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Depressive Deficits in Word Identification and Recall

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Depressed and nondepressed adults rated positive, negative, and neutral nouns for their emotional value or their physical curvature. Next, they tried to identify previously rated and unrated words that were presented quite briefly and masked. Depressed subjects' identification showed a reduced effect of prior exposure in the curvature task but no deficit when words had been rated for emotion. On a subsequent test of free recall, both a depressive deficit and a rating effect obtained. These results suggest that depressed people are less likely to process beyond the requirements of the task.

INTRODUCTION

Depressive deficits in measures of memory occur mainly when the tasks permit variation in individual control of processing. Nondepressed subjects spontaneously engage uninstructed procedures, whereas depressed subjects are more likely to do merely what they are told. This proposed difference can be subsumed under the term: Depressive deficits in cognitive initiative (Hertel & Hardin, 1990). Deficient initiative during initial exposure to materials or during subsequent tests of memory can result in impaired performance on a variety of such tests.

"Cognitive initiative" is another term for cognitive self-control. A similar concept, effortful or controlled processing, plays a central role in many cognitive theories (see Hasher & Zacks, 1979; Posner & Snyder,

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1975). These theories propose that a continuum ranging from automatic to controlled processing represents the degree to which attention characterises the cognitive operations in question. This continuum does not, however, capture the varying extent to which controlled procedures are wilfully initiated versus cued by external characteristics of the task. Consider as a example the laboratory requirement to decide if a word fits sensibly into a sentence frame—a decision that requires attention to the meaning of the word and the frame. Some subjects will make that decision quickly and then wait for the next trial, whereas others will continue to attend to the word in the context of the sentence and further elaborate its meaning. This difference reflects the extent to which controlled procedures are initiated by the subject. Moreover, the difference can be reduced through external control, such as the requirement to repeat the word and report the decision at the end of the trial.

Support for the initiative account of depressive deficits comes from tests of recognition, free recall, and metacognitive judgements (Channon, Baker, & Robertson, 1993; Hertel, submitted; Hertel & Hardin, 1990; Hertel & Rude, 1991; Slife & Weaver, 1992). For example, Hertel and Rude (1991) varied the degree of constraint inherent in the incidental learning task of deciding whether words fit sensibly into sentence frames. Clinically depressed subjects subsequently recalled fewer words than did nondepressed controls or subjects recovered from depressive episodes, but only after having participated under relatively unconstrained learning conditions. Maintaining depressed subjects' focus during the learning task (by requiring that they repeat the word and report the decision at the end of each 8 second trial) eliminated the depressive deficit in later free recall. This finding indicates that the performance of depressed subjects in the unconstrained condition suffered from reduced initiative in attending to the words in the context of the frames. Rather than focusing their attention on the task at hand, they allowed their minds to wander or go blank (see Watts & Sharrock, 1985).

Hertel and Rude's (1991) findings demonstrate the general importance of cognitive initiative during initial exposure, but they do not delineate the specific procedures that were underemployed. The word itself might have received reduced attention, or the sentence frame might not have been used to its best elaborative advantage in establishing routes for later recall. The experiment reported below was designed to pinpoint deficits in initiative at the level of attending to words during their first exposure. This issue was addressed by using an indirect test of memory (see Johnson & Hasher, 1987). As explained next, this test reflects the extent to which words have been integrated as lexical units during their prior exposure.

Direct tests, such as free recall, are those that place subjects in the position of deliberately attempting to remember past events. They are

sensitive to variations in prior elaborative processing and to strategies for retrieval. In contrast, indirect tests are designed to assess more automatic effects of past experience on a current task that is not purported to be a test of memory. The indirect test employed in this research was the word-identification test. After initial exposure to a list, words from the list and new words are presented very briefly (typically 34 milliseconds) on a computer screen and followed by perceptual masks. The subject's task is to read the words aloud. Identification serves as a test of memory because previously exposed words are identified more frequently than are new words; it serves as an *indirect* test because conscious attention is devoted to the present task of reading, rather than to the problem of remembering past events.[1]

The word-identification test is well suited to the job of distinguishing among the procedures that might have been initiated during earlier exposure (e.g. integrating letters into lexical units versus elaborating the meaning of those units by thinking of related words or episodes). We know, for example, that manipulations of elaborative processing, that typically affect performance on direct tests of memory, often have no effects or opposite effects on word identification (e.g. Jacoby, 1983; Jacoby & Dallas, 1981). The levels-of-processing effect (better memory for conceptually processed words than for words processed nonconceptually) is not typically obtained (see Challis & Brodbeck, 1992). Instead, identification is sensitive to changes in typography and other visual characteristics with respect to the initial display (Graf & Ryan, 1990; Jacoby, 1983; Jacoby & Hayman, 1987).

To capitalise on these findings regarding the physical versus conceptual features of words, the design of the present experiment included a processing manipulation in the initial phase; half of the words were rated for their emotional value to the subjects and the other half were rated for physical curvature (how round or angular the shape of the word appeared). This manipulation loosely conforms to a levels-of-processing manipulation. In order to rate emotional value, the subjects must attend to the meaning of the word, whereas the curvature ratings do not require conceptual processing. Indeed, the curvature ratings do not require the letters to be integrated as a unit in any way other than their physical shape; the word as a lexical or semantic unit need not be processed.

This difference between the two rating tasks is central to the present concern, because it presents the opportunity for initiative in reading the

[1] Probably no test of memory is a pure measure of either automatic or controlled use of prior experience (see Jacoby, Toth, & Yonelinas, 1993). In comparison to other indirect tests (e.g. stem completion), however, word identification presents little opportunity for conscious reflection on the prior occurrence of the word.

words in one of the rating conditions. Further, a number of investigations have demonstrated that word integration is a sufficient prerequisite for obtaining effects of prior exposure on subsequent word identification (e.g. Hayman & Jacoby, 1989; Whittlesea & Cantwell, 1987). Consequently, if depressed subjects voluntarily attend to the words *per se* in the nonconceptual task less frequently than do nondepressed subjects, their performance on word identification should show a reduced effect of prior exposure. In contrast, we should not observe a depressive impairment in identification of words that had been rated for emotional value; subjects were expected to profit similarly from having read those words in the earlier phase. Further, the use of emotion ratings in place of other conceptual tasks was intended to ensure this finding, on the belief that emotional matters are central to the concerns of depressed people (see Williams, Watts, MacLeod, & Mathews, 1988).

Finally, the indirect test was followed by a test of free recall of rated words. Although the results of this test must be interpreted cautiously, given additional exposure on the test of word identification, it was included for the purposes of replicating the ubiquitous finding of a depressive deficit in free recall (e.g. Ellis, Thomas, & Rodriguez, 1984) and demonstrating a functional dissociation with respect to direct and indirect measures of depressive memory (see Roediger & McDermott, 1992). In the present context, a functional dissociation is predicted only for words rated according to their emotional value. Such words should produce depressive deficits on the direct test, but not on the indirect test. If depressed subjects voluntarily attend to fewer words on the curvature task, however, these words should be both less frequently identified and less available for intentional retrieval.

In summary of the method: Depressed and nondepressed subjects participated in an experiment with four main phases. First, they rated a set of emotional and neutral words for their emotional value and another set of like words for physical curvature. Secondly, they performed a test of word identification by attempting to read previously rated and new words that appeared very briefly. Thirdly, they attempted free recall of rated words. Finally, they were assessed for verbal intelligence, depression, and anxiety.

In review of the expectations: (a) Depressive deficits should occur at the level of integrating letters into words when this procedure is not required; that is, the effect of prior exposure in the curvature task on later identification should be reduced for depressed subjects. (b) Depressed subjects should recall fewer words overall. In short, I hoped to find evidence for deficient attentional and elaborative processing in depression by way of their presumed effects on word identification and free recall, respectively.

METHOD

Materials

We selected 64 nouns according to their emotional value from norms established by Brown and Ure (1969) and Rubin and Friendly (1986) and according to frequencies determined by Kucera and Francis (1967). No attempt was made to control for inter-item association. Sixteen words were positive, 16 negative, and 32 neutral in emotional tone. Ratings for emotional words exceeded 5.0 on a 7-point scale; they fell below 2.8 for neutral words; means were 5.6 (emotional) and 2.2 (neutral). Mean word frequencies were 48 (emotional) and 43 (neutral). Numbers of letters ranged from 4 to 9; means were 6.0 for both emotional and neutral words.

Rating Lists. The 64 nouns were arranged into four sets that each included 4 positive, 4 negative, and 8 neutral words. In arranging them, we attempted to produce similar means on the emotional norms, frequences, and numbers of letters, both across types of words within sets (where appropriate) and across sets within types of words. The 4 sets were combined into 2 lists, with 2 blocks of 16 words in each, such that the means on the various dimensions were nearly equal across the 2 lists. Each block began with a neutral word, but was otherwise arranged randomly. For each subject, just one list was employed during the rating tasks, with one block assigned for emotional ratings and the other for curvature ratings. The other list served as new (unrated) words on the test of word identification.

Word Identification. The 64 nouns all appeared on the test list. They were arranged into blocks of 16, such that each block contained 1 positive, 1 negative, and 2 neutral words from each of the 4 sets used in the rating tasks (2 lists, each with 2 blocks). The order of words within each block was constrained so that not more than 2 words from the same rating-task set occurred consecutively; otherwise it was random.

A practice list was used as a method of selecting the duration of exposure for each subject on the word-identification test. (This practice is designed to avoid individual floor and ceiling effects.) It consisted of 18 additional words with approximately the same characteristics as the neutral experimental words. Six of these words were again used in practice trials at the beginning of the test.

Procedure

As part of the procedure for informed consent, subjects were told that they would be making different kinds of decisions about words presented on the monitor (attached to an IBM-XT computer). The practice program

began with instructions that were also rephrased aloud by the experimenter, who then invited questions. Instructions emphasised the very brief duration of the upcoming words and the speed of their presentation. Subjects were advised that they might not believe that they actually saw a word and encouraged to blurt out a guess because it did not matter if they were right or wrong. Instructions ended with the warning to fix their gaze at the centre of the screen. The 18 words on the practice test were arranged in blocks of 3; in each block the first word was exposed for 133msec, the second for 100msec, and the third for 67msec. Each word was centred on the row and line and masked by a row of 10 ampersands, exposed for 33msec in the same location. A 2500msec blank screen separated trials. (Words in all tasks were displayed in white letters against a black background.) Subjects read the words aloud, and the experimenter checked the accuracy of the response. Only exact readings were counted as accurate. With this information in hand, the experimenter determined the exposure duration for the main test by identifying the duration on the practice task that produced either two or three correct identifications out of the six attempts. If 133msec or 100msec were so identified, then 33msec were subtracted to produce the duration for the later test. If the identified duration was 67msec, however, 50msec was selected for the test. Subjects who identified four or more words presented at 67msec were assigned to a 33msec duration.

Next, subjects performed the rating tasks, with instructions and materials presented on the monitor. Half of the subjects rated the first block of 16 words for their emotional value and the second block for curvature; the remaining subjects received the reversed order. The order of the two blocks of words was counterbalanced with the order of the rating tasks. Instructions were given before each block and augmented by the experimenter, if necessary. They stressed that subjects should determine how emotional (or curvey) the word appeared to them. Examples were provided. Each trial consisted of a 6sec presentation of the word in the centre of the screen, followed by a rating scale at the top of the next screen and a "Rating" prompt at the bottom. The scale contained equally spaced numbers from 1 to 7, with "not at all = 1" at the beginning of the line, and "7 = very" at the end of the line. The scale and prompt remained on the screen until the subject typed in a legal response, at which time the next word appeared.

After the experimenter took about 2 minutes to store the rating data and bring up the next program, the main test of word identification began. Instructions reminded subjects about the practice test and warned that there would be more words on the current task. The 4 blocks of words were presented in one of four different orders (ABCD, BADC, CDAB, or DCBA), with 6 practice trials at the beginning and a rest break in

the middle. Exposure durations for the words were constant (100, 67, 50, or 33msec). Each word was masked by a row of 10 ampersands for 33msec, which was followed by a 2500msec blank screen.

Immediately after the identification test, subjects were instructed for free recall of the rated words. Next, they filled out the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The experimenter administered the Wechsler Adult Intelligence Scale-Revised (WAIS-R) Vocabulary Subscale. Then she conducted an interview that provided information about age, education, history of psychological treatment, and prescribed and nonprescribed drugs currently or recently used by the subject. The interview progressed through a series of questions that allowed us to use Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978). The experimenter's notes were independently scored by two judges, trained to use RDC, who agreed completely on the placement of each subject into one of the following categories: definite major depression (unipolar); probable major depression; definite minor depression; or no depression. Each interview was also assessed for evidence of symptoms of anxiety that accompany depression or evidence of anxiety disorder (no depression). After the interview, subjects were thoroughly debriefed and paid $10, plus transportation costs.

Subjects and Assignment

Criteria. Universal criteria for participation included: (a) age ranging from 25 to 55 years; (b) a high-school diploma or its equivalent; (c) fluency in English; (d) no uncorrected difficulties in vision; (e) no prior history of shock treatment, organic impairment, seizures, or thought disorder; and (f) no recent history of substance abuse. All depressed subjects had prior diagnoses of depression, with no evidence of manic episodes and were required to meet RDC for depression. All nondepressed controls were required to have no history or evidence of psychological disturbance and to score below 14 on the BDI.

Recruiting Procedures. We recruited subjects from these locations in San Antonio, Texas: the Audie L. Murphy Veterans Administration (VA) Hospital, a private clinic that routinely tests for the Texas Rehabilitation Commission, and the staff of Trinity University. Almost all subjects from the first two sources had previously volunteered for research in our laboratory; the method of initial contact was described by Hertel and Rude (1991). Eight of the 16 nondepressed controls had also participated in the prior experiment; the remainder was recruited from Trinity University for this study only. The fewest number of days elapsed between participation

in the initial experiment and participation in this one was 42. The mean was 118 days and did not differ reliably across diagnostic conditions.

Final Sample. The data from 10 subjects were set aside. Of these, three subjects reported perceiving almost no words on the test of word identification and one subject perceived all 64 words. Two subjects met RDC for anxiety but not depression; and three subjects met criteria for depression without anxiety symptoms. (We had planned to categorise depressed subjects according to the presence versus absence of anxiety, but we failed to recruit enough nonanxious depressed subjects.) One subject from Trinity scored high on the BDI, yet provided insufficient information about clinical diagnosis and treatment.

The final sample consisted of 32 subjects, 16 in each group. The mean age was 38 for nondepressed and 42 for depressed (a nonreliable difference). Both groups had completed 14 years of education, on average. Their mean scores on the WAIS-R Vocabulary Subscale were 10.6 for nondepressed and 10.5 for depressed. One subject in each group was African-American; 5 nondepressed and 4 depressed subjects were Hispanic; the rest were Anglo. Finally, 10 nondepressed but only 5 depressed subjects were female.

Assignment. In each category of depression, two subjects were assigned to each combination of the rating list (the 32 words presented for ratings), the order of sets within that list (the 16 words that appeared for the first rating task), and the order of tasks (whether the emotional or curvature ratings were made first).

Equal numbers of depressed and nondepressed subjects received each of the four block orders on the test. The distribution of exposure durations in the depressed group was: 100msec, 12%; 67msec, 19%; and 50msec, 69%. Of the nondepressed controls, 19% were assigned to 100msec exposures, 6% to 67msec, 44% to 50msec, and 31% to 33msec.

RESULTS

Diagnostic Indices

Mean BDI scores were 5.1 for controls and 27.0 for depressed subjects. Of the 16 depressed subjects, 14 met RDC for definite major depression, 1 met criteria for probable major depression, and 1 met criteria for minor depression. All 16 depressed subjects showed symptoms of anxiety. Twelve were currently medicated with anti-depressants and 3 with anti-anxiety drugs; 14 were currently under the care of a psychiatrist or psychologist; 7 had been hospitalised previously for treatment of depression.

No one in the control group met criteria for depression or anxiety, although one subject reported using anti-anxiety medication within the past month.

Identification

Word identification measures memory to the extent that previously exposed words are identified more frequently than new words. This difference is called the prior-processing effect (PPE) and is computed for each subject by subtracting the percentage of new words identified in each condition from the percentage of old words identified in the same condition. The use of this measure presumes nonreliable differences in the percentages of new items identified, which are shown in the top portion of Table 1. These percentages were submitted to an analysis of variance, which revealed no reliable differences according to group or type of word; all Fs < 1.00. (The significance level for all analyses in this report was set at .05.)

The bottom portion of Table 1 shows the mean PPE in each diagnostic group and experimental condition. An analysis of variance performed on this measure included a between-subjects factor for diagnostic group and within-subjects factors for type of word (emotional vs. neutral) and type of rating (emotion vs. curvature).

The effects of greatest interest were those involving rating type and diagnostic group. Although the effect of the type of rating did not reliably depend on group membership, $F(1,30) = 1.50$, $MS_e = 183.51$, the simple main effects of group within each type of rating task were evaluated as

TABLE 1
Mean Percentage of New Words Identified and the Prior-processing Effect (PPE)

Rating Task	*Type of Word*		
	Neutral	*Emotional*	*Average*
Percentage of new words identified			
Nondepressed	38	37	38
Depressed	33	32	32
Prior-processing effect			
Emotional value			
Nondepressed	26	27	26
Depressed	16	29	22
Curvature			
Nondepressed	23	17	20
Depressed	12	9	10

Note: PPE = % of rated words − % of new words identified in each category.

planned. The groups clearly differed in the effect of prior exposure in the curvature task, $F(1,30) = 4.31$, $MS_e = 353.76$. The mean PPE for these words was 10% in the depressed group and 20% in the nondepressed group. Depressed subjects' PPE was above baseline, $F(1,15) = 17.16$, $MS_e = 199.79$. Further, although depressed subjects tended to produce a smaller effect of prior exposure in the emotion-rating task ($M = 22\%$ vs. 26% in the nondepressed group), the trend was not reliable, $F < 1.00$.

Other reliable effects revealed by the overall analysis of PPE included the main effect of the type of task, $F(1,30) = 14.69$, $MS_e = 183.51$; all subjects showed a greater advantage of having rated emotional value. Further, that effect was qualified by the reliable interaction of task with word type, $F(1,30) = 8.44$, $MS_e = 121.66$. The PPE for emotional words was larger when they had been rated for emotion ($M = 28\%$ vs. 13% when rated for curvature), $F(1,30) = 20.28$, $MS_e = 173.83$. The respective means for neutral words (21% vs. 18%) did not reliably differ, $F(1,30) = 1.51$, $MS_e = 131.35$.

No other effect in this analysis of PPE approached statistical significance. An additional analysis, however, was performed by including a between-subjects factor for the order of the rating tasks. It yielded a reliable interaction of order and type of task, $F(1,28) = 4.56$, $MS_e = 167.24$. The mean PPE for subjects who had rated curvature in the first block of words was 14% for those words, but 29% for the second block of words rated for emotional value. The difference between these two means was smaller when emotion was rated first ($M = 16\%$ for curvature and 20% for emotion). No other effect involving task order was reliable; Fs < 1.20. Apparently, the carry-over effects from rating emotion first were uniform across other conditions.

Free Recall

Table 2 presents the mean percentages of rated words recalled. The analysis of variance included factors for group, rating task, and type of

TABLE 2
Mean Percentage of Words Recalled

Rating Task	*Type of Word*		
	Neutral	*Emotional*	*Average*
Emotional value			
Nondepressed	34	44	39
Depressed	23	26	24
Curvature			
Nondepressed	20	22	21
Depressed	12	13	12

word and revealed only reliable main effects of the rating task, $F(1,30) = 10.38$, $MS_e = 679.04$, and group, $F(1,30) = 8.53$, $MS_e = 481.45$. All subjects recalled more words from the emotion-rating task ($M = 32\%$ vs. 17% from the curvature task). Depressed subjects recalled fewer words overall ($M = 18\%$ vs. 30% by nondepressed subjects). Although there was a trend for emotional words to be recalled more frequently, it was not reliable, $F(1,30) = 2.99$, $MS_e = 197.59$, $P < 0.10$.[2]

The average *number* of words appearing for the first time on the identification test (unrated words) that were subsequently recalled was only 1.1. It did not appear to differ according to group or type of word. Finally, recall was higher for identified words than unidentified words from the rating tasks, $F(1,30) = 53.47$, $MS_e = 157.44$. Nondepressed subjects recalled 40% of rated words that they had identified, but only 12% of unidentified words. The corresponding means in the depressed group were 23% and 9%.

DISCUSSION

In comparison with nondepressed subjects, depressed subjects showed reduced identification of words previously rated for their physical shape but not for their emotional value, and reduced recall of all rated words. These are the major findings as they were anticipated from the cognitive-initiative framework for describing depressive deficits in memory. That framework predicts that impaired performance should be found on tasks that benefit from the spontaneous use of uninstructed procedures, either during initial exposure to the materials (Hertel & Rude, 1991) or during the test phase (Hertel & Hardin, 1990). Although beneficial procedures are less likely to be initiated by depressed subjects, they can be environmentally controlled to eliminate otherwise deficient performance (see Hertel, 1992).

The design of the reported experiment invited initiative in attending to words as such during the initial task of rating their physical shape, and impaired initiative in that task was inferred from performance on the subsequent test of word identification. That test is influenced, not by elaborative processing during initial exposure and not by intentional retrieval strategies at the time of the test, but by the degree to which letters are integrated into lexical units that can then be read with greater fluency on second exposure (Hayman & Jacoby, 1989; Whittlesea &

[2] Further analyses were performed to investigate mood-congruent memory through the examination of identification and recall of positive versus negative emotional words. None of these analyses revealed evidence of mood congruence; however, the use of only four items of each valence in each condition constrains the interpretation of this outcome.

Cantwell, 1987). The present results suggest that nondepressed subjects spontaneously read these words more often than did depressed subjects, because they were more likely to identify them on the test.[3]

The same trend can be seen in the identification of words rated for emotional value, although that difference did not approach statistical significance. Because the trend contributed to the lack of a reliable interaction between group and rating task, however, it is important to notice the pattern obtained from depressed subjects. That is, depressed subjects produced a PPE for emotionally rated emotional words (29%) that was comparable to performance by controls, but the PPE for emotionally rated neutral words (16%) was closer to their own performance on words rated for curvature. (The interaction of type of rating and type of word within the depressed group was reliable, $F(1,30) = 8.85$, $MS_e = 121.66$.) A tentative interpretation of this pattern rests on the possible relationship between the amount of time that subjects stared at the words initially and the likelihood of later identification. Perhaps depressed subjects spent less time looking at neutral words as they rated them for emotional value and therefore identified them less readily upon second exposure. This interpretation is possibly countermanded by results from Jacoby and Dallas (1981, experiment 3), who varied the duration of initial exposure from 1 second to 2 seconds and found that subsequent identification was not affected, but the 6 seconds provided in the present orienting task might permit individual variation sufficient to produce differences. Further research would be necessary to support such a claim, however, "looking" time might also account for an unanticipated finding: Regardless of diagnosis, subjects were more likely to identify emotional words when they had been rated for emotion than when they had been rated for curvature. The resolution of such issues awaits more research on the boundary conditions for observing relationships between emotion and attentional control in both depressed and nondepressed states.

Similarly, continued exploration of boundary conditions on depressive deficits in memory tasks is desirable. One suggested limit concerns the nature of the test. Given appropriate attention to words *qua* words during initial exposure, depressive deficits have not been found on indirect tests.[4] Hertel and Hardin (1990) did not find deficits in spelling homphones, the

[3] The results on word identification calls for a consideration of the extent to which subjects are willing to blurt responses. The fact that approximately one-third of nondepressed subjects but no depressed subjects were assigned to durations of 33msec suggests that depressed subjects were less likely to blurt. What I assumed, however, is that the conservative tendency would not vary with experimental conditions.

[4] One apparent exception to this claim is the finding by Elliott and Greene (1992), but see Roediger and McDermott's (1992) discussion of difficulties in interpreting their findings.

less frequent meaning of which had been biased in the orienting task; nondepressed and depressed students alike showed biased spellings of previously presented homophones more often than new ones. Clinically depressed samples in recent studies by Denny and Hunt (1992) and Watkins, Mathews, Williamson, and Fuller (1992) showed no impairment on tests of word-fragment completion and word-stem completion, respectively. Similarly, in this report the effect of prior exposure on the emotion-rating task was not reliably associated with depression. In short, this finding augments the body of evidence that depressive deficits are not found on indirect tests, as long as words are initially integrated.

On the other hand, depressive deficits are frequently found on direct tests of memory. The present results from the test of free recall are consistent with the usual pattern and, more importantly, show a dissociation between indirect- and direct-test performance that is a function of subjects' emotional state (see Roediger & McDermott, 1992). This dissociation (*re* words rated for emotion) helps to establish the claim that identification and recall measure different retrieval procedures.

The most prevalent account of depressive impairments in free recall is the cognitive-effort or resource-allocation account (Ellis & Ashbrook, 1988; Hasher & Zacks, 1979). These accounts hold that depression limits (or occupies through preoccupation) the attentional resources that would otherwise be available for performing cognitive tasks. Depressed subjects therefore should be impaired on tests that benefit from relatively effortful or resource-demanding procedures. Effort accounts, however, fail to anticipate evidence for deficits in word identification; here, the prerequisite for good performance is simply the prior integration of letters into words—a procedure that is highly automatic under most circumstances.

Plainly, the allocation of attentional resources is a central problem in depression (Ellis & Ashbrook, 1988). In emphasising initiative, however, the present account denies that depressive deficits should always occur on resource-demanding tasks. The very tasks that are offered as resource intensive by Ellis and Ashbrook (e.g. Ellis et al., 1984) can be performed as well by depressed subjects as by nondepressed subjects, provided that attention is well controlled (Hertel & Rude, 1991). For this reason, the initiative account emphasises *control* rather than availability of resources (see Ellis, 1990). Logically, the self-initiated switch of attention from personal concerns (for example) to the task at hand is resource demanding, but it is the switch itself that deserves our experimental and theoretical attention.

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