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# On the Scientific Status of Rational Emotive Behavior Therapy

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The scientific status of psychotherapy has become a central topic in contemporary discussions, and whether Rational Emotive Behavior Therapy (REBT) could be regarded as a scientific form of psychotherapy remains a major issue. Albert Ellis, the founder of REBT, attempted to give positive arguments for its scientific status from the perspective of Logical Empiricism and Falsificationism, mainly referred to Popper's methodological falsificationism, but failed. Therefore, it seems that the claim that REBT is a scientific psychotherapy appears untenable. Through analyzing the core theory and empirical studies of REBT, within the framework of the Methodology of Scientific Research Programmes (MSRP), the hardcore theory of REBT and its auxiliary hypotheses could be clearly distinguished. Furthermore this framework demonstrate how the theoretical and empirical progress of REBT could be gradually manifested in huge empirical studies, and finally get its scientific status.

**Keywords:** Rational Emotive Behavior Therapy (REBT); Scientific Status; Falsificationism; the Methodology of Scientific Research Programmes (MSRP)

**Introduction**

Rational Emotive Behavior Therapy (REBT) was developed by the American philosopher and psychologist Albert Ellis in the 1950s as a form of cognitive psychotherapy. At that time, disciplines such as physics, biology, and chemistry were widely regarded within the philosophy of science as paradigmatic sciences, whereas the scientific status of psychology and psychotherapy remained a matter of persistent controversy, particularly in the wake of Karl Popper's

influential critique of psychoanalysis. Against this backdrop, Ellis devoted considerable philosophical effort to defending the scientific status of cognitive psychotherapy while simultaneously seeking, through clinical practice, a therapeutic approach superior to psychoanalysis. More fundamentally, his overarching objective was to establish psychology and psychotherapy on a more rigorous scientific foundation.

<sup>1</sup> Ellis renamed Rational Therapy (RT) as Rational Emotive Therapy (RET) in 1969 and subsequently as Rational Emotive Behavior Therapy (REBT) in 1995.

Ellis's theoretical endeavor was closely associated with two major theoretical developments of his time. First, the effectiveness of psychoanalytic therapy increasingly came under scrutiny within the field of psychology, giving rise to the cognitive turn in psychotherapy. During the post-World War II period, the demand for psychological treatment expanded substantially. However, the dominant psychoanalytic approach was widely criticized for its lengthy treatment process and delayed therapeutic outcomes. Consequently, therapeutic methods that addressed clients' psychological difficulties directly at the cognitive level appeared to offer a more practical and efficient alternative. Take REBT as an example, this therapy can assist clients in adopting a more rational and philosophical lifestyle within limited therapy sessions, significantly influencing their thoughts, emotions, and behaviors. Second, the classical conception of scientific knowledge was undergoing profound transformation, and the scientific community was urgently seeking to redefine the standards of scientific knowledge. Logical empiricists, represented by Rudolf Carnap, incorporated concepts such as probability and probabilistic reasoning into theories of truth; Michael Polanyi and Thomas Kuhn further challenged the traditional conception of objective truth by emphasizing its dependence on scientific consensus; and Popperian falsificationism constituted a direct challenge to the traditional verificationist paradigm in the philosophy of science. Within this intellectual context, Ellis presented REBT as a "scientific psychotherapy" in deliberate contrast to psychoanalysis and sought to establish its scientific status through philosophical and methodological argumentation.

Nevertheless, constrained by the state of philosophy of science at the time, Ellis's philosophical justification of the scientific status of REBT and of cognitive therapy more broadly remained relatively incomplete. Subsequently, he encountered a series of theoretical difficulties, and by the 1970s his efforts to develop this line of inquiry had largely come to a standstill. A major reason for this outcome was the considerable gap between developments in philosophy of science and psychotherapy research. On the one hand, philosophers paid insufficient attention to investigating and justifying the scientific status of psychotherapy, thereby failing to provide constructive methodological guidance for psychotherapy research. On the other hand, most psychotherapists lacked formal training in philosophy, which prevented them from achieving sufficient theoretical depth in their analyses of the scientific status of psychology and psychotherapy.

This article seeks to revisit Ellis's original commitment to establishing the scientific status of REBT by reexamining the issue from the philosophical perspective that informed his early theoretical work. It first traces the logical development of the debate by demonstrating that early proponents of REBT grounded their defense of its scientific status primarily in logical empiricism and Popper's falsificationism. From the perspective afforded by subsequent developments in contemporary philosophy, these attempts are now generally regarded as unsuccessful. The article then argues that, in response to the limitations of falsificationism,

Imre Lakatos's Methodology of Scientific Research Programmes (MSRP) offers a more promising philosophical framework capable of addressing the interpretive deficiencies in previous accounts of REBT's scientific status. As a constructive methodological approach for providing a more robust and philosophically coherent justification of REBT, Lakatos's framework also broadens the perspective for evaluating the scientific status of REBT and cognitive psychotherapy more generally.

## **The Scientific Justification of REBT: Its Origins and Logical Development**

From the inception of Rational Emotive Behavior Therapy (REBT), Albert Ellis consistently maintained that REBT was a scientific form of psychotherapy and that its theoretical framework constituted a scientific theory of psychological whose scientific status could be established through the methodological framework of logical empiricism. Ellis explicitly stated: "This was the kind of logical positivism taken from A. J. Ayers and other philosophers, that I espoused in 1962. However, I also favored ... the hypothetico-inductive method rather than 'a pure adherence to inductive methods of reasoning.'" [1] Drawing upon developments in cognitive and behavioral sciences, Ellis identified a dynamic relationship among beliefs, emotions, and behaviors, and on this basis formulated the well-known ABC model, which became the central theoretical hypothesis of REBT.

Early proponents of REBT defended its scientific status primarily along two lines. First, they sought empirical evidence from clinical psychotherapy to provide empirical confirmation for the ABC model. Alternatively, in probabilistic terms, they attempted to increase the probability that the model was true by continually accumulating supporting clinical evidence while simultaneously incorporating anomalous cases and empirical findings that appeared inconsistent with the model. Such an approach was entirely consistent with the basic tenets of logical empiricism. Nevertheless, both philosophically and methodologically, this strategy encountered profound difficulties, rendering the justification of REBT's scientific status increasingly problematic.

The first difficulty arose from the recognition that scientific theories can never be completely verified through experience. Moreover, even the weaker claim—that scientific knowledge represents truth understood in probabilistic terms, whose likelihood can be progressively increased through accumulating empirical evidence—was eventually shown to be untenable. Earlier accounts assumed that because empirical observations constituted a finite and enumerable set, continually identifying confirming instances would gradually raise the probability of a theory toward certainty. Karl Popper, however, demonstrated that the total domain of possible empirical observations is not finitely enumerable. Consequently, no finite body of confirming evidence can rise the logical probability of a universal theory toward one; on the contrary, within Popper's probabilistic framework, the logical probability of a universal theory is effectively zero.

<sup>2</sup> The ABC model constitutes a foundational model of REBT: "A" stands for activating events, "B" stands for the beliefs held by an individual, and "C" stands for the resulting consequences.

The second difficulty arose from REBT's own disciplinary positioning. Ellis originally distinguished REBT from psychoanalysis by presenting it as a scientific cognitive therapy, in contrast to what he regarded as the non-scientific character of psychoanalytic therapy. However, the methodological framework of logical empiricism employed to justify REBT's scientific status proved incapable of excluding psychoanalysis from the domain of science. For Freud and his followers, virtually every clinical case could be interpreted as empirical confirmation of psychoanalytic theory, since any psychological phenomenon could be accommodated within a Freudian interpretive framework. As these two difficulties became increasingly apparent, confidence in the original claim that REBT possessed a demonstrably scientific theoretical foundation began to erode. Subsequently, Ellis turned his attention to Popper's criterion of demarcation and gradually adopted the Popperian falsificationism. This means that the philosophical foundation underlying REBT had shifted from logical empiricism to falsificationism. However, Ellis did not fully adopt the core methodological principles of Popper's philosophy. Rather than reformulating the scientific status of REBT in terms of the falsifiability of its theoretical propositions, he merely redirected the therapeutic focus from confirming rational beliefs (or increasing their probability) toward falsifying irrational beliefs. Such a methodological adjustment alone cannot adequately demonstrate that falsificationism provides a satisfactory philosophical account of REBT's scientific status. This raises a more fundamental question: Can Popperian falsificationism genuinely establish the scientific status of REBT?

From the perspective of Popper's criterion of demarcation, one may reconstruct an argument in favor of REBT's scientific status as follows. First, according to falsificationism, Freudian psychoanalysis is non-scientific because it is capable of explaining virtually any psychological phenomenon and therefore admits no conceivable counterexample capable of falsifying it. What's more, REBT qualifies as a scientific theory because it is falsifiable—that is, one can in principle formulate basic statements capable of refuting its theoretical claims. Last but not least, REBT has not been falsified through empirical evidence. If all three conditions are satisfied, REBT may reasonably be regarded as a scientific theory within the framework of Popperian falsificationism.

Among these three conditions, the first is relatively uncontroversial, since Popper's criterion of demarcation explicitly excludes theories that are immune to refutation. The second and third conditions, however, are considerably more problematic. With regard to the second condition, some scholars have argued that although REBT is, in principle, open to empirical testing empirical testing in principle, its therapeutic practice has failed to generate sufficiently persuasive empirical tests capable of subjecting the theory itself to genuine falsification. Moreover, the theory provides no operational procedures by which its own falsifiability can be effectively demonstrated [2]. In other words, while REBT theorists and practitioners regard their approach as scientific within a falsificationist framework, they have not successfully devised conceivable empirical tests capable of refuting the theory. Consequently, falsifiability remains more a philosophical assertion than an operational scientific criterion. The third condition presents

an equally significant challenge. Like other scientific theory, REBT has encountered numerous apparent counterexamples in the course of its clinical development. The classical REBT literature frequently employs expressions such as usually, possibly, and in general. Such qualifications may give the impression that the theory attempts to evade empirical refutation. Whenever an apparent counterexample emerges, it may simply be reclassified as a special case lying outside the conditions ordinarily specified by the theory, after which auxiliary hypotheses can be introduced to absorb the anomaly without requiring revision of the theoretical core.

Accordingly, of the three conditions required to establish the scientific status of REBT within a falsificationist framework, two remain seriously problematic. Indeed, the actual development of REBT appears in important respects to conflict with the methodological requirements of Popperian falsificationism. Ironically, the transition from logical empiricism to falsificationism did not enable Ellis and subsequent REBT theorists to overcome the limitations of the earlier approach. Instead, it further complicated the problem and, by Popper's own standards, risked placing REBT in the same category of non-scientific theories as psychoanalysis.

Nevertheless, the failure of these two philosophical attempts to justify REBT's scientific status does not necessarily warrant the conclusion that REBT is itself a non-scientific psychotherapeutic theory. Nor does it imply that contemporary psychologists who continue to employ REBT in clinical practice are acting rationally. If such a conclusion were accepted, one would also have to regard the substantial clinical success of REBT and its pivotal contribution to the cognitive revolution in psychotherapy as fundamentally irrational achievements—a conclusion that is both theoretically implausible and unacceptable to many scholars. The central question therefore remains: How should the scientific status of REBT be understood, and from what philosophical framework should it be analyzed?

### A Lakatosian Interpretation of the Scientific Status of REBT

It is evident that the foregoing account of the scientific status of REBT is grounded in naïve methodological falsificationism. According to this position, first, if a theory is scientific, it must be capable of specifying a set of possible empirical observations that could potentially falsify it. Second, once the theory is refuted by empirical evidence—whether through universally accepted observations or conventionally accepted counterinstances—it ought to be abandoned in order to preserve the central role of rationality in the development of science. However, subsequent developments in the philosophy of science have demonstrated that naïve methodological falsificationism encounters a number of serious difficulties when employed to interpret the scientific status of theories. Perhaps its most significant weakness is that its criterion of demarcation is excessively stringent, with the result that many paradigmatic scientific theories would themselves be classified as non-scientific. This observation provides a new line of argument for scholars who continue to maintain that REBT is a scientific psychotherapeutic theory. It is entirely possible that REBT, too, belongs to the category of “typical scientific theories” that would be mistakenly excluded from science by the standards

of naïve methodological falsificationism. Recognizing that naïve methodological falsificationism was incapable of providing a historically adequate account of scientific progress, Imre Lakatos, Popper's most influential successor, proposed replacing it with "a sophisticated falsificationism that provides a new theoretical foundation for falsification and thereby rescues both methodology and the conception of scientific progress"[4].

In fact, when naïve methodological falsificationism proved incapable of providing a satisfactory account of the scientific status of REBT, REBT theorists did not continue along the path of falsificationism. Nor did they attempt to reinterpret the scientific status of REBT within the framework of Lakatos's Methodology of Scientific Research Programmes (MSRP). One possible explanation is that Ellis and other leading REBT theorists remained epistemologically committed to a broadly logical empiricist conception of knowledge and therefore failed to appreciate the theoretical significance of Lakatos's methodology. Consequently, they were "unable to integrate their philosophical reflections with their own research practice"[5]. The following discussion therefore proceeds from the theoretical framework of MSRP and continues the line of inquiry initiated by methodological falsificationism, seeking to evaluate the scientific status of REBT from a perspective that its own theorists did not pursue.

Within the conceptual framework of MSRP, REBT should not be regarded as an isolated theory but rather as a scientific research programme composed of a sequence of interconnected theories. In accordance with Lakatosian terminology, the discussion that follows will therefore refer to the "REBT theory" as the REBT research programme. Like any scientific research programme, it is governed by two methodological rules: the negative heuristic and the positive heuristic. The guiding principle of the present analysis is straightforward. If the REBT research programme constitutes a genuinely scientific psychological research programme, it should possess both a theoretically productive hard core and a sufficiently robust protective belt. Conversely, if the programme fails to predict novel facts and relies primarily upon ad hoc hypotheses to accommodate anomalies, then its scientific status becomes open to question.

We begin with the hard core of the REBT research programme. What distinguishes REBT from other psychological research programmes is its distinctive theoretical hard core, which consists of three fundamental propositions:

- I. cognition, emotion, and behavior interact dynamically with one another;
- II. irrational beliefs give rise to maladaptive emotional responses and dysfunctional behaviors; and
- III. irrational beliefs into rational beliefs, these maladaptive emotions and dysfunctional behaviors can substantially alleviate [6].

According to the negative heuristic of the REBT research programme, refutations based on *modus tollens* are not directed against this theoretical hard core. Instead, a series of auxiliary hypotheses is introduced to form a protective belt surrounding it. At the same time, the positive heuristic requires that the programme should not become excessively preoccupied with anomalous clinical observations but should instead allow the theory to develop in accordance with its own internal research trajectory. If anomalies encountered in clinical practice can be accommodated through appropriate modifications of the auxiliary hypotheses within the protective belt, and if these anomalies are subsequently transformed into corroborative evidence supporting the research programme, then the REBT research programme may be regarded as both theoretically and empirically progressive. Consequently, it qualifies as a scientific psychological research programme. Conversely, if the protective belt repeatedly fails to account for clinical anomalies and is unable to generate continuing corroborative evidence in support of the programme, its scientific status will inevitably be called into question or even rejected.

On the basis of these methodological principles, the following section presents an idealized case of problem shift within the REBT research programme in order to illustrate more concretely how its scientific status may be interpreted within the framework of Lakatos's Methodology of Scientific Research Programmes.

Before proceeding with a step-by-step analysis, it is necessary to provide a brief introduction to the ABC model, the principal auxiliary hypothesis within the protective belt of the REBT research programme. Throughout the development of REBT, revisions and refinements of its auxiliary hypotheses have consistently centered on this model. The ABC model is a theoretical hypothesis concerning the relationship among Activating Events (A), Beliefs (B), and Consequences (C) in the form of emotional and behavioral outcomes. In its original formulation, the model proposes that A is interpreted through B, which in turn produce emotional and behavioral consequences. Symbolically, this relationship may be expressed as  $A \times B \rightarrow C$  [7].

Initially, activating events were defined as "external experiential events relevant to the individual" [8]. Consider an idealized clinical case in which a client, Paul, reports to his therapist that he experienced a series of negative emotional and behavioral consequences (C) at 8:00 p.m. on February 20, 2020. According to the ABC model, it may be inferred that Paul must have held a set of corresponding irrational beliefs (B), and that these beliefs must have been triggered by one or more preceding external activating events (A). However, Paul reports that he "did not encounter any external activating event corresponding to these negative emotional and behavioral consequences." At first sight, this appears to indicate the absence of the required external experiential event and therefore seems to challenge the theoretical assumptions of REBT.

<sup>3</sup> Some scholars argue that, although REBT belongs to the field of cognitive psychology whereas psychoanalytic theory belongs to the psychodynamic tradition, the development of REBT is essentially no different from that of psychoanalytic therapy, amounting merely to the adoption of a therapeutic approach suited to certain clients from a pragmatic perspective. Others, however, regard the development of REBT as "a rallying point against the dominant discipline of that era--psychoanalysis" [3].

Nevertheless, such an observation would not lead the therapist to abandon confidence in the REBT research programme. In accordance with the methodology of scientific research programmes, the apparent anomaly would not be regarded as evidence that the research programme itself is unscientific. Instead, the definition of activating events would be modified by proposing that "The As they encounter are normally present or current events or their own thoughts, feelings, or behaviors; but they may be imbedded in memories or thoughts (conscious or unconscious) about past experiences." [9] On this basis, the therapist hypothesizes that Paul's negative emotional and behavioral consequences were triggered not directly by external events themselves but by his perception of those events. During further discussion, Paul reports that at approximately 3:00 p.m. that afternoon he encountered a close friend on the street, but the friend did not greet him. According to the revised definition of activating events, Paul comes to recognize that what affected his emotions was his perception that his friend no longer wished to maintain their relationship. Thus, Paul's report empirically corroborates the revised ABC model, allowing the model itself to develop further.

Such empirical corroboration, however, does not fully satisfy the therapist. A new question immediately arises: Why did Paul interpret this external event negatively rather than positively, or at least neutrally? After all, the same event could equally have been interpreted as indicating that the friend simply failed to notice Paul or was too preoccupied to greet him. Unless this question can be satisfactorily answered, the revised definition that activating events include subjective perceptions of external events risks degenerating into an ad hoc hypothesis.

To address this difficulty, REBT theorists proposed a further auxiliary hypothesis by hypothesis by introducing the concept of Goal (G). They argued that underlying activating events, beliefs, and consequences is a coordinating Goal (G), defined as the individual's purposes, values, or desires that are brought into the processes of perception, cognition, and behavioral response [10]. Accordingly, the therapist hypothesizes that Paul possesses a goal closely associated with his cognition and behavior, and that this goal is precisely what gives rise to his negative interpretation of the external event. In the subsequent therapeutic conversation, Paul reports that he strongly desires to maintain a close friendship with this individual (G). This statement is consistent with the therapist's hypothesis concerning Paul's goal. Because this goal serves as the organizing center of his cognitive, emotional, and behavioral

processes, Paul's immediate interpretation of his friend's failure to greet him is that their friendship has been threatened. As a result, alternative interpretations are largely ignored, irrational beliefs are activated, and these ultimately produce inappropriate emotional responses and dysfunctional behavior. By incorporating the concept of Goal into the ABC model, the newly emerging anomaly is satisfactorily explained. What originally appeared to be anomalous evidence is successfully incorporated into the REBT research programme and transformed into corroborative evidence supporting it. In Lakatosian terms, the anomaly is resolved through a theoretical refinement of the protective belt rather than through revision of the hard core.

According to the revised ABC model, the therapist would initially infer that Paul's irrational beliefs concern the activating event itself-in particular, his friend. For example, Paul might believe that "his friendship with me was never genuine, and I must end the relationship," or that "he no longer wishes to be my friend, so I should distance myself from him." During subsequent therapeutic discussions, however, the therapist discovers that Paul's irrational beliefs are directed primarily toward himself rather than toward his friend. Instead, Paul repeatedly expresses self-evaluative beliefs such as "I am a failure" and "I am not worthy of friendship." These observations clearly diverge from the therapist's original expectation. Once again, however, REBT theorists would not regard this discrepancy as falsifying the research programme. They argue that the original ABC model represents only a unidirectional process linking activating events, beliefs, and consequences, and therefore provides merely a partial description of psychological functioning. In reality, cognition, emotion, and behavior constitute a dynamically integrated system-or, at the very least, a series of interconnected processes. Consequently, when the ABC model is applied to more complex real-life situations, it becomes necessary to recognize the multidirectional and recursive interactions among activating events, beliefs, and consequences [11]. In other words, pre-existing beliefs not only produce emotional and behavioral consequences but also shape the individual's subsequent perception of external experiential events, thereby generating new activating events. Likewise, emotional and behavioral consequences do not represent the endpoint of the ABC process. On the one hand, they themselves become new experiential events that may be perceived as activating events, initiating another cycle of cognitive and behavioral processing. On the other hand, these consequences reinforce or weaken the beliefs that originally produced them, thereby gradually modifying the individual's belief system (see Figure 1).

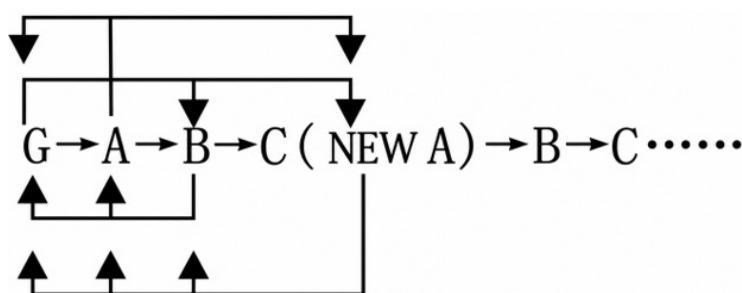


Figure 1.

According to the multidimensional version of the ABC model, the therapist inferred that Paul must have had entered a new cycle following the operation of the initial ABC model. The irrational beliefs that he now held were not his initial beliefs; rather, they must have been produced by a new activating event. In the subsequent therapeutic dialogue, the therapist attempted to obtain empirical corroboration for this inference. The consequence generated in the operation of the initial ABC model—namely, the deterioration of Paul's friendship—became a new activating event. Under the guidance of his goal ("I desire to maintain a friendly relationship with this friend"), Paul developed irrational beliefs, such as "I cannot even maintain a friendship; I am a failure," and "I am about to lose my friend; I am a person unworthy of love." Thus, after the initial unidirectional model had been expanded into a new multidimensional operational model, the anomalous observation once again became corroborative evidence for the REBT research programme. On this basis, we may further formulate a new prediction. For example, if Paul's irrational beliefs are not corrected, he will subsequently develop self-denigrating inappropriate emotions and self-defeating dysfunctional behaviors, which may then be subjected to further empirical testing.

Through the analysis of the foregoing idealized case, we can clearly see that the essential work of REBT lies in weakening the irrational beliefs, which are the fundamental factors leading to emotional disorders and behavioral maladjustment. [12] Under this guidance, we could know that, in accordance with the principle of the negative heuristic of the REBT research programme, when confronted with anomalous clinical observations, therapists do not direct falsification toward the research programme itself. Instead, they continually adjust the conceptual framework and operational model of the ABC model as an auxiliary hypothesis, thereby predicting novel facts that could not be predicted by the original model, generating excess empirical content, and bringing about the continuous theoretical progress of the REBT research programme. During this process, the successful resolution of certain anomalies occasionally enables therapists to obtain empirical corroboration for this excess empirical content, thereby strengthening their confidence in the empirical progress of the research programme.

One might object that, in the foregoing idealized case illustrating the progressive development of the REBT research programme, revisions to the auxiliary hypotheses of the ABC model appear to be directed primarily toward resolving anomalies. This would seem to suggest that theory is always following behind experience, a conclusion that would inevitably affect the evaluation of the scientific status of the REBT research programme. Admittedly, in order to present the theoretical and empirical progress of the REBT research programme in a clear, concise, and integrated manner, I have omitted the discussion of certain additional considerations, although these considerations are likewise important for demonstrating the scientific status of the research programme. The following supplementary analysis is therefore offered in response to the view that the development of REBT theory always lags behind empirical observations. As is well known, the initial ABC model, which functions as a central auxiliary hypothesis within the protective belt, was logically constructed on the basis of the hard core of the REBT research programme. Some scholars have

even developed the ABC Model into the GABCDE(F) Model [13]. However, no matter how the model itself evolves, it does not affect our evaluation of the scientific validity of REBT theory. This is because the ABC Model and its variants are all composed of a set of initial conceptual definitions together with hypotheses specifying the relationships among those concepts.

When the constructing the initial ABC model, Ellis was undoubtedly aware that the number of operative concepts incorporated into the model was only the most basic possible, that the definitions of these concepts were preliminary, partial, and lacking in precision, and that the descriptions of the relationships among them were likewise rudimentary, intuitive, and fragmentary. As Lakatos observed, "This once again shows how irrelevant it is to refute any particular variant of a research programme: the existence of refutations is fully anticipated; the positive heuristic is the strategy both for anticipating (producing) and digesting them" [4]. Throughout the development of the research programme, the number of operative concepts necessarily increases, the definitions of concepts become progressively enriched and refined, and the descriptions of the relationships among them become increasingly complex and precise. Moreover, various clinical hypotheses based on the concepts are also constantly being proposed. For example, in 2020, scholars proposed the hypothesis that REBT helps reduce irrational beliefs and enhance self-determination motivation [14], which makes good efforts to clarify the relationship between irrational beliefs and self-determination motivation, and which is valuable in helping clients get more self-control and better achieve the transformation from thoughts to emotions and behaviors.

All of these developments are encompassed within the strategy prescribed by the positive heuristic of the REBT research programme. Consequently, both the refutations arising from clinical experience and the evolution of the ABC model are anticipated within the research programme itself; from the perspective of the research programme, however, such developments are neither novel nor unexpected. The introduction of new concepts into the ABC model, the enrichment of their conceptual content, and even changes to the operational mechanism of the model itself are not undertaken merely to accommodate each anomalous clinical observation. Rather, they arise from the theoretical difficulties encountered during the development of the REBT research programme—that is, from the programme's own need for theoretical self-reflection, innovation, and breakthrough. Following the sequence prescribed by the positive heuristic, REBT theory develops step by step with little regard for any individual empirical refutation. As the foregoing idealized case illustrates, every successive variant of the ABC model developed from its initial form may fail to predict or explain a particular clinical observation. Nevertheless, provided that sufficient time is allowed for the development of the REBT research programme, theoretical progress will continue to emerge and will subsequently be accompanied by empirical corroboration.

## Conclusion

The development of twentieth-century philosophy of science suggests that the attempts made by Albert Ellis and other REBT theorists to establish the scientific status of REBT ultimately proved unsuccessful. This failure may be attributed to two factors. On the

one hand, it resulted from the theoretical difficulties encountered by philosophy of science itself. On the other hand, it stemmed from the misinterpretation of philosophical theories of science by REBT theorists. Although they never explicitly proposed adopting Lakatos's Methodology of Scientific Research Programmes (MSRP) as a new framework for establishing the scientific status of REBT, the present analysis suggests, if one wishes to continue along the falsificationist line of reasoning adopted by Ellis and his followers and to provide a reasonable account of the establishment and development of REBT, Lakatos's Methodology of Scientific Research Programmes (MSRP) constitutes an indispensable theoretical framework. According to Professor Gui Qiquan, "the Methodology of Scientific Research Programmes is a widely applicable conceptual framework for evaluating economic theories" [15]. The Methodology of Scientific Research Programmes (MSRP) may likewise provide a conceptual framework for evaluating theories of psychotherapy, within which the scientific status and progressiveness of different psychotherapeutic theories can be compared.

Through an idealized case together with the supplementary analysis presented above, this article has argued for the scientific status of the REBT research programme within Lakatos's Methodology of Scientific Research Programmes (MSRP). Compared with logical empiricism and naïve methodological falsificationism, Lakatos's Methodology of Scientific Research Programmes provides an account of the scientific status of REBT, one that more consistent with the historical development of REBT theory. Moreover, this line of argument is equally applicable to other forms of cognitive psychotherapy, including Cognitive Therapy (CT) and Cognitive Behavioral Therapy (CBT). This conclusion is justified because REBT and other cognitive psychotherapies share the same hard core:

- I. cognition, emotion, and behavior interact with one another;
- II. irrational beliefs give rise to inappropriate emotions and dysfunctional behaviors; and
- III. by transforming irrational beliefs into rational beliefs, inappropriate emotions and dysfunctional behaviors can be substantially improved.

The differences among the various approaches within cognitive psychotherapy lie primarily in their specific clinical techniques and in the relative emphasis they place on cognition, emotion, and behavior. Accordingly, if the scientific status of the REBT research programme can be positively justified within Lakatos's Methodology of Scientific Research Programmes (MSRP), then, by extension, the scientific status of cognitive psychotherapy represented by REBT may likewise be positively justified within the same methodological framework.

Of course, as Lakatos himself pointed out, the continuation of falsificationism pursued by Popper and himself is not the only possible approach to explaining the problem of scientific progress. Another approach, represented by Polanyi, Kuhn, and Feyerabend, seeks to explain "paradigm" change from the perspective of social psychology [4]. Perhaps this path could more reasonably elucidate why new theories and hypotheses continuously proposed by REBT are scientific. For instance, how to interpret that the process

and broad framework of REBT is akin to an archetypal narrative story structure, namely the "hero's journey" or "monomyth"[16]. Exploring the scientific status of cognitive psychotherapy from this alternative perspective would likewise constitute a promising direction for future research.

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## Conflict of Interest

No conflict of interest.

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