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The use of daily diaries to assess the relations among mood state, overt behavior, and reward value of activities

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Abstract

Recent data has sparked renewed interest in behavioral treatments for depression; however several fundamental questions remain regarding the mechanisms of such approaches. To this end, the current study directly tested the assumption that non-clinical mildly depressed individuals receive less response-contingent positive reinforcement than non-depressed individuals, indicated by less engagement in behaviors perceived as rewarding in terms of both immediate pleasure and potential for these behaviors to result in more distal rewards. The data presented support this assumption and provide support for the role of reinforcement-based strategies such as behavioral activation in the treatment of depression.

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1. Introduction

The fundamental behavioral model of depression implicates decreases in response-contingent positive reinforcement for non-depressive behavior as the causal factor in eliciting depressive affect (Ferster, 1973; Lewinsohn, 1974; Skinner, 1953). Low rates of positive reinforcement may be a function of the *quantitative* (i.e., number or intensity) or *qualitative* (e.g., type: social, intellectual; function: stimulation seeking, achievement) aspects of the reinforcing events, availability of reinforcement in the environment (e.g., social isolation, poverty), inadequate instrumental

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behaviors (e.g., social skill, academic ability), and/or the result of an increased frequency of punishment (Lewinsohn, 1974; Lewinsohn, Antonuccio, Breckenridge, & Teri, 1984). Through use of research designs that incorporate the Pleasant Events Schedule (PES; MacPhillamy & Lewinsohn, 1971), several empirical findings support this theory. First, following generation of individualized pleasant event schedules and subsequent monitoring of the frequency of events and daily mood state, depressed, nondepressed psychiatric, and normal controls all exhibit a significant positive relation between mood level and frequency of pleasant activities (Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972). Second, depressed individuals engage in fewer pleasant activities and report less pleasure from these activities (Lewinsohn & Graf, 1973; MacPhillamy & Lewinsohn, 1974). Third, the finding that depressed individuals emit fewer interpersonal behaviors suggest they may receive less social reinforcement (Lewinsohn & Shaffer, 1971; Libet & Lewinsohn, 1973). Finally, behavioral therapies that increase access to pleasant events and positive reinforcers and decrease the frequency of aversive events and consequences have been markedly successful in treating depression (DeRubeis, Gelfand, Tang, & Simons, 1999; DeRubeis & Crits-Christoph, 1998; Hopko, Lejuez, LePage, Hopko, & McNeil, 2003; Jacobson et al., 1996; Lejuez, Hopko, & Hopko, 2002; Lejuez, Hopko, LePage, Hopko & McNeil, 2001; Lewinsohn, Antonuccio, Breckenridge & Teri, 1984; Lewinsohn, Sullivan, & Grosscup, 1980; Martell, Addis, & Jacobson, 2001; Robinson, Berman, & Neimeyer, 1990).

Although incorporation of the PES into research designs has proven useful in providing support for the behavioral model of depression, alternate assessment strategies such as the monitoring of overt behavior via diary-based approaches might facilitate a more naturalistic and stringent test of the behavioral hypothesis. Indeed, diary methods have long been used as an assessment strategy in the domains of clinical and health psychology, with increasing evidence supporting the reliability and validity of such an approach. In the area of depression, for example, self reported depressive symptoms (as measured by the Beck Depression Inventory; Beck & Steer, 1987) and aversive behavioral experiences as reported in daily diaries (e.g., conflictual experiences, feeling trapped) were highly convergent (Robbins & Tanck, 1984). Among samples that included individuals with clinical depression (Stamenkivoc et al., 2001) and premenstrual syndrome (Freeman, DeRubeis, & Rickels, 1996), daily reports of depressive symptoms also were characterized as highly reliable ($\alpha=0.92$; Freeman, DeRubeis & Rickels, 1996) and were strongly convergent with the Beck Depression Inventory and the Hamilton Rating Scale for Depression (Hamilton, 1960). Diary methods also are associated with strong psychometric properties in other domains, including research on anxiety (Fydrich, Dowdall, & Chambless, 1992; Nelson & Clum, 2002), pain (Feldman, Downey, & Schaffer-Neitz, 1999; Grant, Long, & Willms, 2002) alcohol abuse (Watson, 1999), sexual behaviors (Okami, 2002), gambling (Atlas & Peterson, 1990), and insomnia (Haythornthwaite, Hegel, & Kerns, 1991). Similarly, diaries completed by socially phobic children (Beidel, 1996), adolescents with headaches (Van den Brink, Bandell, & Huijjer, 2001), and parents of children with sickle cell disease (Ely, Dampier, Gilday, O'Neal, & Brodecki, 2002) have been associated with adequate internal consistency as well as good convergent and discriminant validity.

Given the demonstrated utility of diary methods in clinical research, we utilized a one-week diary keeping procedure to further evaluate the behavioral model of depression. In assessing overt behaviors and associated reward values using a diary method, our primary aim was to more directly test the assumption that mildly depressed individuals receive less response-contingent

positive reinforcement than non-depressed individuals. Compared with previous research where activities to monitor were selected a priori from an assessment instrument (i.e., PES), we speculated that a diary strategy might promote a more representative and naturalistic measure of activity. Specifically, we theorized that diary-keeping might reduce demand characteristics of previous studies where pre-specification of rewarding activities might have made participants more apt to commit to engaging in these behaviors, particularly since they were accountable in having to record their frequency on a daily basis (Kazdin, 1974). Further, because depressed individuals may have dysfunctional views that include expectations of failure, incapability (Beck, 1967), decreased self-efficacy (Maddux & Meier, 1995) and learned helplessness (Seligman, 1975), this process might differentially (and artificially) increase the frequency of pleasant events for non-depressed individuals while not affecting more depressed participants.

This study also was important in that it extended the research of Lewinsohn and colleagues who primarily examined the quantitative aspects (i.e., frequency) of reinforcing events but generally did not evaluate whether measuring the intensity of reinforcement yielded similar findings. That is, in addition to reporting a decreased frequency of pleasant events, are individuals with depressive symptoms also more apt to report decreases in the intensity of reinforcement for activities in which they do engage? Furthermore, in contrast to having participants indicate the pleasantness of activities in an a priori manner (MacPhillamy & Lewinsohn, 1974), we had participants assess reward value following engagement in daily activities. This strategy was incorporated to control for the contextual aspects of reinforcement (Hayes, Strosahl, & Wilson, 1999), or the idea that although previous activities or behaviors may have elicited pleasure or reward in the past, these contingencies may not generalize across time or setting. In previous studies, this contextual quality of behavior may not adequately have been addressed, as pleasant events were identified and monitored according to retrospective accounts of their reward value. Accordingly, this research does not rule out the possibility that alternative (non-monitored) activities may come to be reinforced at a higher rate than those specified on the PES, making it conceivable that individuals with depressive symptoms may not be engaging in *fewer* pleasant events, but rather pleasant events that are *different* from those initially targeted for self-monitoring. If this hypothesis were supported, although extinction of previously reinforced behaviors may be evident, the establishment of alternative rewarding activities (in the presence of depressive symptoms) would signify the need to explore alternative etiological explanations for depressive affect.

A final extension of previous work involved assessing behaviors as they related to possible future rewards (as opposed to only immediate reward). This modification seemed particularly necessary given the importance of negative future-oriented cognitions in maintaining depressive affect. The most prominent cognitive models of depression, for example, have highlighted negative perspectives about the future such as helplessness, hopelessness, and decreased control that are central toward understanding the etiology and maintenance of depression (Abramson, Metalsky, & Alloy, 1989; Beck, Rush, Shaw, & Emory 1979; Seligman, 1975). In line with these theories, a significant body of research suggests that depressed individuals report fewer anticipated positive experiences, ruminate more about the future, and make predictions about negative future events rather automatically, particularly when they are exhibiting feelings of hopelessness (Alloy & Ahrens, 1987; Andersen & Limpert, 2001; MacLeod & Cropley, 1995; MacLeod & Salaminiou, 2001).

To address these issues and limitations, we examined the behavioral model of depression by

incorporating a more naturalistic process of monitoring behavior, increasing the contiguity between behavior and appraisal of reward value, and assessing the reward value of all behavioral responses within a specified time frame. As behavioral theory highlights decreases in response-contingent positive reinforcement as a precursor to depressive affect, the more temporal measurement of the relations between behaviors and (reward) consequences was thought to be a more stringent test of the behavioral hypothesis. We hypothesized that individuals with depressive symptoms would report decreased (immediate and future) reward value of activities, a lower level of general activity, and daily mood ratings consistent with self-reported depressive symptoms as well as reduced pleasure and activity.

2. Method

2.1. Participants

Participants included 37 undergraduate students (females: $n=31$; males: $n=6$). These students were categorized as either non-depressed ($n=23$) or mildly depressed ($n=14$) based on a mean Beck Depression Inventory score (BDI; Beck & Steer, 1987) that was formulated by averaging the pre- and post-assessment BDI scores. The duration of time between administrations was approximately 8 days ($M=8.21$, $SD=1.41$). According to the range specified by Beck and Steer (1987), participants were considered non-depressed if they scored 9 or below on the BDI and mildly depressed if they scored above this value. Experimenters were blind to participant group. The mildly depressed group reported significantly more ($M=16.3$, $SD=4.5$) depressive symptoms than the non-depressed group [$(M=5.2$, $SD=2.7)$; $t(35)=9.37$, $p<0.001$]. Depression was examined as a categorical variable to maintain consistency with research designs implemented in related studies (Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972).¹ The entire sample consisted of 31 Caucasians (84%) and 6 African Americans (16%) and all but one of the participants reported that they were unmarried. The mean age of participants was 19.5 years ($SD=3.1$ years). Chi-square analyses revealed no significant group differences as a function of gender, ethnicity or marital status and a one-way ANOVA revealed no difference as a function of age.

2.2. Assessment measures

The Beck Depression Inventory (BDI; Beck & Steer, 1987) consists of 21 items, each rated on a 4-point Likert scale. The instrument has excellent reliability and validity with depressed adults (Beck & Steer, 1987; Beck, Steer, & Garbin, 1988; Snyder, Stanley, Novy, & Beck, 2000). Among younger clinical and non-clinical adults, the BDI demonstrated substantial internal consistency ($\alpha=0.73$ – 0.95) and adequate test–retest reliability for nonpsychiatric ($r=0.60$ – 0.83) and psychiatric patients ($r=0.48$ – 0.86) (Beck et al., 1988). Concurrent validity between the BDI and other indices of depression ranges from moderate ($r=0.33$ with DSM III diagnosis of clinical depression;

¹ Using regression analyses, data were reanalyzed with depression as a continuous variable (i.e., participants average pre-post BDI score). With depression score as the predictor variable and each reward value (immediate and future) as the criterion variable, the same conclusions were reached (based on p values) as when depression was conceptualized as a categorical variable.

Hesselbrock, Hesselbrock, Tenmen, & Meyer, 1983) to strong ($r=0.86$ with the Zung SDS; Turner & Romano, 1984; see Beck et al., 1988 for a comprehensive review).

The Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) include two 10-item scales, one that assesses positive affect (PA), the other negative affect (NA). Each item consists of a single adjective (e.g., distressed, inspired) in which respondents are asked to “indicate to what extent (you) felt that way during the past day”. Responses range from 1 (“very slightly to not at all”) to 5 (“extremely”). Test–retest reliability is moderate ($r=0.39$ – 0.71) and convergent/divergent validity is evident with measures that assess anxiety and depressive symptoms ($r=0.51$ to 0.74 with the NA scale; $r=-0.19$ to -0.36 with the PA scale) (cf. Nezu, Ronan, Meadows, & McClure, 2000).

Included on the demographic form, participants were asked two questions: (a) “In general, how active are you?” and (b) “In general, how rewarding are the activities you engage in?”. Participants responded to these questions using a 5-point Likert scale ranging from 1 (“not at all”) to 5 (“extremely”).

At the end of each day, participants also were asked to indicate their daily activity level on a 7-point Likert scale ranging from 1 (“very passive”) to 7 (“very active”).

2.3. Procedure

Each participant met individually with an experimenter on two occasions. During the first meeting the participant completed the BDI and demographic form. An assessment packet then was presented that included seven daily activity-monitoring forms and the same number of PANAS questionnaires. The following instructions were provided: “Please take this packet and record all your behaviors and activities for the next week. Your packet contains seven daily monitoring forms (one for each day) that contain spaces to record behaviors from 8 A.M. to 2 A.M. (half-hour intervals). Please take the time to record your behaviors every couple hours to ensure accuracy in remembering your behaviors. Please try to be as honest and thorough as you can in recording your behaviors. Also, try to engage in your normal routine. For each behavior, you should ask yourself two questions: ‘How rewarding or pleasurable was the activity’ (immediate reward value: IRV) and ‘how likely is it that this behavior will lead to a future reward’ (future reward value: FRV). In the spaces provided, indicate your response using the scale ranging from 1 (“very little or very unlikely”) to 4 (“extremely or very likely”). You will also find seven PANAS forms in your packet. Please fill out one PANAS form at the end of each day.” Participants also were provided with an explanation as to what constituted overt behavior and were asked *not* to record specific thoughts, physiological responses, and/or feelings and emotional experiences. Participants returned approximately 1 week later (pending participant and experimenter availability) and completed the post-assessment BDI.

3. Results

3.1. Reward value of daily activities

The total duration of time spent in activities of each (immediate and future) reward value was calculated for each participant. Repeated measure ANOVAs were calculated with depression

group as the between subjects variable and time (hours) at each reward value (1 through 4) as the within subjects variable. Estimated eta-squared (η^2 ; Keppel, 1991) is presented as a measure of effect size ($\eta^2=0.01$ =small; $\eta^2=0.06$ =medium; $\eta^2=0.16$ =large). The main effect of immediate reward value (IRV) was significant [$F(3, 105)=15.0, p<0.001, \eta^2=0.30$]. Collapsed across groups, post-hoc Tukey's Honestly Significant Difference Tests ($\alpha=0.05$) indicated that participants generally spent more time engaging in the more rewarding IRV 3 and IRV 4 behaviors (IRV 1: $M=15.8, SD=18.7$; IRV 2: $M=22.9, SD=14.7$; IRV 3: $M=44.0, SD=17.2$; IRV 4: $M=42.3, SD=20.1$). However, this effect was moderated by a significant interaction between IRV and depression group [$F(3, 105)=3.43, p<0.05, \eta^2=0.09$]. As presented in Fig. 1, post-hoc analyses indicated that the mildly depressed group engaged in significantly more IRV 1 (minimal pleasure) and significantly less IRV 4 (extremely pleasurable) behaviors. For FRV, only the interaction between FRV and depression group was significant [$F(3, 105)=3.53, p<0.05, \eta^2=0.09$]. As presented in Fig. 2, post-hoc analyses indicated that the mildly depressed group engaged in significantly more (FRV 1) behaviors perceived as unlikely to result in a future reward and significantly fewer (FRV 4) behaviors perceived as likely to produce a future reward. These findings were convergent with the pre-experimental rating of general "reward value of activity." Compared with non-depressed individuals ($M=3.8, SD=0.7$), mildly depressed participants reported less reward ($M=2.9, SD=1.0$) subsequent to engaging in daily activities ($F(3, 35)=11.0, p<0.01, \eta^2=0.24$).

3.2. Daily activity level

The weekly activity level rating was the mean of the seven daily activity level data points. As expected, mildly depressed individuals rated themselves as more passive ($M=4.4, SD=0.7$) than non-depressed participants ($M=5.1, SD=0.8$) [$F(1, 35)=6.1, p<0.05, \eta^2=0.16$]. Again, this finding

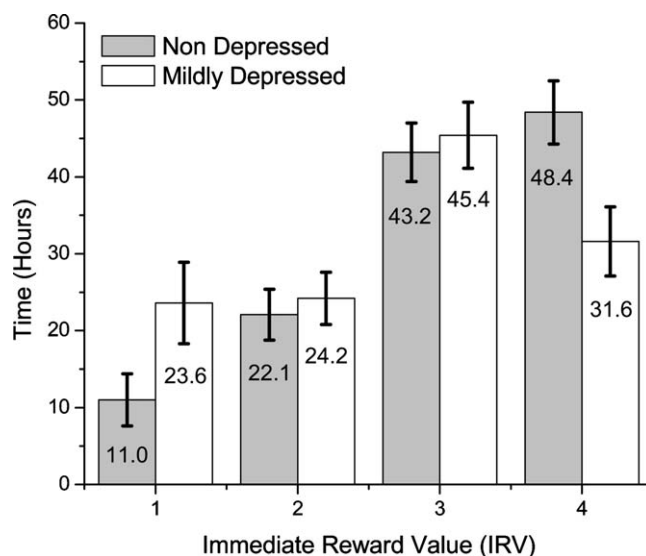


Fig. 1. Immediate reward value as a function of depressive symptom level.

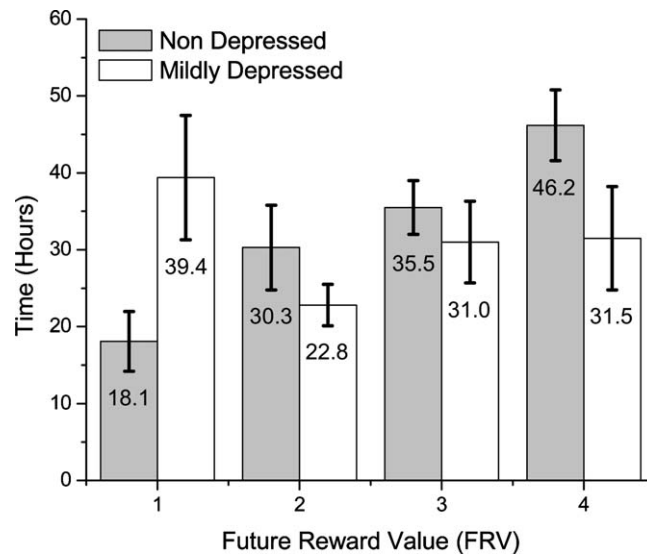


Fig. 2. Future reward value as a function of depressive symptom level.

was convergent with the pre-experimental rating of “activity level” where mildly depressed participants reported less general activity ($M=2.8$, $SD=0.9$) compared with non-depressed individuals ($M=3.6$, $SD=0.7$), [$F(1, 35)=10.4$, $p<0.01$, $\eta^2=0.23$].

3.3. Ratings of positive and negative affect

Average PANAS ratings were moderately correlated with the pre-post mean BDI scores of participants (PA: $r=-0.59$, $p<0.001$; NA: $r=0.38$, $p<0.05$). Average daily PANAS ratings differed significantly between groups on both the PA [$F(1, 35)=13.9$, $p<0.01$, $\eta^2=0.28$] and NA dimensions [$F(1, 35)=3.7$, $p<0.05$, $\eta^2=0.09$]. Mildly depressed individuals reported more NA ($M=18.7$, $SD=4.4$) and less PA ($M=27.1$, $SD=5.5$) than non-depressed participants (negative: $M=15.8$, $SD=4.4$; positive: $M=32.7$, $SD=3.7$). Data also suggest that daily affective ratings were associated with time spent engaging in activities that elicited minimal pleasure or reward. Average PA ratings correlated negatively with time spent in IRV 1 ($r=-0.37$, $p<0.05$) and FRV 1 ($r=-0.48$, $p<0.01$) behaviors and positively with time spent in IRV 4 ($r=0.53$, $p<0.01$) and FRV 4 ($r=0.47$, $p<0.01$) behaviors. PA ratings also correlated strongly with the weekly rating of activity level ($r=0.67$, $p<0.01$), suggesting increased activity is associated with more positive affect.

3.4. Pre-post depression symptom change scores

To further assess the relation of self-reported affect and engagement in rewarding activities, a BDI change score was calculated for each participant by subtracting the post-experimental BDI score from the pre-experimental BDI score. Two stepwise regression analyses were conducted in which BDI change score was used as the criterion variable. In the first analysis, the four predictor

variables were (time spent in) each immediate reward value category (1–4). Only reward value 1 (very little immediate reward value) was a significant predictor of the BDI change score ($F(1, 35)=4.50, p<0.05; \beta=0.34$). Those individuals who reported engaging in more reward value 1 behaviors exhibited less symptom alleviation as indexed by the BDI change score. For the second analysis, the four predictor variables were (time spent in) each future reward value category (1–4). None of the four predictors accounted for significant variance.

4. Discussion

Consistent with previous findings and supportive of the behavioral model, results support the contention that a relationship exists between a lack of rewarding experiences and depressive symptoms. Self-reported depressive symptoms (and daily negative affective ratings) were inversely related to general activity level and the amount of reward or pleasure that participants obtained through interaction with the environment. Moreover, individuals who reported increased depressive symptomology (on the BDI) at 1-week post assessment spent significantly more time engaging in behaviors that elicited minimal immediate reward (i.e., reward value 1). These findings are particularly provocative given the non-clinical, mildly depressed nature of the experimental group and one would predict a magnification of already large effect sizes with inclusion of a clinically depressed sample. Interestingly, compared with Lewinsohn and Graf's (1973) finding that daily positive affect ratings correlated moderately with the number of pleasant events ($r=0.36$), an almost identical relation between positive affect and time spent in IRV 1 behaviors was found in the present study ($r=-0.37$). Thus, the reliability of results is strengthened with the emergence of similar findings regardless of whether the frequency or duration of activity is used as the dependent variable. The present findings also are significant insofar as other non-traditional methodological aspects yield findings supportive of the behavioral model. Under circumstances that increase the contiguity between behavior and reward rating, for example, depressive affect continues to be related to engagement in non-rewarding activities.

An important extension of this primary finding was that mildly depressed individuals also reported a decreased expectation that current behaviors would result in a future reward. In fact, compared with the non-depressed group (14%) mildly depressed individuals indicated that 32% of their time (FRV1) was spent in activities evaluated as very unlikely to produce a long-term reward. Several cognitive-behavioral interpretations of this finding may be offered. First, it is conceivable that mildly depressed individuals have experienced minimal reward (or even punishment) subsequent to past behaviors, develop a depressive attributional style and the expectation that one cannot control outcome, and thus anticipate a continuation of this pattern (i.e., learned helplessness: Seligman, 1975). Second, perceptions that activities or behaviors are unlikely to produce future rewards may be less related to specific attributions and more a consequence of a sense of hopelessness (Abramson, Metalsky, & Alloy, 1989). The important distinction here is that hopelessness theory postulates that negative expectations about the occurrence of highly valued outcomes (i.e., outcome expectancy) contribute to depressive symptoms, which is different from expectations of helplessness about changing the likelihood of occurrence of (negative) outcomes (cf. Abramson, Metalsky & Alloy, 1989). Indeed, the theoretical difference is not unlike Bandura's conceptualization of outcome versus efficacy expectancies (Bandura, 1977). Third, it

is plausible that individuals with elevated depressive symptoms have not effectively identified and exposed themselves to positively reinforcing activities and events and therefore may be unaware of more appealing alternative behaviors. Thus, although current behaviors may not be considered overly pleasurable or likely to produce much in the way of immediate or distal reward, these behaviors may continue to be appealing relative to other options (cf. McDowell, 1982) and although not positively reinforced, may be maintained via other processes such as negative reinforcement. For example, staying in bed might not lead to career advancement or social rewards, but it might allow the individual to avoid the less appealing alternatives in their behavioral repertoire (e.g., working hard in class, spending time with a significant other that is demeaning). Finally, it is conceivable that more depressed individuals exhibit distorted thinking patterns that may preclude accurate perceptions of future reward value (Beck, Rush, Shaw, & Emory, 1979), underestimate the amount of reinforcement they (have or will) receive (Dobson & Shaw, 1981), or even that they are more accurate in their assessment of future reward (Ackerman & DeRubeis, 1991).

Compared with previous studies examining the relation of pleasant events and mood state, perhaps the most important aspect of the present study is that it may represent a more direct examination of the basic behavioral assumption that depression is related to decreases in response-contingent positive reinforcement. As Lewinsohn and Graf (1973) have indicated, their primary dependent variable has been *pleasure* as defined by the frequency of particular events retrospectively rated as rewarding (MacPhillamy & Lewinsohn, 1974), which was assumed to provide an approximate measurement of positive reinforcement. In contrast, the more micro-analytical and contiguous approach of establishing a reward (or reinforcer) value for each daily activity may be a more valid assessment of the response–reward relation. It also is acknowledged, however, that behavioral contingencies are experienced on a continuous basis. Accordingly, although perhaps an advancement, even the present methodology of monitoring activities in half-hour intervals and reward values thereafter does not allow measurement of the entire spectrum of operant relations. Addressing the functional qualities of activities and to validly measure the amount/level of response-contingent reinforcement, one also would have to assess whether behaviors rated as rewarding in fact increased in frequency over time and whether increases were associated with improved affect. An additional methodological limitation involved the lack of a structured method of assessing whether participants reliably completed assessment instruments as instructed. Although participants informally reported compliance with monitoring/assessment procedures when queried (post-experimentally) by experimenters, we cannot make definitive statements as to whether diaries were completed at regular intervals or that PANAS forms were completed at the end of each day, following documentation of behavior. Indeed, this limitation is inherent in a majority of research studies that incorporate diary methods, including many of those reviewed earlier. Contributing to this limitation, researchers generally have conceptualized diary recordings as the (reliable) “gold standard” by which to assess the validity of other assessment methods. A more fundamental analysis of the reliability of diary procedures certainly is warranted. With the assistance of internet-based assessment and/or the use of palm pilots as used in monitoring smoking behavior (Shiffman et al., 2002), future studies will focus on addressing these important issues.

Pertaining to a continuing limitation of the behavioral theory of depression, the results of the study are non-definitive as to the direction of causality between depressive affect, engagement in behaviors that are positively reinforced, and the potential moderating role of cognitive processes.

They only suggest that relationships are evident. Future research designs (perhaps longitudinal) that incorporate a multi-method assessment strategy and multivariate statistical strategies such as path analysis will be necessary to explore these relations. Finally, the endorsement of reduced (general) activity levels by mildly depressed individuals raises some interesting questions given that each participant rated behaviors for 18 hours per day and theoretically had the same amount of time to engage in activities. Is the finding of less self-reported activity in the mildly depressed group reflective of an actual reduction in activity (i.e., increased passivity, lethargy)? Alternatively, are both groups equally active with the non-depressed group engaging in different “types” of activities? Is the result less a function of an actual reduction or different kind of activity and more a product of dissatisfaction with the rewards subsequent to activities? Our research group presently is exploring answers to these kinds of questions.

In closing, although there are strong relations among the frequency and reward value of behaviors and mood states that generally support the behavioral model of depression, many fundamental questions are alluded to in the discussion that remain unanswered. It will be important to answer these questions as we seek to make progress in researching the efficacy and effectiveness of behavioral treatments for depression. To be sure, encouraging preliminary results have sparked renewed interest in “pure” behavioral treatments for depression such as the contextualistic behavioral activation approach (Jacobson et al., 1996; Martell, Addis, & Jacobson, 2001) and the brief behavioral activation treatment for depression (Lejuez, Hopko, & Hopko, 2002; Lejuez et al., 2001). In addition to their focus on targeting increases in systematically derived activities that are deemed reinforcing for patients, other characteristics of these treatments such as time-efficiency, cost-effectiveness, relative ease of practitioner training, and other aspects that reduce practical problems associated with mainstream psychosocial treatments may make them particularly appealing for treating individuals with depression (Coyne, 2000). As such, continued basic research that builds upon the behavioral theory framework of these approaches should only serve to enhance these interventions and thereby increase the quality of care for individuals with clinical depression.

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