

## **A SYNOPSIS OF RATIONAL-EMOTIVE BEHAVIOR THERAPY (REBT); FUNDAMENTAL AND APPLIED RESEARCH**

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**ABSTRACT:** The article presents a synopsis on rational-emotive behavior therapy (REBT), its fundamental theoretical framework, its applications, and future directions. The paper is organized according to the following structure: in part one, REBT fundamental/basic research is discussed; in the second part clinical/applied research in REBT is presented, including aspects of efficacy and effectiveness, discrimination of disorders for which REBT works most effectively, and its relations to other therapies. Uses and misuses of REBT and their impact on research and future developments are presented as well. While it is true that REBT research has many shortcomings, the overgeneralization and/or magnification of the negative, and the minimization of the positive are dysfunctional beliefs that maintain the false idea in the field that REBT has few empirical studies and that REBT research is in serious trouble. A balanced approach, analyzing both the strengths and weakness, suggest that REBT has hundreds of research articles and that high-quality studies tend to support REBT's basic theory and efficacy. However, to strengthen this conclusion and to fully explore the potential of REBT, shortcomings of REBT research need to be corrected, and high-quality studies promoted. This is particularly important since, although effective, cognitive-behavioral psychotherapies have not yet reached "the desired standard" of efficacy and effectiveness, as about 30–40% of people are still nonresponsive to these

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interventions. Thus, REBT could be a platform of reinvigorating empirical studies on the efficacy/effectiveness and theory of cognitive-behavioral models of psychopathology and human functioning.

**KEY WORDS:** REBT; research; review.

Rational emotive behavior therapy (REBT) is the first form of cognitive behavior therapy (CBT) and was created by Albert Ellis in 1955. The "ABCDE" model is the cornerstone of REBT (Ellis, 1962, 1994) and, with minor adjustments, of all cognitive-behavioral psychotherapies. According to the "ABCDE" model, people experience undesirable activating events (A), about which they have rational and irrational beliefs (B). These beliefs lead to emotional, behavioral, and cognitive consequences (C). Rational beliefs (RBs) lead to functional consequences, while irrational beliefs (IBs) lead to dysfunctional consequences. Once generated, these consequences (C) can become activating events (A) themselves, producing secondary (meta) consequences (e.g., meta-emotions: depression about being depressed) through secondary RB and IBs. Clients who engage in REBT are encouraged to actively dispute (D) (i.e., restructure) their IBs and to assimilate more efficient (E), adaptive, and RBs, with a positive impact on their emotional, cognitive, and behavioral responses (Ellis, 1962, 1994; Walen, DiGiuseppe, & Dryden, 1992). Recently, the ABCDE model was expanded by including the concept of unconscious information processing (David, 2003). More precisely, sometimes beliefs are not consciously accessible, being represented in the implicit rather than the explicit memory system (David, 2003). Their impact on our responses can be controlled (a) by behavioral techniques (e.g., altering automatic associations), and (b) by a direct focus on primary responses generated by unconscious information processing or on secondary processes produced by these primary responses (e.g., conscious beliefs and consequences).

Since its creation, several hundred papers have been published focusing on the theory and practice of REBT. Some studies (e.g., Dryden, Ferguson, & Clark, 1989a; McDermut, Haaga, & Bilek, 1997; Solomon, Bruce, Gotlib, & Wind, 2003) have confirmed the main aspects of the original REBT theory (Ellis, 1962), while others (e.g., Bond & Dryden, 2000; Solomon, Haaga, Brody, & Kirk, 1998) have made critical contributions to its evolution (for details, see David, 2003; Solomon & Haaga, 1995). The theoretical constructs of REBT (e.g., IBs and RBs) have influenced many research areas in clinical

psychology and psychotherapy and have also been assimilated by the psychological mainstream. The construct of IBs for example, is incorporated in most handbooks of introduction to psychology (e.g. Sdorow, 1998) and in other forms of cognitive-behavioral psychotherapy (David, 2003; Still, 2001). A quick search on PsychInfo and MEDLINE shows that there are hundreds of studies related to the IBs' construct, more than studies focusing on cognitive constructs promoted by other influential schools of CBT (e.g., such as automatic thoughts, dysfunctional attitudes). The influence of REBT is also reflected by the fact that its founder is often considered one of the most influential living psychotherapists, and professional surveys conducted among USA and Canadian clinical professionals in the '80s show him as being more influential than Sigmund Freud (Smith, 1982). High-quality research (i.e., comparable with research in other psychological fields) exists in REBT, but such research is often conducted outside the politically and economically powerful framework of mainstream cognitive psychology (Still, 2001). This could explain the fact that in spite of the considerable amount of REBT research and influence in the clinical field, it is oftentimes less accessible and, consequently, less explored and less visible in the mainstream cognitive science. Furthermore, meta-analytic studies seem to support the conclusion that REBT is an efficacious form of CBT (e.g., Engles, Garnefsky, & Diekstra, 1993; Lyons & Woods, 1991).

Generally speaking, the development of REBT research has followed two different paths. *Basic REBT research*, mostly conducted in academia, has been of high quality from the beginning. Few therapies, if any, have generated such a large amount of basic research in mainstream psychology as REBT has. Hundreds of papers have related IBs to feelings, physiological indicators, behavior, and other cognitions, not necessarily in a therapeutic context but also in experimental context (e.g., for a review see David, 2003; Smith, 1982). Critiques of the methodology used in this research line (e.g., Haaga & Davidson, 1989a, 1989b, 1993) have had a favorable impact on the cumulative development of subsequent research, and on the knowledge base of REBT. *Applied REBT research* has been less represented and has fared relatively poorly in terms of generic methodological criteria. Empirical outcome research in REBT has developed over three periods: (1) before 1970, (2) between 1970 and 1980, and (3) from the end of the '80s/beginning of the '90s to present. Prior to 1970, rigorous empirical research regarding REBT

efficacy (i.e., how REBT works in controlled conditions) and effectiveness (i.e., how REBT works in ecological conditions), following experimental or quasi-experimental designs, was infrequently conducted. After 1970 a series of outcome studies were published. These studies created the basis for a more rigorous quantitative approach to exploring the efficacy of REBT. Several quantitative meta-analyses based on these studies have shown that REBT is an effective treatment (e.g., Engels et al., 1993; Lyons & Woods, 1991). However, some reviewers (e.g., Haaga & Davidson, 1993) have been critical of the methodological adequacy of research included in these meta-analyses, suggesting that a more conservative conclusion, based on the evidence, would be that REBT is probably efficacious, but that more empirical research is needed. Starting with the end of the '80s/beginning of the '90s, REBT outcome studies have more strictly adhered to relevant methodological criteria (Haaga & Davidson, 1993).

The REBT synopsis presented here, referring to both basic and applied research, is based on (1) Smith's (1982) review (a synopsis of REBT from its inception until 1982), (2) Haaga & Davidson's (1993) review (a review of the REBT literature up to the time their article was published), and (3) our own review of the REBT-related literature (as available through PsychInfo and MEDLINE).

In the present paper, we attempt to critically evaluate the literature on basic and applied REBT research. Cumulative developments, methodological problems in existing REBT research, suggestions for improvement, and projects for future research are discussed in each section. The aim of this paper is to offer a critical review of the research literature on REBT, divided into two major sections, the basics on one hand, and the applied outcome studies on the other. Each section will cover several topics (e.g., the nature of IBs and RBs), and each topic will be organized based upon the following structure: (1) a brief description of the current state, summarizing what has been done, what has been learned from mistakes, and what we know; (2) a brief description of future directions, making recommendations for future research. Following this structure we will progress from *past research* to *present research*, and to *recommendations for future research*. We believe that the weak points of REBT research should be exposed and criticized in order to improve REBT theory and practice. However, the overgeneralization and/or magnification of the negative, and the minimization of the positive, typical in the current literature, are dysfunctional beliefs that may induce a false

perspective in the clinical field regarding the status of REBT. We will try to avoid them by explicitly presenting both the strengths and weakness of REBT; moreover, adopting a constructive approach, we will make suggestions for correcting weaknesses of REBT research. A balanced and more scholarly approach such as this one is much more probable to present a professional perspective, beyond the existing positive or negative biases, thus stimulating rigorous research in the theory and practice of REBT.

## REBT BASIC RESEARCH

### *The Nature of Irrational and Rational Beliefs (IBs/RBs)*

*A Brief Description of the Current State.* Following the theoretical foundations of cognitive psychology (e.g., Marr, 1982; Newell, 1990), it has become commonplace to analyze IBs/RBs on three different levels: computational, algorithmic-representational, and implementational (for details see David, 2003). Cognitive psychology is concerned with the human mind, how it creates meaning, how it processes information it receives (input) to develop responses (output), and how these responses (output) can in turn influence subsequent input (Anderson, 2000). However, cognitive psychology is not only the science of human information processing per se, but also an information processing perspective that can be used in our attempts at understanding all of the workings of the human mind, including cognitive processes, behaviors and emotions (Anderson, 2000).

The *Computational Level Theory* describes the goal of a given computation and the logic of the strategy through which it is carried out. Basic questions that research at this level addresses are “What is the goal of computation?” “Is it appropriate?” “What is the input and what is the output?” “What knowledge do we need to transform the input into output?” “How is the general strategy carried out?” “What is the interaction between the goal and our knowledge?” Suppose that we watch someone playing chess. A computational theory of what is going on in the mind of the player will tell us about (1) the input (e.g., the basic starting positions in the chess game), output (e.g., chess-board moves), and his/her goals (e.g., to play chess and win); (2) his/her knowledge (e.g., the rules of chess); and (3) the general strategy the player uses to transform the input into output (e.g., organizing chess rules in a way as to help him/her win). A basic question that research

at this level addresses is “What is the goal/function of computations based on IBs/RBs?” There is a large consensus in the REBT literature (e.g., Ellis, 1994) that IBs/RBs refer to evaluative or “hot” cognitions, and therefore they have an evaluative function; Abelson and Rosenberg (1958) use the terms “hot” and “cold” cognitions to make the distinction between appraising (hot) and knowing (cold). *Cold cognitions* refer to the way people develop representations of relevant circumstances (i.e., activating events), while hot cognitions refer to the way people process and evaluate cold cognitions (David & McMahon, 2001; David, Schnur, & Belloiu, 2002). Thus, cold cognitions refer to how people develop representations of relevant circumstances (i.e., of activating events) (Lazarus and Smith, 1988). Such circumstances are often analyzed in terms of surface cognitions, (which are easily accessed consciously), and deep cognitions (which although consciously accessible, are more difficult to access). *Surface cognitions* refer to descriptions, inferences, and attributions, whereas *deep cognitions* refer to core beliefs (i.e., schemas) and other meaning-based representations (for details, see Eysenck & Keane, 2000). As already mentioned, *hot cognitions*, also called appraisals or evaluative cognitions, refer to how cold cognitions are processed in terms of their relevance for personal well-being (for details, see Ellis, 1994; Lazarus, 1991). Consequently, during a specific activating event, there seem to be four different possibilities for how cold and hot cognitions regarding the activating event are related: (1) distorted representation of the event/negatively appraised, (2) non-distorted representation/negatively appraised, (3) distorted representation/non-negatively appraised, (4) non-distorted representation/non-negatively appraised. According to Lazarus (1991) and to the appraisal theory of emotions, although cold cognitions contribute to appraisal, only appraisal itself results directly in emotions. The effect of cold cognitions (conceptualized as distal causes: descriptions, inferences, attributions, schemas) on emotions seems to be mediated by hot cognitions (conceptualized as proximal causes: cognitive appraisal). Although past research has suggested that cold cognitions are strongly related to emotions (e.g., Schachter & Singer, 1962; Weiner, 1985), it is now generally accepted that as long as cold cognitions remain unevaluated, they are insufficient to produce emotions (Lazarus, 1991; Lazarus & Smith, 1988; Smith, Haynes, Lazarus, & Pope, 1993). Different schools of CBT differ in the emphasis they place on various levels of cognition (for details, see David, 2003; Wessler, 1982). Since REBT theory (Ellis, 1962, 1994; Wessler, 1982) has

always been focused on a special type of evaluative/hot cognitions as proximal causes of emotions (i.e., IBs) rather than on cold cognitions (e.g., descriptions, inferences, attributions, and schemas), it is congruent with more recent developments in cognitive psychology.

*The Algorithmic-Representational Level Theory* specifies representations in detail, as well as the algorithms defined by them. Although Ellis' original work (1962) proposes 11 IBs, more recent developments in CBT/REBT suggest that IBs fall into four categories of irrational (dysfunctional/maladaptive) cognitive processes: demandingness (DEM), awfulizing/catastrophizing (AWF), global evaluation/self-downing (GE/SD), and frustration intolerance (FI) (Campbell, 1988; DiGiuseppe, 1996). DEM refers to absolutistic requirements expressed in the form of "musts," "shoulds" and "oughts." Furthermore, it includes an evaluative component (how desirable is this?) and a reality component (what should I expect?). AWF refers to one evaluating a situation as more than 100% bad, and considering that it is the worse thing that could happen to him/her. FI refers to individuals' beliefs that they cannot endure, or envision being able to endure, a given situation, as well as their belief that they will have no happiness at all if what they demand should not exist, actually exists. GE/SD appears when individuals tend to be excessively critical of themselves (i.e., to make global negative evaluations of themselves) and also of others and life conditions. These four irrational cognitive processes cover various areas of content (e.g., performance, comfort, affiliation) and refer to ourselves, others, and life conditions. According to Ellis (1962, 1994), DEM is the core IB, and all other IBs are derived from it. It is important to note however, that Ellis' hypothesis is based solely on his clinical work, and that there is no rigorous empirical evidence to support this theory.

This line of research, related to the algorithmic-representational level, examines how IBs/RBs are represented in our cognitive system. At least three possibilities have emerged so far:

- (1) IBs are evaluative (hot) cognitions that are organized as propositional representations (Ellis, 1994). A propositional representation is the smallest unit of knowledge that can stand as a separate assertion; that is, the smallest unit about which one can make the judgment of true or false (Anderson, 2000).
- (2) IBs are evaluative cognitions that are organized as a special type of schemas ("evaluative schemas") (DiGiuseppe, 1996). A schema represents the structure of an object or event according to a slot

structure, where slots specify values that the object or event has on various attributes (Anderson, 2000); thus, schemas are complex structures that represent the person's constructed concepts of reality, and behavioral responses to that reality.

- (3) IBs of Demandingness (DEM) and Global-Evaluation/Self-Downing (GE/SD) are evaluative schemas while Awfulizing (AWF) and FI are evaluative cognitions organized as propositional representations (David, DiGiuseppe et al, in preparation).

*The Implementational Level Theory* answers the question of how representations and algorithms are carried out from a physical point of view. For example, what happens in the human brain when IBs or RBs are activated? This fascinating field requires interdisciplinary research with the field of cognitive neuroscience. REBT research on this topic is still in an incipient phase. This research is usually conducted using the evolutionary psychology framework (Ruth, 1993), connectionist modeling (Ingram & Siegle, 2001), and/or modern brain mapping techniques (e.g., MRI).

*A Brief Description of Future Directions.* Current research on the nature of IBs/RBs should aim to (a) further develop our understanding of IBs/RBs at the computational, algorithmic-representational, and implementational levels, and to (b) understand the nature of IBs/RBs as part of a more complex psychological reality, such as via cognitive–feeling–behavioral interactions. For example, are IBs organized as schemas or as appraisal? Is DEM the core IB and are AWF, FI, and GE/SD its derivatives?

### *The Assessment of IBs/RBs*

*A Brief Description of the Current State.* Many measures of IBs have been described as outdated (for a review see Smith, 1989) because (a) they have either been contaminated by affective items, and/or (b) they reflect Ellis's earlier theories of irrational thinking. Considering these criticisms, a new generation of IBs/RBs assessment tools has been developed.

The new generation of IBs/RBs measures has three major characteristics (for a brief review see Linder, Kirkby, Wertheim, & Birch, 1999): (1) scales contain cognitive items that are not contaminated by affective items, (2) measures differentiate the process of thought from the content of thought, and (3) scales have separate scores for



rational and irrational thinking. This new generation of measures, based on self-report items, has proved to have effective psychometric properties (e.g., it can easily differentiate between clinical and non-clinical populations). Research (e.g., Bernard, 1998) has also shown that rational and irrational thinking are not bi-polar constructs; this means that a high IBs score does not necessarily entail a low RBs score.

Taking into account these new developments in the assessment of IBs/RBs, research should rely only on new generation scales that are not contaminated by affective content, and can offer separate scores for IBs and RBs (e.g., Bernard, 1998; DiGiuseppe, Leaf, Exner, & Robin, 1988; Linder et al., 1999).

*A Brief Description of Future Directions.* Current research in the assessment of IBs/RBs has focused on developing new methods of evaluating IBs/RBs, and on better understanding their role in cognition, emotion, and behavior. This has been done by focusing on (a) the development of specific and/or individualized measures of IBs (e.g., Solomon et al., 2003), adapted to specific contexts (e.g., depression, pain), and (b) measures based on indicators other than direct self-reports of IBs/RBs (e.g., articulated thoughts during simulated situations, ATSS, Davidson, Robins, & Johnson, 1983; Solomon et al., 1998). To date, most measures of IBs are based on self-report scales, which are sensitive to coping/defense mechanisms (e.g., suppression of SD may be an impediment in the assessment of SD by self-report scales). Moreover, it is sometimes difficult to measure the true nature and extent of IBs using self-report scales (as all studies have), as there are situations in which IBs are not readily consciously accessible yet are identifiable by their effects (David, 2003). Measures that are not based on the awareness and self-report of IBs are needed. Implicit tasks and priming methodologies might be good candidates for an indirect measure of IBs.

*Relationships between IBs/RBs and Other Types of Cognitions (e.g., "Cold Cognitions" Descriptions, Inferences, Attributions, Schemas)*

*A Brief Description of the Current State.* To date, a series of seven experimental studies have tested these relationships in a programmatic research program initiated by several authors. Consistent with REBT theory, these experiments demonstrate that people holding a

typical structure of IBs (DEM plus AWF; DEM plus FI; and/or DEM plus GE/SD) make descriptions, inferences, and attributions that are significantly less functional than those that are made by people holding RBs. These experiments (Bond & Dryden, 1996, 1997, 2000; Bond, Dryden, & Briscoe, 1999; Dryden et al., 1989a; Dryden, Ferguson, & Hylton, 1989b; Dryden, Ferguson, & Teague, 1989c) also suggest that the active component of a pair of IBs (e.g., DEM plus AWF; DEM plus FI; DEM plus GE/SD) is a secondary IB (AWF, FI, and/or GE/SD). These results are consistent with recent re-conceptualizations of DEM as a maladaptive (irrational) primary appraisal mechanism, and of AWF, FI, and GE/SD as maladaptive secondary appraisal mechanisms (e.g., David, 2003; David et al., 2002); thus, the effect of DEM on various outcomes (e.g., cognitive, emotional, behavioral) seems to be mediated by AWF, FI, and/or GE/SD. A main limitation of these studies is that they artificially separate DEM from its theoretically related derivatives (i.e., AWF, FI, and GE/SD), although various studies suggest that in ecological and clinical conditions the hypothesized derivatives (AWF, FI, and GE/SD) are usually related to DEM (e.g., Bernard, 1998; David et al., 2002).

*A Brief Description of Future Directions.* Current research should aim at a better understanding of these relationships: (a) do functional/dysfunctional inferences become “functionally autonomous,” even though initially generated in connection with IBs/RBs? (b) Do we need a direct intervention to change the functionality of inferences, or is the change in IBs/RBs accompanied by a change in functional/dysfunctional inferences? (c) What is the impact of IBs/RBs on other types of cognitions (e.g., response expectancies)? (d) Can we ecologically have AWF, FI, or GE/SD independent of DEM (e.g., not derivatives of DEM), or is this just an experimental artefact?

### *The Relationship between IBs/RBs and Feelings/Distress*

*A Brief Description of the Current State.* One of the major topics of interest in cognitive psychology is the relationship between cognitive and emotional processes. Some of the early cognitive theories of emotions have focused on the interruption of schemas and goals, or on linking emotions to schemas, attributions, and goals (“cold” cognitions) (Fiske, 1993; Mandler, 1975), while others have considered the appraisal of stimuli (“hot” cognitions) in terms of personal

significance and emotional consequences to be more important (Lazarus, 1991). More recent research and developments in the cognitive theory of emotions (Lazarus, 1991; Smith & Lazarus, 1993) have underscored the relevance of cold cognitions in emotion formation due to the fact that people evaluate data with respect to adaptive significance. A characteristic of *this line of cognitive research* on emotions is that it focuses on cognitive factors that are conscious or potentially consciously accessible. *Another line of cognitive research* on emotions focuses on unconscious information processing involving cortical and subcortical structures (e.g., LeDoux, 1996). The contemporary approach to emotion formation combines both lines of research, thus offering a comprehensive picture of human emotions (David et al., 2002).

Ellis' cognitive theory of emotion formation is in line with research on hot cognitions that are conscious or potentially consciously accessible (Ellis, 1994; Ellis & Harper, 1961, 1975). However, Ellis also emphasizes that DEM is sometimes implicit/unconscious, and can only be inferred from its behavioral and cognitive consequences (Ellis, 1994). According to the "ABCDE" model of REBT (Ellis, 1994), Cs that follow IBs about negative As are called dysfunctional (also unhealthy/maladaptive/inappropriate) negative feelings (e.g., depression after failing an exam, related to the IB "I must pass all exams"). Cs following IBs about positive As are called dysfunctional positive feelings (e.g., elation after learning that your work was praised by all the evaluators, related to the belief that "Everyone must only say positive things about me"). Cs that follow RBs about negative As are called functional (also healthy/adaptive/appropriate) negative feelings (e.g., sadness related to the idea that "I would have liked to pass the exam but I did not"), while those following RBs about positive As are called functional positive feelings (e.g., happiness related to the idea that "I would like all the evaluators to say only positive things about my performance, and this time they did"). Dysfunctional negative feelings are associated with psychological problems. Functional negative feelings, on the other hand, encourage the successful execution of behaviors necessary to reach a goal. For example, sadness may motivate one to study harder, and pass the next exam. Dysfunctional positive feelings orient people to seek only short-term benefits instead of long-term benefits. Functional positive feelings are associated with the ultimate fulfillment of people's desires, wishes, and goals.

Originally, Ellis implied that the dysfunctionality of negative feelings was circumscribed by their intensity: strong feelings (e.g., high worthlessness, high sadness) were considered dysfunctional and associated with IBs, while less strong feelings (e.g., low worthlessness, low sadness) were considered functional and associated with RB (Ellis, 1962; Ellis & Harper, 1961) (i.e., a unitary model of distress). In the revised version of his theory, Ellis (Ellis, 1994; Ellis & Harper, 1975) advances the idea that there are qualitative differences between certain similar feelings (e.g., depressed/worthless and sad; anxious and concerned/uneasy); while both functional (e.g., sad) and dysfunctional (e.g., depressed) feelings can independently range in intensity from mild to severe, they differ in their quality (i.e., a binary model of distress). In stressful situations, IBs have been hypothesized to be positively associated with dysfunctional negative feelings and their accompanying functional feelings (e.g., if one is depressed he/she is also sad). In stressful situations, RBs (frequently viewed as reflected in low scores of IBs [Bernard, 1998]) are hypothesized to be positively associated with functional negative feelings only. According to the revised theory, a unitary model of distress is not viable (e.g., in stressful situations, high levels of IBs produce high levels of negative affect [functional and dysfunctional negative feelings], while low levels of IBs produce low levels of negative affect [functional and dysfunctional negative feelings]). Rather, a binary model of distress is hypothesized: in stressful situations high distress means high levels of both functional and dysfunctional negative feelings, while low distress means high levels of functional and low levels of dysfunctional negative feelings. However, Cramer (1985) reported that IBs were positively correlated with both functional and dysfunctional negative feelings (as originally described by Ellis and Harper, 1975) in the context of imaginary, stressful situations. Cramer (1985) interpreted these data as inconsistent with the binary model, and consistent with a unitary view of distress (see also Cramer & Fong, 1991; Cramer & Kupshik, 1993).

David et al. (2002) however, have recently proposed a new, more complex model of emotion formation, based on the binary model, which involves both appraisal and REBT theory (Table 1).

Compared to the appraisal theory (Lazarus, 1991), this new model (see also David et al., 2003; David et al., in press) makes a distinction between functional and dysfunctional negative emotions (concern vs. anxiety; sadness vs. depression; remorse vs. guilt; annoyance vs.

Table 1

Appraisal Theory of Emotion Formation (Left), and a Hypothesized Model of Emotion Formation Based on Both REBT and Appraisal Theory (Right)

Appraisal theory (Smith et al., 1993)			REBT theory in the terms of appraisal theory; a hypothesized model		
Emotion	Core relational theme	Appraisal components	Emotion; Dysfunctional Functional	Core relational theme	Important appraisal components
Anger	Other-blame	Motivationally relevant motivationally incongruent other accountability (e.g., the others, life conditions)	Anger	Other-blame	Motivationally relevant, motivationally incongruent with DEM, other-accountability (i.e., the others, life conditions)
			Annoyance		Motivationally relevant, motivationally incongruent with preferences, other-accountability (i.e., the others, life conditions)
Guilt	Self-blame	Motivationally relevant, motivationally incongruent, self-accountability (e.g., myself)	Guilt	Self-blame	Motivationally relevant, motivationally incongruent with DEM, self-accountability (i.e., myself)
			Remorse		Motivationally relevant, motivationally incongruent with preferences, self-accountability (i.e., myself)

**Table 1**  
**(Continued)**

<i>Appraisal theory (Smith et al., 1993)</i>			<i>REBT theory in the terms of appraisal theory; a hypothesized model</i>	
Fear-anxiety	Danger-threat	Motivationally relevant, motivationally incongruent, low or uncertain emotion-focused potential	Fear-anxiety	Motivationally relevant, motivationally incongruent with DEM, low or uncertain emotion-focused potential (i.e., AWF, LFT)
			Concern	Motivationally relevant, motivationally incongruent with preferences, high emotion-focused potential (i.e., non-AWF, non-LFT)
Sadness	Irrevocable loss; helplessness about harm or loss	Motivationally relevant, motivationally incongruent, low problem-focused potential, negative future expectations	Depression	Motivationally relevant, motivationally incongruent with DEM, low problem-focused coping potential (i.e., SD), negative future expectations
			Sadness	Motivationally relevant, motivationally incongruent with preferences, low problem-focused coping potential (i.e., non-SD)

anger). Compared to the REBT model, the complexity of the new model is reflected by the fact that it describes specific and sequential processes associated with each emotion (David et al., 2002).

To summarize, up-to-date in REBT, dysfunctional feelings have been distinguished from functional feelings in two ways:

- (a) Consistent with Ellis and Harper's (1961) original position: functional emotions differ from dysfunctional emotions in terms of intensity, with very intense feelings seen as being dysfunctional (e.g., Cramer, 1985; Cramer & Buckland, 1996; Cramer & Fong, 1991; Cramer & Kupshik, 1993).
- (b) Consistent with Ellis and Harper's (1975) reformulated theory: functional and dysfunctional feelings differ both qualitatively (mainly) and quantitatively (e.g., David et al., 2002; David, Schnur, Birk, & 2003; David, Montgomery, Macavei & Bovbjerg, in press; Ellis & DiGiuseppe, 1993).

*A Brief Description of Future Directions.* Based on the available data (e.g., Cramer & Fong, 1991; David et al., 2002) we can say that IBs and RBs are involved in emotion formation and distress; however, whether their impact is quantitative, accommodating a unitary model of distress or qualitative, accommodating a binary model of distress, is still unanswered. Therefore, current research should aim to (a) investigate these two alternative hypotheses: unitary vs. binary model of distress; (b) elaborate on the relations between cognitions and emotions in REBT (e.g., specific cognitive components for specific emotions); and (c) corroborate the REBT theory of emotions with other theories of emotions (e.g., appraisal theory, bi-factorial theory, and cognitive/unconscious research). Recently LeDoux (1996) and others have argued for another theory of emotion formation. They argue that certain emotional problems are of subcortical origin (e.g., involving the amygdala, thalamus, and other non-cerebral structures), and do not involve appraisal as defined by the appraisal theory (Lazarus, 1991). Although people unfamiliar with basic cognitive psychological research are tempted to say that these findings are incompatible with the cognitive approach of emotions, it is certainly not the case. Some of the connections between the two fields are briefly described below (for details, see also David, 2003). *First*, these subcortical processes are related to the concept of unconscious information processing. Therefore, these processes preserve the cognitive (computational) component of emotions and connect the theory of emotions to the concept of cognitive unconscious, a highly investigated topic in current

cognitive psychology (David, 2003). *Second*, these subcortical and automatic processes can be countered by activating more constructive modes of thinking (David, 2003), and their effects can be controlled by conscious strategies. *Third*, cognitive psychology and CBT do not assume that verbal mediation is the only way of emotional control. Some very successful behavioral (e.g., exposure) methods work specifically on this type of unconscious information processing involved in emotion formation (Ellis, 1962, 1994). *Fourth*, according to REBT theory, an emotion generated by subcortical mechanisms can become an “A,” and be consciously appraised, thus generating a secondary emotional problem (Ellis, 1962, 1994). Unfortunately, the psychotherapeutic community seems to have received the construct of unconscious information processing in a distorted fashion. For example, Mahoney (1993) wrongly argues that the construct of unconscious information processing has already penetrated the field of psychotherapy, and uses Beck’s concepts of (1976) automatic thoughts and schema as an example. Mahoney (1993) seems to refer to a segment of information processing which functions unconsciously, but which can potentially be made conscious. This is a “functional dissociation” between conscious and unconscious processes, generated by the automatization of certain conscious processes and/or by coping and defense mechanisms (e.g., suppression, Wegner & Smart, 1997). However, modern work in cognitive psychology (e.g., Reber, 1993; Schacter, 1987; Seger, 1994) argues for a “structural dissociation” between conscious and unconscious processes. Some types of information processing (both perceptual and semantic) cannot be made conscious by their nature. They are represented in our memory in a format (e.g., nonverbal associations) that is not consciously accessible (Schacter & Tulving, 1994). Few works have assimilated this line of research in psychotherapy yet one notable exception is the work of Dowd and Courchaine (1996). The appraisal theory (Lazarus, 1991) and the developments in the neurobiology of emotions (LeDoux, 1996) can be combined to offer us a more comprehensive picture of human emotions. By incorporating research on unconscious information processing and research on the neurobiology of emotions into REBT theory, we will be able to preserve and extend a useful theory rather than having to invent a new one. To conclude, the idea that the “B” in the “ABCDE” model has been expanded to include two different basic components: (1) IBs and RBs as parts of explicit memory, related to the appraisal theory; and (2) unconscious information



processing in implicit memory, related to research on the cognitive unconscious and the neurobiology of emotions should be better disseminated. Future studies should investigate the interactions between these two constructs as part of an expanded “ABCDE” model.

### *The Relationship between IBs/RBs and Physiological Indicators*

*A Brief Description of the Current State.* IBs/RBs have been related to various physiological indicators. Goldfried and Sobocinsky (1975) for example, found that high/intense IBs are associated with high/intense physiological/emotional arousal. Other studies found only partial support for this hypothesis. For example, classical conditioning (i.e., pavlovian conditioning) has been used as a main explanation of the relationship between IBs and physiological arousal (e.g., Master & Gershman, 1983). Other studies have also failed to support the IB-arousal hypothesis (e.g., Craighead, Kimball, & Rehak, 1979; Smith, Houston, & Zurawski, 1984). However, recent research conducted with improved methodology supports the idea that high levels of IBs are indeed associated with anger arousal (e.g., Eckhardt, Barbour, & Davidson, 1998). These recent findings, along with findings showing that (1) psychosomatic disorder patients have high levels of IBs (e.g., Woods & Lyons, 1990), and that (2) REBT has a powerful impact of various physiological indicators (see outcome studies below) encourage future research on this topic.

*A Brief Description of Future Directions.* The fundamental questions for future research are as follows: Under what conditions do IBs/RBs affect physiological indicators? Which physiological indicators are affected by IBs/RBs? In other words, a much more clear distinction between physiological arousal and emotional arousal is needed, and answers to these questions could be best sought via a more general research program on emotions and distress.

### *The Relationship between IB/RBs and Behavior*

*A Brief Description of the Current State.* Theoretical analyses and clinical data suggest that while IBs seem to be accompanied by dysfunctional behavior, RBs are accompanied by functional behavior

(Ellis, 1994). To date, however, a very small amount of empirical research has attempted to clarify this relationship. For example, one line of research has focused on behavioral performance on various motor tasks. Some authors (e.g., Bonadies & Baas, 1984; Kombos, Fournet, & Estes, 1989) have found that IBs negatively influence behavioral performance on various tasks. Other authors have found only partial or no support (e.g., Rosin & Nelson, 1983) for this hypothesis. Another line of research has focused on the impact of IBs on procrastination. Generally, results have been positive in supporting the idea that IBs are etiopathogenetic factors in procrastination (e.g., Beswick, Rothblum, & Mann, 1988; Bridges & Roig, 1997), with very few disconfirming results (e.g., Ferrari & Emmons, 1994). A weak relationship has been found between IBs and measures of social skills (e.g., Monti, Zwik, & Warzak, 1986) and verbal or nonverbal intellectual functioning (e.g., Prola, 1985). Highly intelligent people seem to learn RBs easier than people of lower intelligence (e.g., Wilde, 1996a, 1996b). High levels of IBs are also associated with other behavioral outcomes (e.g., low perception of control—Thomson et al., 1993; high extrinsic motivation—Harju & Eppler, 1997).

*A Brief Description of Future Directions.* Future research projects should concentrate on clarifying the impact of IBs/RBs on the functionality of behavior, focusing on two approaches:

- (1) Arousal-performance theory (see Yerkes-Dodson Law of Motivation); it is hypothesized that the impact of IBs on performance on complex tasks may be mediated by arousal.
- (2) Behavioral operationalization of outcomes (rather than sole reliance on self-report) and studies rigorously designed to explore the “causal” rather than correlative role of IBS/RBs in human behavior.

### *Preliminary Conclusions*

Since 1955 REBT theory has evolved by hundreds of research and theoretical articles and by incorporating many developments in cognitive science:

- irrational beliefs are conceptualized as irrational cognitive processes that can cover various areas of content, rather than lists established based on clinical practice;
- IBs are conceptualized as hot cognitions and appraisal mechanisms in the cognitive architecture of the human mind;

- the assessment of IBs is taken beyond self-report scales (e.g., ATSS, Davidson et al., 1983).

It is now time to take REBT theory further by integrating it with developments in cognitive neuroscience:

- by an analysis of irrational and RBs at implementational level
- by incorporating the construct of unconscious information processing into the ABCDE model of REBT.

Finally REBT theory should be able to answer the criticisms of being a monolithic therapy that is less flexible in addressing specific disorders (Beck, Rush, Shaw, & Emery, 1979; Padesky & Beck, 2003). This can be done by elaborating more individualized models for various emotional problems following the paradigm proposed by David et al. (2002) (see also David, 2003) and by empirically investigating the way core IBs and their interaction generate particular cognitions involved in specific disorders. By reducing various forms of psychopathology to a few IBs and their combinations, the REBT approach would be similar to the neurosciences approach where a whole range of specific psychopathology is reduced to a few basic neurotransmitters and their interactions.

## CLINICAL AND APPLIED RESEARCH IN REBT

### *Outcome Studies in REBT*

*A Brief Description of the Current State.* This section will address the following questions: “How effective is rational-emotive behavior therapy? For which disorders is it most effective? And how does it compare to other therapies?”

Meta-analysis is a statistical approach that allows researchers to aggregate the results of multiple studies and to describe these results in a standard unit known as effect size. Effect sizes reported here represent group differences in standard deviation units. Hence, an effect size of 0 would indicate no difference between group outcomes; an effect size of 1 is considered large, and would indicate that the average REBT patient had an outcome superior to 84% of the comparison group. Effect sizes have been categorized along a continuum of no effect (0–0.2), low effect (0.2–0.5), medium effect (0.5–0.8), and high effect (higher than 0.8).

To date several qualitative reviews (e.g., DiGiuseppe, Millet, & Trexler, 1977; Ellis, 1974; Haaga & Davidson, 1989a, 1989b; Zettle & Hayes, 1980) have examined the efficacy (i.e., by rigorously controlled clinical studies) and effectiveness (i.e., by studies in real clinical settings) of REBT. Although generally positive, these qualitative reviews have also pointed to some methodological problems that should be corrected to strengthen the conclusion that REBT is an effective treatment.

As previously stated, rigorous empirical research on REBT efficacy, dates back to the end of the '80s and the beginning of the '90s. This outcome research has become the basis for a quantitative approach in examining the efficacy of REBT, and for allowing meta-analysis to address many of the criticisms advanced by previous REBT qualitative reviews (Engels et al., 1993; Lyons & Woods, 1991).

Concerning REBT outcome research, quantitative reviews are of two types: (1) *General*, focused on cognitive behavioral psychotherapy overall; and (2) *Specific*, focused specifically on the efficacy of REBT.

(1) REBT has generally done well in quantitative reviews of psychotherapy. For example, the original psychotherapy meta-analysis (Smith & Glass, 1977) cited REBT as yielding the second highest average effect size among 10 major forms of psychotherapy. However, the number of REBT outcome studies included in general psychotherapy meta-analyses is small, and most authors place all forms of cognitive-behavioral therapy within a single category (e.g., Wampold et al., 1997). Although psychotherapy meta-analyses typically find that cognitive-behavior therapy has the highest overall effect size, as REBT is included in the general CBT category, the degree to which REBT independently contributes to these results is unclear. So far, two rigorous meta-analyses have directly evaluated the efficacy and effectiveness of REBT (i.e., Engels et al., 1993; Lyons & Woods, 1991). The following synthesis of REBT efficacy is based on these two quantitative meta-analyses.

A. REBT diagnostic categories and outcome measures (Engels et al., 1993; Lyons & Woods, 1991)

In general, conclusions about the impact of REBT on various clinical diagnostic categories and outcome measures (see Table 2) can be summarized as follows:

- (1) REBT seems to be useful for a large range of clinical diagnoses and clinical outcomes (see Table 2). Interestingly, REBT has proved to have a much larger effect on "low reactivity" outcomes, which do

Table 2

A Brief Presentation of REBT Outcome Research

	<i>Lyons and Woods (1991); Clinical Psychology Review; 70 Outcome studies, 236 comparisons; REBT vs. Control (i.e., baseline, no-treatment, waiting list, other therapies)</i>	<i>Engels et al. (1993); Journal of Consulting and Clinical Psychology; 28 Randomized studies; REBT vs. Control (i.e., no-treatment; waiting list)</i>
<i>Diagnostic Category</i>		
(1) Anxiety (e.g., interpersonal, speech)	(1) No information	(1) M=1.71 SD=1.5
(2) Phobia (e.g., simple and complex)	(2) M=0.8 SD=0.7	(2) No information
(3) Somatic/emotional (e.g., stuttering, overweight, erectile failure, chronic heart disease, home dialysis, asthma, insomnia, migraine)	(3) M=1.92 SD=1.3	(3) M=2.54 SD=1.8
(4) Neurotic (e.g., lack of assertiveness depression, behavior problems, potential for dropping out of school, achievement problems)	(4) M=0.99 SD=1.0	(4) No information
(5) Neuroticism	(5) No information	(5) M=1.75 SD=1.83
(6) Diverse (e.g., rage, type A behavior, school children's emotional adjustment, well-being)	(6) No information	(6) M=1.04 SD=0.8
(7) Unclassified (e.g., sub-clinical problems, problems that do not fit a well-defined clinical category)	(7) M=0.95 SD=0.8	(7) No information

Table 2  
(Continued)

	Lyons and Woods (1991); <i>Clinical Psychology Review</i> ; 70 Outcome studies, 236 comparisons; REBT vs. Control (i.e., baseline, no-treatment, waiting list, other therapies)	Engels et al. (1993); <i>Journal of Consulting and Clinical Psychology</i> ; 28 Randomized studies; REBT vs. Control (i.e., no-treatment; waiting list)
<i>Outcome Measures</i>		
(1) Fear/anxiety	(1) M=0.77 SD= 0.7	(1) M=1.52 SD=1.4
(2) Performance and behavior (physiological tests of anxiety-heart rate, EEG, pulse, electrodermal response-, behavioral tests of anxiety, number of pounds lost in weight reduction)	(2) No information	(2) M=2.48 SD=1.8
(3) Standard measures (e.g., irrational beliefs, depression)	(3) M=0.81 SD=0.6	(3) No information
(4) Physiological measures only (e.g., heart rate, pulse, EEG, electrodermal response)	(4) M=3.9 SD= 0.5	(4) No information
(5) Neuroticism	(5) No information	(5) M=1.95 SD=2.6
(6) Rationality	(6) No information	(6) M=2.15 SD=1.7
(7) Rest category (e.g., self-esteem, well-being, social desirability)	(7) No information	(7) M=1.28 SD=1.4
(8) Unclassified—do not fit the other categories—(e.g., various behavioral measures for school/clinical population)	(8) M=1.9 SD=1.2	(8) No information

*Note.* (M=mean of the effect size; SD=standard deviation). Effect sizes represent the difference between two groups (REBT group vs. various control groups (e.g., no-treatment, waiting list)). Effect sizes can be categorized along a continuum of no effect (0–0.2), low effect (0.2–0.5), medium effect (0.5–0.8) and high effect (greater than 0.8). A positive ‘M’ indicates that REBT was found to be superior to the other conditions.

not have an obvious relationship with the treatment (e.g., physiological measures, grade-point average), than on “high reactivity” measures, which have a direct and obvious relationship with the treatment (e.g., IBs). This suggests that the effect of REBT is not due to compliance or task-demand characteristics.

- (2) REBT is equally efficient for clinical and nonclinical populations, for a large age range (9–70), and both for males and females.
- (3) In general, there is no difference in efficacy between individual and group REBT.
- (4) In general, the higher the level of training of the therapist, the greater/better the results of REBT intervention.
- (5) Higher numbers of REBT sessions correlate with better outcomes. Higher quality outcome studies have shown greater REBT effectiveness.

#### B. REBT and control groups (e.g., no treatment or waiting list group)

- REBT vs. baseline (88 effect sizes):  $M$  (mean of the effect sizes)=1.4  $SD$  (standard deviation) = 0.9
- REBT vs. no-treatment control (31 effect sizes):  $M=1$   $SD=0.9$
- REBT vs. waiting list (28 effect sizes):  $M=1$   $SD=0.9$

These data show that REBT has a medium to high effect size compared to control conditions. This effect size is higher than the effect size of placebo or other therapies compared to control conditions.

#### C. REBT and Placebo (in most cases placebo is conceptualized as attention-control or sham therapy)

- REBT vs. Placebo (i.e., attention control) (21 effect sizes):  $M=0.8$   $SD=0.7$

These analyses show that REBT has a medium to high effect size compared to Placebo.

- REBT vs. Control (no-treatment, waiting list) (12 studies):  $M=1.8$   $SD=1.78$
- Placebo vs. Control (no-treatment, waiting list) (12 studies):  $M=0.90$   $SD=0.75$

When REBT and Placebo are compared with the same type of treatment, the effect of REBT is typically in the upper range of the high effect size, while placebo is in the lower range of the high effect size.

When directly comparing REBT and Placebo, the effect size for REBT is in the medium/high range. When comparing REBT and Placebo with other conditions (e.g., no-treatment) the effect size for REBT is higher than the effect size for Placebo (but both are in the high range).

#### D. REBT vs. other psychotherapies

- REBT vs. Behavior Therapy (38 effect sizes):  $M=0.30$   $SD=0.6$
- REBT vs. Cognitive-Behavior Modification (13 effect sizes):  $M=0.14$   $SD=0.3$
- REBT vs. other therapies (e.g., psychodynamic, gestalt, humanistic, Adlerian, reality therapy, undifferentiated counselling, vocational and personal development counselling) (17 effect sizes):  $M=0.80$   $SD=1.3$ .

These data show that REBT systematically has a high effect size when compared with other therapies, and that REBT is as efficient or even slightly (but not significantly) more efficient than other behavior therapies.

Based upon these meta-analyses one can conclude that REBT on the whole seems successful in improving subjects' well-being, compared to placebo or control (e.g., no treatment, waiting list). Some words of caution are necessary however, regarding the interpretation of these results (e.g., Haaga & Davidson, 1993):

- (1) More attention should be paid to generic methodological criteria such as (Kazdin, 2003)
  - (a) formal clinical assessment of psychopathology
  - (b) adherence to/adequacy of clinical protocols
  - (c) measures of the clinical significance of change
  - (d) collection of follow-up data
  - (e) subject attrition
- (2) Clients participating in many of the clinical trials tend to be the YAVIS type (Young, Attractive, Verbal, Intelligent, Sensitive) and some of their problems are sub-clinical; hence, the generalization of these results to clinical practice should keep this limitation in mind.
- (3) Both REBT and the other therapies have evolved during the last years, and therefore it is possible that earlier studies contaminate the conclusion regarding the relative efficacy of REBT and other therapies. However, the new generation of REBT randomized clinical trials, adhering to the generic methodological criteria, have also



offered a positive view on the efficacy of REBT. Overall, these studies have found that REBT is an effective treatment compared to various control conditions, and that it has about the same efficacy as most behavioral treatments for obsessive-compulsive disorders (Emmelkamp & Beens, 1991; Emmelkamp, Visser, & Hoekstra, 1988), social phobia (Mersch, Emmelkamp, & Lips, 1991; Mersch, Emmelkamp, Boegel, & van der Sleen, 1989) and social anxiety (DiGiuseppe et al., 1990). In the case of agoraphobia, however, both rational emotive therapy and self-instructional training seem less effective than *in vivo* exposure (Emmelkamp, Brilman, Kuiper, & Mersh, 1988). REBT in conjunction with medication has been found more effective than medication alone for major depression (e.g., Macaskill & Macaskill, 1996). In the case of dysthymic patients REBT has been shown to be as efficient as medication, but a combination of REBT with medication is much more effective (Wang et al., 1999). Also, REBT seems to be an effective adjunct in the therapy of inpatients with schizophrenia (e.g., Shelley, Battaglia, Lucely, Ellis, & Opler, 2001). All these results encourage future clinical research regarding the efficacy of REBT in various clinical conditions.

It is important to point out that some of the REBT outcome research has been conducted on normal population having subclinical problems. This can be seen as one of the strengths of this approach. REBT is not only a clinical theory useful for clinical populations, but also an educational system with implications for nonclinical and subclinical populations (e.g., depressed mood, lack of assertiveness, test or speaking anxiety) who have an interest in self-help materials and personal development.

*A Brief Description of Future Directions.* Current research should be focused on developing two lines of outcome studies.

(1) Efficacy studies based on well-controlled randomized clinical trials, and (2) effectiveness studies examining REBT in real clinical settings. Finally, a new quantitative meta-analysis is needed to assess recent empirical studies of REBT efficacy and effectiveness.

### *REBT Theory of Change*

*A Brief Description of the Current State.* Evidence from outcome studies presented above indicates that REBT is probably an effective form of treatment for a large spectrum of problems and populations. Although additional outcome studies using mainly non-analogue pop-

ulations (to strengthen the conclusion about REBT efficacy and effectiveness in clinical practice), and outcome measures of several aspects (e.g., subjective, cognitive, behavioral, and physiological) are still needed, future research efforts should also be focused on the factors contributing to the effectiveness of REBT (Lyons & Woods, 1991). Do changes in IBs/RBs underlie the effectiveness of REBT? Very few studies have directly tested the REBT theory of change. There is research indicating that changes in IBs mediate observed treatment effects. Several studies using REBT for anxiety (e.g., Kanter & Goldfried, 1979), depression (Lipsky et al., 1980) and unassertiveness (Hammen, Jacobs, & Mayol, 1980) have shown a reduction in both IBs and other symptoms measures. However, qualitative reviews (e.g., Haaga & Davidson, 1989a, 1989b, 1993) have been critical of the methodological adequacy of much of the research on which these conclusions are based.

Also, related to the theory of change, REBT is hypothesized (Ellis, 1994) to exceed the efficacy and effectiveness of other cognitive-behavioral treatments by virtue of (1) focusing on the core beliefs in psychopathology (e.g., DEM), (2) reducing secondary problems, and (3) promoting self-acceptance. However, these hypothesized mechanisms of change have not been thoroughly examined in REBT research (but see Chamberlain & Haaga, 2001a, 2001b).

*A Brief Description of Future Directions.* Component designs isolating specific beliefs, and designs examining the association of changes in beliefs with changes in other outcome measures could provide important evidence for the basic premises of REBT theory of change.

### *IBs and RBs as Etiopathogenetic Mechanisms in (Psycho) Pathology*

*A Brief Description of the Current State.* REBT maintains that IBs/RBs mediate the relationship between environmental events and emotional distress (REBT diathesis-stress model). IBs are hypothesized to be “cognitive vulnerability” factors in stressful situations, while RBs are “protective factors.” Three lines of research have been used to provide support for this conclusion.

1. *Correlational and cross-sectional studies (B-C).* This line of research has consistently indicated that measures of IBs are reliably associated with measures of emotional disorders and symptoms in both nonclinical and clinical populations. For example, high levels of IBs have been shown to be associated with general anxiety (Jones,

1968), social phobia, speech anxiety, test anxiety (e.g., Goldfried & Sobocinski, 1975), self-reported depression (Nelson, 1977), general psychiatric symptoms (Jones, 1968), assertiveness deficits (Alden & Safran, 1978), and type-A coronary-prone behavior (Smith & Brehm, 1981). Upon admission to an inpatient psychiatric unit, individuals diagnosed as neurotic (based on MMPI scores) showed higher levels of IBs than non-hospitalized normals (Newark, Frerking, Cook, & Newark, 1973).

Many of these studies, however, have been criticized as confounding the assessment of IBs with predicted outcomes (e.g., emotional distress). Also, many of them were contaminated by a “context effect,” as IBs and other correlated variables were measured in the same context, a procedure that may have inflated the correlations (some of these correlations reached values around 0.7).

As a result of these critiques, a new generation of IBs scales has been developed in which contamination with emotional items was avoided. Research using these new measures (e.g., Bernard, 1998) has consistently indicated that high levels of IBs are reliably associated with a variety of indicators of emotional distress (measured in the same or in a different context), in both clinical and nonclinical populations. For example, IBs are associated with anxiety and/or depressive symptoms in both college populations (e.g., Chang & Bridewell, 1998; Muran, Kassino, Ross, & Muran, 1989) and clinical samples (e.g., Nottingham, 1992; Murran & Motta, 1993).

Unfortunately, the correlational nature of these research designs precludes inferences regarding the causal role of IBs in distress. Do these studies and their results support REBT theory? Supposing that one did not find an association between high IBs and various symptoms—using this methodology—would that be a disconfirmation of REBT theory and of the diathesis-stress model? The answer is “not at all!” in both cases. The results obtained in these correlational and cross-sectional designs are interesting, but they are not a direct test of REBT theory. IBs and symptoms are supposed to be correlated only in stressful situations. One can have high levels of IBs but because he/she has not faced stressful situations he/she will experience no symptoms! Therefore, the lack of correlation is not a disconfirmation of REBT theory, unless it is found during a stressful event that is hypothesized to activate available IBs! A more comprehensive test is needed, taking into account the presence/absence of activating events and their influence on the associations found in these studies.

2. *Correlational and cross-sectional studies during stressful events (A-B-C).* By including all three hypothesized factors (i.e., event, beliefs, response) these studies have provided a more complete test of REBT theory and of the diathesis-stress model. IBs have been found to be associated with negative mood during stressful situations in formerly depressed persons (Solomon et al., 1998), and with state and trait anxiety in college students experiencing both high and low stress (Chang, 1997).

The overall picture of this research is that IBs are associated with measures of psychological disturbance. In this case too, the correlational nature of the design, precludes inferences about (1) the causal role of IBs/RBs or (2) the moderating or mediating role (for a distinction between moderation and mediation see Baron & Kenney, 1986) of IBs/RBs on the impact of stressful events and emotional/psychological disturbance. It is possible, for example, that both stressful events and IBs are correlated with psychological disturbance, but IBs do not mediate the impact of stressful events on psychological disturbance, as the REBT diathesis-stress model would predict. The diathesis-stress model of REBT (i.e., in stressful situations IBs produce cognitive vulnerability, while RBs are protective) can be empirically investigated using a  $2 \times 2$  factorial design with stress and IBs as independent variables. Research along this line, with stressful events being induced experimentally (e.g., by imagining various stressful situations), has resulted in mixed findings. While Goldfried & Sobocinski (1975) found support for the REBT diathesis-stress model, Craighead et al. (1979) did not. Craighead et al. (1979) found however, that high IBs subjects produced more negative self-statements while imagining negative events. This finding is consistent with the REBT diathesis-stress model where the outcome measures are cognitions rather than feelings. Smith et al. (1984) found no evidence for the diathesis-stress model of anxiety in a college population when the stressful event was taking part in an intelligence test.

This type of studies has been criticized for unjustly assuming that they are testing the REBT diathesis-stress model because often studies have used artificially induced stressful situations (e.g., by imagery) rather than real ones. Ellis (1994) has mentioned several times that generic events may not be relevant primers for IBs. Rather, specific events, representing a thwarting of one's goals, or a loss/failure relevant to one's psychosocial concerns are needed. Consequently, this type of studies has provided a minimal test of the REBT diathesis-stress model.

Another strategy to test the REBT diathesis-stress model has been to focus on real stressful events retrospectively (e.g., in the last 1 year or 6 months). Using this framework, Hart, Turner, Hittner, Cardozo, and Paras (1991) found support for the REBT diathesis-stress model for hostility but not for anxiety. Chang (1997) found no support for the REBT model in explaining depressive symptoms in college populations. However, measuring stressful events retrospectively, after long periods of time (1 year or 6 months), significantly reduces the likelihood of this type of study to test the REBT diathesis-stress model. A diathesis-stress effect may exist during the stressful period, but may become less relevant several months later, as emotional problems diminish (e.g., as a result of using various coping mechanisms).

When studies have tested the REBT diathesis-stress model using rigorous methodology, the results have been supportive of the REBT diathesis-model. Thus, Malouff, Schutte, and McClelland (1992), using a prospective design with real stressful events (e.g., right before a final exam), found support for the REBT diathesis-stress model of anxiety.

To conclude, the results of studies investigating the REBT diathesis-stress model do not, as a group, give us a substantial amount of clear information. They suggest that the REBT diathesis-stress model can predict some outcomes (e.g., hostility) but not others (e.g., trait anxiety). However, they also suggest that when implemented and tested correctly (e.g., in prospective designs and real stressful events), hypotheses generated by the REBT diathesis-stress model are empirically supported. This topic deserves further research.

*3. Studies of self-referent speech and self-statements.* This line of research has attempted to establish a causal role of IBs/RBs in generating various emotions by directly manipulating cognitions.

Studies of this type have systematically shown that self-referent speech or self-statements—based on experimentally manipulated IBs/RBs (e.g., Cramer & Fongs, 1991; Cramer & Kupskin, 1993)—are associated with physiological and emotional indices of stress and decreased task performance (e.g., Schill, Monroe, Evans, & Ramanaiah, 1978). Also, studies based on other types of negative self-referent speech (e.g., cognitions not directly expressing IBs/RBs) (e.g., Hollon & Kendal, 1980) have provided indirect support for the REBT theory, as IBs are reliably correlated with such negative self-statements (Harrel, Chamless, & Calhoun, 1981). The main limitations of these studies are that they do not address: (1) the conceptual difference

between viewing IBs/RBs as core beliefs or as self-statements produced during experimental manipulation (e.g., the transitory nature of self-statements vs. the stability of IBs); (2) the fact that some self-statements (e.g., cognitions not directly expressing IBs/RBs) could be involved in emotional disorders without core IBs playing a direct role; (3) the demand characteristics of the tasks (but see Cramer & Buckland, 1996).

Summarizing, as a group, results based on these three lines of research tentatively support some aspects of the REBT diathesis-stress model. The three main criticisms of previous studies investigating the etiopathogenetic role of IBs/RBs in health and pathology (based on the diathesis-stress model) are (1) a diathesis-stress model can only be tested rigorously in a prospective design with (a) repeated measures for both IBs/RBs—as mediators—using a variety of other outcome variables (e.g., distress) and (b) manipulation of really stressful situations. Only a few studies (e.g., Malouff et al., 1992) are based on this type of design, and therefore the results supporting the REBT diathesis-stress model need further replication; (2) most of the previous studies have assumed that a high RBs score indicates a low IBs score; as already discussed above, IBs and RBs load on two different factors and should be measured by separate scores. None of the studies investigating the REBT diathesis-stress model has done this; (3) researchers have often assumed that all outcome measures (e.g., cognitive, behavioral, physiological, emotional) should reflect the REBT diathesis-stress model. A more pertinent question would be: Which outcomes are more or less susceptible to the REBT diathesis-stress model? Is it possible that some outcomes (e.g., galvanic skin response) are more related to unconscious information processing (e.g., conditioning) than to consciously accessible beliefs.

*A Brief Description of Future Directions.* Future research examining the role of IBs/RBs in the etiology of psychopathology and emotional disturbance should focus on

- (1) Endorsement of RBs/IBs and physiological, behavioral, cognitive, and emotional responses in individuals exposed to real-life stressful situations; this type of research requires longitudinal and randomized designs.
- (2) Treatment outcome studies with experimental manipulations of sufficient magnitude and duration to influence both core beliefs and self-statements.

### *Preliminary Conclusion*

Based on empirical studies conducted so far, we can say that REBT is an efficacious form of psychotherapy for a large spectrum of disorders and populations. However, as some of these studies, particularly earlier ones, have methodological problems, the conclusion should be “tempered,” and it is safer to say that REBT is very probably an efficacious form of psychotherapy. One should keep in mind, however, that both older studies and more rigorous new studies suggest that REBT is at least as efficient as behavioral or other cognitive-behavioral therapies. Although REBT proponents suggest that REBT should be more efficient than other forms of cognitive-behavioral psychotherapies because it is focused on fundamental evaluative core beliefs, this assumption has no empirical support (DiGiuseppe et al., 1990; Warren, McLellarn, & Ponzoha, 1988). Considering that cognitive-behavioral psychotherapies, although effective, have not yet reached “the desired standard” of efficacy and effectiveness, as about 30–40% of people are still non-responsive to these interventions, the efficacy and effectiveness of REBT should get more empirical attention in order to come to a definitive answer regarding its hypothesized superior effect. The fact that much of the REBT outcome research has been conducted on normal populations with sub-clinical problems can be seen as one of the strengths of this approach as REBT is not only a clinical theory applicable to clinical populations, but also an educational system with implications for nonclinical and sub-clinical populations (e.g., depressed mood, lack of assertiveness, test or speaking anxiety). Finally, although IBs seem to be important etiopathogenetic factors in psychopathology; it is not yet clear whether the efficacy of REBT can be attributed to the change of IBs into RBs, as the REBT theory of change is insufficiently studied.

### OTHER REBT RESEARCH/APPLICATIONS

REBT is a general psychological theory, not only a clinical theory. Therefore, it has stimulated applications and research in several areas:

- (1) Clinical psychology/psychotherapy and health/behavioral medicine (see the above summary).

- (2) Education (e.g., rational-emotive education, rational parent education, rational teacher education, rational mentoring). Rigorous research has been conducted to empirically test the REBT theory and practice in this field (e.g., Wilde, 1996a, 1996b, 1999).
- (3) Industrial/organizational psychology (e.g., rational-assertiveness training) (e.g., Cayer, DiMattia, & Wingrove, 1988).
- (4) Pastoral counselling (e.g., Johnson & Ridley, 1992; Johnson et al., 1994).
- (5) REBT has been a prominent source of information regarding self-help materials and personal development (e.g., Ellis & Harper, 1975). However, little research to date has empirically validated these applications.
- (6) Nonclinical populations: life-problems, optimization of human potential (e.g., decision making, emotional control, emotional intelligence), occupational stress management, REBT coaching, rational mentoring etc. (see Johnson, Huwe, & Lucas, 2000; Lyons & Woods, 1991).

All these areas need further research in order to clearly evaluate the scientific basis and the efficacy/effectiveness of such programs.

### MISCONCEPTIONS OR UNFAIR ATTACKS? THE CASE OF REBT RESEARCH

Lakatos (1970) has stated that mainstream science only exposes the public to its theories and models and tries to build a protective belt around its assumptions. Because assumptions are neither falsifiable nor verifiable, this is an unsound practice, which keeps debates focused on the theory and driven by empirical evidence. REBT is a scientific form of psychotherapy, but at the same time it is philosophically driven. Because REBT as a system exposes its philosophical assumptions about life and human beings, it often arouses defensiveness in the mainstream. Therefore, although many REBT ideas have been incorporated into the mainstream, the source of these ideas is often not cited in order to avoid controversy (Popa, 2001). Also, (a) REBT theory has been often misunderstood in research (see David et al., 2002 for a discussion about how the REBT theory of emotions has been misunderstood in research); (b) incorrect predictions have been derived from the REBT theory (see Ellis & DiGiuseppe, 1993 for a discussion about how the REBT theory of emotions has been incorrectly tested); and (c) some of the existing data has not been properly interpreted.



As an example, a review reflecting all these misunderstandings was published in the *Journal of Behavior Therapy and Experimental Psychiatry*, (1992) by Robert L. Gossette and Richard M. O'Brien from Hofstra University (a similarly flawed review on rational-emo-tive education was published by the same authors, see Gossette & O'Brien, 1993). The authors reviewed several studies in which subjects were assigned to (a) REBT treatment, (b) no treatment, or (c) "other" treatment groups. Both professional studies as well as students' dissertations were included in the review. Each comparison of outcome measures of REBT treatment vs. other conditions was considered a test of the efficiency of REBT treatment. A test was considered positive if the investigator concluded that the REBT treatment group was significantly different ( $p < 0.05$ ) from comparison groups in the predicted direction. Proportions (e.g., for dissertations, for publications, and total) of the outcome tests favoring REBT treatments compared to control and "other" treatments were computed. At the risk of stating the obvious, let us point out the most serious flaws in the design of this review and in its conclusions. *First*, a combination of professional papers and dissertations is not acceptable in a serious review. It is well-known in the academic field that students usually include several measures in their dissertations (more or less theoretically related to their main objective) in order to be sure that they get significant results that are to be discussed in their work; measures that prove non-significant, and that are not the main focus of the study but rather additional aspects, can seriously alter the results. Unless the dissertation is published, it is not considered serious scientific literature. *Second*, REBT treatments might be very effective for some disorders (or outcomes) and less effective and/or non-effective at all for other disorders (or outcomes). But it makes little sense to evaluate the effects of REBT treatments in general. Instead, one needs to evaluate the effects of REBT treatments on particular outcomes and disorders. *Third*, including only significant outcomes and disregarding samples sizes is a serious methodological flaw, particularly now that top-quality textbooks on meta-analyses have been published (e.g., Hunter & Schmidt, 1990). *Fourth*, stating that at present REBT treatment appears to possess neither theoretical nor practical justification based on the findings, and that it is more efficient than "other" treatments (i.e., behavioral therapy) in only 12% of the cases (while in most of the other cases there is no statistically and/or clinically significant difference between REBT and behavioral treatments

on major dependent variables) is a misrepresentation and a misinterpretation of the data; the correct conclusion would be that REBT treatment is at least as efficient as behavioral treatments. Indeed, less biased and more methodologically sound quantitative reviews based on the same studies as those used by Gossette and O'Brien (1992) (e.g., Engels et al., 1993; Lyons & Woods, 1991) have drawn conclusions similar to those suggested by us, not those of Gossette and O'Brien (1992, 1993). It is curious that Gossette and O'Brien do not even mention these quantitative meta-analyses, nor do they address discrepancies between their conclusions and meta-analyses results (e.g., Lyons & Woods, 1991)! Although their biased review has not seriously impacted the scientific community (it has only been cited six times; one time by the authors themselves), it is unfortunate that it is so easily accessible on PSYCHLIT and MEDLINE, as it might bias (1) novices in the field, who are unfamiliar with REBT and sound scientific methodology and/or (2) professionals who in the first phase of research often screen the literature by only reading the abstracts.

Another recent example is related to a "programmatic" review of MacInnes (2004) with the goal of finding the evidence underpinning REBT. According to the findings, there is limited evidence to support the REBT theory. Although we agree that more research is needed to test the REBT theory, the criteria and the method used by the author are strange. For example, there seems to be confusion between a random selection of participants for the study, and a randomized distribution of the participants in various groups. A randomized distribution of participants in various groups is fundamental for testing the REBT theory, while a randomized selection of participants from the general population would be useful to generalize the REBT theory. Most REBT studies presented by the author as flawed for not using randomization, have in fact used a randomized distribution of participants in various groups to rigorously test the theory (e.g., Bond et al., 1999; Cramer & Kupshik, 1993).

Another constant criticism of REBT has come from the proponents of cognitive therapy. Some authors for example (e.g., Padesky & Beck, 2003) argue that REBT is mainly a philosophical therapy rather than a scientific one. We believe this to be an epistemological misconstruction and, again, a false representation of REBT. Let us explain. Any psychotherapeutic system (including Beck's cognitive therapy) can be described at a paradigmatic level (i.e., its philosophi-

cal assumptions), at a theoretical level (i.e., its empirically testable hypotheses), and by referring to its models and intervention procedures. In all therapies, assumptions are neither verifiable nor falsifiable. They are often assumed simply because an influential founder of the paradigm has said so; moreover, they are masked and protected since sometimes they differ widely even within an apparently homogenous theoretical enterprise. Because REBT as a system exposes its philosophical assumptions about life and human beings, it might feel uncomfortable to the more defensive mainstream. Furthermore, Albert Ellis seems to be one of the last psychotherapists of the old tradition of “spiritual leaders,” and he is a fervent supporter of the philosophical component of REBT. Thus, REBT seems to be both philosophical and leader driven. Because of these two factors, REBT as a system might be incompatible with the way the mainstream works, and thus has not been able to fully penetrate the mainstream. Other cognitive-behavioral therapies have had a different fate. For example, both Aaron Beck’s and Donald Meichenbaum’s approaches have been better assimilated into the mainstream. However, both Beck and Meichenbaum have focused on developing theories, and have created models that are well-supported empirically. With REBT this is more difficult because REBT proudly exposes its philosophical assumptions. Although many REBT ideas have been assimilated into the mainstream (Still, 2001) the source of these ideas is sometimes not cited in order to avoid debates regarding their philosophical tinge. As Ellis (Popa, 2001) has noticed, this has happened many times. However, this does not mean that REBT is philosophically oriented while cognitive therapy is more scientifically oriented; as we have said before, this is an epistemological misconception. Beck’s cognitive therapy has its own un-testable assumptions (e.g., the deterministic assumption) beyond the well-validated models and theories, but they are often not exposed; moreover, they are defended by a protective (conceptual) belt, to use Lakatos’ terms (1970). REBT has long ago started to change its original approach, and also to expose its theory and models, not just its philosophical assumptions. Indeed, meta-analyses of the studies focused on current REBT theory and intervention models (e.g., Engels et al., 1993) suggest that REBT is very probably an efficacious form of CBT.

Finally, REBT has also been criticized by proponents of cognitive therapy that it does not provide a differentiated understanding of the specific patterns of cognitive processes underlying various forms of

pathology, being a monolithic therapy that is less flexible in addressing specific disorders (Beck, Rush, Shaw, & Emery, 1979; Padesky & Beck, 2003). A large empirical basis exists for these specific cognitive models of various cognitive-behavioral psychotherapies; their implications in anxiety disorders, depression, schizophrenia, and personality disorders have been well documented (e.g., Beck & Emery, 1985; Riskind, 1999). For example, the cognitive model of depression as hypothesized by Beck et al. (1976) states that individuals have stable cognitive patterns that develop as a consequence of early learning. These cognitive patterns predispose people to negative interpretations of life events, which, in turn, lead depressed people to engage in depressive behavior. Ellis (1994) differentiates between inelegant and elegant REBT. While inelegant REBT is similar to general cognitive-behavioral therapy in accepting the specific models, elegant REBT is a unique kind of CBT. While REBT has recently developed specific models for various emotional problems (e.g., David et al., 2002), the elegant REBT line of research (Ellis, 1994) hypothesizes that only a few dysfunctional cognitions are at the root of psychopathology and are therefore, involved in the development of psychological problems in stressful situations (Ellis, 1994). More precisely, in elegant REBT, while recognizing the specific cognitive models, Ellis (1994) describes the core of psychopathology as consisting of a few basic IBs; both symptomatology and the specific cognitions described in various specific models are the product of these core IBs. This reductionistic approach is similar to the neurosciences approach where a whole range of psychopathology is reduced to several neurotransmitters and their interactions! According to REBT challenging the core IBs is accompanied by a reduction in both symptomatology and in cognitions described in specific models (DiGiuseppe, 1996; Dryden et al., 1989; but see Bond and Dryden, 2000). In the case of depression for example, Ellis (1987) has argued that previous specific theories lack a crucial cognitive component—demandingness (DEM). According to Ellis (1987), the other cognitive models of depression (e.g., Beck, 1967; Rehm, 1977; Lewinsohn, 1974; Seligman, 1975, 1981) probably explain how people make themselves sad when suffering major losses and inconveniences. Only the IB of DEM, however, differentiates people's appropriate feeling of sadness from their dysfunctional feeling of depression. REBT is focused on this crucial component in depression (i.e., DEM) and its main derivate (self-downing—SD) that contribute to an understanding of the causative factors in depression. In a reply

to Ellis, Marzillier (1987) and then Brown and Beck (1990) argue that DEM can be a component of depression, but that it is not specific and sometimes even not necessary. If identified, DEM is disputed in cognitive therapy along with other schemas. According to CT, DEM is one of the core beliefs sometimes readily recognizable in depression (Beck et al., 1979). Beck et al., (1979) mention that cognitions recorded by patients as homework, as well as verbalizations during therapy sessions, contain a high frequency DEM. However, DEM is not always necessary for depression, and is identifiable by current CT strategies. On the other hand, Ellis (1987, 1994) insists that DEM is always a component in depression and that more effort is necessary to identify it than is made in CT. Sometimes DEM is implicit or is not consciously accessible because of defense mechanisms. This is why, compared to CT, REBT places a special focus on identifying DEM. Interestingly, recently, Solomon et al. (2003), using individualized measures of IBs (i.e., DEM) found that DEM seems to be the core belief in major depression. Thus, the failure of REBT to account for different emotional reactions may be a myth. David et al. (2002) have shown how different IBs are combined in different emotional reactions (see Table 1). Moreover, IBs may refer to the well-known construct of “negative affectivity” (it has been established that measures of emotional disturbance factor together see DiGiuseppe, 1996) and thus, core IBs may be involved in generating both symptomatology and specific cognitions described in specific models of psychopathology.

While it is true that REBT research has many shortcomings (some of them explicitly presented here) it is unfortunate that they are sometimes exaggerated and presented in such an unfair and biased manner. Ironically, Gossette and O’Brien state in their article that “previous reviews [of REBT] have generally been quite partisan and subjective, and have not reflected available research”! We believe that the weak points of REBT research should be exposed and criticized in order to improve REBT theory and practice. We have tried to do this in our synopsis. However, the overgeneralization and/or magnification of the negative, and the minimization of the positive are dysfunctional beliefs that maintain the “wisdom” in the field that REBT has few empirical studies and that REBT research is in serious trouble. We have tried to avoid them by explicitly presenting both the positive aspects and strengths of REBT research and its weakness. A balanced and more scholar approach such as this is

much more probable to stimulate rigorous research in the theory and practice of REBT.

### FINAL REMARKS

Based on an extensive review of REBT fundamental and applied research, we believe that (a) REBT theory has been many times misunderstood in research, (b) incorrect predictions have been derived from this research, and (c) some of the existing data has not been properly interpreted. We do not agree with the “wisdom” in the field that REBT has few empirical studies and that REBT research is in serious trouble. As this review shows, this is myth! If one eliminates the “noise,” a tentative conclusion is that high-quality studies tend to support REBT basic theory and efficacy. However, to strengthen this conclusion and to fully explore the potential of REBT, shortcomings of REBT research presented here need to be corrected, and high-quality studies better promoted. This is particularly important since cognitive-behavioral psychotherapies seem to be somewhat stuck, as although effective, the efficacy and effectiveness of these therapies has not yet reached “the desired standard,” as about 30–40% of people are still non-responsive to these interventions. Thus, REBT could be a platform of reinvigorating empirical studies on the efficacy/effectiveness and theory of cognitive-behavioral models of psychopathology and human functioning.

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