

UNPLEASANT AND PLEASANT EVENTS, AND MOOD¹

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Investigated the relationships between the daily occurrence of aversive events, depressed mood, and the enjoyment of pleasant events in a sample of 21 depressed patients. Participants were assessed pre-, post-, and 1 month after treatment, on the Pleasant Events Schedule, the Unpleasant Events Schedule, MMPI, Beck Depression Inventory and Grinker Interview Checklist. During treatment participants rated their mood and also indicated the occurrence and degree of (un)pleasantness for 80 of their most pleasant and for 80 of their most unpleasant events each day over a 42-day period. Significant associations were found between depressed mood and unpleasant events, and between unpleasant events and the pleasantness of pleasant events. There was also a significant decrease in experienced aversiveness concomitant with clinical improvement.

The relationship between the occurrence of aversive life events² and depression has been of longstanding interest. Given impetus by Holmes and Rahe's successful quantification of stressful life events via the Schedule of Recent Experience (Holmes & Rahe, 1967) investigators (e.g., Brown, Bhrolchaim, & Harris, 1975; Paykel, Myers, Dienelt, Klerman, Lindenthal, & Pepper, 1969), generally have reported an elevated incidence of stressful life events during the period that preceded the onset of depression. Depressives also are reportedly more sensitive to aversive contingencies. Stewart (Note 1) found the latency of responding to be especially slow in depressives after the incidence of a negative social reaction (e.g., being criticized, disagreed with, etc.). Libet, Lewinsohn, and Javorek (Note 2) reported a greater attenuation of behavior rate for depressives than for the controls after a reaction from "aversive" persons in a group situation. Lewinsohn, Lobitz, and

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²In this study aversive life events are defined as members of a set of events (e.g., death of a close friend, losing one's job), stimuli (e.g., strong electric shock), and behaviors (e.g., cleaning up a mess), which are experienced by the individual to whom they occur as unpleasant, painful, noxious, or distressing. It is assumed that individuals are motivated to avoid or to terminate such events. The words aversive and unpleasant are used interchangeably.

Wilson (1973) measured autonomic response (GSR) to electric shock; depressed Ss were found to emit larger autonomic responses to the shock. Schless, Schwartz, Goetz, and Mendels (1974) reported depressives to rate specific stressful life events as more aversive than a nondepressed control group. These findings were replicated in a recent study by Lewinsohn and Talkington (1979).

The present investigation investigated the relationship between the daily occurrence of aversive life events and mood level within depressives. Specifically, it was predicted (H_1) that there would be a significant association between the rate of occurrence of aversive events and daily fluctuations in mood level, i.e., the greater the number of aversive events, the higher the dysphoria level. This prediction is a logical extension of the previously reported findings of higher incidences of stressful life events in close temporal proximity to the occurrence of depression. By the same reasoning, it also was predicted (H_2) that a diminution of experienced aversiveness would be associated with clinical improvement.

Assuming that the above mentioned predictions are confirmed, the issue of the mechanism(s) by which the occurrence of aversive events might lead to depression needs to be addressed. Three hypotheses, which are not mutually exclusive, may be suggested: (1) Based on Seligman's (1975) theorizing, the occurrence of aversive life events (many of which probably are, or are perceived to be, uncontrollable) may be expected to lead to a state of helplessness (the expectation that responding is independent of reinforcement) which, in turn, would result in the motivational manifestations (reduced responding), cognitive features (interference with later instrumental learning) and emotional components (fear, followed by depression) of the learned helplessness syndrome that he assumes to be analogous to clinical depression; (2) within a reduced rate of response-contingent positive reinforcement paradigm (Lewinsohn, Weinstein, & Shaw, 1969), an elevated rate of occurrence of aversive events, and heightened sensitivity to such events, would be expected to result in avoidance and withdrawal from aversive situations. The short-term consequence of greater isolation and the long-term consequence of less skill acquisition would be expected to increase the probability that the individual would be in a condition of low positive reinforcement; and (3) the occurrence of aversive events may reduce the enjoyment (potential reinforcement value) of behaviors and events that occur in close temporal proximity to aversive events. For example, the person who has just received distressing news may derive less enjoyment from a subsequent social interaction than one who has not received distressing news. This speculation is consistent with depressed patients' reports that it only takes one upsetting incident (e.g., an argument with their spouse) to "ruin" the rest of their day. The prediction (H_3) of a negative association between the rate of occurrence of aversive events and the subjective enjoyment of pleasant events is of special interest because its confirmation would provide a conceptual bridge between the "low rate of response-contingent positive reinforcement" hypothesis and the effect of aversive events on depression. Support of H_3 also would be consistent with Costello's (1973) hypothesis about the importance of the "loss of reinforcer effectiveness" for the occurrence of depression.

METHOD

Subjects

Twenty-one depressed individuals, recruited through public announcements and through referrals from community agencies and physicians, participated in this study and received treatment for depression at the University of Oregon Psychology Clinic. The mean age of the group was 30.6 years, and it included 11 males and 10 females. A two-stage screening procedure that involved cut-off scores on selected MMPI scales and on the depression factors identified by Grinker, Miller, Sabshin, Nunn, and Nunnally (1961) was used. To be included, participants had to meet the following three criteria: (a) MMPI D Scale > 80, or D \geq 70

and $D \geq$ other MMPI clinical scales; (b) Grinker Factor I (Dysphoria) ≥ 1.0 and mean of other Grinker factors $\geq .70$; and (c) Depression rated as the major presenting problem for the intake interviewer. The mean D (T score) for the sample was 93. Individuals with serious health problems, alcoholism, and bipolar affective disorder were excluded. Previous experience has indicated that the two-stage criteria identify persons in whom depression is present to a clinically significant degree and for whom being depressed constitutes the major presenting psychopathology (Lewinsohn, Biglan, & Zeiss, 1976). The present sample of depressives may be considered to be predominantly neurotic and unipolar with severity level that ranged from moderate to severe. Waiver of treatment fees was contingent upon completion of all experimental procedures. Each participant signed an informed consent form.

Assessment

Pre-post measures. A member of the staff rated each participant, on the basis of a semi-structured clinical interview, on the 25 items of the Feelings and Concerns Checklist developed by Grinker et al. (1961). The items represent the most common symptoms of depression. Each was rated on a 4-point scale (0—not present; 1—present to slight extent; 2—present to a moderate extent; 3—present to a marked extent). The interviewers had been trained carefully in the use of the scales. Interrater reliability for individual items (average $r = .69$) on 30 previous Ss was satisfactory (Lewinsohn, Zeiss, Zeiss, & Haller, 1977).

In addition, participants took the MMPI, the Beck Depression Inventory (Beck, 1967), the Unpleasant Events Schedule, Form II (Lewinsohn, Note 3), and the Pleasant Events Schedule, Form III (MacPhillamy & Lewinsohn, Note 4). The Unpleasant and Pleasant Events Schedules each consist of 320 events and activities that were generated after a very extensive search of the universe of unpleasant and pleasant events. The participants rated each item on a 3-point scale of frequency and a 3-point scale of both pleasantness and unpleasantness based on the past 30 days. Three scores were computed for each schedule: (a) mean frequency, presumed to be indicative of the rate of occurrence of the events; (b) mean enjoyability (aversiveness), presumed to measure the potential for pleasantness (aversiveness); and (c) mean cross-product, obtained by multiplying the frequency and enjoyability (aversiveness) ratings for each event summed across all events, and presumed to measure total experienced pleasure (aversiveness).

Daily Self-monitoring. An Activity Schedule, which consisted of 80 events judged by the participant to be most pleasant on the Pleasant Events Schedule and 80 events judged by the participant to be most aversive on the Unpleasant Events Schedule, was constructed for each participant. The participants were asked to rate each item from their schedule on a 4-point scale from 0 to 3 at the end of each day in order to indicate whether the event had not occurred (0), had occurred and was experienced as pleasant (1), neutral (2), or unpleasant (3). Based on these daily self-monitoring data the following scores were computed: (a) daily raw pleasant and unpleasant activity scores, obtained by summing the number of pleasant or unpleasant activities that occurred (rating $\neq 0$); (b) daily weighted pleasant and unpleasant activity scores, obtained by summing the number of activities that occurred and were rated as pleasant (rating 1) or unpleasant (rating 3); and (c) daily mean pleasantness and unpleasantness scores, obtained by summing experienced pleasantness and unpleasantness ratings separately for the 80 pleasant and for the 80 unpleasant events and dividing by daily number occurred.

The participants also were asked to fill out on a daily basis one of the alternate forms of the Depression Adjective Checklists (Lubin, 1965). Daily mood scores, based on the number of negative items checked plus the number of positive items not checked, were computed. Product-moment correlation coefficients were com-

puted between each of the daily self-monitoring scores and the daily mood scores across days ($N = 42$) separately for each participant.

Treatment. Participants were assigned randomly to therapists (2-3 participants per therapist) for treatment. The therapists were graduate students in Counseling Psychology, who had received intensive training in the treatment procedure. Treatment was time limited (two sessions per week for 6 weeks) and made use of a treatment manual ("Increase Pleasant Activities") described in more detail elsewhere (Zeiss, Lewinsohn, & Munoz, 1979). The goal of treatment was to assist participants to increase their rate of engagement in the pleasant activities. The treatment manual suggests specific interventions to be used by the therapist, but the exact order and timing of these varied across participants.

RESULTS

Hypothesis 1. A significant association will exist between the rate of occurrence of aversive events and daily fluctuations in mood level. The mean correlations (averaged across Ss) between daily raw occurrences (rating $\neq 0$) of unpleasant events and mood ($r = .33$, $t = 4.6$, $df = 20$, $p < .001$) and between weighted occurrences (rating = 3) of unpleasant events and mood ($r = .42$, $t = 6.4$, $df = 20$, $p < .001$) were both statistically significant. The results thus are consistent with the expectation of a significant association between the rate of occurrence of aversive events and daily fluctuations in mood level (H_1). While the mean correlation of weighted unpleasant activities and mood was greater than the mean correlation of raw unpleasant activities and mood, the difference between the two r s did not attain statistical significance ($t = .6$, $df = 20$, ns).

The analogous relationship for pleasant activities as represented by the mean correlations (across Ss) between daily raw (ratings $\neq 0$) ($r = -.45$, $t = 8.0$, $df = 20$, $p < .001$) and weighted (ratings = 2) ($r = -.56$, $t = 8.75$, $df = 20$, $p < .001$) occurrence of pleasant activities and mood are also significant and, hence, replicate earlier findings (Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972). Again the correlation was higher when the quality of the experience was taken into consideration, although the difference between the two r s did not attain statistical significance ($t = 1.6$, $df = 20$, ns).

Hypothesis 2. A diminution of experienced aversiveness will be associated with clinical improvement. As a group, the participants manifested significant ($p < .001$) improvement over the three time periods on the two depression measures (see Table 1). As can be seen, the greatest improvement occurred between pre- and

TABLE 1

Ss' AGE AND SEX, AND DEPRESSION MEASURE SCORES FOR THE THREE ASSESSMENT PERIODS

	All Ss $N = 21$	More improved subgroup $N = 9$	Less improved subgroup $N = 9$
Mean Age	30.6	29.0	30.1
% female	47	44	44
MMPI-D T1	93	93	92
T2	71	56	83
T3	77	71	84
Beck Depression Inventory			
T1	25	26	26
T2	8	4	12
T3	6	2	11

posttreatment. According to H_2 , a decrease in experienced aversiveness was expected to correspond with clinical improvement. Specifically, it was predicted that there would be a decrease in the Unpleasant Events cross product scores (shown in Table 2) and on the daily self-monitoring unpleasant events scores (shown in Table 3). As can be seen, the results strongly support H_2 . Consistent with the goals of treatment, there was also a significant increase in rate of engagement in pleasant activities.

TABLE 2
PRE-, POST-, AND 1-MONTH POSTTREATMENT UNPLEASANT EVENTS SCHEDULE AND PLEASANT EVENTS SCHEDULE SCORES

Ues variable	T	All Ss N = 21	F (Across T's)	More improved N = 9	Less improved N = 9	F (Between groups)	F (Across T's)	F (Inter- action)
\bar{X} Frequency	1	.619	10.4***	.571	.617	<1	11.6***	<1
	2	.522		.456	.508			
	3	.511		.474	.494			
\bar{X} Aversiveness	1	1.079	<1	1.032	1.073	<1	<1	<1
	2	1.095		1.143	1.030			
	3	.994		1.016	.972			
\bar{X} Cross Product	1	.682	9.0***	.609	.683	<1	8.6***	<1
	2	.508		.419	.497			
	3	.482		.444	.470			

Pes variable	T	All Ss N = 21	F (Across T's)	More improved N = 9	Less improved N = 9	F (Between groups)	F (Across T's)	F (Inter- action)
\bar{X} Frequency	1	.674	6.5**	.708	.611	4.0	9.0***	<1
	2	.757		.828	.649			
	3	.690		.707	.589			
\bar{X} Enjoyability	1	1.000	<1	1.033	.923	3.8	3.2*	<1
	2	1.093		1.250	.919			
	3	.970		.987	.856			
\bar{X} Cross Product	1	.793	5.5**	.887	.650	7.1*	6.5**	<1
	2	1.057		1.303	.767			
	3	.858		.902	.644			

* $p \leq .05$.
** $p \leq .01$.
*** $p \leq .001$.

As is usually the case, there were large differences among participants in the amount of improvement in clinical depression level. To permit a further test of H_2 , residual gain scores based on MMPI-D from T_1 to T_2 were computed. The participants then were dichotomized into more and less improved subgroups. Three participants whose scores were close to the median were not included. The use of residual gain scores insures that the change measure is independent of base level. As indicated in Table 1, the residual gain scores were successful in this regard.

The relevant scores for the more and less improved subgroups on the Unpleasant Events Schedule and self-monitoring scores are shown in Tables 2³ and

TABLE 3
MEAN MOOD AND DAILY SELF-MONITORING SCORES

Groups	Days				<i>F</i> (Between groups)	<i>F</i> (Across days)	<i>F</i> (Inter- action)	
	1-10	11-20	21-30	31-42				
Depression	All Ss	<i>N</i> = 21	13.5	12.4	11.0	9.1	14.4***	<1
Adjective	More improved	<i>N</i> = 9	11.6	10.3	8.6	6.0	5.6*	<1
Checklist	Less improved	<i>N</i> = 9	15.8	15.2	14.4	13.1		
Raw	All Ss	<i>N</i> = 21	16.1	14.1	12.4	11.4	12.3***	
unpleasant	More improved	<i>N</i> = 9	13.7	11.3	9.7	8.9	<1	<1
Events	Less improved	<i>N</i> = 9	16.8	13.6	13.1	11.8		
Weighted	All Ss	<i>N</i> = 21	11.5	9.9	8.8	7.5	8.9***	
unpleasant	More improved	<i>N</i> = 9	9.9	7.6	6.0	4.9	<1	<1
Events	Less improved	<i>N</i> = 9	12.3	10.00	10.2	9.4		
Mean	All Ss	<i>N</i> = 21	2.63	2.62	2.61	2.52	3.2*	
unpleasant-	More improved	<i>N</i> = 9	2.62	2.56	2.54	2.36	<1	7.36***
ness	Less improved	<i>N</i> = 9	2.66	2.66	2.67	2.72		
Raw	All Ss	<i>N</i> = 21	27.1	27.4	30.6	32.6	17.2***	
pleasant	More improved	<i>N</i> = 9	28.9	29.4	32.3	34.4	<1	<1
Events	Less improved	<i>N</i> = 9	24.1	23.8	26.4	28.4		
Weighted	All Ss	<i>N</i> = 21	19.2	22.7	27.5	30.3	40.1***	
pleasant	More improved	<i>N</i> = 9	21.2	24.8	29.7	32.5	<1	<1
Events	Less improved	<i>N</i> = 9	16.5	20.0	23.3	25.8		
Mean	All Ss	<i>N</i> = 21	1.35	1.21	1.14	1.09	46.5***	
pleasant-	More improved	<i>N</i> = 9	1.31	1.18	1.09	1.05	<1	<1
ness	Less improved	<i>N</i> = 9	1.37	1.23	1.19	1.13		

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

3. As can be seen, there is a consistent tendency for the more improved subgroup to show a greater decrease on the various aversiveness measures. However, these differences attain statistical significance (Interaction) in only one instance: The mean unpleasantness value. The corresponding pleasant activities scores, while not of major concern, also consistently show greater change for the more improved subgroup.

Hypothesis 3. Based on H_3 , a negative relationship was predicted between the daily occurrence of unpleasant events and the mean pleasantness of pleasant events, i.e., the experienced pleasantness of pleasant activities was expected to be lower on days with a high occurrence of both raw and weighted unpleasant events and vice versa. As predicted, the mean correlations (averaged across Ss) between experienced pleasantness of daily pleasant activities with raw ($r = -.41$, $t = 4.7$, $df = 20$, $p < .001$) and with weighted ($r = -.41$, $t = 4.6$, $df = 20$, $p < .001$) unpleasant events were highly significant. Thus, the null hypothesis was strongly rejected. It is important to note that the mean correlation between the daily raw occurrence of pleasant and unpleasant events ($r = -.06$, $t = .6$, $df = 20$, *ns*) did not differ significantly from zero, which indicates that the occurrence of aversive events affects the quality of pleasant events without a concomitant effect on their rate of occurrence.

³On some Ues variables the total mean is higher than either of the two subgroups. This is due to the 3 Ss who were excluded because their residual gain scores on the MMPI-D from T_1 to T_2 were close to the median and who had especially high scores on these variables.

Although no a priori prediction had been made, the analogous question with regard to the relationships between the daily occurrence of raw and weighted pleasant events and the mean aversiveness of unpleasant events was also of interest. These mean correlations between mean aversiveness of unpleasant events and raw ($r = -.23, p < .01$) and weighted ($r = -.24, p < .01$) occurrence of pleasant events were also statistically significant, which indicates that a high level of occurrence of raw and weighted pleasant events attenuates the experienced aversiveness of unpleasant events.

DISCUSSION

Taken in their totality, the results strongly support the hypotheses under investigation: (1) There was a significant association between daily rate of occurrence of unpleasant events and mood level; (2) improvement in clinical depression level was accompanied by a decrease in experienced aversiveness; and (3) a high rate of occurrence of aversive events was associated with a reduction in the pleasantness of pleasant events.

The findings of this study are based on a relatively small number of participants and need to be cross-validated.⁴ It also should be noted that the reported relationships are based on correlational data and thus do not prove the direction of causality. While we interpret the results as suggesting that an increase in unpleasant events leads to feelings of dysphoria, equally plausible is the possibility that persons who feel dysphoric are more likely to notice, and perhaps even be confronted by more aversive events. The present study also points to a methodology for (a) obtaining a quantitative measure of the daily rate of occurrence of aversive events in a given patient's life; (b) determining the magnitude of the relationship between the occurrence of such events and mood level; and (c) pinpointing a small number of aversive events as targets for therapeutic intervention.

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⁴In a recent article Rehm (1978) reports results that in many respects are very similar to ours with nondepressed samples.

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