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The effects of grades on course enjoyment: Did you get the grade you wanted?

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Background. Students tend to rate university courses more positively if they do well. Greenwald and Gillmore (1997a) suggested that it is not students' absolute grades that are important but rather how these grades compare to their expectations. However, this hypothesis is difficult to evaluate because few studies have measured grade expectations at the beginning of courses.

Aim. By measuring students' grade expectations and enjoyment at several stages during a course, we hoped to evaluate the extent to which expectations modulate the impact of grades on course enjoyment.

Sample. Participants were 242 students in a university course in psychology.

Method. Students were asked what grades they expected, and how much they were enjoying the course, at four stages. The effect of grades and grade expectations on enjoyment were analysed using restricted maximum likelihood (REML) and regression analyses.

Results. The best predictor of course enjoyment varied somewhat at different stages, but in general it was the extent to which students' grades surpassed their expectations. Students' expectations at the beginning of the course proved particularly influential.

Conclusions. Grade expectations do influence how students react to course grades, but the prominent role of pre-course expectations suggests that it may be important to distinguish between grade aspirations and grade expectations. It appears to be students' aspirations – the grades they hope to achieve – that most strongly shape their emotional reactions, rather than the more realistic expectations they may form later in a course.

A substantial body of research has suggested that the grades students attain in a course correlate positively with their evaluations of the course (student evaluation of teaching, or SET – see Feldman, 1976 and Stumpf & Freedman, 1979 for reviews; also Blunt, 1981; also Chako, 1983; Powell, 1977; Vasta & Sarmiento, 1979; Worthington & Wong, 1979). Several explanations have been offered for why grades influence evaluations of a course. For example, Greenwald and Gillmore (1997b) suggest that the grade-rating

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correlation may be explained by the social phenomena of praise inducing liking for the person who provides it. When a student receives a high grade, this is taken by the student as praise from the instructor and this in turn leads students to rate their courses (and instructors) positively. Conversely, when a student receives a low grade, they may resent the person assigning the grade, resulting in lower ratings of the course and instructor. Greenwald and Gillmore (1997a) also suggest that it is not the grade per se that influences evaluations but rather how this grade compares to the grade the student expected. If students receive better grades than they expected, they are likely to like a course more. According to this interpretation, the crucial fact is not whether a student receives a high or low grade, but rather whether his or her grade is better or worse than expected.

Despite the now extensive literature concerned with the determinants of course evaluations, there is surprisingly little evidence concerning the confirmation of grade expectations. The problem is that most studies of SETs have adopted a one-stop approach in which questionnaires have been administered at a single point towards the end of the course (e.g., Greenwald & Gillmore, 1997a, 1997b). Most of these questionnaires have thus been answered at a time when students had already received feedback on their performance on the course, and this feedback would almost certainly have altered their expectations concerning their course grade. Grade expectations at the end of a course are thus unlikely to be identical to those at the beginning, and arguably it is students' initial expectations that would most powerfully determine their pleasure or upset at the grade they receive.

Two studies shed at least some light on this issue. Holmes (1972) reported a laboratory analogue study in which expectations were established and students were then given bogus grades. He found that students who surpassed their grade expectations rated the course more positively. However, Holmes's study has been strongly criticised by Marsh and Roche (1997) on the grounds of poor methodology and statistically weak effects. Stronger evidence that the effects of grades depend on students' expectations has come from a study by Greenwald and Gillmore (1997a). In a questionnaire administered at the end of a course, they asked students to indicate how well they expected to perform on the course relative to other courses they had taken. Their results indicated that relative expected grade was an important correlate of SETs.

Greenwald and Gillmore's results suggest that students' expectations are important in determining how they react to course grades. However, because expectations were assessed at the end of the course, we again cannot be sure what expectations students held at the beginning of the course. A further complication in this case is that students were asked how they expected to perform relative to earlier courses, rather than how they expected to perform in this course, and these expectations are not necessarily the same. Suppose, for example, that some C-average students had heard that a course was easy and so expected to do well. If they received Bs, Greenwald and Gillmore's measure would suggest that they should be happy because they had done better than in previous courses, but in fact they might be resentful because they had actually expected to do even better. Thus while Greenwald and Gillmore's results suggest that students' expectations influence how they evaluate courses, to better understand this influence it would be useful to be able to assess students' expectations at the beginning of a course directly, rather than by inference from other measures.

To assess students' expectations at the beginning of a course, and also how these expectations changed as the course progressed, we carried out a longitudinal study in which we asked students their views at four points. The final grade for the course was based on three, equally-weighted components – a mid-semester exam, an essay, and a final exam – and questionnaires were administered a) at the first lecture, b) at mid-semester, following receipt of the mid-semester exam grade, c) at the final exam, following receipt of the essay grade, and d) approximately two months later, when students knew their final course grade. One important feature of these questionnaires was that students were asked to provide their student ID numbers. This allowed us to assess, for each student, how their feelings about the course were influenced not only by their current grade expectations, but also by their absolute grades and by whether or not these grades surpassed their prior expectations.

Measures

Students' liking of a course is normally assessed by using one or more items from the SET questionnaire administered at the end of the course. However, we wanted to track students' feelings about the course as the course progressed, and for several reasons it was not practical to administer a lengthy questionnaire at each of these points. One reason was that participation in the study was voluntary, and we did not want to discourage participation by including too many questions. We were particularly concerned about the questionnaire distributed at the end of the final exam, when students had just completed their exam and a three-page course evaluation questionnaire; had they been asked to complete another long questionnaire, they might have been unwilling to do so. Also, because the first two questionnaires were completed during teaching time, we wanted to minimise intrusion.

In the light of these concerns, we decided to include only three questions in each questionnaire, asking what grade the student expected to receive, how much they enjoyed the course, and how interesting it was. Our decision to assess interest and enjoyment was based on research on intrinsic motivation, where theorists have argued that interest and enjoyment provide a sensitive measure of intrinsic motivation for a task (e.g., Harackiewicz, 1979; Ryan, Connell, & Plant, 1990; Ryan, Koestner, & Deci, 1991; Ryan, Mims, & Koestner, 1983). The consistent finding within this research domain has been that individuals who report high interest and enjoyment of a task also evidence greater motivation for that task. Indeed, Deci (1975) has gone so far as to suggest that individuals' self-report ratings of interest and enjoyment may be *the* operational definition of intrinsic motivation. In short, it seems reasonable to suggest that individuals who report high interest and enjoyment of a course are those who have probably been most motivated by that course.

In essence, we wanted to know whether student enjoyment was better predicted by course grades or by how these grades compared to their expectations, or, as we shall henceforth refer to this issue, the role of absolute versus relative grades in determining enjoyment. Based on Greenwald and Gillmore's findings, we expected relative grades to be more important than absolute grades.

Method

Participants

Third-year psychology students at the University of Stirling who completed the course during the years 1997 ($N = 124$) and 1998 ($N = 118$).

Procedure

The study took place in 1997 and 1998 during two 12-week autumn semesters (September – December). The course studied was a third year course on Learning taught by the second author. He had taught the course for approximately 25 years, with the result that there was little variation in the course's structure and content during the two years in question. Students' grades in the course were based on three equally-weighted components: a mid-semester exam, an essay, and a final exam.

Students were administered four questionnaires, one at the beginning of the course, one after they had received their mid-semester exam mark, one immediately after they completed the final exam and one at the beginning of the following semester. The first questionnaire was distributed at the end of the first lecture. Students were told that the study was part of the first author's Ph.D research and that participation was voluntary. The questionnaire asked students their student registration number and what grade they expected to get for the course. The Stirling University Psychology Department uses a 10-point grading scale incremented by half marks, 10 being the highest and 0 the lowest, and students were asked to circle the grade they expected to receive. In 1998, students were additionally asked how much better or worse they expected to perform relative to previous units. A box marked 'completed questionnaires' was left in the lecture room, and students were asked to deposit their questionnaire in this box.

The second questionnaire was administered at students' tutorial groups held during either the seventh or eighth week of the semester, approximately one week after their mid-semester marks had been posted on the Psychology notice-board. Students were again told that completion of the questionnaire was voluntary. The questionnaire asked their student identification number, how much they were enjoying the course and how interesting they were finding the course. These ratings were anchored on a 6-point Likert scale; 6 was labelled 'A lot' and 1 was labelled 'Not very much'. They were also again asked what grade they expected to get for the course. Students agreeing to complete the questionnaires were asked to place their completed questionnaires in an envelope provided by the tutor.

The third questionnaire was administered to students immediately after they completed their final exam. At this time, we also asked students to complete the SET questionnaire for the course. The third questionnaire was identical to the second questionnaire except the grade expectation question read 'Having done the course, what final grade do you expect to get?'. A box was left at the front of the exam room for students to put their completed questionnaires. The final exam was invigilated by the authors.

The final questionnaire was administered by the first author at the beginning of the following semester when students registered for their courses. The questionnaire read 'This questionnaire is a follow-up to the ones that you completed last semester. The questionnaire is to see what you think of the 46AA course now that you have had time

to reflect on it.' (46AA was the code for the Learning course.) They were then asked to rate their interest and enjoyment of the course. In 1998, students were additionally asked to indicate the degree to which they thought the grade they achieved on the course was deserved or not. For example, if students achieved a grade one unit lower than they thought they deserved (e.g., an 8 instead of an 8.5), they circled '−1' on the questionnaire. One week later, those students taking one of the spring courses for which the first author was a tutor were given an opportunity to complete questionnaire 4. The purpose was simply to maximise the number of students completing the questionnaires.

Sample size

Although we hoped to track students' views throughout the study, there were several sources of attrition. For example, some students did not attend the first lecture; some were not present at the tutorial when questionnaire 2 was distributed; in one tutorial meeting, the tutor forgot to distribute the questionnaires; and several students completed the questionnaires but forgot to enter their student registration number. The data for the two years were combined, resulting in a final sample of 204. Of this sample, 186 students completed questionnaire 1, 155 completed questionnaires 1 and 2, 107 completed questionnaires 1, 2 and 3 and 68 students completed all four questionnaires. The remainder of the sample completed a combination of the four questionnaires, e.g., questionnaires 1 and 3 only, 1 and 2 only, etc. A two-sample *t*-test revealed that there was no difference in the grade expectations of those students who completed all four questionnaires ($M = 7.85$, SD = 0.61) relative to those who failed to complete at least one of the questionnaires ($M = 7.86$, SD = 0.77).

For ease of presentation, the four questionnaires will be hereafter referred to as pre-course (questionnaire 1); mid-semester (questionnaire 2); final exam (questionnaire 3) and post-course (questionnaire 4).

Results

We wanted to assess the effects of grades and grade expectations on students' ratings of course interest and enjoyment, and also whether the relationship between these variables altered as the course progressed. To estimate how grades and expectations were related to enjoyment at different times of the semester, and to see what the effects of grade were independently of time (and vice versa), an ANOVA was called for. However, because grades and grade expectations were nested variables (i.e., each grade and grade expectation were dependent upon the student and not independent at the different times) a fixed effects analysis of variance was not appropriate. We analysed our data instead using a restricted maximum likelihood (REML) analysis (statistical package Genstat, version 5, release 4.1), which allows multiple error terms to be included in the model (akin to a nested random-effects ANOVA). The REML analyses we report below concern the effects of grades and expectations when the effects of student (a random effects factor) have been statistically controlled. The significant relationships indicated by the REML analysis were subsequently explored using more standard statistical techniques (correlation and regression) with which it is not possible to statistically control for the effects of students, but in the knowledge that the relationships under exploration were not a spurious result of a simple model.

The independent variables were the grades students had attained at the time of the questionnaires (the mid-semester exam grade; the mid-semester exam plus project grade; and the final course grade) and their expectations concerning their course grades at the time of the previous questionnaire. At mid-semester, for example, we examined the impact of the mid-semester exam and the grade expectation stated on the pre-course questionnaire. Because overall interest and enjoyment were highly correlated ($r = .82$, $p < .001$,) these variables were summarised by principal components analysis to compute the component scores. The reason for this analysis was simply to allow the regression to be computed on a single dependent variable rather than two separate ones. Of the two components in the analysis, component 1 accounted for 93.5% of variance (eigenvalue = 1.9) and the component score for this factor was used as the dependent response in the model.

The REML analysis revealed a significant grades x time effect, Wald = 23.2 (2), $p < .0001$, and significant expectations x time effect, Wald = 10.3 (2), $p < .01$. Thus, ratings were affected by both grades and grade expectations, but the magnitude of these effects varied over time. The REML coefficients are shown in Table 1 where mid-semester time was set to 0 and compared to final exam and post-course enjoyment ratings for both grades and expectations.

Table 1. Coefficients from a REML (Restricted Maximum Likelihood) analysis showing the relative change in slope between the independent variables and the dependent variable (Interest/enjoyment) at different times of the course (represented by the mid-semester, final exam, and post-course questionnaires)

Variable	Mid-semester	Final Exam	Post-Course
Grades	0.0	0.22	0.58
Expectations	0.0	0.28	−0.40

The coefficients in Table 1 represent the degree of change in enjoyment from mid-semester to the final exam, and from mid-semester to post-course. To ascertain whether these changes in ratings were significant, we divided the differences between the coefficients by the average standard error for each set of effects. For the grades x time interaction, the correlation between grades and enjoyment increased from mid-semester to the final exam (t (128) = 2.91, $p < .05$), and then increased still further from the final exam to post-course. The increase from final exam to post-course was not significant (t (128) = 1.45, n.s.), but the increase from mid-semester to post-course was (t (128) = 4.33, $p < .01$). For the expectations x time interaction, there was a non-significant increase in the correlation between expectations and enjoyment following the mid-semester grade and a non-significant increase between mid-semester and post-course. The difference between the correlations from mid-semester to post-course was significant (t (128) = 1.95, $p < .05$).

It is possibly easier to appreciate the changing nature of the enjoyment and grades/time and expectations/time relationships when these relationships are presented as a series of regression equations. The co-efficients in Table 1 are relative co-efficients, that

is, final exam and post-course ratings are compared to mid-semester ratings. The regression equation in this case reads as follows:

Interest and Enjoyment ratings = −0.06688 + 0.1806* grade expectation + 0 (mid-semester) + 0.04751 (final exam) + 0.00476 (post-course) + −0.00276* grade + 0 (mid-semester) + 0.1747*grade expectation (final exam) + 0.3688*grade expectation (post-course) + 0 (mid-semester) + 0.3922*grade (final exam) + 0.5881* grade (post-course).

However, the equation can also be stated in absolute (rather than relative) terms thus:

Mid-semester I+ E = 0.1806* grade expectation – 0.00278* grade – 0.06688
Final exam I+ E = 0.3553* grade expectation – 0.39496* grade – 0.01937
Post-course I+ E = −0.1882* grade expectation – 0.5909* grade – 0.06212.

To unravel this changing pattern of response to grades and expectations, and to take into account the effects of relative grades, we conducted stepwise multiple regression analyses of mid-semester, final exam and post-course questionnaires to determine predictor variables for enjoyment at each stage ($N = 68$ for all analyses). This analysis was carried out using SPSS version 7.5.

Mid-semester questionnaire

At this stage, students had just received their mid-semester mark. Because interest and enjoyment were highly correlated ($r = .68$, $p < .001$), a composite interest/enjoyment score was derived using principal components analysis. The principal components analysis revealed a factor which accounted for 84% of variance (eigenvalue = 1.68), and we used this factor as the dependent response (enjoyment 1). A stepwise multiple regression analysis was conducted using enjoyment 1 as the dependent variable for the following potential predictor variables (correlation co-efficient with enjoyment 1 in parentheses): mid-semester grade ($r = .09$, n.s.); the difference between mid-semester grade and the average grade achieved on earlier courses ($r = .16$, n.s.); the difference between mid-semester grade and pre-course expected grade – i.e., the degree to which students' expectations were confirmed or disconfirmed ($r = .07$, n.s.); and their current expectation about their course grade, which we have called expectation 2 ($r = .18$, n.s.). A stepwise regression analysis was significant, $F(1, 60) = 4.08$, $p < .05$, and revealed that the one significant predictor for enjoyment 1 was students' current expectation, B = .464, SE = 0.23, $p < .05$. This variable accounted for 6.5% of the variance in enjoyment.

Final exam questionnaire

At this stage, students had received marks for their projects. Because interest and enjoyment ratings were again highly correlated ($r = .87$, $p < .001$), a composite interest/enjoyment score was derived using principal components analysis. The principal component analysis revealed a factor which accounted for 94% of variance (eigenvalue = 1.88). This factor was used as the dependent response (enjoyment 2). A stepwise multiple regression was conducted using enjoyment 2 as the dependent variable for the following independent variables; the project grade, mid-semester grade, the difference between project grade and mid-semester grade, the current grade (i.e., the

sum of the project grade and mid-semester grade, the difference between current grade and the average grade achieved on earlier courses, the difference between the current grade and the grade expected at the beginning of the course, the currently expected course grade, the difference between the current grade and the currently expected course, the change in expectation from pre-course to current expectation, the change in expected course grade from mid-semester to the final exam, and the current grade expectation. The full correlation matrix is shown in Table 2. The dependent variable, which the regression analysis was carried out on, appears in the first column.

Table 2 shows that there were four variables that significantly correlated with enjoyment 2. However, because a stepwise regression analysis looks for unique contributions to overall variance when determining predictors, the analysis revealed that only three of these variables were significant predictors of enjoyment ratings at the final exam. Together, these variables accounted for 30% of the variance in enjoyment. Table 3 shows the stepped regression analysis for the three predictors.

The best predictor was the grade obtained on the mid-semester exam, which explained 17% of the variance. A secondary predictor was the difference between the current grade (mid-semester plus project grade) and the grade the student expected after midsemester, which explained a further 6% of the variance. This increase was significant ($p < .05$). A third predictor was the difference between the current grade and the average grade prior to the course, which explained a further 7% of the variance. This increase was also significant ($p < .05$).

Post-course questionnaire

Questionnaire 4 was distributed the following semester, when students knew their final course grade. Because interest and enjoyment were again highly correlated ($r = .86$, $p < .001$), a composite interest/enjoyment score was derived using principal components analysis. The analysis revealed a factor which accounted for 94% of variance (eigenvalue = 1.88), and this factor was used as the dependent response (final enjoyment). A stepwise multiple regression was conducted using the following independent variables (correlation co-efficient with final enjoyment, and significance level in parentheses): final grade ($r = .37$, $p < .001$); final grade minus pre-course grade expectation ($r = .38$, $p < .005$); final grade minus expected grade at the time of the final exam ($r = .14$, n.s.); final grade minus average grade prior to the course ($r = .29$, $p < .05$); and final grade minus average grade at the time of the final exam ($r = .29$, $p < .05$). The stepwise regression analysis revealed that two of these variables were significant predictors of post-course enjoyment ratings; together these variables accounted for 22% of the variance in enjoyment. Table 4 shows the stepped regression analysis for the two predictors.

The best predictor was the difference between the final grade and students' pre-course grade expectation, which explained 12% of the variance. A secondary predictor was the difference between the final grade and students' overall grade at the final exam, which explained a further 10% of the variance. This increase was significant ($p < .01$).

Table 2. Correlation table for all variables entered into regression model at the final exam (i.e., the second Enjoyment measure) ($N = 68$)

	Enjoyment[1]	Project grade	Mid-sem grade	Midsem – project	Midsem + project	(Msem + Proj) – ave	(Msem + Proj) – Expl	(Msem + Proj) – Exp2	Grade exp 2 – grade exp 1	Grade exp 3 – grade exp 2	Grade exp 3
Enjoyment[1]	–	.04	.41**	−.33**	.33**	.33**	.22	.10	.57**	−.11	.33**
Project grade	.04	–	.19	.49**	.69**	.53**	.53**	.62**	.05	.18	.28**
Mid-sem grade	.41**	.19	–	−.76**	.84**	.58**	.70**	.54**	.35**	.20	.67**
Midsem – project	−.33**	.49**	−.76**	–	−.29*	−.16	−.27*	−.06	−.28*	−.06	−.41**
Midsem + project	.33**	.69**	.84**	−.29*	–	.71**	.81**	.74**	.29*	.25*	.65**
(Msem + Proj) − ave	.33**	.53**	.58**	−.16	.71**	–	.72**	.66**	.22	.25	.46**
(Msem + Proj) – Expl	.22	.53**	.70**	−.27*	.81**	.72**	–	.79**	.25*	.34*	.51**
(Msem + Proj) – Exp 2	.10	.62**	.54**	−.06	.74**	.66**	.79**	–	.17	.46**	.23
Grade exp 2 – grade exp 1	.57**	.56**	.05	.35**	−.28*	.29*	.22	.25*	–	−.21	.85**
Grade exp 3 – grade exp 2	−.11	−.10	.18	.20	−.06	.25*	.25	.34**	.46**	−.21	.73**
Grade exp 3	.33**	.28**	.67**	−41**	.65**	.46**	.51**	.23	.85**	.73**	–

[1] Enjoyment is the principle components score for the combined interest and enjoyment ratings for the questionnaire answered at the final exam
*$p < .05$ **$p < .01$

Table 3. Stepwise regression for the significant predictors of Enjoyment 2

Step	Variable	cumulative R	R^2 change	cumulative R^2	p
1	Mid-semester grade	.41	.17	.17	< .001
2	Current grade minus expectation 2	.47	.06	.23	< .05
3	Current grade minus average grade achieved on earlier courses	.55	.07	.30	< .05

Table 4. Stepwise regression for the significant predictors of Enjoyment 3

Step	Variable	cumulative R	R^2 change	cumulative R^2	p
1	Final grade minus pre-course expectation	.35	.12	.12	< .005
2	Final grade minus average grade attained prior to their final grade	.47	.10	.22	< .01

Discussion

The results from the REML analysis suggest that the grades students attained affected their interest and enjoyment of the course. This confirms the already well-established grade-rating effect but adds to that knowledge by suggesting that grades have a more influential effect on enjoyment as a course progresses, and especially once final grades are known. In addition, the REML analysis provided new evidence that grade expectations also influence interest and enjoyment. However, this analysis could not consider whether the effects of grade expectations depended on whether the expectations were confirmed, and to address this issue we carried out correlation and regression analyses at each questionnaire point.

After students had received their mid-semester grades, we examined three conceptually different ways in which this grade might have influenced their enjoyment of the course: the absolute grade (i.e., mid-semester grade alone); the grade relative to grades in past courses; and the grade relative to pre-course expectations. Surprisingly, none of these variables correlated significantly with course enjoyment at this stage. In addition, the stepwise regression analysis showed that although student expectations concerning their course grades were a significant predictor of course enjoyment at this time, the relationship was a weak one, accounting for only 7% of the overall variance.

Our failure to find any relationship between mid-semester grade and course enjoyment stands in striking contrast to previous studies in this area, which have consistently found strong relationships when the effects of grades were measured towards the end of the course. Our failure to find an effect was especially curious given that students' mid-term performance was generally far below their original expectations. For example, 62% of students obtained a lower grade on their mid-semester test than they originally expected to obtain in the course, and 59% did worse than their

average performance coming into the course. Of the students in 1997 who were additionally asked on the first questionnaire whether they expected to do better or worse than their average grade in the past ($N = 22$), only four expected to do worse. Thus, it would have been reasonable to suppose that students were, on average, very disappointed by the grades they received for their mid-term exams, and that this in turn would have adversely affected their enjoyment of the course.

One reason why mid-term grades had little effect on course enjoyment may have been that students did not experience their failure to meet their expectations as true failure. Several studies have suggested that failure information may not be experienced negatively when individuals believe that they can use that information to improve future performance (e.g., Anderson & Rodin, 1989; Baumeister & Tice; 1985; Ryan, Koestner, & Deci, 1991). Also, the mid-semester grade accounted for only 33% of overall grade, so that poor performance at mid-semester did not necessarily mean that the student would not achieve a high grade in the course. Thus, at this stage of the course, disconfirmed grade expectations may not have led to low course enjoyment ratings because students hoped to use this information to help them perform better in future assessments.

Turning to the questionnaire administered at the final exam, this questionnaire was distributed at the same point in the course as in most previous studies of SETs. And, in keeping with these earlier analyses, we too found that grades had a significant effect on course enjoyment at this point. Somewhat curiously, however, our stepwise regression analysis revealed that the best predictor of course enjoyment was the mid-semester grade, rather than the composite of mid-semester and project grade. One possible explanation is that, because the final exam was the same format as the mid-semester exam, students might have regarded their mid-semester grade as the best predictor of what grade they would receive on the final exam. And, since these grades together constituted two-thirds of the overall course grade, students might have regarded their mid-semester grade as the best predictor of their overall course grade. Some evidence that supports the suggestion that students were basing their expectations more on their mid-semester grades than their project grades can be taken from the finding that whilst both mid-semester grade alone ($r = .68, p < .001$) and the composite of mid-semester and project grade ($r = .65, p < .001$) correlated significantly with grade expectation at the final exam, project grade on its own was only weakly correlated ($r = .28, p < .05$).

The second best predictor of enjoyment at the time of the final exam was the relationship between students' grades and the expectations that they had expressed after the mid-semester exam. The third best predictor was the degree to which students' grades differed from their average grade coming into the course. Thus, at the time of the final exam, there was evidence that both absolute grades and grades relative to expectations were predictive of course enjoyment, that is, the higher their grade relative to their original grade expectation, the more they enjoyed the course.

The data for the post-course questionnaire were obtained the following semester, almost two months after students had learned their course grades. In keeping with the general finding that grades affect SETs, we also found a significant positive correlation between final grade and course enjoyment, but a stepwise regression analysis revealed that the only significant predictors of course enjoyment were two relative measures: how the final grade compared to students' pre-course grade expectations, and how the

final grade compared to the average grade prior to the final exam. The best predictor of course enjoyment at this point was, thus, how students' course grades compared to their original expectations; the final grade on its own was not a significant predictor.

One interesting issue arising from the final questionnaire is why the final grade relative to the grade expectation at the time of the final exam did not emerge as a significant predictor of course enjoyment. After all, this expectation was the most informed and probably most realistic expectation prediction of the three that were made, and if students were evaluating grades relative to their expectations it might be thought that this expectation would be particularly influential. The fact that it wasn't suggests to us a more subtle process might have been at work. We suggest that pre-course grade expectations and mid-semester grade expectations essentially represented grades that students hoped for, rather than grades that they realistically expected to obtain. Before the course began, students had relatively little information on which to base a prediction, and even after they received their mid-semester exam result they still had two further opportunities to improve their work and thereby achieve their hoped-for grade. At the final exam, on the other hand, students had most of the information they needed to accurately estimate their course grade: they already knew their mid-semester and project grades, and they had some idea of how well they had just done on the final exam. Students' grade expectations at this point thus probably represented realistic expectations rather than hopes. In line with this analysis, we found that students' expectations became increasingly realistic as the course progressed. The correlation between students' grades expectations at the beginning of the course and their actual grades was .27; the corresponding correlation after mid-semester was .35; and the correlation immediately after the final exam was .58.

Our interpretation of this set of data is that when students are asked what grade they expect to receive in a course, their answers may involve a blend of two components, realistic and aspirational. At the beginning of a course, when they have little information on which to base a response, their answers may primarily reflect the grade they hope to achieve.[1] As the course progresses, however, and they receive feedback which allows them to predict their final grade with increasing accuracy, their answers are increasingly likely to reflect their realistic expectations rather than their hopes. If pre-course expectations primarily reflect students' aspirations, then the finding that overall course enjoyment is better predicted using grade expectations at the beginning of the course, rather than its end, suggests that it is students' initial grade aspirations that determine how they react to their course grade, rather than the more realistic expectations that they have formed by the end. Suppose, for example, that a student initially hopes to achieve an A in a course, but that as the course progresses they realise that the grades they have already earned make it likely that they will eventually receive a B. If they then do receive a B, will they evaluate this grade against their current expectation of a B, or against their earlier aspiration of an A? Our results suggests that they are more likely to evaluate it in terms of their initial aspirations, and thus that it is the disappointment they feel relative to this aspiration that is likely to colour their feelings about the course.

We can develop this interpretation further by considering our earlier analysis of the mid-semester questionnaire, where we suggested that mid-semester grades had surprisingly little impact on course enjoyment because students still hoped to be able

to achieve their course grade. To account for both the mid-semester and post-course results, we suggest that students generally evaluate grades relative to their aspirations, but that what they focus on is not their current grade per se, but rather their chances of achieving their hoped-for grade. At mid-semester, when only one third of the course grade had been determined, our students still hoped to do well, and this allowed them to discount the relatively low grade that they had achieved. Once they knew their course grade, however, it was the relationship between this grade and their original aspiration that influenced their enjoyment of the course.

One implication of our analysis is that in order to understand how grades influence student enjoyment, it is important to consider students' hopes and aspirations at the beginning of the course, rather than the more realistic expectations they form as the course progresses. As we have seen, however, insofar as past studies have examined grade expectations, they have done so only towards the end of courses, and they have used questions that focused on grade expectations rather than aspirations. If our analysis is right, two practical implications follow. The first is that where possible, future studies should incorporate measures at the beginning of a course as well as the end. Moreover, whenever questionnaires are distributed, they should be phrased in such a way as to provide information on students' aspirations as well as their more realistic expectations. We would find it particularly interesting to have studies along these lines conducted in disciplines other than psychology, in order to test the generality of our findings. We know of no reason to expect the results to be different, but it would be useful to have this expectation confirmed.

The relationship between grades and course enjoyment in context

Our discussion to this point might have seemed to imply that the disappointment students feel over low grades substantially biases their evaluations of courses, but this inference would not have been correct. Although we did find a significant effect of grades on course enjoyment, the effect was small in absolute terms, as the grades our students received at mid-semester accounted for only 1% of the variance in their enjoyment of the course at this time, and their final course grades accounted for only 14% of their post-course enjoyment. The magnitude of this effect in past studies has generally been similar: Marsh and Roche (1997) review a number of studies in this area and suggest that the best estimate of the proportion of variance accounted for by grades is probably around 4%.

The relatively small effect in our study is perhaps even more striking if we consider that our students were generally disappointed by their grades. Our pre-course questionnaire ($N = 171$) revealed that students generally started the course with high grade expectations. When they were asked what grade they expected to receive compared to their past grades (1997 only; $N = 99$), 56% said that they expected to do better and only 15% that they expected to do worse. Despite their optimism, however, most failed to fulfil their expectations. When we analysed the data for all students who completed the pre-course questionnaire ($N = 171$), we found that 18% eventually did better than they expected, 14% did the same, and two-thirds (68%) did worse. Also, at the final course questionnaire in 1998, we asked students to what degree they thought they had deserved the grade they had attained. Of the students who responded

($N = 105$), 50% thought they deserved a better grade, 35% thought they got the grade they deserved, and only 16% thought they deserved a lower grade.

The tale therefore seems to be one whereby students expected a lot, achieved less, and were disappointed. This disappointment, however, did not prevent them from rating the course positively. The average rating on the enjoyment scale, from 1 to 6, was 4.16, and the average rating of on the interest scale was 4.45. Moreover, data from the SET questionnaire (also distributed at the final exam) indicated that the course was rated very positively in comparison to other psychology courses. All psychology courses at Stirling include a question in which students are asked to rate the overall quality of the course on a scale from −3 (labelled 'Highly Negative') to + 3 (labelled 'Highly Positive'). The present course received an average rating of + 2.1 for the two years in question, making it one of the most highly rated courses in psychology. (The average rating for other psychology courses at this level ranged from 0 to + 2.3.) Thus, while it is important to recognise that grades can influence students' enjoyment of a course, it is also important to keep this relationship in context, recognising that grades are only one of the determinants of students' evaluations.

Conclusions

Our results suggest several conclusions. First, and perhaps most important, they support Greenwald and Gillmore's suggestion that it is not grades per se that influence students' evaluations of a course but rather how these grades compare to those students expected. Our longitudinal design allowed us to confirm that students' grade expectations at the beginning of a course play an important role in influencing their reactions to the grade they eventually receive, perhaps even the most important role. More broadly, it is interesting to speculate whether students' initial expectations influence their reactions to their entire university experience, as well as to individual courses. If so, it might be in universities' interests to ensure that students' initial expectations are as realistic as possible.

Further analysis of this relationship suggested to us that it is students' aspirations that are particularly critical, rather than their more realistic expectations. That is, it is the grades students would like to receive – or, in some cases, perhaps the grades that they feel they deserve – that shape their emotional reactions to grades, rather than their more realistic estimates of what they will actually achieve. We think this distinction between grade expectations and grade aspirations may be an important one to bear in mind in trying to understand the relationship between grades and course evaluations.

A third possible implication of our study concerns how the relationship between grades and enjoyment changes as a course progresses. We found clear evidence that this relationship does change: our REML analysis revealed that the magnitude of the relationship between grades and course enjoyment changes significantly as the course progressed, and we found similar effects in the relationship between expectations and enjoyment. Moreover, regression analyses confirmed that the best predictors of course enjoyment changed over time. At the mid-term, the best predictor was students' current grade expectation; at the final, the best predictor was the mid-semester grade; after the course was finished, the best predictor was how the course grade compared to the student's pre-course expectation.

Although these shifts in the various relationships were undoubtedly real, our current

suspicion is that the underlying processes were largely constant. That is, we think the primary determinant of how students reacted to grades was whether they believed that their course grade would match or exceed their initial aspirations. As the course progressed, and they received different forms of feedback about how they were doing, their hopes of achieving their aspirations would have shifted, but we think it was this hope that was the critical factor mediating the impact of grades.

NOTE

[1] Note that our use of the term grade aspiration differs somewhat from that of Greenwald and Gillmore (1997a). They define grade aspirations as students' expectations of the grade appropriate for their work, whereas we are defining it as the grade students hope to achieve. Paraphrasing, Greenwald and Gillmore seem to view a grade aspiration as the grade a student regards as fair, whereas we are treating it as the grade the student would like to achieve, whether or not they view it as fair. Also, in our definition students may have grade aspirations even before they have submitted any work.

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