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Behavioral Activation

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*-It’s not who I am underneath, it’s what I do that defines me-*

*-Bruce Way*ne *in Batman Begins*

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Abstract

Considered a third-wave behavior therapy, behavioral activation is a therapeutic process emphasizing structured attempts to increase overt behaviors likely to bring patients into contact with reinforcing environmental contingencies and corresponding improvements in thoughts, mood, and quality of life. In the past two decades, behavioral activation has emerged as an empirically supported treatment for depression that has effectively been provided to patients with diverse clinical presentations and in multiple therapeutic contexts. This chapter focuses on providing a brief historical context of behavioral activation, a description of the principles and procedures underlying contemporary behavioral activation therapies, a review of assessment strategies particularly relevant to this approach, a comprehensive analysis of treatment outcome studies, and a presentation of limitations and future directions that need to be addressed to further solidify the status of behavioral activation as an effective and feasible approach to treating clinical depression and other mental health problems.

Key Words: Behavioral Activation; Behavior Principles; Assessment; Treatment Outcome Review

Behavioral Activation

The National Comorbidity Survey (NCS-R) suggested that Major Depression has a lifetime prevalence of 16% and 12-month prevalence of 7%, is associated with substantial life impairment, and adequate treatment occurs for less than 50% of individuals with depression (Kessler et al., 2003; Wang et al., 2005). Although there are many factors associated with this problem and the dissemination of efficacious and parsimonious treatments for depression in general (Collins, Westra, Dozois, & Burns, 2004; Voelker, 2003), one of the primary barriers is a lack of relatively uncomplicated and highly transportable interventions that have the potential to be administered by a variety of mental health and medical practitioners. Recent depression treatment outcome research shows that briefer and less complicated behavioral activation interventions might be as effective in reducing depression as more elaborate cognitive-behavioral approaches, making them a viable option toward resolving this issue (Dimidjian et al., 2006; Hopko, Armento et al., 2011; Jacobson et al., 1996). Although the term *behavioral activation* is rooted in the biological basis of behavior (Gray, 1982), behavioral activation as a therapeutic process refers to structured attempts to increase overt behaviors likely to bring patients into contact with reinforcing environmental contingencies and produce corresponding improvements in thoughts, mood, and overall quality of life (Hopko, Lejuez, Ruggiero, & Eifert, 2003). Beginning with the pioneering work of Peter Lewinsohn and colleagues (Lewinsohn, 1974; Lewinsohn & Graf, 1973; Lewinsohn, Sullivan, & Grosscup, 1980), revitalized by the cognitive-behavioral therapy component analysis study (Jacobson et al., 1996), and culminating in its current status as an empirically validated treatment for depression (Cuijpers et al., 2007; Ekers et al., 2008; Mazzucchelli et al., 2009; Sturmey, 2009), behavioral activation interventions have gained prominent status as an effective treatment modality across a range of clinical samples and settings. This chapter focuses on providing a brief historical context of behavioral activation, a description of the principles and procedures underlying contemporary behavioral activation therapies, a review of assessment strategies particularly relevant to this approach, a comprehensive analysis of treatment outcome studies, and a presentation of limitations and future directions that will need to be addressed to further solidify the status of behavioral activation as an effective and feasible approach to treating clinical depression and other mental health problems in a variety of clinical contexts.

***Historical Context of Behavioral Activation.***

As highlighted in previous works (Hopko et al., 2003; Dimidjian, Barrera, Martell, Munoz, & Lewinsohn, 2011; Jacobson, Martell, & Dimidjian, 2001), the basic conceptual foundation for behavioral activation can be traced back to original behavioral models of depression that implicated decreases in response-contingent reinforcement for nondepressive behavior as the causal factor in eliciting depressive affect (Ferster, 1973; Lewinsohn, 1974; Lewinsohn & Graf, 1973). Detailed historical accounts of the evolution of behavioral activation have been nicely articulated (Jacobson at al., 2001; Kanter, Manos, Bowe, Baruch, Busch, & Rusch, 2010; Martell, Addis, & Jacobson, 2001), including an interesting narrative depicting its initial development in the laboratory of Peter Lewinsohn at the University of Oregon (Dimidjian et al., 2011). Although Peter Lewinsohn should be considered the father of behavioral activation, his work was clearly influenced by B. F. Skinner, who initially proposed that depression was associated with an interruption of established sequences of healthy behavior that had been positively reinforced by the social environment (Skinner, 1953). In subsequent expansions of this model, the reduction of positively reinforced healthy behavior was attributed to a decrease in the number and range of reinforcing stimuli available to an individual for such behavior, a lack of skill in obtaining reinforcement, and/or an increased frequency of punishment (Lewinsohn, Antonuccio, Breckenridge, & Teri, 1984; Lewinsohn & Shaffer, 1971; Lewinsohn, 1974).

A functional analytic view of this paradigm suggests that continued engagement of depressed behavior must result from some combination of reinforcement for depressed behavior and/or a lack of reinforcement or even punishment of more healthy alternative behavior (Ferster, 1973; Hopko et al., 2003; Kanfer & Grimm, 1977; Kazdin, 1977). As degree of social reinforcement was an integral component of Lewinsohn’s model (1974), it was also indicated that although depressed affect and behavior could initially may be maintained through positive social reinforcement, depressed behavior also could ultimately result in aversive social consequences in the form of negative responses from significant others (Coyne, 1976). Accordingly, this behavioral model of depression highlighted the quantitative (number, level of gratification) and qualitative (type, function) aspects of reinforcing events, their availability, and an individual’s instrumental behaviors as critical toward decreased levels of response contingent positive reinforcement, particularly as it pertained to one’s social environment (and related social avoidance). Using a number of research designs, these fundamental assertions generally have been strongly supported. For example, using home observations (Lewinsohn & Shaffer, 1971; Lewinsohn & Shaw, 1969) and self-monitoring paradigms (Grosscup & Lewinsohn, 1980; Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972), it was demonstrated that depressed mood was related to decreased positive reinforcement for healthy behaviors and less engagement in pleasurable activities. In a recent daily diary study, self-reported depression was inversely related to general activity level as well as the amount of reward or pleasure obtained through overt behaviors (Hopko, Armento, Chambers, Cantu, & Lejuez, 2003). Another study showed that mildly depressed college students also engaged less frequently in social, physical, and educational behaviors (Hopko & Mullane, 2008).

In terms of other model assertions, several studies demonstrated that depressed mood also was associated with an increased frequency of aversive events and experiences (Grosscup & Lewinsohn, 1980; Lewinsohn & Talkington, 1979; MacPhillamy & Lewinsohn, 1974; Rehm, 1977). Also supporting Lewinsohn’s emphasis on decreased social reinforcement as a catalyst for depression, several studies highlighted the premise that social behaviors of depressed individuals were less likely to be reinforced relative to non-depressed individuals (Libet & Lewinsohn, 1973; Lewinsohn & Shaffer, 1971; Rehm, 1988; Youngren & Lewinsohn, 1980). Important to acknowledge, although it has accurately been pointed out that conclusions regarding the causal relationship between decreased response contingent positive reinforcement and depression are limited due to the unavailability of statistical mediation analyses decades ago (Dimidjian et al., 2011), at least two recent studies support this causal association (Carvalho & Hopko, 2011; Carvalho, Trent, & Hopko, 2011). Similarly, although decreased social skills and diminished social reinforcement have been associated with depression (Dimidjian et al., 2011; Segrin, 2000), support for the causal link is equivocal (Cole & Milstead, 1989; Segrin, 1999, 2000).

*Behavioral Theory into Practice.* Based on behavioral theories of depression, conventional behavioral therapy for depression was aimed at increasing access to pleasant events and positive reinforcers as well as decreasing the intensity and frequency of aversive events and consequences (Lewinsohn & Graf, 1973; Lewinsohn, Sullivan, & Grosscup, 1980; Sanchez, Lewinsohn, & Larson, 1980). In these pioneering efforts to examine the efficacy of behavioral activation strategies, Lewinsohn and colleagues demonstrated that through daily monitoring of pleasant/unpleasant events and corresponding mood states as well as behavioral interventions that included activity scheduling, social skills development and time management training, depressive symptoms often were alleviated. Importantly, these early studies documented the potential efficacy of activation-based approaches in multiple contexts, including individual, group, family, and marital therapy settings (Brown & Lewinsohn, 1984; Lewinsohn & Atwood, 1969; Lewinsohn & Shaffer, 1971; Lewinsohn & Shaw, 1969; Zeiss, Lewinsohn, & Munoz, 1979). The study by Brown and Lewinsohn (1984) found that the efficacy of individual, group, and minimal contact (telephone) conditions was superior to a delayed contact control condition. Fundamental behavioral activation strategies (i.e., pleasant event scheduling) also were as effective as cognitive and interpersonal skills training approaches in treating depressed outpatients (Zeiss et al., 1979). Based on several of these early studies, what could be considered the first behavioral activation treatment manual was developed (Lewinsohn, Biglan, & Zeiss, 1976).

As support for behavioral therapies for depression accumulated, increased attention was being given to biological, interpersonal, and cognitive factors as etiologically associated with depression. For example, with increased interest in cognitive theory in the latter quarter of the twentieth century, interventions based exclusively on operant and respondent principles, once thought adequate, were viewed as insufficient, and the absence of direct cognitive manipulations was widely regarded as a limitation of behavioral treatment. These changing perspectives, along with three highly influential studies, contributed to the de-emphasis of purely behavioral interventions as stand-alone treatments. In the first of these studies, Hammen & Glass (1975) demonstrated that mild to moderately depressed college students who increased their participation in events they had rated as pleasurable did not become less depressed. Second, Shaw (1977) published a multi-method assessment study with depressed college students and suggested the potential superiority of cognitive techniques over behavioral strategies in attenuating depression symptoms. In a third study published two years later, a component analysis revealed no differential effectiveness between activity scheduling, skills training, and cognitive techniques (Zeiss, Lewinsohn, & Munoz, 1979). In response to these studies and the changing zeitgeist that reflected a more integrative multi-dimensional model of depression, purely behavioral interventions generally were abandoned in favor of more comprehensive cognitive-behavioral approaches (Lewinsohn, Hoberman, Teri, & Hautzinger, 1985). The increasing popularity of cognitive therapy culminated in its inclusion (and exclusion of behavioral therapy) in the *Treatment of Depression Collaborative Research Program* (TDCRP; Elkin et al., 1989) funded by the *National Institute of Health*. This transition stated, however, the distinction among interventions for depression considered purely “cognitive” or “behavioral” has become blurred because of their significant conceptual and technical overlap (Barlow, Allen, & Choate, 2004; Hollon, 2001). Indeed, cognitive strategies have been integrated into more traditional behavioral approaches (Fuchs & Rehm, 1977; Rehm, 1977; Lewinsohn, et al., 1980, 1984; Lewinsohn & Clarke, 1999; Lewinsohn, Munoz, Youngren, & Zeiss, 1986) and vice versa (Beck, Rush, Shaw, & Emery, 1979).

Despite the documented efficacy of cognitive and cognitive-behavioral therapies for depression (DeRubeis & Crits-Christoph, 1998; Hollon & Ponniah, 2010; Hollon, Thase, & Markowitz, 2002; Westen & Morrison, 2001), several recent findings along with evolving socioeconomic and professional developments raise the question as to whether “purely” behavioral approaches to treating clinical depression were abandoned too hastily. For example, managed care organizations and academic counseling centers have established the need to develop and utilize psychosocial interventions that are both time-limited and empirically validated (Peak & Barusch, 1999; Voelker, 2003), which are features typifying the behavioral model. Second, empirical data from carefully conducted clinical studies demonstrate that cognitive change may be just as likely to occur using environment-based manipulations or cognitive interventions (Jacobson et al., 1996; Jacobson & Gortner, 2000; Simons, Garfield, & Murphy, 1984; Zeiss, Lewinsohn, & Munoz, 1979). Third, it has been demonstrated that behavioral activation interventions have been effective with even difficult-to-treat medical and psychiatric samples (Dimidjian et al., 2006; Ekers et al., 2011; Hopko et al., 2011; MacPherson et al., 2010; Pagoto et al., 2008). Fourth, therapeutic benefits of cognitive-behavioral treatment packages for depression most often occur in the initial sessions of the treatment course (Hopko, Robertson, & Carvalho, 2009), a period in which behavioral components often are more prominent (Hollon, Shelton, & Davis, 1993; Otto, Pava, & Sprich-Buckminster, 1996). In response to these issues, research programs have continued to evolve that evaluate the feasibility, effectiveness, and efficacy of purely behavioral interventions for depression.

***Contemporary Behavioral Activation Strategies***

The revitalization of behavioral approaches to treating depression has been most evident in the development of two new interventions: *Behavioral Activation* (BA; Martell et al., 2001) and the *Brief* *Behavioral Activation Treatment for Depression* (BATD; Lejuez, Hopko, & Hopko, 2001; BATD-R; Lejuez, Hopko, Acierno, Daughters, Pagoto, 2011). Although these treatment protocols utilize somewhat different strategies, both are based on traditional behavioral models of the etiology and treatment of depression (Ferster, 1973; Lewinsohn, 1974) and to a greater or lesser degree include conventional behavioral therapy strategies designed to increase response-contingent positive reinforcement. These strategies include increasing pleasant or rewarding events, teaching relaxation skills, social and problem solving skill training, contingency management, decreasing behavioral avoidance, and the incorporation of cognitive-behavioral methods such as self-instructional training and rumination-cued activation (Antonuccio, Ward, & Tearnan, 1991; Hersen, Bellack, Himmelhock, & Thase, 1984; Lewinsohn et al., 1986; Nezu, Nezu, & Perri, 1989). These treatment components, sometimes enhanced using exposure-based therapy techniques for co-existent anxiety conditions (Hopko Armento et al., 2011; Hopko, Robertson, & Lejuez, 2006; Jakupcak, Roberts, Martell, Mulick, Michael, & Reed, 2006) collectively fall under the rubric of behavioral activation.

Although contemporary behavioral activation approaches are consistent with the original etiological formulation and treatment approaches, these newer protocols entail important advancements over early behavioral approaches. First, current activation approaches are more idiographic, giving more attention to unique environmental contingencies maintaining depressed behavior, and in the case of BATD, also incorporate an individualized life areas and value assessment (LAVA) that provides the foundation for activity identification and structured activation. Second, there has been a concerted movement from targeting pleasant events alone (Lewinsohn & Graf, 1973) toward understanding the *functional* aspects of behavior change (Martell et al., 2001). So rather than increasing exposure to events and behaviors presumed to be pleasant or rewarding, this functional analytic approach involves a detailed assessment of contingencies maintaining depressive behavior, idiographic assessment of patient values and goals, and the subsequent targeting of behavior that functionally is likely to attenuate depressive affect and improve quality of life. Accordingly, the appropriateness of any particular behavioral change is determined by ongoing assessment of whether the frequency and/or duration of that behavior increases over time and leads to a corresponding reduction in depressive symptoms. Although this process may involve several strategies as outlined above, the critical mechanism of change is to decrease avoidance behavior and increase reward via principles of extinction, fading, shaping, and differential reinforcement of healthy behaviors (Hopko et al., 2003). Third, as elucidated in other works (Manos et al., 2010), unlike traditional behavioral treatments, BA focuses significantly more on the role of negative reinforcement in maintaining depressive symptoms. Consistent with the perspective that individuals with depression often experience aversive or punitive environmental events and stimuli, negative affect resulting from such experiences may result in extreme escape and avoidance behavior that cyclically may exacerbate depression and further increase the likelihood of avoidance behavior. Important to highlight, however, at this stage of research, behavioral activation methods more strongly focus on increasing response contingent positive reinforcement and in a much less structured manner address aversive environmental events and the “de-activation” of patient behaviors that may elicit such events.

Fourth, behavioral activation approaches are unique from traditional behavior therapy in that along with dialectical behavior therapy (DBT; Linehan, 1993), acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), functional analytic psychotherapy (FAP; Kohlenberg & Tsai, 1991), mindfulness-based therapies (MBT; Kabat-Zinn, 1990; Segal, Williams, & Teasdale, 2002), and the cognitive behavioral analysis system of psychotherapy (CBASP; McCullough, 2000), behavioral activation adheres to principles consistent with *third-wave behavioral therapies*. Where first and second wave therapies focused primarily on behavior modification of immediate problems, third wave methods emphasize the broad constructs of values, spirituality, relationships, and mindfulness. Indeed, when the acceptance and mindfulness-based philosophies of behavioral activation are recognized in the context of emphasizing value-based behavior, and through overt behavioral change, reducing the discrepancy between the perceived and ideal self, it is not unreasonable to suggest behavioral activation shares many fundamental assertions of traditional humanistic therapy (Rogers, 1951). On many levels, activating is congruent with strides toward self-actualization. Third wave behavioral therapy is particularly sensitive to the context and functions of psychological phenomena, not just their form, and thus tend to emphasize contextual and experiential change strategies in addition to more direct and didactic ones (Hayes, 2004). So where a second wave cognitive-behavior therapist might identify and restructure cognitive errors, a third wave therapist might focus more on encouraging patients to understand and accept the cognitions, learn their function, and how they associate with the patient’s value system. Accordingly, differing from early behavioral therapies for depression, behavior activation is much more focused on a balanced acceptance-change model (Hayes, Strosahl, & Wilson, 1999). Based on this paradigm, behavioral activation partially involves teaching patients to formulate and accomplish behavioral goals irrespective of certain aversive thoughts and mood states they may experience. This focus on action makes it unnecessary to attempt to control and change such thoughts and mood states directly, as was more common with traditional behavioral interventions (Lewinsohn, Munoz et al., 1978; Rehm, 1977). Instead, changes in patterns of overt behavior are likely to coincide with changes in thoughts and mood, in most instances following rather than preceding behavior change.

Behavior activation models acknowledge that there continues to be significant controversy surrounding cause-effect relations among biological, cognitive, and behavioral components in the etiology and maintenance of depression (Eifert, Beach, & Wilson, 1998; Hopko et al., 2003; Martell et al., 2001; Plaud, 2001). As with other pathogenic models of depression, the importance of cognition in the genesis and maintenance of depression is acknowledged in activation-based approaches, but cognitions are not regarded as proximal causes of overt behavior to be targeted directly for change. Thus, behavioral activation procedures address cognitions and emotions indirectly by bringing the individual into contact with more positive consequences for overt behavior. In doing so, behavioral activation addresses the environmental constituent of depressive affect, a component deemed more external, observable, measurable, and capable of being modified. Finally, relative to traditional behavioral therapies, contemporary behavioral activation approaches are designed to more systematically address co-existent anxiety conditions (Hopko, Robertson, & Lejuez, 2006). In large part due to high rates of comorbidity and shared symptom patterns (Kessler et al., 2003; Barlow, Allen, & Choate, 2004), the contention has been made that heterogeneity of anxiety and depressive symptom patterns is but an inconsequential variant of what is more importantly a broader general neurotic or negative affect syndrome (Barlow, 2002; Barlow et al., 2004). Based on this functional analytic framework in which depressive and anxiety based symptom patterns are viewed as conceptually parallel, behavioral avoidance is targeted within behavioral activation both as a means to increase response contingent positive reinforcement and systematically extinguish anxiety-related fears and phobias. For a comprehensive review of treatment components of traditional and contemporary behavioral activation interventions, as well as a thoughtful discussion of the construct of behavioral activation and whether effective psychotherapies such as self-control therapy (Rehm, 1977) should fall under this category, the reader is referred to the work of Jonathan Kanter and colleagues (2010).

*Behavioral Activation (BA) or Washington BA.* BA directly evolved from a component analysis study comparing cognitive-behavioral therapy for depression, behavioral activation supplemented with automatic thought restructuring, and behavioral activation alone. Data indicated that the behavioral activation condition was just as effective as the comprehensive intervention in terms of both overall treatment outcome and the modification of negative thinking and dysfunctional attributional styles (Jacobson et al., 1996). Longer-term maintenance of gains also was noted in that at 24-month follow-up, BA and the comprehensive cognitive-behavioral treatment were equally effective in preventing relapse (Gortner, Gollan, Dobson, & Jacobson, 1998). Predictor analyses indicated that positive outcome of BA was associated with pretreatment expectancies and inversely related to “reason giving,” or the tendency to offer multiple explanations with respect to the etiology and maintenance of depression (Addis & Jacobson, 1996). Several years later, a BA treatment manual was published that clearly highlighted the underlying philosophy and treatment components of BA (Addis & Martell, 2004; Martell et al., 2001). The focus of BA is on the evolving transactions between the person and environment over time and the identification of environmental triggers and ineffective coping responses involved in the etiology and maintenance of depression (Martell et al., 2001). Much like traditional behavioral therapy, this approach conceptualizes depressed behavior (e.g., inactivity, withdrawal) as a coping strategy to avoid environmental circumstances that provide low levels of positive reinforcement or high levels of aversive control (Jacobson et al., 2001). Behavioral avoidance is central to the BA treatment model. Within the context of a collaborative patient-therapist relationship, the initial treatment objective is to increase patient awareness of how internal and external events (triggers) result in a negative emotional (response) that may effectively establish a recurrent avoidance pattern (i.e., TRAP; trigger, response, avoidance-pattern). Once this pattern is recognized, the principal therapeutic objective is to assist the patient in reengaging in healthy behaviors through the development of alternative coping strategies (i.e., TRAC; trigger, response, alternative coping).

Along with increased patient awareness and progression from a TRAP to TRAC based coping philosophy, BA involves teaching patients to take ACTION. To reduce escape and avoidance behavior, patients are taught to assess the function of their behavior, and then to make an informed choice as to whether to continue escaping and avoiding or instead engage in behavior that may improve their mood, integrate such behavior into their lifestyle, and never give up. Additional treatment strategies are used to facilitate action and development of active coping including rating mastery and pleasure of activities, assigning activities to increase mastery and pleasure, mental rehearsal of assigned activities, role-playing behavioral assignments, therapist modeling, periodic distraction from problems or unpleasant events, mindfulness training or relaxation, self-reinforcement, and skills training (e.g., sleep hygiene, assertiveness, communication, problem solving) (Martell et al., 2001). Rumination-cued activation also is an important intervention component in which patients are taught to recognize negative cognitions and to use this identification as a cue to reengage with the environment and behaviorally activate. The treatment duration of BA typically is between 20-24 sessions.

*Behavioral Activation Treatment for Depression (BATD) or Morgantown BA.* At approximately the same time the BA treatment manual was released, our research team at West Virginia University published the brief behavioral activation treatment for depression (BATD: Lejuez, Hopko, & Hopko, 2001) based on behavioral matching theory. Applied to depression, matching theory suggests that the frequency and duration of depressed relative to nondepressed (or healthy) behavior is directly proportional to the relative value of reinforcement obtained for depressed versus nondepressed behavior (Herrnstein, 1970; McDowell, 1982). When the value (e.g., accessibility, duration, immediacy) of reinforcement for depressed behavior is increased through environmental change (e.g., increased accessibility to social attention, increased opportunity to escape aversive tasks), the relative value of reinforcement for healthy behavior decreases, increasing the likelihood of depressive behavior. Similarly, when the value of reinforcement for healthy behavior is decreased through environmental change (e.g., decreased availability of peers), the relative value of reinforcement for depressed behavior is simultaneously increased. The BATD model predicts that increased contact with reinforcement for healthy behavior (or reduced contact with reinforcement for depressed behavior) would have the effect of decreasing depressed behavior and increasing healthy behavior.

Based on this paradigm, BATD generally is conducted over an 8-10 session protocol, although two-session BATD has recently been shown to be effective in reducing symptoms of depression among moderately depressed undergraduate students (Armento, McNulty, & Hopko, in press; Gawrysiak, Nicholas, & Hopko, 2009). Initial sessions consist of assessing the function of depressed behavior, efforts to weaken access to positive reinforcement (e.g., sympathy) and negative reinforcement (e.g., escape from responsibilities) for depressed behavior, establishing patient rapport, identifying the pros and cons of behavioral change, and introducing the treatment rationale. Patients begin with a weekly self-monitoring exercise that serves as a baseline assessment of daily activities, orients patients to the quality and quantity of their activities, and generates ideas about activities to target during treatment. The emphasis then shifts to the life areas and value assessment (LAVA), in which ideographic life values are identified and behavioral goals are established within major life areas: family, peer, and intimate relationships, daily responsibilities, education, employment, hobbies and recreational activities, physical/health issues, spirituality, and anxiety-eliciting situations (Hayes et al., 1999). Such goal setting has long been considered an important component in the behavioral treatment of depression (Rehm, 1977). Subsequent to goal selection, an activity hierarchy is constructed in which 15 activities are rated ranging from “easiest” to “most difficult” to accomplish. Using activity logs to monitor progress, the patient progressively moves through the hierarchy. For each activity, the therapist and patient collaboratively determine what the *weekly* and *final* goals will be in terms of the frequency and duration of activity. At the start of each session, the monitoring form is examined and discussed, with the following weeks goals are established as a function of patient success or difficulty with goals for the prior week. The BATD treatment manual recently was revised to simplify and clarify treatment components, procedures, and forms, with an additional emphasis on therapeutic alliance issues and applications of BATD for the cognitively impaired (Lejuez, Hopko et al., 2011).

*BA and BATD: Similarities and Differences.* The most important similarity in BA and BATD is their direct focus on behavioral avoidance as the primary target of therapy. Both interventions strongly emphasize that behavioral avoidance is the pathognomonic feature of depression that inhibits exposure to response contingent reinforcement and extinction of anxiety-related symptoms and behaviors. Based on this conceptual similarity, a primary and common treatment focus is facilitating approach behavior. In the context of BA, activities in graded task assignments are designed based on current activity level, likelihood of success, and importance of activities in meeting life goals. This process is quite open and the therapist has significant flexibility in assigning activities, how to assess life goals, and determining whether (and when) the remaining treatment components are to be implemented. With BATD, following the LAVA assessment and based on a model forwarded by Hayes and colleagues (1999), an activity hierarchy is systematically constructed that directly reflects life values and is followed by systematic movement through the hierarchy to achieve value-consistent life goals. The course of therapy is held relatively constant across all patients. Second, both BA and BATD researchers and clinicians would suggest that affective change and cognitive modification are directly attributable and secondary to relative increases in reinforcement for healthy relative to depressive behavior patterns. Third, both interventions focus on functional assessment of depressive behaviors to varying degrees. In the BA model, the TRAP/TRAC strategies are used to identify avoidance patterns and teach a functional analytic style of understanding and modifying behavior. In contrast, and consistent with traditional behavior therapies for depression, the BATD model does not focus significantly on assisting patients with functional analytic interpretations of behavior as precise functional analyses are difficult for even highly trained clinicians (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Consequently, functional analytic strategies in BATD are deemed secondary to the primary overt activation component. Beyond the theoretical distinctions explicated above, the primary difference in the two approaches is that BA includes many strategies generally not incorporated within BATD, such as mental rehearsal, periodic distraction, mindfulness training, and skill-training procedures. BATD is based on the premise that systematic activation toward positive activities and situations will allow patients to develop skills in the natural environment, enhance generalizability of treatment gains beyond the clinic, and maximize maintenance of gains over time. That stated, the question of whether a multimodal strategy is superior to a pure activation-based approach must be answered empirically, and to date, the incremental benefits of treatment approaches included in BA beyond those of BATD is unstudied. In terms of practical applications, a clinician who desires a greater range of intervention strategies might prefer the BA method, whereas therapists and patients desiring greater structure and decreased interest in strategies beyond direct activation might prefer BATD. This is not to suggest, however, that BA cannot be organized more systematically or that BATD cannot be used flexibly. We merely assert that such efforts are less easily accomplished within the framework of the particular approaches and therefore likely would require greater practical and conceptual skill on the part of the therapist.

*The Focus of Behavioral Activation: Behaviors Amenable to Activation.* When discussing behavioral activation interventions, it is important to clearly operationalize the scope of behaviors amenable to activation. Toward this objective, it is useful to distinguish between nondepressive or healthy overt behaviors we are striving to activate, and the depressive behaviors we are attempting to eliminate or deactivate. Nondepressive behavior is defined as overt behaviors that are generally value-based, directed toward improving quality of life and life functioning, minimize aversive response-consequence contingencies, and are directed toward the attainment of some objective or rewarding consequence. Nondepressive behavior is directly incompatible and the antithesis of depressive behavior. Depressed behavior may occur as a function of some reward via positive (e.g., sympathy from friend or family member) or negative reinforcement (escape from responsibility), or in response to decreased availability of reinforcers for healthy behavior. Depressed behavior also is often a direct consequence of aversive or unpleasant life events or experiences, some of which are beyond human control and unpredictable (e.g., sexual or physical trauma, natural disasters, chronic medical illness, death of a loved one) and others where human accountability is more apparent (e.g., alcoholism and substance abuse, gambling, aggression and other social indiscretions). In contrast with healthy behavior, depressive behavior generally is not consistent with one’s value system and generally does not function to improve functioning or quality of life. Depressive behavior generally refers to responses associated with major depressive disorder (DSM-IV-TR; American Psychiatric Association, 2000).

Practitioners of behavioral activation conceptualize depressive behavior from a contextual perspective, which: (a) considers behavior as a function of the environmental contingencies that shape and maintain its occurrence, and (b) encourages the identification of environment-behavior relations that may be measured objectively and reliably. For example, lethargic and passive behavior associated with anhedonia as well as suicidal behavior largely is understood with reference to operant principles. Although these forms of behavior primarily occur as a function of environmental context, they also are considered “choice” behaviors insofar as the person has some degree of control over whether situations are approached or avoided. Social withdrawal, substance abuse, and other maladaptive actions (antagonistic social behavior, lack of work productivity) associated with depressive behavior may well be considered in the same category. Neurovegetative symptoms such as decreased eating and sleeping, on the other hand, though still a function of environmental contingencies, are perhaps more biologically-based responses and less directly controllable (Benca, Obermeyer, Thisted, & Gillin, 1992). Yet even in this example “choice” (in a stochastic rather than mentalistic sense) plays a certain role in whether one eats or decides to sleep or awaken. Finally, symptoms such as negative cognitions and psychomotor agitation/retardation primarily are viewed as private (non-observable) responses to environmental stimuli that are less controllable, difficult to manipulate therapeutically, and in the latter case biologically based. In conducting behavioral activation, patients and therapists target behavior that is within the realm of patient control and where the environmental context can be modified. In the case of BATD, multiple life domains are focused on simultaneously as a guideline to structured activation. Private behaviors (thoughts, feelings) do not fall into this category, are more difficult to observe and measure, and consequently are less often the focus of behavioral activation methods. Such behavior is not ignored, however, but rather is expected to alleviate following overt behavior modification that increases environmental reward. For example, although cognitions often are not targeted directly in behavioral activation strategies, covert change has been directly implicated as a transfer effect of activation (Jacobson, et al., 1996; Simons, et al., 1984). That stated, it is noteworthy that rumination-cued activation is a BA treatment component that focuses on recognition of maladaptive cognitions, their impact on life functioning, and the incorporation of activation as a viable coping mechanism by which ruminative behavior is replaced via engagement in rewarding overt behaviors (Addis & Martell, 2004).

*Behavioral Activation as a Mechanism for Anxiety Exposure.* As indicated earlier, behavioral activation provides a framework in which exposure strategies can easily be implemented. The theoretical basis for this integration has been highlighted in earlier works (Hopko, Robertson, & Lejuez, 2006) and is largely based on a unified model of internalizing disorders (Barlow, 2002; Barlow et al., 2004). Indeed, in addition to several case studies, a few randomized trials have demonstrated preliminary support for the efficacy of both BA and BATD in attenuating symptoms of anxiety (Hopko et al., 2011; Jakupcak et al., 2006). Nonetheless, the process of behavioral activation should be differentiated from that of in vivo exposure. In the latter procedure, exposing individuals to aversive conditioned stimuli while preventing an avoidance response is an application of extinction within a classical conditioning framework. Without experiencing the anticipated aversive or traumatic event, over time anxious responding in the presence of the conditioned stimuli is likely to extinguish. Although exposure strategies are not fundamental to the behavioral activation process, avoidance behaviors characteristic of depressed individuals may partially be a function of aversive contextual stimuli (e.g., situations or individuals). To the extent that avoidance behavior functions to minimize anxiety elicited by these contexts, the therapeutic effects of guided activity (or activation) and graduated systematic exposure might be functionally similar.Exploration of the relevance of behavioral activation in treating anxiety disorders is worthy of further investigation because of the inter-relatedness of anxiety and depressive conditions (Barlow et al., 2004; Kessler et al., 2003; Mineka, Watson, & Clark, 1998), the potential transfer effects of treating one condition on the other (Hopko et al., 2011; Stanley et al., 2003), and increased focus on refining treatments for patients with mixed anxiety-depressive disorders (Barlow & Campbell, 2000). More systematic research clearly is needed to examine how activation strategies supplemented with graduated fear hierarchies, progressive muscle relaxation, and other behavioral strategies may enhance treatment of patients with co-existent anxiety and depressive symptoms.

### **Behavioral Activation Assessment Methods**

Based on conceptual models of depression and proposed mechanisms of change linked to behavioral activation (Ferster, 1973; Hopko, Lejuez et al., 2003; Lewinsohn, 1974; Manos et al., 2010; Martell et al., 2001), measurement of a number of constructs is relevant toward evaluating the process and outcomes associated with behavioral activation. Among these constructs are depression, environmental reinforcement and reward, behavioral avoidance, behavioral activation and inhibition, and aversive or unpleasant events. Organized on the basis of assessment methods, measurement of these constructs is presented below, with an important caveat to be acknowledged. Specifically, the fundamental principle of behavioral models of depression and the ultimate objective of behavioral activation is to increase response contingent positive reinforcement. As highlighted in several works (Armento & Hopko, 2007; Carvalho et al., 2011; Manos et al., 2010), it is highly difficult to measure the process of reinforcement, in that by definition it refers to change in behavior frequency over time that is contingent upon the presentation of controlled stimuli. If a given behavior increases as a function of a consequence or stimulus presented, a positive reinforcer has been identified. Problematically, the direct measurement of reinforcement is pragmatically difficult in that it would necessitate extensive and micro-analytical control over the patient’s environment, lengthy observation periods, and careful assessment of a plethora of ongoing response-consequence contingencies across a breadth of life domains. Accordingly, many measures either do not purport to measure the process of reinforcement, or alternatively, attempt to measure reinforcement by means of proxy variables (e.g., environmental reward, pleasant events). The remainder of the section highlights assessment strategies relevant to assessing behavioral activation and depression. Although many resources are available, their appropriateness and clinical utility vary greatly across patient and assessment context. The level of skill and training required of the assessor to incorporate these strategies also is quite variable, ranging from minimal skill to administer a self-report measure, moderate skill to conduct a valid structured interview, and extensive skill to perform a comprehensive functional assessment of depressive behaviors.

*Unstructured and Structured Interviews.* Clinical interviews have significant utility, both in terms of evaluating symptoms of depression and actively engaging in behavioral activation therapy. Of course clinical interviewing procedures can range from primarily unstructured and highly flexible approaches to structured methods that are more restrictive and goal-directed. In terms of assessing depression, the most commonly used interviews include the Structured Clinical Interview for DSM-IV Patient Version (SCID-I/P; First et al., 1996), the Anxiety Disorders Interview Schedule (ADIS-IV; Brown, Di Nardo, & Barlow, 1994), the Schedule for Affective Disorders and Schizophrenia (SADS; Endicott & Spitzer, 1978), and the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981). The 17-item Hamilton Rating Scale for Depression (HRSD; Hamilton, 1960) was designed as a post-diagnostic measure to assess the severity of depressive symptoms and to measure changes in patient functioning over time. The recommendation is that the HRSD be completed (in about10 minutes) following a clinical interview in which the necessary information is obtained to accurately assess the patient on dimensions such as mood, anhedonia, insomnia, and weight change. Following Hamilton’s development of the HRSD, several alternative Hamilton rating scales have evolved with some instruments including as many as 29-items (Williams, Link, Rosenthal, & Terman, 1988). Inter-rater reliability coefficients of the HRSD generally are excellent (> 0.84) and data suggest moderate convergent validity with several self-report measures of depression (Nezu, Ronan, Meadows, & McClure, 2000). Although recently criticized as conceptually and psychometrically flawed (Bagby, Ryder, Schuller, & Marshall, 2004), the HRSD generally is the most widely used and accepted outcome measure for the evaluation of depression and is the standard outcome measure in clinical trials (Kobak & Reynolds, 1999), including treatment outcome research in behavioral activation (Dimidjian et al., 2006; Hopko et al., 2011).

In addition to increasing diagnostic precision, interviewing strategies with the patient and significant others also can provide valuable assessment data at several stages of behavioral activation. For example, in assessing level of environmental reward, in addition to using daily self-monitoring strategies endorsed in both BA and BATD, the therapist is always encouraged to further explore activities and behaviors in the context of specific reward ratings, and strive to identify behavioral patterns, as well as stimulus and response classes and their associated reward or pleasure ratings. Interviewing and questioning are often critical toward facilitating this process, elaborating on self-monitoring data, and helping to ensure that the patient and therapist are conceptualizing behaviors and reward systems reliably. When possible, incorporating the observations of a spouse or significant friend also is recommended. Arguably at no other treatment phase is meticulous interviewing as crucial as it is during the life areas and values (LAVA) assessment; in the domains of family, social, and intimate relationships, education, employment and career, hobbies and recreation, volunteer work and charity, physical and health issues, spirituality, and avoidance behavior related to anxiety-eliciting situations. A *value* is defined as an ideal, quality, or strong belief that should translate into certain patterns of behavior. To assess values, patients are interviewed about which life domains are more or less important, what they would like to accomplish in each area, who would be involved in each area, what observable and measurable overt behaviors could be engaged in that would be consistent with life values and accomplish goals in life domains, and which possible obstacles might prevent engagement in behaviors. Patients are asked to identify values that are highly personal and not necessarily values of other people in their life or society in general. Based on this model, therapist must not only be skillful at interviewing, but also cognizant of possibilities for treatment failure. First, it is conceivable that patients are unable to articulate their life values due to misunderstandings about the purpose of the exercise (e.g., lack of therapist proficiency, patient cognitive impairment). Second, because discussion of life areas can be a highly sensitive exercise, patients may be unwilling to disclose due to emotional avoidance or personal discomfort. Third, and different from patient unwillingness, engaging in the value assessment may be difficult for some patients due to minimal insight or lack of psychological awareness. Finally, patients must be encouraged to focus on their unique values and life circumstances, embrace their individuality, and refrain from impulses to adopt other people’s values and beliefs that might be common, yet markedly different from their own perspectives and value systems. Given these objectives, and the fact that the LAVA assessment serves as the foundation for guided activation, significant therapeutic interviewing skills are required to accurately assess patients’ unique value systems with awareness of how this process could potentially become derailed. If conducted ineptly, the efficacy of behavioral activation could be greatly compromised.

In addition to the importance of proficient interviewing during behavioral activation treatment components, it is important to note that therapeutic alliance and associated therapist-patient communication patterns are strongly emphasized in behavioral activation and other third-wave behavioral therapies (Lejuez, Hopko, Levine, Gholkar, & Collins, 2005). In addition to assisting with the development of patient rapport, basic behavioral principles such as reinforcement, punishment, shaping, and fading are utilized within sessions to address patient adherence to behavioral activation and develop skills necessary to activate in the natural environment. In an interesting integration of functional analytic psychotherapy (FAP) and behavioral activation, it was demonstrated that whereas the latter intervention largely focuses on activation out-of-session, FAP can utilize therapist interviewing skills and dyadic discussions to identify clinically relevant problem behaviors that can be behaviorally modified within session to promote increased access to naturalistic environmental reinforcement (Kanter, Manos, Busch, & Rusch, 2008; Manos, Kanter, Rusch, Turner, Roberts, & Busch, 2009). Strategies such as this may prove useful toward supplementing more traditional activation approaches.

*Self-Report Measures.* Self-report measures of depression, behavioral activation, inhibition, avoidance, environmental reward, and pleasant and unpleasant events have proven useful as screeninginstruments, auxiliaries in the diagnostic process, as tools for monitoring progress across treatment sessions, and as outcome measures assessing the efficacy and effectiveness of behavioral activation interventions. At present, there are over 100 measures designed to assess depression and related constructs, with the majority having adequate to excellent psychometric properties (Hopko, Lejuez, Armento, & Bare, 2004; Nezu et al., 2000). As the strengths and limitations of self-report measures relevant to behavioral activation have nicely been presented (Manos, Kanter, & Busch, 2010), only a few of the most commonly utilized measures are presented here.

***Depression.*** The *Beck Depression Inventories* (BDI; Beck & Steer, 1987; BDI-II; Beck, Steer, & Brown, 1996) assess the severity of depressive symptoms and each consists of 21 items. The instruments have excellent reliability and validity with depressed younger and older adults (Beck & Steer, 1987; Beck et al., 1996; Beck, Steer, & Garbin, 1988; Snyder et al., 2000). Among younger clinical and nonclinical adults, the instruments have good internal consistency (α = 0.73–0.95) and adequate test-retest reliability for non-depressed individuals (*r* = 0.60–0.83) and psychiatric patients (*r* = 0.48–0.93) (Beck et al., 1988, 1996). Concurrent and construct validity among the Beck inventories and other indices of depression ranges from moderate (*r* = 0.33 with DSM III diagnosis of clinical depression; Hesselbrock et al., 1983) to strong (*r* = 0.86 with the Zung SDS; Turner & Romano, 1984; see Beck et al., 1988, 1996 for comprehensive reviews).

The *Center for Epidemiological Studies’ Depression Scale* (CES-D; Radloff, 1977) is a 20-item self-report questionnaire of depressive symptoms that was designed as a survey instrument for assessing depressive affect in the general population. Although it was not intended for use as a diagnostic measure, CES-D totals have been shown to be moderately related to a diagnosis of clinical depression (Myers & Weissman, 1980) and some have argued for its utility as an initial depression screening measure (Roberts & Vernon, 1983). When used for screening, scores greater than 16 indicate that a patient may have clinical depression (Radloff, 1977). The CES-D has adequate psychometric properties in psychiatric and medical samples (Nezu et al., 2000).

***Behavioral Avoidance and Activation.*** The Cognitive-Behavioral Avoidance Scale (CBAS; Ottenbreit & Dobson, 2004) is a self-report measure that assesses depression-related avoidance. The scale includes 31 items and includes four subscales: Behavioral Social, Cognitive Social, Behavioral Nonsocial, and Cognitive Nonsocial avoidance. Subscales demonstrate adequate to strong coefficient alphas (α = 0.86, 0.78, 0.75, 0.80, respectively) and test-retest reliability (*r* = 0.86, 0.58, 0.88, 0.94, respectively). A total avoidance score also is calculated, which has excellent internal consistency (α = .91) and test-retest reliability (*r* = 0.92). The CBAS also correlates moderately with other measures of avoidance as well as depression and anxiety scales (Kanter et al., 2007, 2009; Ottenbreit & Dobson, 2004). Sample items include, “I try not to think about problems in my personal relationships” (Cognitive Social) and “I quit activities that challenge me too much” (Behavioral Nonsocial).

The *Behavioral Activation for Depression Scale* (BADS; Kanter et al., 2007) is a 25-item scale assessing behaviors targeted during behavioral activation treatment interventions. The measure includes four subscales: Activation, Avoidance/Rumination, Work/School Impairment, and Social Impairment. Sample items include “I engaged in a wide and diverse array of activities” (Activation subscale), “I did things to avoid feeling sadness or other painful emotions” (Avoidance/Rumination subscale), and “I stayed in bed for too long even though I had things to do (Work/School Impairment subscale). Internal consistency of the total score and subscales is adequate (α = .76 to .87), and good 1-week test-retest reliability was established (*r* = .74). The BADS also correlated strongly with the BDI (*r* = -.67 to -.70), and had good discriminant validity as evidenced by a significant albeit weak relationship with the Beck Anxiety Inventory (*r* = -.19; Beck, Epstein, Brown, & Steer, 1988). Finally, there was some support for the predictive validity of the BADS in that individuals with higher scores on the Avoidance/Rumination subscale were less likely to return for follow-up assessment (Kanter et al., 2007).

The *Behavioral Inhibition and Behavioral Activation Scale* (BIS/BAS; Kasch, Rottenberg, Arnow & Gotlib, 2002) is a 20-item self-report questionnaire that assesses how people typically react to certain situations. The scale is subdivided into four subscales: Behavioral Inhibition, Behavioral Activation-Reward Responsiveness, Behavioral Activation-Drive, and Behavioral Activation-Fun-Seeking. Internal consistencies of all subscales are high (BIS = .78; BAS-RR = .80; BAS-Drive = .83; BAS-Fun = .69). The BIS/BAS scales also have good convergent and discriminant validity, with scores on the BAS scales typically relating to positive affect and extraversion and scores on the BIS scale generally being related to anxiety symptoms, negative affect and neuroticism (Carver & White, 1994; Jorm et al., 1999).

***Environmental Reward.*** The *Reward Probability Index* (RPI; Carvalho et al., 2011) is a 20-item self-report measure designed to measure the magnitude of environmental reward as an approximation of response-contingent positive reinforcement. The scale assesses RCPR’s four dimensions via two factors: Reward Probability (potentially reinforcing events and instrumental behaviors in obtaining reinforcement) and Environmental Suppressors (availability of reinforcement in the environment and presence of punishing/aversive experiences). Sample items include, “I consider myself to be a person with many skills” (Reward Probability) and “There are a lot of activities I might enjoy, but they just don’t seem to happen” (Environmental Suppressors). Participants rate each item on a 4-point Likert scale (1 = *strongly disagree* to 4 = *strongly agree*) for the time period of the “past several months,” with higher scores indicating higher levels of reward. Psychometric properties of the RPI were established through three studies. The measure had strong internal consistency (α = .88 to .92) and very good two-week test-retest reliability (*r* = .69). Convergent validity was established via strong correlations with measures of activity, avoidance, reward, and depression (*r* = .65 to .81). Discriminant validity was supported via smaller correlations with measures of social support and somatic anxiety (*r* = -.29 to -.40). Further, the RPI accounted for unique variance in daily diary-reported environmental reward above that accounted for by a preexisting reward measure (EROS) and self-reported depression (BDI-II).

The *Environmental Reward Observation Scale* (EROS; Armento & Hopko, 2007) is a 10-item measure that assesses environmental reward. The scale is intended to identify the magnitude of reinforcing events, the availability of reinforcement in the environment, and the ability of an individual to elicit reinforcement. Sample items include “A lot of activities in my life are pleasurable,” “It is easy for me to find enjoyment in my life,” and “The activities I engage in have positive consequences.” The EROS has strong internal consistency (α = .85 - .90) and excellent 1-week test-retest reliability (*r* = .85). The EROS also correlated strongly with other commonly administered and psychometrically sound self-report measures of depression and anxiety, as well as the Pleasant Events Schedule (*r* = -.43 to -.71; Armento & Hopko, 2007).

***Pleasant and Unpleasant Events.*** The *Pleasant Events Schedule* (PES; MacPhillamy & Lewinsohn, 1982) is a 320-item measure assessing the frequency and subjective pleasure of potentially reinforcing events or activities. Each item has a frequency and enjoyability score, each of which is rated on a 0 (“not happened in last 30 days”; “not pleasant”) to 2 (“happened often”; “very pleasant”) Likert-type scale. Average frequency and pleasure ratings are multiplied to form a cross-product score, with higher cross-product scores indicating that activities have a higher level of reinforcement potential, considered a useful index of experienced positive reinforcement (Correia et al., 2002). The PES has strong psychometric properties (MacPhillamy & Lewinsohn, 1982; Nezu et al., 2000).

The *Unpleasant Events Schedule* (UES; Lewinsohn & Talkington, 1979) is a list of 320 unpleasant events that is used as an indicator of contact with punishers and negative reinforcers. Each item has a frequency and aversiveness score. Examples of items include **“**being alone**”**, **“**attending funerals**”** and **“**performing in public.**”** Like the PES, the UES uses the time frame of the past month, and yields a frequency score on a 3-point scale, a subjective aversiveness score on a 3-point scale, and the crossproduct that is thought to approximate response-contingent punishment and negative reinforcement.

Factor analytic investigation by Lewinsohn et al. (1985) resulted in the following scales: Legal, Sexual**–**Marital-Friendship, Death Related, Controllable versus Uncontrollable, Life Changes, Self versus Other, and Most Discriminating Items.

The *Life Experiences Survey* (LES; Sarason, Johnson, & Siegel, 1978) is a 57-item measure that assesses stressful life changes over the past year and includes blank spaces for write-in events. Each experienced event is rated on a 7-point Likert scale ranging from “extremely negative impact” (-3) to “extremely positive impact” (+3). Sample items include “Death of a close family member,” “Change of residence,” and “Beginning a new school experience at a higher academic level.” The LES has good reliability and is significantly related to several stress-related measures (Sarason et al., 1978).

*Observational Methods.* Observational methods of assessing depression, its overt manifestation, and related behavioral activation and avoidance patterns represent an additional valuable assessment tool. For example, the frequency and duration of observable (overt-motor) depressive behaviors may be monitored that include excesses such as crying, irritable/agitated behaviors, and even suicidal behaviors, or deficits such as minimal eye contact, psychomotor retardation, decreased recreational and occupational activities, as well as disruption in sleep, eating, and sexual behaviors (Bonierbale, Lancon, & Tignol, 2003; Rehm, 1988; Riemann, Berger, & Voderholzer, 2001; Thase, 2006). In the realm of verbal behavior [see Rehm (1988) for a comprehensive discussion], several studies have demonstrated that depressed individuals generally exhibit slower and more monotonous speech (Gotlib & Robinson, 1982; Libet & Lewinsohn, 1973; Robinson & Lewinsohn, 1973). Individuals with depression also have longer response latencies to the verbal behavior of others (Libet & Lewinsohn, 1973) and more commonly engage in self-focused negative remarks (Blumberg & Hokanson, 1983; Gotlib & Robinson, 1982) and use fewer “achievement” and “power” words in their speech (Andreasen & Pfohl, 1976). Nonverbal (motoric) differences between depressed and nondepressed individuals also are evident. In a pioneering investigation, Williams, Barlow, and Agras (1972) developed the Ward Behavior Checklist to assess smiling, motoric activities (e.g., reading, grooming), and “time out of the room” among a small group of depressed inpatients. These behaviors correlated moderately with depression, and other studies have suggested depressed individuals smile less frequently (Gotlib & Robinson, 1982), make less eye contact during conversation (Gotlib, 1982), and hold their head in a downward position more frequently (Ranelli & Miller, 1981). Depressed individuals also react differently to emotional facial experiences (Seidel, Hable et al., 2010) and are sometimes rated as less competent in social situations (Dykman, Horowitz, Abramson, & Usher, 1991), although other studies have not supported this latter finding (Gable & Shean, 2000; Segrin, 1999). There also is couples research suggesting when one or both partners is clinically depressed, there is increased conflict and decreased marital satisfaction (Fincham, Beach, Harold, & Osborne, 1997; Hinchliffe, Hooper, & Roberts, 1978; Whisman, Uebelacker, & Weinstock, 2004).

Although such behavioral observations characteristic of depressed individuals are highly relevant insofar as assessment and treatment monitoring are concerned, observational assessment also has specific applications within behavioral activation. For example, in traditional behavioral treatments, daily diaries, activity monitoring logs, and home observations were utilized in the context of assessing patients’ sources and degree of environmental reinforcement (Lewinsohn & Atwood, 1969; Lewinsohn & Libet, 1972; Lewinsohn & Shaffer, 1971). In the context of contemporary behavioral activation treatments, daily diaries and activity schedules are useful indicators of overt behavior and assist with case conceptualization in that they allow patients to topographically record behaviors over a given time interval and also permit recording of mood, mastery, and/or pleasure ratings. As detailed elsewhere, such strategies are typically used as indicators of environmental reinforcement in lieu of more detailed, functional analyses of reinforcement following specific activities (Manos et al., 2010). Nonetheless, in addition to serving useful purposes insofar as pre-treatment assessment and treatment monitoring are concerned, daily diaries and activity logs have proven valuable in terms of quantitatively evaluating treatment adherence. For example, in our work with depressed cancer patients and college students, treatment compliance has been assessed using an adherence score that is formulated for each patient by dividing the number of behavioral assignments completed by those assigned (Gawrysiak et al., 2009; Hopko et al., 2005, 2008). These daily diaries can also be useful toward using mood and reward ratings to evaluate behavioral models of depression. For example, it has been demonstrated that the immediate and future reward value of current overt behaviors correlated highly with self-report measures of depression, with mildly depressed and non-depressed students distinguishable via response style (Hopko, Armento, Cantu, Chambers, & Lejuez, 2003). Compared to non-depressed college students, mildly depressed individuals also less frequently engaged in social, physical, and educational behaviors and more often in activities related to employment (Hopko & Mullane, 2008). In an interesting single-subject design that provided some support for the proposed mechanism of change in behavioral activation, it was shown that change in activity level predicted change in depression over time (Gaynor & Harris, 2008). Finally, an intriguing and emerging area of interest to explore mechanism of change issues in behavioral activation involves the use of therapist coding to more clearly decipher the relation between patient activation and attenuated depression (Hubley, Dimidjian, & Gallop, 2012). Although self-report measures and observational methods have much to offer toward establishing the merit of behavioral models of depression and behavioral activation therapy, the cross-sectional methodologies only allow for partial inferences to be drawn at present. More longitudinal work that incorporates enhanced technology and sophisticated statistical analysis will be essential toward assessing the causal relationships between response contingent positive reinforcement, aversive (or punitive) environmental events, and their collective impact on depression.

*Functional Assessment.* Functional assessment generally refers to theprocess of identifying important, controllable, and causal environmentalfactors that may be related to the etiology and maintenance of depressivebehavior(s),such as passivity, social withdrawal, crying, alcohol abuse, and suicidality.Strategies for conducting a functional assessment include interviews with thepatient and significant others, naturalistic observation, the manipulationof specific situations that result in an increase or decrease of target behaviors,or some combination. Functional assessment is not to be equated with functional analysis, with the latter process being but one option to accomplish the former. Indeed, functional analysis refers to the manipulation of environmental events under highly controlled experimental conditions with systematic observation of behaviors (Horner, 1994; O’Neill, Horner, Albin, Storey, & Sprague,1990). Functional assessment generally is less rigid, an ongoing process without the experimental constraints of functional analysis, and under certain conditions highly appropriate for clinical practice (Horner, 1994). With the exception of significant clinical research in childhood externalizing disorders that has relied heavily on functional analysis (Hanley, Iwata, & McCord, 2003), this specific assessment and intervention process is only infrequently used in clinical practice, including cognitive-behavioral treatment outcome research for depression. In addition to highly limited implementation in general, recurrent reference to behavioral activation as adopting this strategy is grossly inaccurate. Indeed, both BA and BATD researchers have erroneously endorsed functional analysis as a critical component of behavioral activation (Dimidjian et al., 2006; Hopko, Lejuez, Ruggiero, & Eifert, 2003; Jacobson, Martell, & Dimidjian, 2001), where functional assessment is the more operative term.

This important semantic issue acknowledged, functional assessment is integral to both BA and BATD. In particular, the shared perspective is that depressive behavior such as passivity and withdrawal functions as avoidance behavior as individuals minimize exposure to environments that lack positive reinforcement and/or have aversive or punitive consequences. So, depressivebehavior occurs because reinforcement for healthy behavior is minimal,positive and negative reinforcement for depressive behavioris excessive, healthy behavior is punished, or some combination of these factors. As avoidance behavior patterns are negatively reinforced via the short-term relief often experienced, in the longer term negative affect frequently heightens and a cyclical pattern is initiated (i.e., avoidance-depression-more avoidance). In the initial stages of behavioral activation and often incorporating some form of daily monitoring,patients may be asked to record depressive (target) behaviors, the context(time, place, surroundings) in which they occur, and the consequencesthat follow. With all functional assessment strategies, the therapist is concernedwith identifying the function (or maintaining reinforcers) thatdepressed behavior produces for an individual, or put more simply, whythe depressed behavior occurs. Communication with significant others also might facilitate this functional conceptualization. In the Washington BA model, the principal strategies of change involve teaching patients to identify avoidance patterns (i.e., TRAP and TRAC models described earlier), teaching a functional assessment style of understanding behavior, and focusing on guided activity to foster enduring changes in overt

behavior. In contrast, the Morgantown BATD model does not focus to a similar degree on assisting patients with functional assessment interpretations of behavior. As mentioned earlier, functional assessment strategies in BATD are secondary to the primary value-assessment and overt activation components. In addition to using functional assessment to conceptualize overt behavior, or lack thereof, this strategy can be used to identify specific thought patterns elicited by certain environmental events and how these cognitions may correspond with depressive mood states. Indeed, a unique feature of Washington BA is the use of rumination-cued activation (Addis & Martell, 2004), an assessment and intervention strategy that focuses on identifying the context and function of ruminative thought patterns and how to cope through guided activation. Intuitively, it is evident that functional assessment strategies should be useful in case conceptualization, generating specific treatment goals, and as a method of intervention. At this stage of outcome research, however, the incremental benefits of functional assessment, the structured value-assessment of BATD, and the additional treatment strategies at the disposal of BA practitioners above and beyond the benefits of overt activation toward increasing RCPR are largely unknown.

***Behavioral Activation Treatment Outcome Research***

Behavioral activation interventions largely have been used to treat depressive disorders and symptoms, with three meta-analyses supporting their efficacy such that behavioral activation is now considered an empirically-validated treatment for depression (Cuijpers et al., 2007; Ekers et al., 2008; Mazzucchelli et al., 2009; Sturmey, 2009). In one of the more compelling studies, behavioral activation was comparable to antidepressant medication and superior to cognitive therapy in treating severe depression (Dimidjian et al. 2006), results that were maintained at 2-year follow-up (Dobson et al., 2008). In a recent study examining the relative efficacy of BATD and problem-solving therapy in treating depressed breast cancer patients, intent-to-treat analyses suggested both treatments were efficacious, with both evidencing significant pre-post treatment gains across a breadth of outcome measures assessing depression, environmental reward, anxiety, quality of life, social support, and medical outcomes (Hopko et al., 2011). Across both treatments, gains were associated with strong effect sizes, and based on response and remission criteria, a reliable change index, and numbers needed to treat analyses, approximately two-thirds of patients exhibited clinically significant improvement. Importantly, treatment gains were maintained at 12-month follow-up. In addition to these studies, behavioral activation has been effectively used with depressed patients in a variety of settings and among samples with divergent medical and psychiatric problems (Daughters et al., 2008; Ekers et al., 2011; Gawrysiak, Nicholas, & Hopko, 2009; Hopko et al., 2005; Hopko, Lejuez, LePage, Hopko, & McNeil, 2001; Jacobson et al., 1996; Jakupcak et al., 2006; MacPherson et al., 2010; Pagoto et al., 2008).

As presented in Table 1, the efficacy of both traditional and contemporary behavioral activation interventions has been strongly supported. Although the overwhelming majority of these studies reflect applications of behavioral activation for depressed individuals, it is important to highlight its successful implementation among individuals with comorbid medical problems that include cancer, HIV, brain trauma, and obesity. In addition, albeit much more preliminarily than in the treatment of depression, behavioral activation outcome research supports its potential effectiveness in patients with co-existent anxiety problems (particularly PTSD and GAD), Alzheimer’s disease, smoking and alcohol dependence, and possibly even schizophrenia and borderline personality disorder. Although most studies have examined the efficacy of behavioral activation with younger to middle-aged adults, more systematic research is beginning to assess its utility with younger adolescents and older adults.

In the first of three recent meta-analyses in this area (Cuijpers et al., 2007), the focus was on assessing the efficacy of activity scheduling as a behavioral treatment for depression. In an examination of sixteen studies, the pooled effect size indicating the difference between activity scheduling and control conditions at post-treatment was large [*d* = 0.87 (95% CI: 0.60~1.15)]. Comparisons with other psychological treatments at post-treatment resulted in a non-significant pooled effect size of 0.13, in favor of activity scheduling. In ten studies where activity scheduling was compared to cognitive therapy, a non-significant pooled effect size of 0.02 was indicated. Importantly, the changes from post-treatment to follow-up for activity scheduling were non-significant, indicating that the benefits of treatment were retained at follow-up. In a second meta-analysis of seventeen randomized controlled trials involving behavioral interventions (Ekers et al., 2008), post-treatment symptom assessment showed behavioral therapies were superior to control conditions [standardized mean difference (SMD)**-**0.70, 95% CI**-**1.00 to **-**0.39, *k***=**12, *n***=**459], brief psychotherapy (SMD**-**0.56, 95% CI **-**1.0 to **-**0.12, *k***=**3, *n***=**166), supportive therapy (SMD-0.75, 95% CI **-**1.37 to **-**0.14, *k***=**2, *n***=**45) and equal to cognitive behavioral therapy (SMD-0.08, 95% CI **-**0.14 to 0.30, *k***=**12, *n***=**476). Finally, in a third meta-analysis that assessed the impact of behavioral activation on subjective well-being and life satisfaction, a pooled effect size across twenty studies indicated a significant difference in well-being between behavioral activation and control conditions at post-treatment that was associated with a moderate effect size (Hedges’s g =0.52). This significant effect was found for both non-clinical individuals and those with elevated depression symptoms. Taken together, the studies highlighted in Table 1 and these three meta-analyses strongly support the efficacy of behavioral activation as a treatment for depression and suggest that the relatively uncomplicated and time-efficient approach may be adequate as a stand-alone intervention for a wide range of patients, including those with severe depression (Dimidjian et al., 2006).

### **Directions for Future Research**

Based on accumulating data, behavioral activation interventions show promise as parsimonious and potentially cost-effective means to treat clinical depression. Given the current status of behavioral activation as an empirically validated treatment for depression, the foundation has been established to further explore important theoretical and empirical questions related to behavioral models of depression and the extrapolation of these models toward refining behavioral activation interventions. First, more systematic longitudinal research is required to assess causality in terms of the degree that decreased response contingent positive reinforcement is critical toward the etiology of depressive symptoms and disorders. Second, congruent with Lewinsohn’s behavioral model (1974), increased specification of the relevance of reward probability (i.e., potentially reinforcing events and instrumental behaviors in obtaining reinforcement) and environmental suppression (i.e., availability of reinforcement in the environment and presence of punishing/aversive experiences) toward conceptualizing the onset and maintenance of depression will be useful toward treatment development and refinement. Third, at this stage of research, very little is known about how reinforcement value (i.e., magnitude, immediacy, duration, and certainty) is associated with the development of a depressive disorder, or how these factors should be addressed within behavioral activation treatment protocols. Similarly, the qualitative (type, function) aspects of reinforcing events and an individuals reinforcement sensitivity are factors that may affect the efficacy of behavioral activation protocols but are generally unstudied. Fourth, more rigorous empirical testing is required to further assess the efficacy and effectiveness of behavioral activation relative to other well-established, empirically validated psychosocial and pharmacological interventions for depression, particularly newer generation anti-depressants.

Fifth, a more sophisticated understanding of behavioral activation dose-response relationships is required. As most sudden reductions in depressive symptoms are observed in the first four sessions of treatment (Hopko et al., 2009), and as few as two weeks have been shown as adequate toward reducing depression (Armento et al., in press; Gawrysiak et al., 2009), future clinical trials might focus on determining the level of activation required to promote depression reduction and maintenance of gains over time. Considering that focusing on the single activation domain of spirituality significantly reduced depression symptoms in college students (Armento et al., in press), understanding the relative importance of other behavioral domains in attenuating depression (across different samples) yields some exciting research opportunities. Sixth, dismantling studies that better isolate the intervention component(s) most essential to engendering nondepressive (healthy) behavior also are needed, as is an answer to the question of whether the more comprehensive 20-24 session BA protocol yields incremental treatment gains beyond those of the more streamlined 8-10 session BATD protocol. Relatedly, how much do mindfulness training, mental rehearsal, and therapist modeling contribute to treatment outcome relative to guided activity? Is teaching patients the TRAC, TRAP, and ACTION models critical to treatment success? Similar concerns may be raised in regard to BATD. For example, what impact does behavioral contracting have on treatment outcome? How necessary is it to base the activity hierarchy on a life value (LAVA) assessment? Is it necessary to address all life domains or would transfer effects be evident by targeting fewer (or the most important) areas? There also are components common to the BA and BATD approaches that may moderate outcome and prove difficult to measure and control, such as the nature and quality of the therapeutic relationship. These questions all require further empirical attention.

Seventh, the relatively uncomplicated and time-efficient administration of behavioral activation strategies may allow for “real world” effectiveness studies that may be conducted in primary care environments. Accordingly, focusing on quality improvement in primary care settings by incorporating behavioral activation interventions with an emphasis on treatment efficacy and cost-effectiveness is a pressing need (Coyne, 2000; Schoenbaum, Unutzer, Sherbourne, & Duan, 2001). Indeed, as recently demonstrated (Ekers et al., 2011), the structured and manualized behavioral activation approach may allow for implementation by health care providers such as physicians, nurses, and social workers. Eighth, although important strides have been made toward evaluating the potential transfer effects of behavioral activation treatment to other Axis I and II treatment conditions, much more systematic work is required in this area. Along these lines, we also need to identify potential patient-related variables associated with positive treatment outcome to make evaluations and recommendations as to which patients will be more or less likely to respond to behavioral activation interventions. Finally, although pioneering work has examined the potential utility of behavioral activation across the lifespan and across ethnic and racial minorities, this research is very much in its infancy.

In closing, as we indicated a decade ago (Hopko, Lejuez, Ruggiero, & Eifert, 2003), this continues to be an exciting time for researchers and practitioners involved with behavioral activation. The highly favorable treatment outcome data has renewed interest in behavioral treatment approaches once thought insufficient for treating clinical depression, and has paved the way for a multitude of exciting research opportunities related to behavioral theory and treatment outcome. It has become evident that purely behavioral approaches to treating depression were in fact abandoned prematurely some 30 years ago. Instead of repeating history, the data collectively suggest that behavioral activation merits strong regard as a parsimonious and effective intervention with many applications supported, and hopefully many more to follow in the years ahead.

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| --- | --- | --- | --- | --- | --- |
| ***Table 1.*** | | | | | |
| ***The Efficacy of Behavioral Interventions*** | | | | | |
| Study | Sample | Interventions and Research Design | Duration | | Primary Results |
| ***Conventional Behavioral Treatments*** | | | | | |
| Barrera (1979) | 20 participants with MDD   * Immediate Treatment (IT) * Delayed Treatment (DT) * Age: M = 33.9 years | Group (Design: RT):  1. IT: Self-instructional materials: monitoring pleasant activities and mood, daily activity goals, and graphing progress  2. DT: Self-instructional materials: monitoring pleasant activities and mood, and graph progress; Daily activity goals after 4 weeks | * IT (4 weeks): Individual session and group meeting in first week; 2-hour sessions for 3 weeks * DT (4 weeks): Following training in self-monitoring, researcher called weekly to assess compliance with monitoring | | * IT was not more effective than DT * After DT, participants successfully increased activities and decreased depression relative to IT * Increased self-monitoring may be necessary to facilitate progress in pleasant event scheduling |
| Biglan & Craker (1982) | 4 participants   * Females with MDD * Age: M = 33.5 | Individual (Design: group time series):   * Baseline * Activity Goal setting * Self-reward * Reversal | * 4 days activity scheduling | | * Increase in pleasant activities produced no improvement in self-monitored mood |
| Comas-Díaz (1981) | 26 participants   * Low-SES Puerto Rican women * Spanish-speaking * Age: M = 38 years | Group (Design: RCT):   1. Cognitive therapy 2. Activity scheduling 3. Wait list control | * 5 sessions | | * Decreased depression in the cognitive therapy and activity scheduling groups relative to the wait list control |
| Fuchs & Rehm (1977) | 36 participants   * Females with MDD * Age: 18-38 | Group (Design: RCT)  1. Self-Control Therapy (with activity scheduling)  2. Supportive therapy  3. Wait List Control | * 6 sessions | | * Self-Control Therapy group exhibited increased activity levels and decreased depression at post-treatment compared to other groups. |
| Gardner & Oei (1981) | 16 participants   * Treatment groups matched on gender, age, and depression severity * Age = 19-65 | Individual (Design: RT):  1. Activity Scheduling  2. Cognitive: Rational  emotive therapy | * 8 sessions | | * Both cognitive and behavior therapy effectively reduced depression (no difference between treatment groups * Rate of improvement faster in the cognitive therapy group |
| Hammen & Glass (1975) | 40 participants   * College students * Mild to moderate depression | Group (Design: RCT):  1. Activity Scheduling  2. Self-Monitoring  3. Control: Dietary  Monitoring  4. No treatment | * 2 weeks | | * Activity scheduling group engaged in more pleasurable activities * Increases in pleasant activities did not correspond to depression reduction * No differences between groups |
| Harmon, Nelson, & Hayes (1980) | 6 participants   * MDD * Age = 18-23 * All previous outpatients | Individual (Design: group time series):  1, Self-Monitoring Activity  2. Self-Monitoring of Mood  3. Control group | * 5 weeks * Experimental groups intervention at weeks 2 and 4 | | * Self-monitoring of activity and self-monitoring of mood increased pleasant events and decreased depression |
| Lewinsohn & Libet (1972) | 30 participants   * Undergraduates students * Depressed (10) * Psychiatric control (10) * Normal control (10) | Individual (Design: OT):  1. Rate moods and indicate frequency of pleasant activities | * 30 days | | * Significant association between pleasant activities and mood * Association between rate of pleasant activities and depression varied between groups, but not significant |
| McLean & Hakstain (1979) | 196 patients   * MDD * Age: M = 39.3 years | Group (Design: RT)  1. Activity scheduling  2. Brief psychodynamic  3. Relaxation training  4. Amitriptyline | * 8-12 sessions | | * Behavior therapy superior to all other interventions at post-treatment * Results maintained at 3-M Follow-up * Attrition lowest (5%) in Activity scheduling group |
| McNamara & Horan (1986) | 40 participants   * BDI > 16 * HRSD > 20 * Age: M = 23.0 years | Group (Design: RT);  1. Activity scheduling  2. Cognitive therapy  3. Combined | * 8 sessions (groups 1,2) * 10 sessions (combined) | | * All groups improved significantly and equally in terms of reduced depression (BDI) |
| Padfield (1976) | 24 adult female participants   * Living in rural area: Low SES * Moderately depressed as determined by the Grinker Interview Checklist (GIC) * Age = 21-56 | Individual (Design: RT):  1. Activity Scheduling  2. Supportive counseling | * 12 sessions | | * Women of lowest SES status had the most significant depression reduction * Results concerning comparative effectiveness of interventions inconclusive but GIC scores suggest behavior therapy was most effective |
| Rehm, Kaslow, & Rabin (1987) | 104 participants   * Age: M = 38.6 years | Group (Design: RT):   1. Self-control: Behavioral target 2. Self-control: Cognitive target 3. Combined target | * 10 sessions | | * All groups improved significantly and equally |
| Scogin, Jamison, & Gochneaur (1989) | 67 older adult participants   * Mild and moderately depressed * Age: M = 68.3 years | Individual (Design = RT):   1. Cognitive bibliotherapy 2. Behavioral bibliotherapy | * 4 weeks | | * Both groups improved significantly and equally |
| Shaw (1977) | 32 participants   * MDD * Age = 18-26 | Group (Design: RCT):   1. Cognitive therapy 2. Activity scheduling 3. Supportive therapy 4. Wait list control | * 4 sessions | | * Cognitive therapy most effective in reducing depression * Activity scheduling more effective than control condition |
| Taylor & Marshall 1977) | 28 participants   * BDI ≥ 14 * Age: M = 22.4 years | Individual (Design: RCT):  1. Cognitive therapy  2. Activity scheduling  3. Combined  4. Wait list control | * 6 sessions | | * All treatment groups superior to control group in reducing depression * Combined treatment more effective than other active interventions * No significant differences between cognitive and activity scheduling groups |
| Teri, Logsdon, Uomoto, & McCurry (1997) | 72 participants   * MDD and Alzheimer’s Disease | Group (Design: RCT)  1. Activity scheduling  2. Caregiver problem solving  3. TAU  4. Wait list control | * 9 sessions | | * Patients in activity scheduling and problem solving had significantly reduced depression relative to other two groups * Same results for depressive symptoms of caregivers |
| Thompson, Gallagher, & Breckenridg (1987) | 91 older adults   * MDD * BDI ≥ 17 * HRSD ≥ 14 * Age 60 or older | Individual (Design: RT):  1. Activity scheduling  2. Cognitive therapy  3. Brief psychodynamic | * 16-20 sessions | | * Significant and equivalent depression reduction in all three groups * Response rates similar to younger samples |
| Wilson (1982) | 64 participants   * BDI ≥ 20 * Age = 20-55 | Individual (Design: RCT):  1. Activity scheduling  2. Relaxation training  3. Minimal contact  (Each group was also randomized to either amitriptyline or placebo) | * 7 sessions * Minimal contact = 2 sessions for medication | | * Reduced depression across all groups * No group differences * More rapid improvement in patients receiving amitriptyline * Participants in activity scheduling and relaxation training groups sought less additional treatment at follow-up |
| Wilson, Goldin, & Charbonneau (1983) | 25 participants   * BDI ≥ 17 * Age: M = 39.5 years | Individual (Design: RCT):  1. Activity scheduling  2. Cognitive therapy  3. No treatment control | * 8 sessions | | * Activity Scheduling and cognitive therapy both effective in reducing depression and superior to control * Treatment effects maintained at 5-month follow-up |
| Zeiss, Lewinsohn, & Muñoz (1979) | 66 participants   * Outpatients with MDD * Age: M = 33.9 years | Individual (Design: RT):   1. Interpersonal skills therapy 2. Activity scheduling 3. Cognitive therapy | * 12 sessions | | * All interventions reduced depression at post-treatment and no significant differences between treatments * There were no treatment-specific effects on a single class of behavior |
| ***Contemporary Behavioral Treatments*** | | | | | |
| *Based or modified from the Brief Behavioral Activation Treatment (BATD; Lejuez, Hopko, & Hopko, 2001)* | | | | | |
| Armento & Hopko (2009) | 1 participant   * MDD and GAD * White female with breast cancer * Age: 58 years | Individual (Design: CS):   * 1. BA for cancer patients | | * 8 sessions | * Decreased depression and anxiety * Improvement in quality of life and psychosocial functioning |
| Armento, McNulty, & Hopko (in press) | 50 participants   * Undergraduate students * Age: M = 20.0 years * BDI-II > 14 * 78% with Depressive Disorder | Individual (Design: RT)  1. BA for religious behaviors  2. Supportive therapy | | * 1 session (two weeks) | * BA increased religious behaviors and attitudes * Significantly reduced depression and anxiety in BA group * Increased quality of life in BA group * Gains maintained at 1-M follow-up |
| Bailey & Arco (2010) | 2 participants   * 28 years-old (BDI-II = 16) * 39 years-old (BDI-II = 28) | Group (Design: CS)  1. BATD | | * 8 sessions * Multiple Baseline | * Decreased depression at post-treatment: 28 year-old (BDI-II = 6); 39 year-old (BDI-II = 1) |
| Daughters et al. (2008) | 44 participants   * Diagnosis of substance dependence * BDI-II ≥ 10 * Impatient setting | Group (Design: RCT):   1. Modified BATD 2. Treatment as usual | | * 2 weeks (6 sessions) | * Significantly reduced depression, anxiety, and increased environmental reward at post-treatment in BATD * Lower attrition in BATD (4.5%) compared to TAU (22.7%) |
| Daughters, Magidson et al. (2010) | 3 participants   * HIV-positive and MDD * Low-income African American * Residential substance abuse facility | Individual (Design: CS)  1. ACT HEALTHY (BATD + cognitive therapy for medication adherence) | | * 8 sessions (4 weeks) as an inpatient, followed by; * 8 sessions (4 weeks) as an outpatient | * Decreased depression and improved medication adherence in all patients * Increased environmental reward in two of three patients |
| Dichter et al. (2009, 2010) | 27 participants  12 adults with MDD   * Age: M = 39.0 years   15 adults without MDD   * Age: M = 30.8 years | Individual (Design: OT):  1. Participants Received 2  fMRI scans  2. MDD patients received  BATD between scans | | * Average of 11 sessions | * 75% treatment responders HRSD ≤ 6 * BATD resulted in improved functioning of structures that mediate response to rewards * Magnitude of pre-treatment activation in paracingulate gyrus responsive to BATD predicted depression symptom change |
| Egede et al. (2009) | 224 participants   * MDD * 40% African American * Age 60 or older | Individual (Design: RT):   1. BATD via in-home videoconferencing 2. BATD via outpatient | | * 8 sessions | * Both interventions equally effective in reducing depression |
| Ekers, Richards et al., (2011) | 47 participants   * MDD * Moderate-severe depression * Age: M = 47.7 years | Individual (Design: RCT):  1. BATD (via mental health nurses)  2. TAU | | * 12 sessions | * Decreased depression in BATD group relative to TAU * Improved work and social adjustment in BATD group |
| Freij & Mastri (2008) | 8 participants   * MDD * 87% female * Age: M = 40 years | Individual (Design: OT)  1. BATD | | * 13 sessions (Mean) | * Reduced depression and life impairment * Improved quality of life |
| Gawrysiak, Nicholas, & Hopko (2009) | 30 participants   * Undergraduate students * 80% women * BDI-II ≥ 14 * Age: M = 18.4 years | Individual (Design: RCT):   1. Modified BATD 2. No treatment control | | * One-90 minute session * Two weeks activation | * Significantly reduced depression and increased environmental reward in BATD |
| Hopko et al. (2011) | 80 participants   * Diagnosed with breast cancer * Principal diagnosis of major depression of moderate severity * Age: M = 55.4 years | Individual (Design: RT):   1. BATD 2. PST | | * 8 sessions | * Both interventions reduce depression and anxiety and improve medical outcomes and quality of life * Minimal differences between groups * Gains maintained at 12-months * Combined rates of response and remission based on the HRSD were 78% in BATD, and 81% in PST |
| Hopko, Bell, Armento, Hunt, & Lejuez (2005) | 6 participants   * Diagnosed with cancer * MDD * Age: M = 46.4 years | Individual (Design: OT):  1. BATD | | * 9 sessions | * Significant reduction in depression, improved quality of life and medical outcomes * Gains maintained at 3-M follow-up * Moderate/large effect sizes *d*=0.5-2.3 |
| Hopko, Bell, Armento et al., 2008 | 18 participants   * Diagnosed with cancer * MDD * Age: M = 52.2 years | Individual (Design: OT):  1. BATD supplemented with brief cognitive therapy, relaxation training, PST, and sleep hygiene | | * 9 sessions | * Significant reduction in depression and anxiety, improved quality of life and medical outcomes * Gains maintained at 3-M follow-up * Moderate/large effect sizes *d*=0.5-2.0 |
| Hopko, Lejuez, & Hopko (2004) | 1 participant   * + - 28-year old Caucasian female     - Co-existent anxiety and depression | Individual (Design: CS):  1. BATD | | * 10 sessions | * Decrease is anxiety and depression and increased quality of life at Post-treatment |
| Hopko, Lejuez, Lepage et al., (2003) | 25 participants   * Psychiatric inpatients * MDD * Age: M = 30.5 years | Individual (Design: RT):   1. BATD + antidepressant 2. Supportive therapy + antidepressant | | * 6 sessions (2 weeks) | * Decreased depression in both groups * Significantly greater improvements in the BATD group |
| Hopko, Sanchez, Hopko, Dvir, & Lejuez (2003) | 1 participant   * 25 year-old Hispanic female * MDD, Borderline PD | Individual (Design: Case Study):  1. BATD supplemented with DBT strategies | | * 12 sessions | * Decreased depression and suicidal ideation |
| Lazzari, Egan, & Rees (2011) | 3 older adult participants   * Moderate depression * Age: 65-73 | Group: (Design: CS)  1. BATD (Videoconferencing) | | * 5 sessions | * Reduced depression and improved positive affect at post-treatment * Gains maintained at 1-M follow-up |
| Lejuez, Hopko, LePage et al., (2001) | 3 participants   * MDD * Caucasian females * Age: 29-43 | Individual: (Design: CS)  1. BATD | | * 9-12 sessions | * Reduced depression at post-treatment |
| MacPherson et al. (2010) | 68 participants   * 73% African American * 49% women * Smokers * Depression BDI-II ≥ 10 | Group (Design: RT)   1. BATD + Standard treatment (ST) 2. ST | | * 8 sessions | * Participants in BATD + ST reported greater smoking abstinence * Participants in BATD + ST significantly greater reduction in depression |
| Magidson et al. (2011) | 58 participants   * adult substance users in residential treatment * BDI-II ≥ 12 * Age M = 43.8 years | Individual (Design: RT):   1. LETS ACT–BATD 2. Supportive counseling | | * 5 sessions (2.5 weeks) | * Decreased depression in both groups at post-treatment * Decreased attrition in LETS ACT * Significant increase in behavior activation in LETS ACT group |
| Mairs, Lovell, Campbell, & Keeley (2011) | 8 participants   * All schizophrenia * Age M = 33 years * Moderate negative symptoms | Individual (Design: OT)  1. BATD | | * 15 sessions (Mean) | * Decreased depression, improved negative symptoms, and improved social adjustment at post-treatment * Moderate maintenance of gains at 6-month follow-up |
| Meeks, Looney, Van Haitsma, & Teri (2008) | 25 participants   * Nursing home residents * 1st phase: Pilot study included 5 depressed residents * 2nd phase: Randomized trial included 20 nursing homes residents * Age: M = 75 years | Individual (Design: OT)   * 1st phase:   1. BE-ACTIV  Individual (Design: RCT)   * 2nd phase:   1. BE-ACTIV  2. TAU | | * 6 sessions * 4 weeks maintenance * 12 week follow-up   (Both 1st and 2nd phase) | * 1st phase: BE-ACTIV reduced institutional barriers to participation in activities, increased activities and reduced depression * 2nd phase: Depressive reduced in BE-ACTIV group compared to TAU group and 75% recovery rate at follow-up in BE-ACTIV and 50% in TAU |
| Reynolds, MacPherson, Tull, Baruch, & Lejuez (2011) | 71 participants   * College freshmen * Moderate depression * Alcohol abuse | Group (Design: RT)   1. Standard Orientation (SO) 2. BATD + SO | | * 15 weeks   (2-hours) | * Problem drinking significantly reduced in BATD + SO * No reduction in depression (possible floor effect) |
| Ruggiero, Morris, Hopko, & Lejuez (2007) | 1 participant   * 17 year-old European American in foster care | Individual (Design: CS)  1. BATD | | * 9 sessions | * Reduced depression at post-treatment |
| Snarski, Scogin, et al. (2011) | 50 participants   * Older adults (> 65 years) * Mild to moderate cognitive impairment * Residents of a geriatric psychiatric facility | Individual (Design: RCT)  1. BATD + TAU  2. TAU | | * 8 sessions (4 weeks) | * Significantly reduced depression in the BATD + TAU group relative to the TAU group * Efficacy of BATD + TAU not impacted by cognitive impairment |
| Staley & Lawyer (2010) | 1 participant   * 46 year-old Japanese-American male * Co-existent depression and social anxiety * Diabetes | Individual (Design: CS)  1. BATD integrated within cognitive-behavior therapy | | * 9 biweekly sessions | * Decreased depression and anxiety at post-treatment * Results maintained at 3-weeks follow-up |
| Strachan, Gros et al. (in press) | 31 participants   * Military veterans * 93% male * 63% PTSD: 37% sub-threshold PTSD * 23% MDD | Individual (Design: RT)  1. BATD + Exposure (outpatient)  2. BATD + Exposure (home-based telehealth) | | * 8 sessions (90 min) | * Reduced depression, somatic anxiety, and PTSD symptoms at post-treatment * No between group differences |
| *Based or modified from BA (Martell, Addis, & Jacobson, 2001; Jacobson et al., 2001)* | | | | | |
| Chu, Colognori, Weissman, & Bannon (2009) | 4 participants   * 7th and 8th grade (Age 12-14) * MDD and co-existent anxiety disorder * School setting | Group (Design: OT)  1. BA supplemented with exposure to address anxiety | * 13 sessions | | * 75% of sample did not meet criteria for principle and secondary diagnosis at post-treatment |
| Cullen et. al. (2006) | 25 participants   * MDD * Age: M = 38 years | Individual (Design: RCT)  1. BA  2. WL | * 10 sessions | | * Reduced depression BA group relative to WL at post-treatment * Maintained at 3-month follow-up |
| Dimidjian et al. (2006); Coffman, Martell et al. (2007): Dobson et al. (2008) | 241 participants   * MDD * BDI-II ≥ 20 * HRSD ≥ 14 * Age: 18 - 60 | Individual (Design: RCT)   1. BA 2. CT 3. ADM 4. PLACEBO | * BA and CT 16 weeks (24 sessions) * ADM (Paroxetine) 16 weeks (36 sessions) * PLACEBO 8 weeks (12 sessions) | | * Reduced depression in all 4 groups * Low depression severity group: No differences between groups * High depression severity group: BA and ADM more effective than CT * At 2 year follow-up, BA and CT patients less likely to relapse * Significantly more extreme non-responders to treatment in BA relative to CT * Patients with severe depression and functional impairment may be more appropriate for BA relative to CT |
| Jacob, Keeley, Ritschel, & Craighead (2011) | 3 adolescent participants   * Low-income African American * MDD * Ages = 13-17 | Individual (Design: OT)  1. Adapted BA for adolescents with inclusion of parents in intervention | * 14-17 sessions (6 months) | | * 2 of 3 participants no longer met criteria for MDD at post-treatment * Depression and functional impairment decreased for all participants |
| Jacobson et al. (1996); Gortner, Gollan et al. (1998) | 150 participants   * Outpatients with MDD * BDI-II ≥ 20 * HRSD ≥ 14 | Individual (Design: RT)   1. BA 2. BA plus automatic thought modification 3. CT | * 20 sessions | | * BA comparable to full CT at post-treatment in reducing depression * Results maintained at 2-year follow-up. |
| Jakupcak et al. (2006) | 9 participants   * Veterans with PTSD * Veterans Administration outpatient PTSD clinic | Individual (Design: OT)  1. BA | * 16 sessions | | * Reduction of PTSD severity at post-treatment based on the CAPS * Reduced depression and improved quality of life (not significant) |
| Jakupcak, Wagner et al. (2010) | 8 participants   * Caucasian military Veterans * PTSD and 50% current MDD * Age: M = 25 years | Individual (Design: OT)  1. BA | * 8 sessions | | * Reduction of PTSD severity at post-treatment * Reduced depression and improved quality of life (not significant) |
| Kanter, Santiago-Rivera, Rusch, Busch, & West (2010) | 10 Latina participants   * Age: M = 40 years * At bilingual (English-Spanish) mental health clinic * HRSD ≥ 16; BDI-II ≥ 20 * MDD according to PRIME-MD | Individual (Design: RCT)   1. BA-Latino 2. TAU | * 12 sessions | | * Reduced depression at post-treatment in the BA group * High attrition in the TAU group prohibited group comparisons |
| Mulick & Naugle (2004) | 1 participant   * Police officer/military veteran * PTSD and MDD * Age: 37 years | Individual (Design: CS)  1. BA | * 11 sessions | | * Patient no longer met diagnostic criteria for PTSD and MDD at post-treatment |
| Nixon & Nearmy (2011) | 20 participants   * PTSD and MDD * 35% Co-existent anxiety * 85% female * Age: M = 45 years | Individual (Design: OT)  1. BA + Exposure therapy | * 12-16 sessions * First 6 BA then integration of exposure for up to 10 sessions | | * Decreased PTSD and depression severity at post-treatment * Treatment gains maintained at 3 months follow-up with 60% and 70% no longer meeting diagnostic criteria for PTSD and MDD, respectively |
| Pagoto et al. (2008) | 14 participants   * Obese, BMI ≥ 30 * MDD * BDI-II ≥ 10; HDRS ≥ 10 * Age: M = 45 years | Group (Design: OT)  1. BA with nutrition counseling for weight loss, and groups lead by dietician | * 12 sessions ( 6 biweekly, 90 minute) | | * Reductions in body weight and daily caloric intake * Reduced depression at post-treatment * 10/14 patients had full depression remission at post-treatment |
| Porter, Spates, & Smitham (2004) | 26 participants   * MDD * Age: M = 44 years | Group (Design: RCT)   1. BA 2. Wait list control | * 10 sessions (95 minute) | | * Significantly reduced depression in the BA group at post-treatment * Results maintained at 3-month follow-up |
| Ritschel, Ramirez, Jones, & Craighead (2011) | 6 adolescent participants   * MDD * BDI: *M* = 27.00 * Age: 14-17 | Individual (Design: OT)  1. BA modified for adolescents with inclusion of parents | * 11-16 sessions | | * Decreased depression at post-treatment. |
| Santiago-Rivera et al. (2008) | 1 male Latino participant   * Monolingual Spanish speaking * Age: 46 years | Individual (Design: CS)  1. BA: conducted in Spanish | * 45 sessions | | * Significant reduction in depressive symptoms at post-treatment |
| Wagner, Zatzick, Ghesquiere, & Jurkovich (2007) | 8 participants   * MDD and PTSD * Physically injured survivors of traumatic injury * Glasgow Coma Scale < 15 or Mental State Examination < 7 * Age: 18-65 years | Individual (Design: RCT)   1. BA modified for physical injured trauma survivors 2. TAU | * BA: 4 sessions   (60-90 minutes)   * TAU: community referrals | | * BA group showed decreased PTSD symptom severity, but not depression severity at post-treatment * BA group had improved physical functioning at post-treatment. |
| Weinstock, Munroe, & Miller (2011) | 10 participants   * MDD with atypical features * IDS-C ≥ 30 * Age: M = 36 years | Individual (Design: OT)  1. BA | * 16 sessions | | * Decreased depression and functional impairment and increased activity level at post-treatment |

**Assessment Measures**

BDI = Beck Depression Inventory (Beck & Steer, 1987)

BDI-II = Beck Depression Inventory-II (Beck, Steer, & Brown, 1996)

BMI = Body Mass Index

CAPS = Clinician-Administered PTSD Scale (Blake, Weathers, Nagy, Kaloupek, Gusman, Charney, & Keane, 1995)

HRSD = Hamilton Rating Scale for Depression (Hamilton, 1960)

IDS-C = Inventory of Depressive Symptomatology-Clinician version (Rush, Guillon, Basco, Jarrett, & Trivedi, 1996)

PRIME-MD = Primary Care Evaluation for Mental Disorders (Spitzer, Williams, Kroenke, & Linzer, 1994)

**Treatment Condition Abbreviations**

ADM = Antidepressant Medication (Paroxetine)

BA = Behavioral Activation

BATD = Brief Behavioral Activation Treatment for Depression

CT = Cognitive Therapy

DBT = Dialectical Behavior Therapy

PST = Problem Solving Therapy

TAU = Treatment as Usual

WL = Wait List

**Research Design Abbreviations**

RCT = Randomized Controlled Trial

RT = Randomized Trial

OT = Open Trial

CS = Case Study

**Diagnostic Abbreviations**

GAD = Generalized Anxiety Disorder

MDD = Major Depressive Disorder

PTSD = Posttraumatic Stress Disorder