

Anxiety, Depression, and the Anticipation of Future Positive and Negative Experiences

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An experiment is reported that attempts to distinguish between anxious and depressive future thinking in terms of anticipation of future positive and future negative experiences. Anxious, mixed (anxious–depressed), and control participants were given an adapted verbal fluency paradigm to examine the ease with which they could think of future positive and negative personal experiences. Anxious participants differed from controls only in anticipating more future negative experiences; mixed participants showed both greater anticipation of negative experiences and reduced anticipation of positive experiences. Self-report measures of hopelessness and worry followed a similar pattern to future positive and future negative anticipation, respectively. The results are discussed in terms of the distinction between positive affect and negative affect (D. Watson, L. A. Clark, & G. Carey, 1988).

Cognitions relating to the future play an important role in theories of depression (Abramson, Alloy, & Metalsky, 1989; Beck, Rush, Shaw, & Emery, 1979) and anxiety (Barlow, 1988). At the empirical level, anxious and depressed individuals have been found to differ from controls in their perceived likelihood of future self-relevant events (e.g., Butler & Mathews, 1983). It is clearly important to understand the psychological bases of depressive and anxious future thinking. There has been considerable recent interest in distinguishing characteristics of depression from those of anxiety. One influential approach has been based on the idea that affect can be understood in terms of two orthogonal dimensions of positive affect (PA) and negative affect (NA; Watson, Clark, & Tellegen, 1988).

It has been further suggested that anxiety can be thought of as a state of high NA and depression as a combined state of high NA and low PA (Watson, Clark, & Carey, 1988). If affect relates in some direct way to cognitions, anxiety might be related only to increased expectancies concerning negative events; depression, on the other hand, might be related to increased negative expectancies through its high NA component and to reduced positive expectancies through its low PA component. The proposed distinction between positive and negative expectancies is also supported by Marshall, Wortman, Kusalis, Hervig, and Vickers (1992), who argued that self-reported optimism and pessimism are distinct constructs that relate to PA and NA, respectively.

The present study examined anticipation of future positive and negative experiences in relation to anxiety and depression. As depression and anxiety typically co-occur, the original design of the study entailed screening for a group of anxious individuals (who were not also depressed), a group of depressed individuals (who were not also anxious), and a group of individuals who were neither depressed nor anxious. However, despite extensive screening, depressed individuals who were not also anxious were so rare that it proved to be impossible to recruit a group of them, necessitating their substitution by a group of (mixed) individuals who were both anxious and depressed. These three groups of individuals (anxious, mixed, and control) were given an adapted fluency measure of future thinking used by MacLeod, Rose, and Williams (1993), which assesses number of anticipated future positive and negative experiences. Individuals also completed self-report measures of worry and hopelessness, which were expected to capture the global future-directed thinking of individuals with anxiety and depression, respectively.

It was predicted that both anxious and mixed individuals would generate more future negative experiences than controls but that only the mixed individuals would generate fewer positive experiences. It was also predicted that both anxious and mixed individuals would report similarly elevated levels of worry, relative to controls, but that only the mixed group would report higher levels of hopelessness.

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Method

Participants

Seventy-five undergraduates at Royal Holloway University of London participated in this study. They formed an anxious group ($n = 25$; 21 women, 4 men; mean age = 24 years), a mixed group ($n = 25$; 22 women, 3 men; mean age = 21 years), and a control group ($n = 25$; 7 women, 18 men; mean age = 23 years). The groups did not differ significantly in mean age or in sex distribution.

Materials

Self-report questionnaires. Hopelessness was assessed by the Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974), which is a 20 item, true-false measure of generalized negative expectancies about one's own future. Worry was assessed by the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990), which is a 16 item Likert-type scale assessing generalized worry (e.g., "I am always worrying about something"). Both scales have been subjected to research, which has demonstrated good reliability and validity.

Anxiety and depression measure (Goldberg, Bridges, Duncan-Jones, & Grayson, 1988). Anxiety and depression were assessed using scales developed by Goldberg and his colleagues (Goldberg et al., 1987, 1988). These scales have been derived empirically from a standardized psychiatric interview that is based on the Present State Examination (Wing, Cooper, & Sartorius, 1974). The Anxiety Scale items cover the following: feeling keyed up and on edge, generalized worry, irritability, difficulty relaxing, localized tension pains, autonomic symptoms, health worries, poor quality sleep, and delayed sleep. The Depression Scale covers hopelessness, loss of energy, loss of interests, loss of confidence, inefficient thinking, poor appetite, feeling slowed down, early waking, and feeling worse in the mornings. The first four symptoms on each scale are core symptoms. Only if a respondent scores at least one on the depression core symptoms or two on the anxiety core symptoms are the supplementary symptoms assessed.

In addition to initial questions assessing the presence or absence of a symptom, further probe questions are used to assess quality, severity, and duration of any reported symptom, and standardized ratings are made on this basis. The most recent scoring system was adopted where a rating is made on whether the symptom is present to a mild degree (0.5) as well as presence-absence (0-1).

The scales have proved to be effective in discriminating anxious and depressed patients. Eighty-two percent of generalized anxiety disorder patients scored above 5 on the Anxiety Scale, whereas only 13% of major depressed patients did so. In contrast, 85% of the major depressed patients but only 24% of the generalized anxiety patients scored greater than 2 on the Depression Scale (Goldberg et al., 1988). These were the cut-off points adopted in the present study.

An additional question assessing depressed mood was included in the present study. This item had been excluded by Goldberg et al. (1988) on statistical grounds because it fell between the anxiety and depression axes. However, it was included here as an additional criteria for the mixed group (to at least a mild degree), although it was not counted in a participant's depression score.

Interviews were recorded and ratings made by the interviewer (Angela Byrne). A second rater (Andrew K. MacLeod) listened to the taped interviews and made blind ratings on one third of the participants. The two sets of ratings were correlated for each of the items separately, using Kendall's method. These correlations ranged from .73 to 1.00. The correlation between the two raters was .98 for total anxiety scores and .99 for the depression scores.

Personal-future task. This task required participants to think of future experiences occurring over three different time periods—the next week, including today; the next year; and the next 5 to 10 years. Although the time periods were not expected to show differential effects, piloting had shown that participants were more able to generate items where cues specifying particular time periods were used, rather than being presented with the future as a single cue. The time periods were presented verbally, one at a time and in the order given above. There were two conditions, one where participants were asked to think of future positive experiences and the other where they were asked to think of future negative experiences. For each of the three time periods in each of the two conditions, participants were given 1 min to generate as many responses as possible. The number of items generated was re-

corded and a score for each condition was obtained by summing items across the three time periods, excluding only repetitions. In previous work (MacLeod et al., 1993), the task has been found to be effective in eliciting personally relevant responses.

Control task. This is a standard task that provides a general measure of verbal fluency (Lezak, 1976). It involves asking individuals to say as many words as they can think of beginning with each of three letters (*F, A, S*), excluding proper nouns, numbers, the same word with a different suffix, and repetitions. Participants were allowed 1 min for each letter, and the three letters were given in a fixed order. The score was the sum of all acceptable words produced within the three 1-min trials.

Procedure

Participant selection was in two stages. First, 1,800 students at Royal Holloway University of London were randomly selected from College lists and sent a package of questionnaires, including a self-report version of the Goldberg et al. (1988) measure. Participants indicated the extent to which they had experienced each symptom recently (0 = *not at all*; 1 = *a little*; 2 = *a lot*); for the purpose of consistency with the interview scoring, these were counted as scores of 0, 0.5, and 1.0, respectively. This screening was carried out in three batches over a 5-month period and was continued until the required number of participants were found for each group. Of the students sent screening material, 721 (41%) responded.

Participants who met criteria on the self-report measure were invited to take part in the study and were seen individually. However, after some individual testing of selected participants in the first screening batch, two facts became clear. First, the self-report screening version overestimated their scores relative to the interview version, that is, many participants who from self-report appeared to meet criteria for the two experimental groups did not do so when administered the interview. Second, very few participants met depression criteria who were not also anxious. Therefore, a mixed group of anxious and depressed participants was substituted for the depressed group in the design, and participants were henceforth selected for interview as candidates for the mixed and anxious groups only if they exceeded the criteria on the self-report version by at least two points. A total of 99 candidates were tested individually, 24 of whom were excluded because they did not maintain criteria (13 for the anxious group, 9 for the mixed group, and 2 candidates who were tested for the pure depression group early on). A random sample of those meeting control criteria were invited to participate, and all met criteria for the control group at interview.

After completing the control task, participants were presented with the personal-future task. Participants were told that they would be required to think about things occurring to them over three different time periods in the future. It was explained that these could be trivial or important things and that they could be things that the participant knew were going to happen or things that they thought might reasonably happen. Participants were instructed to think of as many things as possible for each time period and were to keep trying until the time limit was up. For the positive condition, they were asked to think of positive things in the future—things that they were looking forward to, things that they would enjoy. For negative events, they were asked to think of negative things in the future—things that they were worried about or not looking forward to. Order of presentation of positive and negative conditions was counterbalanced across participants, with each getting both conditions. The items generated by participants were written down by the experimenter, and the task was also recorded.

Following this task, the anxiety-depression interview was conducted. This semistructured interview lasted between 5 and 25 min, depending on the number of symptoms reported by the participant. Finally, participants completed the BHS and the PSWQ, and they were paid for their participation.

Table 1
Scores and Significance of Differences for Each Group on
PSWQ, BHS, and Control Task

Variable	Group					
	Control		Anxious		Mixed	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PSWQ	36.8 _a	9.2	63.3 _b	8.4	65.0 _a	8.5
BHS	2.2 _a	2.3	5.6 _b	4.3	10.8 _c	5.7
Control task	10.8 _a	2.2	9.8 _a	2.0	12.8 _a	2.6

Note. PSWQ = Penn State Worry Questionnaire; BHS = Beck Hopelessness Scale; Control task = control task for verbal fluency. Horizontal means sharing a subscript do not differ from each other at the $p < .05$ level.

Results

Data analysis was by analysis of variance (ANOVA), followed, where appropriate, by Fisher's protected t tests, the optimal form of familywise error rate protection in designs involving three groups (Levin, Serlin, & Seaman, 1994). For individual comparisons, pooled error terms were used except where homogeneity of variance assumptions were not met, in which case separate variance estimates were used.

Table 1 shows mean scores for each group on the PSWQ, BHS, and the control task. Separate one-way ANOVAs were carried out on each variable. Table 1 also indicates the significance of differences between groups on each variable.

There was a significant main effect of group on PSWQ, $F(2, 72) = 82.9, p < .001$. As predicted, the scores of the mixed group and the anxious group were significantly higher than those of controls (both $ps < .01$) and did not differ from each other. There was also a significant main effect of group on BHS, $F(2, 72) = 24.9, p < .001$. Also as predicted, the mixed participants' levels of self-reported hopelessness were significantly greater than those of both the anxious and the control participants (both $ps < .01$). However, the anxious group did show significantly higher BHS scores than controls ($p < .01$). This may be explained by the fact that, although none met criteria for depression, the anxious participants did show more depressive symptoms than controls. Whereas none of the control group scored on any depressive symptom, 15 of the anxious group showed some subthreshold depression score. There was no significant group difference in general verbal fluency, $F(2, 72) = 0.1, ns$, indicating that the three groups were comparable on general cognitive performance relevant to the personal-future task.

For the personal-future task, boxplots revealed several outliers across different conditions. These outliers were dealt with through winsorizing (Winer, 1971), where equal numbers from each end of the distribution containing outliers are replaced with the nearest nonoutlier values. A Group (anxious, mixed, control) \times Valence (positive, negative) ANOVA was then carried out on total items produced. There was a significant main effect of valence, $F(1, 72) = 51.3, p < .001$, as well as a significant Group \times Valence interaction, $F(2, 72) = 19.7, p < .001$. The means and standard deviations of each group in each con-

dition are shown in Table 2. To clarify the source of the interaction and address the main hypotheses, we conducted separate analyses for positive and negative conditions.

Analysis of the negative condition revealed a significant overall group difference, $F(2, 72) = 6.7, p < .01$, because the control group generated significantly fewer negative experiences than both the anxious group ($p < .05$) and the mixed group ($p < .01$), whereas the anxious and mixed groups did not differ significantly from each other.

Analysis of the positive condition also revealed a significant overall group difference, $F(2, 72) = 4.4, p < .05$, because the mixed group produced significantly fewer positive experiences than both the anxious group ($p < .05$) and the control group ($p < .01$), but the anxious group did not differ significantly from the control group. Thus, the two main predictions were supported, with both the anxious and the mixed group showing significantly increased anticipation of future negative experiences, but only the mixed group showing significantly decreased anticipation of future positive experiences.

To check that differences were consistent across the different time periods, we conducted a Group (control, anxious, mixed) \times Period (week, year, 5 to 10 years) ANOVA for both positive and negative conditions, with the Group \times Period interaction being the focus of interest. This interaction was nonsignificant for both the positive condition ($F < 1$) and the negative condition ($F < 1$).

Discussion

In large part, the hypotheses were supported: Both anxious and mixed participants generated significantly more negative future experiences than controls, but only the mixed participants generated fewer positive future experiences than controls. Relative to controls, both groups reported similarly elevated levels of worry. The anxious group reported some elevation in self-reported hopelessness on the BHS, although that was consistent with their subthreshold elevations on depression; the mixed group showed substantially elevated levels of self-reported hopelessness.

The results are consistent with the view that anxiety is associated with increased negative future thinking but not with decreased positive future thinking, whereas depression is associated with both increased negative and decreased positive future thinking. However, the major limitation in drawing this conclusion is

Table 2
Total Personal Future Task Scores for Each
Group in Each Condition

Condition	Group					
	Control		Anxious		Mixed	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive	22.7 _a	9.2	20.3 _a	6.9	16.9 _b	3.4
Negative	12.5 _a	4.9	15.6 _b	4.8	17.1 _b	4.1

Note. Horizontal means sharing a subscript do not differ from each other at the $p < .05$ level.

that there was no pure depressed group in the study. Although it can reasonably be inferred that the decreased positive anticipation of the mixed group arose because those individuals were depressed, the effect could also have arisen specifically because they were depressed and anxious. The increased negative expectancies could have arisen because the mixed participants were anxious, or because they were depressed, or because they were both anxious and depressed. Having categorized participants on the basis of their anxiety and depression scores, it was not possible to use these variables in a continuous way (e.g., for covariance analysis), because the distributions were far from normal; furthermore, participants' scores were not directly comparable because not all of them were assessed on all symptoms. It was therefore not possible in the present study to separate out the contribution of anxiety and depression to the higher levels of worry and increased negative anticipation shown by the mixed group. Future research may be able to address this issue by recruiting a group of exclusively depressed individuals, or, alternatively, by treating depressive and anxious symptoms as continuous variables and dealing with the overlap statistically.

There were a number of other limitations of the present study. One limitation lies in the fact that the sample was not a clinical sample. The use of a student sample had the benefit of enabling screening to select at least an exclusively anxious group, and the criteria used should have produced individuals with at least a 50% chance of having a clinically important disturbance (Goldberg et al., 1987). Nevertheless, it is an open question whether the results would be found in clinical samples. Similarly, the method of assessing anxiety and depression was not developed specifically with student samples. Future research could easily address these issues by using formally diagnosed patient samples, although in the process it is also likely to encounter the problem of mixed individuals.

Clearly, the particular measure of future thinking used in any study is going to influence the results. The measure used here had high face validity, and previous work had shown that it asked for individuals' thoughts about their own future in a way in which they could easily engage. However, cues such as "things you are worried about" or "things you enjoy" obviously overlap semantically with the descriptors used to characterize someone as anxious or depressed and therefore run the risk of confounding dependent and independent variables. Set against this, the measure—number of future items generated—is clearly quite different from a broad description of a current state of mind, and it is therefore unlikely that a relationship would emerge simply through shared measurement variance.

Assessing future-thinking patterns is a relatively undeveloped area. Research could usefully try to look at the same issues addressed by the current study using a variety of methods to measure future thinking. There may also be qualitative, rather than simply quantitative, differences in the types of outcomes individuals anticipate, which different measures could assess. In addition, the measure used here takes no account of actual life

circumstances, and future research could examine the extent to which expectancies relate to current and future circumstances. What is clear is that future thinking is an important component of emotional disturbance, and understanding of emotional disturbance could benefit from increased understanding of future thinking.

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