MANAGING THE GRADING PARADOX:

LEVERAGING THE POWER OF CHOICE IN THE CLASSROOM

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ABSTRACT

How can management educators cultivate students' interest in the MBA classroom? Inspiring interest, an important antecedent of learning, can be an uphill battle due to the ubiquitous presence of grades. Grades are meant to encourage interest, yet they often do just the opposite. The result is a grading paradox. We hypothesize that leveraging choice in the classroom can manage this grading paradox by increasing interest. In a field experiment in real-world MBA classrooms (N = 91 students), we found that a choice intervention, the opportunity for students to allocate the weight of several course components toward their final course grade, was associated with higher levels of two types of interest, triggered situational interest and maintained situational interest. This study corroborates and extends previous laboratory-based research documenting the positive relationship between choice and interest, and offers a practical tool that management educators can use to encourage student interest.

Keywords: Interest, choice, grades, paradox, classroom-based field experiment

How can management educators engage students' interest? Extensive research has explored the content of business school curricula (see also Clinebell & Clinebell, 2008; Navarro, 2008; Pfeffer & Fong, 2002; Rubin & Dierdorff, 2009). Yet even with the best curricula, students only learn the content if they are engaged and interested (Schraw, Flowerday, & Lehman, 2001). Fostering interest is especially challenging in management and organizational behavior courses (Rynes, Trank, Lawson, & Ilies, 2003). These courses teach relevant and critical skills for business leaders (Rubin & Dierdorff, 2009), yet "business students often regard behavioral studies as peripheral to the mainstream business curriculum (Rynes & Trank, 1999: 808).

Professors typically use grades to motivate students and foster interest. Ironically, as a form of extrinsic reward, grades can reduce intrinsic motivation, resulting in decreased interest, creativity, and curiosity (Amabile, DeJong, & Lepper, 1976; Deci, Koestner, & Ryan, 2001; Deci, Koestner, & Ryan, 1999; Dweck, 1986; Kohn, 1993). Moreover, grades focus students on their performance rather than on learning (Dweck, 1986). Too much attention on performance can lead students to seek easy problems that provide a high likelihood of success, rather than challenging problems that offer an opportunity for learning, but increase the risk of failure (Dweck, 1986). This results in a grading paradox: grades, which are meant to motivate and inspire students, can do just the opposite. The grading paradox is especially problematic for MBA students, who possess relatively materialistic, individualistic values (Rynes & Trank, 1999) and who have been entrenched in educational and work settings that place a strong emphasis on extrinsic rewards.

While some education scholars advocate completely eliminating grades to foster learning (Kohn, 1993), grades still offer valuable performance feedback to students and comparative

metrics to schools and employers. In this research, we explore how professors can increase student interest by using—even exacerbating—a focus on grades, rather than eliminating grades altogether. Building on research showing that choice can lead to increased interest in an activity (e.g., Cordova & Lepper, 1996; Schraw, Flowerday, & Reisetter, 1998), we ask whether offering students choice about their grades, specifically by allowing them to allocate the weight of course assignments toward their final course grade, is an antidote to the grading paradox. To investigate whether choice is associated with increased interest in management education, we conducted a semester-long field experiment in four introductory MBA management classes.

MANAGEMENT EDUCATION, INTEREST, AND CHOICE

Interest and Learning

Almost a century ago, Dewey's (1913) treatise on education argued that interest was critical to learning. Interest is associated with focused attention, cognitive and affective functioning, and persistent effort, all of which foster learning (e.g., Ainley, Hidi, & Berndorff, 2002; Schraw et al., 2001; Smith, Sansone, & White, 2007). Moreover, as a feature of intrinsic motivation, interest motivates continued engagement in particular content or tasks (Deci et al., 1999). Scholars consistently find a positive relationship between interest and learning (Hidi & Renninger, 2006).

Interest is "a motivational variable [that] refers to the psychological state of engaging or the predisposition to reengage with particular classes of objects, events, or ideas over time" (Hidi & Renninger, 2006: 112). Researchers classify interest into two general types: situational interest is "an emotional state brought about by situational stimuli" and individual interest is "a relatively enduring preference for certain topics, subject areas, or activities" (Schiefele, 1999: 302). (See

also Hidi, 1990; Krapp, Hidi, & Renninger, 1992; Renninger, 2000; and Schiefele, 1991 for further detail on definitions of interest).

Interest develops over time, such that the more temporary situational interest can transform into the more permanent individual interest. Specifically, Hidi and Renninger (2006) proposed four phases of interest: (1) triggered situational interest can develop into (2) maintained situational interest. This type of interest can develop into (3) emerging individual interest, which can then become (4) well-developed individual interest. The first two phases comprise situational interest, while the third and fourth phases comprise individual interest.

One goal of education is to cultivate students' individual interest in a topic, thereby cultivating ongoing curiosity and exploration, and ultimately long-term learning. Johnson and Spicer (2006) reflected on this goal in an MBA program context, suggesting that management educators seek to create "learning managers," rather than "learned managers." Although cultivating individual interest in management education may be professors' ultimate goal, their primary opportunity for shaping interest is to impact the first two phases of interests, triggered situational interest and maintained situational interest. Influenced by the context, these two phases are potentially more malleable (Schraw et al., 2001). Thus, in the present study, we focus on the first two phases of interest specifically in a management education setting.

The first phase, triggered situational interest, is defined as "a psychological state of interest that results from short-term changes in affective and cognitive processing" (Hidi & Renninger, 2006: 114). Scholars have operationalized triggered situational interest in different ways. Cordova and Lepper (1996) studied the relationship between choice and interest in the context of elementary school students playing computer games. They focused on overall liking for the game as an indicator of triggered situational interest. In a summer high school football

camp context, Hulleman et al. (2008) also operationalized triggered situational interest as a general sense of positive affect. Specifically, to assess interest in the camp experience, they measured overall satisfaction with the camp as an indicator of triggered situational interest.

Interest triggered by specific situations can be sustained over time. Hidi and Renninger (2006) refer to this, the second phase of interest development, as maintained situational interest, "a psychological state of interest that is subsequent to a triggered state, involves focused attention and persistence over an extended episode in time, and/or reoccurs and again persists" (p. 114). Maintained situational interest has been measured as an individuals' willingness to engage in the same type of activity in the future. Both Harackiewicz et al. (2000) and Hulleman et al. (2008) conducted studies of college students in an introductory psychology course. Using future-oriented items, they measured students' interest in taking additional psychology classes. Similarly, Cordova and Lepper's (1996) study measured children's willingness to stay during recess or after school to play computer games again with future-oriented items.

Fostering situational interest is challenging in the classroom, particularly due to the role of grades in this context. Grades are intended to cultivate positive outcomes in the classroom, including interest. Yet paradoxically, they often have the opposite effect (e.g., Dweck, 1986; Kohn, 1993). The grading paradox results from the tension between extrinsic rewards (e.g., grades) and intrinsic motivation (e.g., interest). Broadly speaking, extrinsic rewards can reduce intrinsic motivation, of which interest is a key component (Amabile et al., 1976; Deci et al., 1999). Goal orientation research argues that extrinsic rewards reinforce a performance orientation, a focus on ability and preserving one's perceptions of one's abilities, while undermining a learning orientation, a focus on identifying one's limitations and improving one's abilities (e.g., Dweck, 1986; Kohn, 1993; Mueller & Dweck, 1998). Further, self-determination

theory recognizes grades as a form of control, which results in reduced interest (Deci, Vallerand, Pelletier, & Ryan, 1991; Ryan & Deci, 2002). More specifically, in experimental work conducted with elementary school children, Butler and Nisan (1986) and Butler (1987) found that grades led to decreased interest.

Deci, Koestner, and Ryan (2001) conducted a meta-analysis examining the relationship between external rewards and intrinsic motivation in an educational context (see also Deci et al., 1999). While they did not directly study external rewards in the form of grades, Deci et al. (2001) defined a category of external rewards—performance-contingent rewards, which reward people based on their performance—that includes grades. When performance-contingent rewards are designed so that people get varying degrees of the reward depending on the quality of their performance (e.g., some students get lower grades than others), the negative impact of this external reward on intrinsic motivation is the largest of any type of external reward included in the meta-analysis. Thus, Deci et al. (2001) concluded that "rewarding people as a direct function of performance runs a very serious risk of negatively affecting their intrinsic motivation" (p. 13). As such, this meta-analysis supports the notion that grades can have a detrimental impact on intrinsic motivation, and so, despite their intended purpose of fostering interest and learning, extrinsic rewards like grades can do just the opposite.

Fostering Interest through Increased Choice

How can educators overcome the grading paradox and foster interest in the classroom? Some researchers advocate the elimination of grades altogether, proposing such alternatives as providing students with developmental feedback and the opportunity to practice or improve (Butler, 1987; Butler & Nisan, 1986). Yet as Kohn (1993: 201) notes, grades are so "integral to our educational system that it is hard to imagine life without them." Moreover, grades are not

always detrimental; indeed, they have beneficial effects as well. Grades allow possible helpful comparisons across classes and schools. Grades can affirm competence (Deci et al., 2001) and provide students with feedback, which has been associated with student attention and subsequent academic achievement (Geddes, 2009). That grades can simultaneously result in both positive and negative effects on student interest underscores our study's goal of seeking constructive tools for managing this grading paradox.

Rather than eliminate grades, one strategy to increase student interest is by exacerbating the focus on grades through choice—the opportunity for students to make decisions about their classroom experiences, including grades (Deci & Ryan, 1985; Glasser, 1986; Langer & Rodin, 1976). Based on their meta-analysis results, Deci et al. (2001) argued that "rather than focusing on rewards for motivating students' learning, it is important to focus more on how to facilitate intrinsic motivation, for example, by beginning from the students' perspective to develop more interesting learning activities, *to provide more choice*, and to ensure that tasks are optimally challenging" (p. 15; emphasis added). Schraw, Flowerday and Lehman (2001) argue that choice leads to increased interest in the classroom for three reasons. Choice enables students to pick what they like and what piques their curiosity. Second, choice enables students to pick learning materials that may be familiar to them. Finally, choice enables students to control what and how they study. Curiosity, familiarity, and control can all lead to increased interest, primarily via increased engagement, understanding, and intrinsic motivation. For example, giving children a choice of which puzzles to work on led to increased interest in working on more puzzles in the future compared to children with no choice (Zuckerman, Porac, Lathin, Smith, & Deci, 1978). Similarly, after playing a computer game designed to teach arithmetic and problem-solving, elementary school students who had choice over incidental factors in the game such as the names

of the characters were both more interested in the games and also learned more from them (Cordova & Lepper, 1996).

Previous research has established that choice is associated with increased interest, and that interest, in turn, enables learning, yet there are several notable gaps in this literature. First, all of these studies focused on task choice, rather than on grade-related choice. Choosing a type of story to read is an example of task choice (Schraw et al., 1998), whereas having choice about the course's grading scheme would be an example of grade-related choice. While task choice fosters interest, grade-related choice may do so to a greater degree; having choice directly about the extrinsic reward itself, such as grades, could dampen the negative effects of these extrinsic rewards more than by having choice about the tasks that are the basis of these grades. Further, grade-related choice would still allow grades to serve their positive purpose as well.

Second, the existing research focused predominantly on children and adolescents, rather than exploring the impact on older students, such those typically found in MBA classrooms. The different developmental stage experienced by young adults relative to children or adolescents suggests that an extension of this research into a wider range of age groups is necessary (Levinson, Darrow, Klein, Levinson, & McKee, 1978). Adult learning theory suggests that adults feel a strong need for choice in a learning context (Knowles, Holton, & Swanson, 2005). This emphasis on adults' need for choice is consistent with self-determination theory, such that "people have an innate psychological need for competence, belonging, and autonomy. Choice increases feelings of self-determination by satisfying the need for autonomy. In turn, increased self-determination leads to increased intrinsic motivation, interest, and engagement" (Schraw et al., 2001: 215). Further, research on an adult sample of trainees found that the combination of having and receiving a choice about training increased outcomes related to interest, motivation,

and learning (Baldwin, Magjuka, & Loher, 1991). Thus, there is suggestive evidence that the link between choice and interest is applicable to adult students, not only to younger students. Indeed, this research suggests that adult students may benefit from choice more than children do, but this has not yet been tested.

Third, existing research on choice and interest occurred primarily in laboratory settings, rather than in real-life classrooms. The fact that these studies utilized education-related experimental manipulations suggests implications for the classroom (e.g., Schraw et al., 1998). However, the real-world pressures and implications of grades—such as class ranks, earning scholarships, and obtaining jobs—are not captured in the laboratory.

Finally, these studies provide limited evidence for specific choice interventions that can easily and effectively be implemented in an MBA classroom setting. In practice, some professors already provide students with choices in the classroom, including grade-related choice. However, these methods have not been studied empirically. We aim to fill these gaps by testing the relationship between choice and interest in the real-world setting of an MBA classroom. Specifically, we test the following hypotheses:

> *Hypothesis 1: Presenting students with choice regarding grade weights positively influences students' triggered situational interest in the course.*
>
> *Hypothesis 2: Presenting students with choice regarding grade weights positively influences students' maintained situational interest in the course content.*

METHOD

Sample and Procedure

This study used an experimental field design in MBA management classes to test the relationship between choice and interest. Ninety-one MBA students in required introductory core management courses at two different universities participated. Two professors, both authors of

this paper, conducted the study during the same semester at their respective universities. The professors each taught two sections of the course, resulting in four sections total in the study. All four sections required the same assignments from their students.

The mean age of our sample was 28.8 years, with 58% male and 55% Caucasian. Fifty-three percent of participants were part-time students, and they worked 36 hours per week on average. Participants earned a mean undergraduate grade point average (GPA) of 3.23 out of 4.00, and they scored an average of 564 on the Graduate Management Admission Test (GMAT).

For each university, we assigned one section as the experimental condition in which we implemented a choice intervention, and the other section as the control condition, in which we did not implement this intervention. Overall, our study included 53 participants in the choice condition and 38 participants in the no-choice condition. We aimed to minimize bias associated with order effects by using a crossover design. Consistent with previous experimental education research (e.g., Ackerman & Kanfer, 2009; Pearce & Barker, 1991), this design reversed the order of when the choice and no-choice sections occurred during the week at each university. The professor at "University A" taught the no-choice section earlier in the week and the choice section later in the week. The professor at "University B" taught the choice section earlier in the week and the no-choice section later in the week.

We conducted the study in the natural conditions of real-life MBA programs, and therefore we could not randomize participants into their management course sections. However, we found no statistically significant differences between the choice and no-choice conditions for any measured demographic characteristics: age, gender, ethnicity, full-time or part-time student status, number of hours worked in one's place of employment per week, undergraduate GPA, or GMAT score. Additionally, we found no statistically significant differences between the two

universities for any of these same measured demographic characteristics. As is common in educational research, the professors were not blind to the conditions of the study; rather they served in the role of "teacher-researcher" (Fraenkel & Wallen, 2006; Taber, 2007).

We collected data from several sources during the semester. During the semester's last class session, students in both conditions completed a survey that included measures of interest, as well as other course-related questions. Also at the end of the semester, students completed the university's official course evaluation. Per each university's standard procedures, students at University A completed the evaluations online and students at University B completed the evaluations during the final class session. We accessed these evaluations only after final grades had been submitted. We collected control variables such as undergraduate GPAs and GMAT scores from the universities' registrars.

We told the students about the study at the end of the semester and asked for their participation consent. At University A, the Institutional Review Board required that students provide consent for obtaining the data from the registrar; 89% of students gave consent for their registrar data to be included in the study. At University B, the Institutional Review Board required that students give consent to include both their course-related data and registrar data in the study. Ninety-seven percent of students gave consent for their course-related data to be included, while 92% of students gave consent for their registrar data to be included.

Measures

Independent Variable: Choice Intervention. We provided students in the choice condition with the opportunity to individually determine the weight of three course components toward their final course grade, within a specified range. Appendix A shows the choice intervention form completed by the students. The three course components, class participation, a

case analysis paper, and a final group project[1], constituted 75% of the final course grade. Students could allocate between a minimum of 15% and maximum of 45% toward their final course grade for each of the three components, such that the weights for all three summed to 75%. Two other assignments accounted for the remaining 25% of the grade.

At the beginning of the semester, we informed students in the choice condition that they would have the opportunity to make grade allocations during the third week of the semester. This timing provided students with several weeks to understand the nature of the course assignments and, more broadly, the class. Once submitted, students could not change their allocations. To minimize observer-expectancy effects, research assistants kept the submitted allocation forms until the end of the semester, thus allowing the professors to remain blind to student allocations until after grading all course components.

Students in the no-choice condition did not have any choice regarding their final course grade allocations. For them, each of the three course components—class participation, case analysis paper, and final group project—constituted 25% of their final grade. The remaining 25% of their grade belonged to two other assignments, as in the choice condition. We informed these students of the percentages in class and in the course syllabus, per the norms of a typical classroom.

Dependent Variables: Interest. Hypothesis 1 proposed that presenting students with choice regarding grades weights would positively influence triggered situational interest in the course. We operationalized triggered situational interest as students' reactions to the course. This approach is based on Hulleman et al.'s (2008) research on students at a summer sports camp. They measured triggered situational interest as the students' satisfaction with their summer camp

[1] Students selected their own groups at both universities.

experience with a 5-item scale, including "Overall, I am satisfied with this camp." In our study, we examined students' reactions to their management course in two separate ways.

First, the end-of-semester survey included a measure of students' satisfaction with the course. Participants rated the item, "I am satisfied with this course," using a 7-point Likert scale (1 = *strongly disagree,* 7 = *strongly agree*).

We also used the course evaluations administered by the university. As with previous research that viewed "overall liking" (Cordova & Lepper, 1996) and "overall satisfaction" (Hulleman et al., 2008) as indicators of triggered situational interest, the items comprising these evaluations are designed to tap into overall reactions to the course at the end of the semester. Students completed these evaluations anonymously, and so we could not analyze differences among responses at the individual level. However, the evaluations were connected to their sections, and we could therefore analyze differences between the choice and no-choice conditions. Students rated items about various aspects of their experience in the introductory management class on a 5-point agreement scale. University A's evaluation consisted of 19 items, while University B's consisted of 17 items. The items used at the two universities were different, but both evaluations included items related to similar topics: course content and structure (e.g., "Work that students were required to do promoted meaningful learning" at University A and "Workload worth benefits" at University B), grading (e.g., "Meaningful feedback was given regarding standards that were used to grade exams and assignments" at University A and "Grades fair" at University B), and the instructor (e.g., "The instructor demonstrated an interest in course topics" at University A and "Knowledge of subject" at University B).

Hypothesis 2 proposed that presenting students with choice regarding grade weights would positively influence maintained situational interest in the course content. We measured

maintained situational interest with the item, "I would be interested in taking another course in management/organizational behavior" (1 = *strongly disagree*, 7 = *strongly agree*). This measure is consistent with previous studies that operationalized maintained situational interest as individuals' interest in taking another course in the same topic again in the future (Harackiewicz et al., 2000; Hulleman et al., 2008).

We selected the two single-item measures of interest, rather than multi-item scales, due to length constraints for the end-of-semester survey and research support for their use (Wanous, Reichers, & Hudy, 1997). These single-item measures may have better construct validity than multi-item scales (Scarpello & Campbell, 1983). Moreover, single-item satisfaction measures are commonly used in organizational behavior research (e.g., Ganzach, 1988; Judge & Hurst, 2008).

Control Variables. Our primary analyses controlled for gender and university. We then conducted sensitivity analyses in which we controlled for several demographic and education-related characteristics. Based on prior research on interest (e.g., Ainley et al., 2002; Amabile, Hill, Hennessey, & Tighe, 1994), we controlled for age (in years), gender (coded as 1 = male, 0 = female), ethnicity (coded as 1 = self-reported as Caucasian, 0 = did not self-report as Caucasian), student status (coded as 1 = part-time student, 0 = full-time student), university (dummy variable), undergraduate GPA, and GMAT score. We calibrated all undergraduate GPAs to a 4-point scale. We used participants' combined GMAT score (possible range 200-800). We used participants' self-reported GMAT scores in five cases for which the registrar did not have GMAT information, consistent with prior research on the high accuracy of self-reported standardized test scores (Cassady, 2001; Noftle & Robins, 2007). For four participants, the registrar reported two GMAT test scores. We used the higher score in our analyses, following the norm used in many business schools' admissions processes.

Additional Variables. The final survey included several additional measures that are relevant to the discussion of our analyses, but are not included in our primary analyses. Students in both conditions rated the degree to which they believed their work was graded fairly ("I think my work in the class was graded fairly") on a 7-point Likert scale. Students in the choice condition answered several additional items: First, they assessed the difficulty they had in allocating the weights of their course components by rating the item, "I found it challenging to figure out my allocations" (1 = *strongly disagree*, 7 = *strongly agree*). Next, they addressed how much their allocations impacted the time they spent on different components of the class, coded as 3 = *affected a lot*, 2 = *affected sometimes*, and 1 = *did not affect*. Lastly, they indicated their recollection of their chosen allocations, which they had submitted three months earlier.

RESULTS

The means and standard deviations for all variables are shown in Table 1. Correlations for all variables are shown in Table 2.

[Insert Tables 1 and 2 about here]

Choice Intervention

We conducted four manipulation checks of our choice intervention. Specifically, we looked at the degree to which choice was salient to students and mattered to them throughout the semester. First, 67% percent of the students in the choice condition said they would want to see grading allocations be implemented in other courses, thus suggesting that they saw the choice intervention as beneficial. Second, in response to a question about how much the choice intervention impacted the amount of time they spent on different course components throughout the semester, 50% of students in the choice condition reported that it affected them a lot, 34% reported sometimes, and only 16% reported that it did not affect them. Third, at the end of the

semester, participants in the choice condition indicated their recollection of their allocations from three months earlier. Eighty-five percent of those who completed this item (34 of 40) were accurate within 5 percentage points, thus suggesting that the allocations were notable in students' minds. However, 20% of students who submitted the survey (10 of 50) left this item blank, suggesting that the allocations may not have been as memorable to this subset of students. Put another way, 34 of 50 (68%) students who were eligible to complete this item were accurate within 5 percentage points. Finally, students in the choice condition believed their work was graded more fairly than the students in the no-choice condition (5.9 vs. 5.2, $p < .05$, on a 7-point scale). Together, these four manipulation checks indicate that the choice intervention was salient to a large majority of participants in the choice condition.

Students may have viewed the allocation as salient because the allocation could impact their final course grade. However, our results show that the choice intervention had no impact on the total points students earned in the course. We found an almost perfect correlation of .99 between students' total points earned in the class using their chosen allocations compared with an alternative calculation using the default allocations of 25% per course component ($p \leq .01$). The difference between total points earned in the course using students' chosen allocations vs. using the default allocations was less than 1 point (on a 100-point scale) for 86% of students. This difference was greater than two points for only two students in the sample.

On average, students selected allocations close to the default grading scheme. In the choice condition, the average allocations for each of the three course components were 24.2% for class participation (*SD* = 6.8%, range = 15%-45%), 25.8% for the case analysis paper (*SD* = 5.3%, range = 15%-35%), and 25.0% for the group project (*SD* = 5.4%, range = 15%-35%). Moreover, 19% of students in the choice condition chose the exact default values. This limited

range of allocations partially explains the high correlation between students' final grades using their chosen allocations and the default allocations.

Interest

To examine interest as measured by the final surveys, we used multiple regression analyses. To examine interest as measured by the official course evaluations, we used a nonparametric sign test to determine whether overall interest was higher in the choice condition. We found support for our hypotheses: the choice intervention was positively associated with both triggered and maintained situational interest.

Hypothesis 1: Choice and Triggered Situational Interest. Participants across both conditions reported high levels of satisfaction with the course as measured by their response on the final survey ($M = 6.3$, $SD = 0.9$). Even with such high ratings, a two-sample t-test showed that students in the choice condition expressed an interest level 0.5 points higher ($p \leq .05$; $d = .54$) than in the no-choice condition (on a 7-point scale). This relationship did not change when controlling for both gender and university in our multiple regression analyses, thus supporting Hypothesis 1 (see Table 3, Model 1).

The course evaluations administered by the university provided further support for Hypothesis 1. We conducted this analysis using a sign test, as this methodology can handle the variations in number and text of the specific items from the two universities (Hollander & Wolfe, 1999). The sign test is a nonparametric test that evaluates whether students in the choice condition reported more or less positive reactions to the course than students in the no-choice condition, regardless of the magnitude of the difference (Siegel, 1956). Here, we do not evaluate the question of whether an individual item on the evaluations was rated higher (as individual t-tests would do), but rather whether the students had a more positive general reaction to the class

in the choice relative to the no-choice condition. Combining the items from the two universities also eliminates the effect of condition order, since we reversed the conditions at the two schools. If students in the choice and no-choice conditions demonstrated equal preferences for the course, then 50% of the items (18 out of 36) would be more positive in the choice condition than in the no-choice section and vice versa. Instead, we found that 83% of the items (30 out of the 36) were rated more positively in the choice condition than in the no-choice condition, which is greater than what is predicted by random chance alone ($p \leq .01$). Consistent with the sign test results, a two sample t-test combining the results for all 36 items also showed more positive evaluations in the choice condition relative to the no-choice condition ($p < 0.001$). As with the analyses of the survey measure of triggered situational interest, these results indicate that students in the choice condition reported overall more positive reactions to the course than students in the no-choice condition, supporting Hypothesis 1.

Hypothesis 2: Choice and Maintained Situational Interest. Participants across both conditions reported high levels of interest in taking another course about the same topic in the future ($M = 5.9$, $SD = 1.4$). A two-sample t-test shows that being presented with choice about one's grade allocations was associated with a maintained situational interest level 0.7 points higher ($p \leq .05$, $d = .48$) than in the no-choice condition (on a 7-point scale). This relationship increased to 0.8 points when controlling for both gender and university in our multiple regression analyses, thus supporting Hypothesis 2 (see Table 3, Model 2).

[Insert Table 3 about here]

To establish the strength and robustness of our findings, we conducted sensitivity analyses involving a broader range of control variables than were included in our primary

multiple regression analyses.[2] We did this in two different ways. First, we ran the analyses using listwise deletion, such that only those cases without any missing data were included ($n = 43$). These analyses produced the same pattern of results as in Table 3: a 0.6 increase in course satisfaction ($p \leq .01$) and a 1.0 increase in interest in taking another course about the same topic in the future ($p \leq .05$). Second, we ran the analyses using both measured and imputed data, such that when participants' control variables were missing, we imputed these values from the other variables. This allowed these participants to remain in the analyses ($n = 81$). Again, these analyses produced the same pattern of results as in Table 3 and in the listwise deletion analyses: a 0.5 increase in course satisfaction ($p \leq .01$) and a 0.8 increase in interest in taking another course ($p \leq .01$). The consistent pattern of results across our primary analyses shown in Table 3 and in these sensitivity analyses reinforces the strength and robustness of our findings.

DISCUSSION

In an MBA classroom setting, our research explored whether presenting students with choice was associated with increased interest, an important antecedent of learning. We found that a grade-related choice intervention, presenting students with the opportunity to allocate the weight of several course components toward their final course grade, yielded higher levels of two types of interest: triggered situational interest, in the form of students' reactions to the course, and maintained situational interest, in the form of interest in taking another course about the same topic again in the future—thus alleviating the grading paradox. Our findings corroborate and extend previous research documenting the positive relationship between choice and interest (Cordova & Lepper, 1996; Schraw et al., 2001; Schraw et al., 1998; Zuckerman et al., 1978). Further, they create a direct connection between the organizational behavior and

[2] This broader set of control variables was excluded from our focal analyses because many participants had missing data, which made the analyses harder to conduct without imputation. Further, when controlling for university and gender in the regression models, none of these additional control variables was significant.

educational psychology literatures on choice and interest with the management learning and education literature, as advocated by management learning and education scholars (Arbaugh, 2008). Lastly, they provide empirical support for a practical pedagogical tool to help management educators encourage student interest.

The magnitude of the choice intervention's impact is noteworthy given the context of the study. First, in our sample, these positive effects occurred at the high end of the rating scale, and so the degree to which the intervention could have had an impact was limited. In the no-choice condition, the mean level of course satisfaction was 6.0 (out of 7.0). Thus, a boost of 0.5 out of the 1.0 point difference between 6.0 and the maximum of 7.0 represents a 50% increase in the potential space for improvement. Likewise, in the no-choice condition, the mean level of interest in taking another course about this topic again was 5.5 (out of 7.0). Thus, a boost of 0.8 out of the 1.5 point difference between 5.5 and 7.0 represents a 55% increase in the potential space for improvement. The university course evaluation results underscore the magnitude of impact elicited by the choice intervention: students in the choice condition rated the course higher on 30 out of 36 items relative to the no-choice condition.

Second, students' interest increased due to the choice manipulation, even though they found it slightly challenging to figure out their allocations (M = 4.9 on a 7-point scale; SD = 1.6, where 1 = *strongly disagree* (i.e., not challenging) and 7 = *strongly agree* (i.e., challenging)). Anecdotally, several students reported some anxiety about the grade allocation task. They expressed concern about making a "wrong" allocation and therefore hurting their final grade. In terms of the allocation percentages, students made choices relatively similar to the defaults, including 19% of students who chose the exact default weights. This suggests that students may have been unwilling to accept or leverage the choice offered to them, and instead used a risk-

averse strategy. In spite of these students' challenges with selecting their allocations, we still found that the choice intervention was associated with increased interest. Moreover, these challenges may capture the difficulties students faced as they transitioned from a traditional classroom environment, where they had little or no opportunity to exercise choice, into one in which they had some responsibility for their own grades.

Theoretical Contributions

Our findings make several theoretical contributions to management learning and education research. First, we extend previous research on choice and interest by focusing on grade-related choice, rather than task choice. This previous research showed that choice about the nature of activities led to more interest in that activity (Cordova & Lepper, 1996; Zuckerman et al., 1978). However, we focused on cultivating interest in the context of continued use of a powerful extrinsic reward that can have a detrimental effect on interest—grades. We suggest that exercising choice directly on the extrinsic reward itself (i.e., grades) is a critical means of minimizing the negative effects of these extrinsic rewards. Future research can explore whether task choice vs. grade-related choice has a greater impact on increasing interest.

Second, we contribute to the literature on choice and interest by expanding the contexts in which this relationship has been tested: the age of the participants, the setting, and the time span of the study. Whereas previous research has identified the relationship between choice and interest in samples of children and adolescents, we found this relationship in an adult cohort of MBA students. Our participants were 28.8 years old on average, and though they were students, they also worked an average of 36 hours per week. Future research can explore the possibility that fostering student interest may be particularly problematic for certain students within MBA

programs, such as younger students with little prior work experience, or certain programs with larger percentages of younger students.

In addition, most research in the connection between choice and interest occurred in laboratory settings and, therefore, utilized short-term tasks (e.g., Cordova & Lepper, 1996; Schraw et al., 1998; Zuckerman et al., 1978). Therefore, previous studies examined only the most temporary type of interest (i.e., triggered situational interest). As advocated by Rynes and Trank (1999), we conducted a field experiment in an ecologically-valid setting, an MBA classroom. We thus demonstrated that the positive choice-interest relationship exists outside of a laboratory setting in a context relevant to management educators. We also showed that choice is associated with triggered situational interest and a more "developed"—i.e., less temporary—type of interest, maintained situational interest (Hidi & Renninger, 2006). Three months passed between the choice intervention and the measurement of interest, suggesting that the choice intervention had an enduring impact over an extended period of time. Our findings expand scholars' understanding of the range of contexts in which the choice-interest relationship holds. Further, these findings encourage future research in a broader array of contexts, including in the workplace (see Chua & Iyengar, 2006 for a review of choice in organizations). We also encourage future research that extends our findings about choice and interest to test the connection between choice and explicit learning outcomes (Rynes & Trank, 1999).

Third, our findings highlight two mechanisms that may link choice, and particularly choice about a performance metric like grades, with interest. The first mechanism that may explain why the choice intervention led to increased interest is the strengths-based approach to management (Roberts, Dutton, Spreitzer, Heaphy, & Quinn, 2005). The design of the choice intervention allowed students to make grade allocations according to their perceptions of their

own strengths. For instance, the three course components that students considered in the choice intervention utilized very different types of skills—verbal communication was needed for class participation, written communication was needed for the case analysis paper, and interpersonal skills were needed for the group project. Individuals are more interested in activities that reflect their inherent strengths (Roberts et al., 2005), and so the choice intervention may have increased triggered and maintained situational interest because it encouraged students to devote more of their attention to the activities in which they were inherently interested.

Students in the study had not encountered a choice intervention like the one used in this study before. Thus, the novelty of the choice intervention to these students may explain why choice led to increased interest. Moreover, the professors' role in implementing and explaining the choice intervention may have further added to the novelty surrounding the choice intervention for the study participants. While we did not test this mechanism, previous research suggests that novelty may amplify the impact of choice on interest. Cordova and Lepper's (1996) study of elementary school children playing an educational computer game sheds some light on the choice vs. novelty question. They separated the effects of these two factors on interest by manipulating choice, in the form of participants selecting instructionally irrelevant features of the game, and personalization, regarding the degree of personalization of the game's fantasy context. This personalization is akin to isolating a novelty effect. They found that both choice and personalization independently increased interest, as well as increasing motivation and learning. The subjects who experienced both factors had the highest levels of these outcomes. As our study's choice intervention included elements of both choice and novelty, in terms of the existence of the intervention itself and the students' personalization of their preferences, our

results may reflect this combination. Future research, particularly in a laboratory setting, can attempt to untangle the degree to which choice vs. novelty drive interest.

Practical Contributions

Our research contributes to the practice of management education by testing a pedagogical tool that professors can utilize in their classroom to encourage interest while continuing to use grades. The grade allocation choice intervention is a straightforward, simple tool that can be easily be adopted in the classroom. In fact, anecdotal evidence suggests that many professors currently use similar practices in their classrooms. Moreover, an advantage of this tool, which focuses on grade-related choice, is that it may be easier to implement than task-related choices, which could require the professor to develop multiple versions of assignments.

From the perspective of the students, 67% of the students in the choice condition supported the use of this type of allocation tool in other courses. Figuring out their allocations was only slightly challenging (M = 4.9 on a 7-point scale). Both of the professors who taught the sections involved in the present study elected to use the allocation tool in subsequent semesters. In sum, not only did the choice intervention yield positive results in terms of increasing students' interest, but it also received support from both students and faculty involved in the study.

We recommend that professors be conscientious about which course components are subject to choice. For instance, our students allocated the weight of their group project toward their final grade. It is possible that the grading allocation intervention could lead to inadvertent negative team dynamics, such as conflict over the importance of the project based on divergent allocations. In our sample, the relatively conservative allocation choices made by students meant that within the project groups, students' allocations were relatively similar: the mean allocation was 25% for the group project (SD = 5.4%, range = 15%-35%). Further, the minimum and

maximum allocations within groups typically diverged by only 10% points, such that 80% of students in the experimental condition selected 20%, 25%, or 30% as their allocation for the group project grade. We therefore assume that divergent allocations were not a concern in this sample. We suggest that future research examine the potential impact of choice on group dynamics by adding two conditions to the two included in the present study (i.e., choice or no choice about all course components): choice about components graded on an individual basis only and choice about components graded on a group basis only.

Our findings suggest that the positive benefits of the choice intervention could be magnified if fully integrated into a course's design and dialogue. In the study context presented here, we aimed to keep course design and dialogue similar between the choice and no-choice conditions—with the exception of the choice intervention itself. As a result, we did not attempt to encourage or amplify the effects of the choice intervention during the course of the semester. In contrast, when utilized in a non-research setting, professors could establish and reinforce classroom norms that support the choice intervention. For example, professors could use the introduction and administration of the choice intervention as an opportunity to explain the grading paradox by articulating that their pedagogical goal is to maximize interest and, ultimately, learning while minimizing the detrimental impact of grades (Kohn, 1993). We further recommend that future research examine other forms of choice in the classroom (e.g., providing students the opportunity to vote for the lecture topic on a given day), many of which currently exist in practice. Our findings suggest that these other forms of choice should also help boost interest.

In the educational system beyond business schools, educators have begun to explore methods of managing the grading paradox. For instance, the Young Women's Leadership

Charter School of Chicago abolished grades in favor of standards-based learning and has achieved the highest graduation and college attendance rate of any non-selective school in the area (Farrington & Small, 2006; Posner, 2007). Some school districts have sought radical innovations for minimizing students' focus on grades, including removing grades entirely from the K-12 curriculum (Paulson, 2009). Our study contributes to this effort by focusing on a way to cultivate interest while continuing to use, and even exacerbate the focus on, grades. We encourage future research that explores the means of using and adapting performance metrics in a manner that not only avoids destroying interest, but perhaps even helps increase it.

While our study focused on the relationship between interest and choice in a management classroom, this research may have implications for other management settings. The tension between learning goals and performance metrics exist at other levels of analysis as well. As in the classroom, performance metrics could undermine desired learning outcomes at the individual, team, and organizational levels (Bunderson & Sutcliffe, 2003; Ghoshal & Bartlett, 1994; Van Der Vegt & Bunderson, 2005). Moreover, organizations often seek to achieve complex goals including both learning and performance goals (Smith, Binns, & Tushman, 2010) and as a result have complex reward systems (Boettger & Greer, 1994). These multiple, contradictory demands set up the potential for increased input from employees in structuring the value of each of these outcomes. Our findings suggest that providing employees with the opportunity to exercise choice about workplace rewards might increase interest. That is, employees could not only be consulted to offer voice into the process of performance reviews (Korsgaard & Roberson, 1995), but could also be offered choice about how they are assessed. While offering choice about workplace rewards may seem provocative, future research can explore whether such choice impacts employee interest, engagement, and productivity.

Limitations and Future Research

Although we found significant effects of choice on interest, there are several limitations to this study. We tested the relationship between choice and interest in an ecologically-valid, real-world setting. Yet conducting field-based research prevented us from randomly assigning students to their sections or controlling the number of students enrolled in each section. Further, we were not blind to the conditions of the experiment, resulting in possible expectancy biases or a Hawthorne effect (Roethlisberger & Dickson, 1939). We took several steps to check for and minimize these effects. Students' final grades reflected no differences between the choice and no-choice conditions, suggesting that we did not show any preference for the students in the choice condition. We used a crossover design, which alternated the order of the choice and no-choice classes across the two universities. This reduced the possibility that differences in the two classes could be caused by either a mindless decrease in professor enthusiasm from one section to the next (Langer, 1997) or a learning curve benefit from the first section to the second (Newell & Rosenbloom, 1981).

Future research could aim to replicate our results about choice, particularly grade-related choice, and interest in an adult population in the controlled context of a laboratory experiment. Alternatively, researchers could design a quasi-replication of our field experiment in which the professor is blind to the student's experimental condition. In spite of the benefits of such a design, introducing the choice intervention outside of the syllabus and by someone other than the course professor might encourage student concerns about being research participants, and could possibly reduce the validity of the results. This future research would build on our work, which contributes to the initial knowledge base about the relationship between choice and interest in adults. The tests presented here set the stage for future research that can advance our

understanding of this relationship with greater specificity, consistent with the "full cycle research" approach to research (Chatman & Flynn, 2005).

Second, we note that our approach to measuring triggered situational interest—by using student's reactions to the course—is just one of many possible approaches. Satisfaction and interest are not the same construct, though they are highly and positively correlated (Brown, 2005). This relationship, as well as previous research that has viewed satisfaction as an indicator of triggered situational interest (Hulleman et al., 2008), support the viability of our approach. However, we encourage future research to utilize additional, and more direct, indicators of interest (e.g., Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008). This could include research that uses multi-item measures of interest. Moreover, we encourage future research that measures interest at multiple timepoints, such as at the beginning and end of the semester, as well as at timepoints after the end of the semester (Harackiewicz, Barron, Tauer, & Elliott, 2002).

Third, it is possible that the effects we found would not generalize to other populations. Additional research could examine the relationship between choice and interest in business school settings beyond introductory MBA management classes, such as in other management classes, non-management MBA classes, or undergraduate business classes. Future research could also extend into the workplace, particularly by exploring the relationship between extrinsic reward-related choice and interest in a real-world organizational setting.

Conclusion

To effectively educate future managers, business schools must not only focus on the content of their curricula, but also on pedagogical processes. Our study did just that by identifying a strategy to address the grading paradox in a management classroom: providing

students with the opportunity to exercise choice about an important performance metric, their final course grade. The choice intervention is a pedagogical tool that is easy to implement in the classroom. Moreover, it has a powerful effect on interest. In both research and in teaching, and in both business schools and beyond, we encourage future work on inspiring student interest in the classroom.

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TABLE 1
Means and Standard Deviations by University, by Condition, and Overall

	UNIVERSITY						CONDITION						OVERALL	
	A (n=55)		B (n=36)		Significance	Effect Size (d-value)	Control (n=38)		Experimental (n=53)		Significance	Effect Size (d-value)	(n=91)	
	M	SD	M	SD			M	SD	M	SD			M	SD
Control Variables (in final analyses)														
1. Gender (1 = male; 0 = female)	0.62	0.49	0.53	0.51		-0.18	0.50	0.51	0.64	0.48		0.28	0.58	0.50
2. University (1 = A; 0 = B)	1.00	0.00	0.00	0.00		n/a	0.71	0.46	0.53	0.50		-0.37	0.60	0.49
Control Variables (in sensitivity analyses)														
3. Age	28.30	5.20	29.70	5.00		0.27	28.30	2.30	29.20	5.20		0.21	28.80	5.20
4. Ethnicity (1 = Caucasian; 0 = Not Caucasian)	0.56	0.50	0.53	0.51		-0.06	0.47	0.51	0.60	0.49		0.26	0.55	0.50
5. Student status (1 = FT; 0 = PT)	0.55	0.50	0.50	0.51		-0.10	0.47	0.51	0.57	0.50		0.20	0.53	0.50
6. Undergraduate GPA	3.16	0.45	3.36	0.36	t	0.48	3.11	0.47	3.31	0.39	t	0.47	3.23	0.43
7. GMAT score	553	97	577	70		0.27	566	84	563	87		-0.03	564	85
Dependent Variables														
8. Triggered Situational Interest: Satisfaction with the Course	6.30	0.79	6.20	1.02		-0.11	5.97	1.02	6.44	0.76	*	0.54	6.26	0.89
9. Maintained Situational Interest: Take Similar Course in the Future	6.00	1.26	5.69	1.60		-0.22	5.45	1.59	6.12	1.26	*	0.48	5.86	1.42

Note. ^{t} $p \leq .10$. * $p \leq .05$. (for two-sided, two-sample t tests)

TABLE 2
Correlations among Study Variables

Variable	1	2	3	4	5	6	7	8
1. Gender								
2. Age	0.23 *							
3. Ethnicity	0.13	0.03						
4. Student status (FT/PT)	0.00	0.16	0.43 **					
5. Undergraduate GPA	-0.08	0.15	0.14	0.04				
6. GMAT score	0.05	0.36 **	0.11	-0.11	0.34 *			
7. Triggered Situational Interest: Satisfaction with the Course	0.03	0.11	0.27 *	0.19	-0.02	-0.10		
8. Maintained Situational Interest: Take Similar Course in the Future	-0.10	0.02	0.23 *	0.29 **	-0.01	-0.02	0.64 **	

Note. * $p \leq .05$. ** $p \leq .01$.

TABLE 3
Regression Results for Interest

	Model 1 Triggered Situational Interest: Satisfaction with the Course		Model 2 Maintained Situational Interest: Take A Similar Course in the Future	
	Parameter Estimate	Standard Error	Parameter Estimate	Standard Error
Intercept	5.71 ***	0.36	4.92 ***	0.57
Control variables				
Gender	-0.05	0.20	-0.48	0.32
University (dummy variable)	0.17	0.20	0.46	0.31
Experimental Condition	0.50 *	0.21	0.82 *	0.32
R-square	0.08		0.10	
Adjusted R-square	0.04		0.06	

Note. $n = 81$.
* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

APPENDIX A
Grade Allocation Sheet

PERFORMANCE EVALUATION DESIGN
Please submit by the end of class tonight

Goal of this Personal Performance Evaluation:
The goal of this class is for you to expand your understanding of how to manage yourself and others, and to develop your skills in critical thinking, writing, leadership, etc. To do your best, you must engage with the material, try new skills, and commit time.

Each of the components of your overall grade relies upon different strengths – individual analysis, writing, group work, class participation. Yet, each of you comes into the course with your own distinctive strengths. Therefore, in order to maximize your strengths, I am offering you the option to design your own performance evaluation.

Instructions: Please fill in the 4 shaded cells. This includes: (1) the percentage—within the allowable range—that you would like allocated to each component of your final grade and (2) the total, which MUST be 100%.

Please note: You have discretion over how to allocate 75% of your final grade. The other 25% is allocated to the Self-Assessment Exercise (15%) and the two Case Outlines (10%; 5% each); there is no percentage range for you to select from for these components. Once you have submitted this performance evaluation menu, it is unchangeable.

Performance Evaluation Menu*		
Component	**Percentage Range**	**YOUR Percentage**
1. Self-Assessment Exercise	N/A	15%
2. Case Analysis—Outlines #1 & #2	N/A	10%
3. Participation	15%-45%	
4. Case Analysis—Write-Up	15%-45%	
5. Group Project	15%-45%	
Total	100%	

My signature indicates my agreement to receive a final grade for this course in accordance with the percentages listed above.

Name (Print): _____

Signature: _____ Date: _____

*Note: Missing or problematic (e.g., percentages don't total 100%) submissions will be assigned the following default allocations: (3) Class participation (25%); (4) Case Analysis Write-Up (25%); (5) Group Project (25%).