).

**Analytical Strategy**

All models were estimated with Mplus 6.1 (Muthén & Muthén, 2010), relying on full information maximum likelihood to deal with the missing data and on the robust maximum likelihood estimator (MLR). The MLR estimator provides standard errors and tests of fit that are robust to nonnormality as well as to nonindependence of observations due to nesting when used in conjunction with the “Type = Complex” feature. This feature was used in the present study to account for students nesting within schools (Marsh & O’Mara, 2010; Marsh et al., 2009). In any longitudinal analyses in which the same factors are estimated from the same items over time, as it is the case here for academic achievement, there is a need to include a priori correlated uniquenesses (CUs) relating the same indicators used on the different occasions (Jöreskog, 1979; Marsh, 2007) in order to avoid inflated test–test correlations (e.g., Marsh, Martin, & Debuss, 2001). Thus, a priori CUs were included in all models between the three indicators of academic achievement used at T2 and T3.

We began with a set of confirmatory factor analysis (CFA) models in which we first verified whether the a priori measurement model provided a satisfactory representation of the data. Then, we verified whether the measurement model of the latent variable representing academic achievement at T2 and T3 was invariant across time (e.g., Meredith, 1993). Finally, following a reviewer concern that the academic self-esteem construct may not be sufficiently distinct from the devaluing and mastery-approach goals constructs, two additional models were estimated in which academic self-esteem and devaluing (CFA-a1) or mastery-approach goals (CFA-a2) were merged into a single construct.

Then, six alternative structural models were compared, following Anderson and Gerbing’s (1988) decision-tree framework. First, a fully saturated structural model (SEM-S) was estimated. This model included all possible structural relations between the latent variables and is formally equivalent to the final retained CFA model. This model serves as a standard for gauging the value of more parsimonious models. This model was first contrasted with a structurally null model (SEM-N) in which all relations between the latent variables were fixed to zero. Then, the fully mediated theoretical model (SEM-T) was estimated according to the theoretical propositions discussed previously. This model is illustrated by the full lines in Figure 1. Three alternative theoretical models were then tested. The first one (SEM-A1) differs from SEM-T by the addition of a relation between devaluing and global self-esteem, as illustrated by the dotted line in Figure 1. Our hypotheses predicted that devaluing would be unrelated to students’ global self-esteem, but a negative link could not be excluded. The second model (SEM-A2) differed from SEM-T by the addition of relations between discounting and mastery goals, as illustrated by the dashed lines in Figure 1. As discussed previously, no relationship was predicted between discounting and mastery goals, but a negative link could not be excluded, and this hypothesis needed to be verified empirically. A third alternative model differed from SEM-T by the addition of relations between avoidance goals and T3 academic achievement (as illustrated by the dashed-and-dotted-dotted lines). Once again, it was expected that these relationships would be nonsignificant, but this hypothesis needed to be verified empirically. Finally, the fourth model (SEM-A4) differed from SEM-T by the addition of direct relationships between discounting/devaluing and T3 academic achievement (as illustrated by dashed-and-dotted lines) in order to verify the possibility of partial mediation (through approach goals).

In all models, prior academic T2 grades, prior T2 academic self-esteem, and gender were used as controls due to their known role in predicting the main variables assessed in the present study so that the effects of the main predictors could be estimated net of their shared variances with the controls. The fact that these controls were also specified to predict the outcomes (T3 academic achievement and global self-esteem) means that we are predicting changes in these outcomes over time (i.e., the effects of the predictors on changes in achievement and self-esteem once their known developmental stability is taken into account).

To estimate the significance of mediated relationships (i.e., indirect effects), 95% bias-corrected bootstrap confidence intervals (CIs) were constructed from 5,000 bootstrap samples (MacKinnon, Lockwood, & Williams, 2004), as this represents the most effective way to identify mediated relationships given the asymmetry of their theoretical distributions (Cheung & Lau, 2008). If the CI does not include “zero,” then the mediated relationship is said to significantly differ from zero. Once the full SEM model was retained, additional models were tested to verify the proposed hypothesis that T2 academic self-esteem could interact with discounting/devaluing in predicting T3 global self-esteem. This possibility was verified using the latent moderated structural equations (LMS) approach (Klein & Muthén, 2007).

Model fit was assessed using multiple indices. The chi-square test was first estimated. However, because this test is sensitive to sample size and minor departures from multivariate normality, researchers have suggested additional indices that are less dependent on sample size (e.g., Hu & Bentler, 1999; Marsh, Hau, & Grayson, 2005). Thus, the following incremental fit indices were used: the comparative fit index (CFI), Tucker-Lewis Index (TLI), standardized root-mean-square residual (SRMR), and the root-mean-square error of approximation (RMSEA). Values greater than .90 and .95 for CFI and TLI are considered to be indicative of adequate and good model fit, whereas values smaller than .08 or .06 for the RMSEA and smaller than .10 and .08 for the SRMR support acceptable and good model fit, respectively (Hu & Bentler, 1999). Chen (2007) suggested that if the decrease in fit for the
more parsimonious model is less than .01 for the CFI or less than .015 for the RMSEA, then there is reasonable support for the more parsimonious model. Chi-square differences tests were calculated while taking into account the scaling correction factors of the MLR estimator (Muthén & Muthén, 2010).

**Results**

**CFAs**

Means, standard deviations, and latent variable correlations among all variables are presented in Table 1. Fit indices for the alternative CFA models considered in this study are reported in the top part of Table 2. These results confirm that the a priori measurement model (CFA-1) provide a satisfactory degree of fit to the data. Furthermore, the measurement model of academic achievement appears to be reasonably invariant across time for factor loadings (CFA-2 vs. CFA-1: $\Delta \chi^2 = 2.7; \Delta df = 2; p > .05$; $\Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01), intercepts (CFA-3 vs. CFA-1: $\Delta \chi^2 = 6.4; \Delta df = 4; p > .05$; $\Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01), and CUs (CFA-4 vs. CFA-1: $\Delta \chi^2 = 11.8; \Delta df = 7; p > .05$; $\Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01). Finally, comparisons of this fully invariant model (CFA-4) with alternative models in which academic self-esteem is merged with either devaluing (CFA-a1) or mastery-approach goals (CFA-a2) all result in highly significant chi-square difference tests ([CFA-a1: $\Delta \chi^2 = 482.6; \Delta df = 10; p < .01$]; [CFA-a2: $\Delta \chi^2 = 2041.5; \Delta df = 10; p < .01$]) and in changes in fit indices that are substantially higher than the recommended cut-offs. These results confirm the distinctiveness of the latent constructs measured in the present study.

**SEM**

Fit indices for the alternative SEMs considered in this study are reported at the bottom of Table 2. Not surprisingly, as this model is formatively equivalent to the final CFA model, the fully saturated SEM model provides a satisfactory level of fit to the data, and a substantially higher degree of fit than the structural null model ($\Delta \chi^2 = 1331.7; \Delta df = 47; p < .01$; $\Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01), confirming the presence of significant relationships between the estimated latent constructs. Interestingly, the fully mediated a priori structural model (SEM-T) also provides a satisfactory degree of fit to the data and, according to the fit indices but not the chi-square, an almost equivalent level of fit to the data than the fully saturated model ($\Delta \chi^2 = 319.5; \Delta df = 29; p < .01$; $\Delta$CFI = -.019, $\Delta$TLI = -016, and $\Delta$RMSEA = +.005 < .01). This suggests that this model provides a very good synthesis of the complete latent variable correlation matrix directly estimated in the fully saturated model. Adding to this model, a path between devaluing and global self-esteem (SEM-A1) did not improve the fit of the model ($\Delta \chi^2 = 4; \Delta df = 1; p > .05$; $\Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01) and revealed that this additional relationship was nonsignificant. Similarly, adding paths between discounting and mastery goals to this model (SEM-A2) also did not improve the fit of the model ($\Delta \chi^2 = 3.8; \Delta df = 2; p > .05$; $\Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01) and revealed that the additional relations were nonsignificant. Likewise, none of the

### Table 1

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Notes: Gender was coded 0 for boys and 1 for girls; T2 = Trimester 2; T2 ASE = T2 academic self-esteem; T2 DA = T2 devaluing and global self-esteem; T3 GSE = T3 global self-esteem; T3 PA = T3 performance-approach goal; T3 PAv = T3 performance-avoidance goal; T3 MP = T3 mastery-approach goal; T3 MAv = T3 mastery-avoidance goal.
other modifications resulted in any improvement in the fit of the model or in the estimation of additional significant relationships ([SEM-A3 in which paths were added between avoidance goals and T3 achievement: $\Delta \chi^2 = 1.1; \Delta df = 2; p > .05; \Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01]; [SEM-A4 in which direct paths were added between discounting/devaluing and T3 achievement: $\Delta \chi^2 = 1.5; \Delta df = 2; p > .05; \Delta$CFI, $\Delta$TLI, and $\Delta$RMSEA < .01]). Thus, interestingly, the final retained model corresponds exactly to the hypothesized fully mediated a priori structural model (SEM-T). However, although we expected discounting to be positively related to both performance goals, these relationships came out as nonsignificant in this final model.

The standardized parameter estimates from this final model are depicted in Figure 2. To sum up, this final model indicated that discounting was positively related to global self-esteem but unrelated to achievement goals and T3 grades. Conversely, devaluing was unrelated to global self-esteem but negatively associated with all achievement goals and presented no residual direct relations with T3 grades. Thus, mastery-approach and performance-approach goals both apparently fully mediated the relationships between T2 devaluing and T3 grades. The relationships between these approach goals and T3 grades were in the opposite direction: positive for mastery goals but negative for performance goals. Apart from the relationships between discounting and both performance goals that unexpectedly were found to be nonsignificant and the negative (rather than positive) association between performance-approach goals and grades, the results support our a priori hypotheses regarding the nature and directions of the relationships.

![Figure 2](image-url)
Mediation Analyses

Further examination of these results suggests the presence of at least two mediated relationships. The obtained 95% bias-corrected bootstrap CIs confirmed that all of these indirect relationships are significant. These results show that the relationships between devaluing and T3 academic achievement are fully mediated by mastery-approach goals (indirect effect = -.287; 95% CI [-.61, -.06]; standardized indirect effect = -.06) and by performance-approach goals (indirect effect = .154; 95% CI [.03, .35]; standardized indirect effect = .03). Interestingly, as both of these indirect effects are of opposite signs, the total indirect effect of devaluing on T3 academic achievement as mediated by approach goals ends up being lower and nonsignificant relative to both specific indirect effects considered separately (indirect effect = -.133; 95% CI [-.35, -.03]; standardized indirect effect = -.03), reinforcing the need for construct specificity in the prediction of academic achievement.

Moderating Role of Academic Self-Esteem

Finally, we used the LMS approach to test the significance of latent interactions between T2 academic self-esteem and discounting/devaluing in the prediction of T3 global self-esteem. As expected, the interaction between academic self-esteem and discounting was significant (b = -.09, SE = .04; p < .05), whereas the interaction between academic self-esteem and devaluing was not. These results confirmed the moderating role of academic self-esteem on the relation between discounting and global self-esteem. Examination of this interaction effect using the online calculator available on the quantpsy.org website (Preacher, Curran, & Bauer, 2006) revealed that this interaction effect was, however, very slight and that the positive relationship between discounting and global self-esteem was significant for all students, although greater for those with a lower (i.e., 2 SDs below the mean, with all latent means being fixed at 0: a = -1.49, b = 0.55, p < .001) than with a higher academic self-esteem (i.e., 2 SDs above the mean: a = 1.49, b = .23, p < .01).

Discussion

The coexistence of benefits (on global self-esteem) and costs (on motivation and performance) of discounting and devaluing has often been taken for granted. Yet, not only has this double-edged sword hypothesis never been tested, but past research revealed inconsistent relations between these disengagement processes and global self-esteem or motivation. In the present study, we took into account individuals’ self-esteem in the domain under evaluation as a potential moderator of the relation between discounting (not devaluing) and global self-esteem. We also focused on achievement goals to encompass various kinds of motivation. Most of our hypotheses were supported among a diverse sample of stigmatized students who were studied in their natural academic setting. To the question of whether discounting and devaluing are double-edged-swords, our findings provide a different answer for each process.

Discounting

We suggested that academic self-esteem could moderate the relationship between discounting and global self-esteem, thereby explaining the surprising null (Lesko & Corpus, 2006; Major & Schmader, 1998, 2001) or negative (Tougas et al., 2005) associations observed in past studies. We expected this relation to be positive among stigmatized students with lower academic self-esteem, but negative or null among those with higher academic self-esteem. Results partially supported our hypothesis. The predicted interaction emerged, and, as expected, discounting was positively associated with global self-esteem for students with low levels of academic self-esteem. However, this positive association was also found for students with higher academic self-esteem, albeit less pronounced. This last finding may be due to the nature of our sample of stigmatized students. Indeed, these students presented a relatively low level of academic performances, global self-esteem, and academic self-esteem (see Table 1). In other words, even our participants with a higher academic self-esteem may have used discounting for self-protective purposes.

Concerning its relationships to achievement goals, discounting was hypothesized to be positively related to performance goals but unrelated to mastery goals. First, and as expected, no significant association appeared between discounting and mastery goals. The mismatch between both constructs is likely to explain this finding: Grades being at the core of discounting but not of mastery goals, their lack of relationship is not very surprising. Second, our findings revealed that discounting was, unexpectedly, unrelated to performance goals. This result seems consistent with Forbes et al. (2008), who found no association between discounting and the motivation to detect errors during an intellectual task. However, motivation is a complex and multifaceted construct. When operationalized as persistence in the task, motivation was found to positively relate to discounting (Nussbaum & Steele, 2007). Further research is needed to clarify when discounting fosters each type of motivation.

In summary, our study is the first to show that discounting is positively related to global self-esteem, a relationship that tends to be more characteristic of students with a low academic self-esteem and that occurs without any cost for achievement motivations.

Devaluing

Unlike discounting, devaluing was not associated with students’ global self-esteem. As expected, this null relationship occurred irrespective of students’ levels of academic self-esteem. This result strengthens the idea that, relative to discounting, devaluing is certainly a much more radical strategy that can hardly benefit self-evaluation. It also supports that students cannot benefit from depreciating academics because this domain is highly valued in our societies (Crocker & Major, 1989; Major & Schmader, 2001). Combined with the lower tendency of our participants to report devaluing relative to discounting (see also Régner & Loose, 2006; Schmader et al., 2001; Voelkl, 1997), the lack of positive relation—

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5 This model cannot be compared with the preceding ones via fit indices or chi-square given the fact that LMS estimation involves using a numerical integration-based estimation and the inclusion of random effects to the model, and thus does not provide these indices. This is why we elected to implement this test at the end. Given that LMS is computer-intensive, both interactions were first tested separately and would be simultaneously combined in a final model only if both proved significant when considered separately.
ships between devaluing and global self-esteem even among students with a lower academic self-esteem contributes to seriously question the self-protective properties of this process.

Not only was devaluing unrelated to self-esteem, but it was also negatively associated with achievement motivation. Competence valuation being at the conceptual core of all four achievement goals (Elliott & McGregor, 2001), we predicted that devaluing would be negatively related to the tendency to pursue any of these goals. This is exactly what we observed. The more students devalued academic competence, the less they felt motivated to develop competence (mastery-approach goals), to avoid task-based or intrapersonal incompetence (mastery-avoidance goals), to demonstrate their competence relative to others (performance-approach goals), and to avoid incompetence relative to others (performance-avoidance goals). This supports the traditional view of the detrimental effects of devaluing on achievement motivation (Crocker & Major, 1989; Major & Schmader, 1998, 2001; Schmader et al., 2001). Our findings extend those of Forbes et al. (2008) and provide more direct evidence that devaluing is a general strategy that can impair various kinds of motivation.

Of particular interest now is whether devaluing is also negatively related to academic performance. Our findings indicate that devaluing was associated with lower academic grades through decreased mastery-approach goals, but with higher academic grades through decreased performance-approach goals. If the former relation is clearly compatible with the conceptualization of devaluing as a general negative disengagement process, then the latter seems quite puzzling at first glance. Can we conclude that devaluing has a positive side by decreasing performance-approach goals, which in turn results in higher performance? Probably not. It is interesting to note that the bivariate correlation between performance-approach goals and academic grades was positive (and significant), whereas the corresponding path coefficient in the mediation analysis was negative (and significant). In other words, performance-approach goals turn out to be detrimental for students when their trend toward devaluing is taken into account. This pattern is in fact completely consistent with past findings showing that performance-approach goals can deteriorate performance for students who are experiencing academic difficulties (Butler, 1993, 1999; Dweck & Leggett, 1988; Grant & Dweck, 2003; for a review, see Linnenbrink-Garcia et al., 2008). Stigmatized students who try to self-protect by devaluing the importance of academic success are typically faced with such difficulties. More recently, performance-approach goals have also proved detrimental when they are endorsed for extrinsic, instead of intrinsic, reasons (e.g., Vansteenkiste, Mouratidis, & Lens, 2010; Vansteenkiste et al., 2010). This may be the case for students who devalue academic success. They are indeed quite unlikely to consider that outperforming others is personally important and valuable. However, these students may feel pressured by teachers, parents, and peers to pursue performance-approach goals, especially given the selective nature of the grading system.

Therefore, the present mediation finding is more likely to illustrate a negative rather than positive side of devaluing. In addition, the negative relationships between devaluing and the two approach goals are necessarily problematic for another reason: Both performance-approach and mastery-approach goals have proved to facilitate several behaviors that are necessary to attain academic success (e.g., Barron & Harackiewicz, 2000; Elliot, 1999; Harackiewicz et al., 2002). In summary, the present findings tend to indicate that devaluing is a maladaptive process, at least when the domain under evaluation is highly valued in the society. A question that arises is why do some students use this disengagement process if they cannot benefit from it? One explanation might be that devaluing academics may sometimes refer, especially during adolescence, to a peer-group norm (e.g., Davis, 2003; Ogbu, 1997). When valued by peers, opposing school through devaluing academic success might refer to a self-presentation rather than to a self-protective strategy.

Limitations and Future Directions

The present results must be interpreted in light of several limitations. First, although we used a short-term longitudinal design, our research was clearly correlational. In addition, even if initial levels of most dependent variables were controlled for in the study (i.e., academic grades and, to a certain extent, global self-esteem), we could not control for initial levels of mastery and performance goals. These limitations prevent any firm conclusion about causality. However, this does not undermine the validity of our findings for the predictive relations in our hypothesized model, which were built on the basis of strong theoretical considerations and the results from several past empirical studies (e.g., Elliot & McGregor, 2001; Forbes et al., 2008; Harackiewicz et al., 2002; Linnenbrink-Garcia et al., 2008; Schmader et al., 2001). In addition, when one wants to examine how real-world situations can have important implications for students’ motivation and achievement, “the possibilities for true random assignment of students to conditions are severely limited for ethical and legal reasons” (Trautwein, Lüdtke, Marsh, & Nagy, 2009, p. 864). Future longitudinal studies using a longer time sequence, more time points, and controlling for initial levels of all dependent variables could be helpful to address the causality issue. It might also be interesting to examine whether the relationships between achievement goals and either discounting or devaluing or both are bidirectional rather than unidirectional. Another possibility is that achievement goals might predict discounting (i.e., students need to care about competence before being motivated to discount academic feedback), whereas goals might come after devaluing (i.e., students need to value academic success before adopting achievement goals). This possibility needs to be investigated in future studies.

Like in several other studies (e.g., Bråten & Strømsø, 2004; Liem, Lau, & Nie, 2008; Liu, Wang, Tan, & Koh, 2009; Putwain & Daniels, 2010; Van Yperen, 2006), the reliability coefficients were below .70 for performance-avoidance and mastery-avoidance goals. Had we not relied on a latent variable methodology, which allowed us to estimate relationships between latent variables net of errors, this low level of reliability could have led to an underestimation of relationships under study. Additionally, one may see some overlap between the devaluing facet of disengagement and other related constructs like task value (Wigfield & Eccles, 2000). However, whereas devaluing focuses on the extent to which individuals decrease the value of success in a general domain (e.g., academic domain; Schmader et al., 2001), task value focuses on how important, interesting, and useful a specific task can be (e.g., specific school subject domains like English or Math; Lau, Liem, & Nie, 2008). More importantly, whereas our study showed that devaluing was strongly related to
all the four achievement goals, task value has been found to be related only to mastery goals (Greene, Miller, Crowson, Duke, & Akey, 2004; Liem et al., 2008). Clearly, it would be highly interesting for task value and devaluing (as well as discounting) to be measured simultaneously in order to determine their respective contribution to achievement goals. Another limitation concerns the generalizability of our findings, which were obtained among stigmatized secondary-school French students. Future research will need to test whether these results generalize to nonstigmatized students from other age groups or countries.

Conclusion

The present study is the first to investigate how academic discounting and devaluing processes are related to achievement goals and performance and, a fortiori, the first to do so while simultaneously examining their relationships with global self-esteem. Our findings support past research showing that discounting and devaluing are very different processes, but go further in the specification of these differences. If discounting can be viewed as an effective self-protective strategy (at least for stigmatized secondary-school students), on the contrary, devaluing appeared as a maladaptive process. Taken together, the differences found between devaluing and discounting strengthen the idea that devaluing is a more general and damaging strategy than discounting, which is much more temporary and less drastic.

References


ARE DISCOUNTING AND DEVALUING DOUBLE-EDGED SWORDS?

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