

Cognitive-Experiential Self-Theory of Personality

Seymour Epstein, Ph. D.

University of Massachusetts at Amherst

(Reference: Epstein, S. (2003). Cognitive-experiential self-theory of personality. In Millon, T., & Lerner, M. J. (Eds), Comprehensive Handbook of Psychology, Volume 5: Personality and Social Psychology (pp. 159-184). Hoboken, NJ: Wiley & Sons.)

Running head: Cognitive-experiential self-theory

Author's Note

This chapter includes material from several other chapters and articles as well as new information. The research reported here was supported by National Institute of Mental Health (NIMH) Research Grant MH 01293 and NIMH Research Scientist Award 5 KO5 MH 00363.

Correspondence should be addressed to Seymour Epstein, Psychology Department, University of Massachusetts, Amherst, MA 01003. Tel.: (413) 253-2092, Fax: (413) 545-0996, e-mail: sepstein@psych.umass.edu

- p. 3. TWO INFORMATION PROCESSING SYSTEMS
- p. 5. Comparison of the Operating Principles of the Two Systems
- p. 8. How the Experiential System Operates
- p. 9. The Four Basic Needs
- p. 9. Identification of the Four Basic Needs
- p. 9. Interactions Among the Basic Needs
- p. 11. Imbalances in the Basic Needs as Related to Specific Psychopathologies
- p. 12. The Four Basic Beliefs
- p. 14. The Interaction of the Two Systems
- p. 14. The Influence of the Experiential System on the Rational System
- p. 17. The Influence of the Rational System on the Experiential System
- p. 18. The Lower and Higher Reaches of the Experiential System
- p. 20. PSYCHODYNAMICS
- p. 20. The Influence of Early-Acquired Beliefs on Maladaptive Behavior
- p. 23. The Influence of Early-Acquired Motives on Maladaptive Behavior
- p. 26. RESEARCH SUPPORT FOR THE CONSTRUCT VALIDITY OF CEST
- p. 26. Research on the Operating Principles of the Experiential System
- p. 26. Irrational Reactions to Unfavorable Arbitrary Outcomes
- p. 28. The Ratio-Bias Phenomenon
- p. 31. The Global Evaluation Heuristic
- p. 33. Conjunction Problems
- p. 35. Interaction Between the Two Processing Systems
- p. 36. Interaction Between the Basic Needs
- p. 37. Research on Individual Differences
- p. 37. Individual Differences in the Intelligence of the Experiential System
- p. 39. Individual Differences in Rational and Experiential Thinking Styles
- p. 41. Individual Differences in Basic Beliefs About the Self and the World
- p. 42. Summary and Conclusions Regarding Research Support for CEST
- p. 43. IMPLICATIONS OF COGNITIVE-EXPERIENTIAL SELF-THEORY
FOR PSYCHOTHERAPY AND RESEARCH
- p. 43. Implications for Psychotherapy
- p. 43. Using the Rational System to Correct the Experiential System
- p. 46. Learning Directly From Emotionally Significant Experiences
- p. 47. Communicating with the Experiential System in its Own Medium
- p. 53. Implications for Research
- p. 58. SUMMARY AND CONCLUSIONS
- p. 60. REFERENCES

Cognitive-experiential self-theory (CEST) is a broadly integrative theory of personality that is compatible with a variety of other theories, including psychodynamic theories, learning theories, phenomenological self-theories, and modern cognitive scientific views on information processing. CEST achieves its integrative power primarily through three assumptions. The first is that people process information by two independent, interactive conceptual systems, a preconscious “experiential system” and a conscious “rational system”. By introducing a new view of the unconscious in the form of an experiential system, CEST is able to explain almost everything that psychoanalysis can and much that it can not, and it is able to do so in a scientifically much more defensible manner. The second assumption is that the experiential system is emotionally driven. This assumption permits CEST to integrate the passionate tooth-and-phallus unconscious of psychoanalysis with the “kinder, gentler” affect-free unconscious of cognitive science (Epstein, 1994). The third assumption is that four basic needs, each of which is assumed in other theories to be the one most fundamental need, are equally important according to CEST.

In this chapter, I review the basic assumptions of CEST, summarize the research conducted to test the theory, and note the implications of the theory for research and psychotherapy.

TWO INFORMATION PROCESSING SYSTEMS

According to CEST, humans operate by two fundamental information-processing systems, a rational system and an experiential system. The two systems operate in parallel and are interactive. CEST has nothing new to say about the rational system, other than to emphasize the degree to which it is influenced by the experiential system. CEST does have a great deal to say about the experiential system. In effect, CEST introduces a new system of unconscious processing in the experiential system that is a substitute for the unconscious system in psychoanalysis. Although, like

psychoanalysis, CEST emphasizes the unconscious, it differs from psychoanalysis in its conception of how the unconscious operates. Before proceeding further, it should be noted that the word “rational” as used in the rational system refers to a set of analytical principles and has no implications with respect to the reasonableness of the behavior, which is an alternative meaning of the word.

It is assumed in CEST that everyone, like it or not, automatically constructs an implicit theory of reality that includes a self-theory, a world-theory, and connecting propositions. An implicit theory of reality consists of a hierarchical organization of schemas. Toward the apex of the conceptual structure are highly general, abstract schemas, such as that the self is worthy, people are trustworthy, and the world is orderly and good. Because of their abstractness, generality, and their widespread connections with schematic networks throughout the system, these broad schemas are normally highly stable and not easily invalidated. However, should they be invalidated, the entire system would be destabilized. Evidence that this actually occurs is provided by the profound disorganization following unassimilable experiences in acute schizophrenic reactions (Epstein, 1979a). At the opposite end of the hierarchy are narrow, situation-specific schemas. Unlike the broad schemas, the narrower ones are readily susceptible to change, and their changes have little effect on the stability of the personality structure. Thus, the hierarchic structure of the implicit theory allows it to be stable at the center and flexible at the periphery. It is important to recognize that, unlike other theories that propose specific implicit or heuristic rules of information processing, it is assumed in CEST that the experiential system is an organized, adaptive system, rather than simply a number of unrelated constructs or “cognitive short-cuts” (e.g., Tversky & Kahneman, 1974). As it is assumed in CEST that the experiential system in humans is the same system by which nonhuman animals adapt to their environments, it follows that nonhuman animals also have an organized model of the world that is capable of disorganization. Support for this assumption is

provided by the widespread dysfunctional behavior that is exhibited in animals when they are exposed to emotionally significant unassimilable events (e.g., Pavlov, 1941).

Unlike nonhuman animals, humans have a conscious, explicit theory of reality in their rational system in addition to the model of reality in their experiential system. The two theories of reality coincide to different degrees, varying among individuals and situations.

Comparison of the Operating Principles of the Two Systems

The experiential system in humans is the same system with which other higher order animals have adapted to their environments over millions of years of evolution. It adapts by learning from experience rather than by logical inference, which is the exclusive domain of the rational system. The experiential system operates in a manner that is preconscious, automatic, rapid, effortless, holistic, concrete, associative, primarily nonverbal, and minimally demanding of cognitive resources (see Table 1 for a more complete comparison of the two systems). It encodes information in two ways: as memories of individual events, particularly events that were experienced as highly emotionally arousing, and also in a more abstract, general way. The abstract representations are in the form of stimulus generalization, including specific generalization gradients as well as broader generalizations based on a confluence of multiple generalizations, as well as in the form of prototypes, metaphors, and narratives. Although the experiential system is a cognitive system, its operation is intimately related to the experience of affect. It is, in fact, inconceivable that a conceptual system that learns from experience would not be used to facilitate positive affect and avoid negative affect. According to CEST, the experiential system both influences and is influenced by affect. Not only does the experiential system direct behavior in a manner anticipated to achieve pleasurable outcomes and to avoid unpleasurable ones, but the cognitions themselves are influenced by affect. As noted previously, the experiential conceptual system, according to CEST, is emotionally driven. Once this is recognized, it follows that the affect-free unconscious proposed by

cognitive scientists is untenable. The automatic, preconscious experiential conceptual system that regulates everyday behavior is, of necessity, an emotionally driven, dynamic unconscious system. As affect determines what is attended to and what is reinforced, without affect there would be neither schemas nor motivation in the experiential system, and, therefore, no experiential system. It follows that CEST is as much an emotional as a cognitive theory.

Present Table 1 about here

In contrast to the experiential system, the rational system is an inferential system that operates according to a person's understanding of the rules of reasoning and of evidence, which are mainly culturally transmitted. The rational system, unlike the experiential system, has a very brief evolutionary history. It operates in a manner that is conscious, analytical, effortful, relatively slow, affect-free, and highly demanding of cognitive resources (see Table 1).

Which system is superior? At first thought, it might seem that it must be the rational system. After all, the rational system, with its use of language, is a much more recent evolutionary development than the experiential system and is unique to the human species. Moreover, it is capable of much higher levels of abstraction and complexity than the experiential system, and it makes possible planning, long-term delay of gratification, complex generalization and discrimination, and comprehension of cause-and-effect relations. These attributes of the rational system have been the source of humankind's remarkable scientific and technological achievements. Moreover, the rational system can understand the operation of the experiential system whereas the reverse is not true.

On the other side of the coin, carefully consider the following question: If you could have only one system, which would you choose? Without question, the only reasonable choice is the

experiential system. You could exist with an experiential system without a rational system, as the existence of nonhuman animals testifies, but you could not exist with just a rational system. Even mundane activities, such as crossing a street, would be excessively burdensome if you had to rely exclusively on conscious reasoning. Imagine having to estimate your walking speed relative to that of approaching vehicles so you could determine when to cross a street. Moreover, without a system guided by affect, you might not even be able to decide whether you should cross the street. Given enough alternative activities to consider, you might remain lost in contemplation at the curb forever.

The experiential system also has other virtues, including the ability to solve some kinds of problems that the rational system cannot. For example, by reacting holistically, the experiential system can respond adaptively to real-life problems that are too complex to be analyzed into their components. Also, there are important lessons in living that can be learned directly from experience that eludes articulation and logical analysis. Moreover, as our research has demonstrated, the experiential system is more strongly associated with the ability to establish rewarding interpersonal relationships, with creativity, and with empathy than the rational system (Norris & Epstein, 2000). Most important, the experiential system has demonstrated its adaptive value over millions of years of evolution, whereas the rational system has yet to prove itself, and may yet be the source of the destruction of the human species as well as all other life on earth.

Fortunately, there is no need to choose between the systems. Each has its advantages and disadvantages, and the advantages of one can offset the limitations of the other. Besides, we have no choice in the matter. We are they, and they are us. Where we do have a choice is in improving our ability to use each of them and to use them in a complementary manner. As much as we might wish to suppress the experiential system in order to be rational, it is no more possible to accomplish this than to stop breathing because the air is polluted. Rather than achieving control by denying the experiential system, we lose control when we attempt to do so, as by being unaware of its operation,

we are unable to take its influence into account. When we are in touch with the processing of the experiential system, we can consciously decide whether to heed or discount its influence. Moreover, if, in addition, we understand its operation, we can begin to take steps to improve it by providing it with corrective experiences.

How the Experiential System Operates

As noted, the operation of the experiential system is intimately associated with the experience of affect. For want of a better word, I shall use the word “vibes” to refer to vague feelings that may exist only dimly, if at all, in a person’s consciousness. Stating that vibes often operate outside of awareness is not meant to imply that people cannot become aware of them. Vibes are a subset of feelings, which include other feelings that are more easily articulated than vibes, such as those that accompany standard emotions. Examples of negative vibes are vague feelings of agitation, irritation, tension, disquietude, queasiness, edginess, and apprehension. Examples of positive vibes are vague feelings of wellbeing, gratification, positive anticipation, calmness, and light-heartedness.

When a person responds to an emotionally significant event, the sequence of reactions is as follows: The experiential system automatically and instantaneously searches its memory banks for related events. The recalled memories and feelings influence the course of further processing and of behavioral tendencies. If the recalled feelings are positive, the person automatically thinks and has tendencies to act in ways anticipated to reproduce the feelings. If the recalled feelings are negative, the person automatically thinks and has tendencies to act in ways anticipated to avoid experiencing the feelings. As this sequence of events occurs instantaneously and automatically, people are normally unaware of its operation. Seeking to understand their behavior, they usually succeed in finding an acceptable explanation. In so far as they can manage it without too seriously violating reality considerations, they will also find the most emotionally satisfying explanation possible. This process of finding an explanation in the rational system for what was determined primarily by the

experiential system and doing so in a manner that is emotionally acceptable corresponds to what is normally referred to as rationalization. According to CEST, such rationalization is a routine process that occurs far more often than is generally recognized. Accordingly, the influence of the experiential system on the rational system and its subsequent rationalization is regarded, in CEST, as a major source of human irrationality.

The Four Basic Needs

Almost all of the major theories of personality propose a single, most basic need. CEST considers the four most often proposed needs as equally basic. It is further assumed in CEST that their interaction plays an important role in behavior and can account for paradoxical reactions that have eluded explanation by other theoretical formulations.

Identification of the Four Basic Needs. In classical Freudian theory, before the introduction of the death instinct, the one most basic need was the pleasure principle, which refers to the desire to maximize pleasure and minimize pain (Freud, 1900/1953). Most learning theorists make a similar implicit assumption in their view of what constitutes reinforcement (e.g., Dollard & Miller, 1950). For other theorists, such as object-relations theorists, most notably Bowlby (1988), the most fundamental need is the need for relatedness. For Rogers (1951) and other phenomenological psychologists, it is the need to maintain the stability and coherence of a person's conceptual system. For Allport (1961) and Kohut (1971), it is the need to enhance self-esteem. (For a more thorough discussion of these views, see Epstein, 1993.) Which of these views is correct? From the perspective of CEST, they are all correct, because each of the needs is basic, but they are also all incorrect because of the failure to recognize that the other needs are equally fundamental. They are equally fundamental in the sense that each can dominate the others. Moreover, there are equally serious consequences, including disorganization of the entire personality structure, when any one of the needs is insufficiently fulfilled.

. Interactions Among the Basic Needs. Given four equally important needs that can operate simultaneously, it follows that behavior is determined by the combined influence of those needs that are activated in a particular situation. An important adaptive consequence of such influence is that the needs serve as checks and balances against each other. When any need is fulfilled at the expense of the others, the intensity of the others increases, thereby increasing the motivation to satisfy the other needs. However, under certain circumstances the frustration of a need may be so great that frustration of the other needs is disregarded, which can have serious maladaptive consequences. As will be shown next, these assumptions about the interaction of basic needs can resolve some important, otherwise paradoxical findings.

The finding that normal people characteristically have unrealistic self-enhancing and optimistic biases (Taylor & Brown, 1988) has evoked considerable interest because it appears to contradict the widely held assumption that reality awareness is an important criterion of mental health. From the perspective of CEST, this finding does not indicate that reality awareness is a false criterion of mental health, but only that it is not the only criterion. According to CEST, a compromise occurs between the need to realistically assimilate the data of reality into a stable, coherent conceptual system and the need to enhance self-esteem. The result is a modest self-enhancing bias that is not unduly unrealistic. It suggests that normal individuals tend to give themselves the benefit of the doubt in situations where the cost of slight inaccuracy is outweighed by the gain in positive feelings about the self. Note that this assumes that the basic need for a favorable pleasure-pain balance is also involved in the compromise.

There are more and less effective ways of balancing basic needs. A balance that is achieved among equally unfulfilled competing needs is a prescription for chronic distress, not good adjustment. Whereas poorly adjusted people tend to fulfill their basic needs in a conflictual manner, well-adjusted people fulfill their basic needs in a synergistic manner, in which the fulfillment of one

need contributes to, rather than conflicts with, the fulfillment of the other needs. They thereby maintain a stable conceptual system, a favorable pleasure-pain balance, rewarding interpersonal relationships, and a high level of self-esteem.

Let us first consider an example of a person who balances her basic needs in a synergistic manner and then consider an opposite example. Mary is an emotionally stable, happy person with high self-esteem, who establishes warm, rewarding relationships with others. She derives pleasure from helping others. This contributes to her self-esteem, as she is proud of her helpful behavior and others admire and appreciate her for it. As a result, Mary's behavior also contributes to favorable relationships with others. Thus, Mary satisfies all her basic needs in a harmonious manner.

Now, consider a person who fulfills his basic needs in a conflictual manner. Ralph is an unhappy, unstable person with low self-esteem, who establishes poor relationships with others. Because of his low self-esteem, Ralph derives pleasure from defeating others and behaving in other ways that make him feel momentarily superior. Not surprisingly, this alienates people, so he has no close friends. Because of his low self-esteem and poor relationships with others, he anticipates rejection, from which he protects himself by maintaining a distance from people. His low self-esteem and poor relationships with others contribute to feelings of being unlovable as well as to an unfavorable pleasure-pain balance. Because his conceptual system is failing to fulfill its function of directing his behavior in a manner that fulfills his basic needs, it is under the stress of potential disorganization, which he experiences in the form of anxiety. The more his need for enhancing his self-esteem is thwarted, the more he acts in a self-aggrandizing manner, which exacerbates his problems with respect to fulfilling his other basic needs.

Imbalances in the Basic Needs as Related to Specific Psychopathologies. Specific imbalances among the basic needs are associated with specific mental disorders. For present purposes, it will suffice to present some of the more obvious examples.

Paranoia with delusions of grandeur can be understood as a compensatory reaction to threats to self-esteem. In a desperate attempt to buoy up self-esteem, paranoid individuals tend to disregard their other needs. They sacrifice their need to maintain a favorable pleasure-pain balance because their desperate need to maintain their superficially elevated self-esteem is continuously threatened. They sacrifice their need to maintain relationships because their grandiose behavior alienates others who do not appreciate being treated as inferiors and who are repelled by their unrealistic views. The situation is somewhat more complicated with respect to their need to realistically assimilate the data of reality into a coherent, stable, conceptual system. They sacrifice the reality aspect of this need but not the coherence aspect. In both of these respects they are similar to paranoid individuals with delusions of persecution, considered in the next example.

Paranoia with delusions of persecution can be understood as a desperate attempt to defend the stability of a person's conceptual system and, to a lesser extent, to enhance self-esteem. By viewing their problems in living as resulting from persecution by others, paranoid people with delusions of persecution can focus all their attention and resources on defending themselves. Such focus and mobilization provide a highly unifying state that serve as an effective defense against disorganization. Delusions of persecution also contribute to self-esteem because the perception of the persecutors as powerful or prestigious, which is invariably the case, implies that the target of the persecution must also be important. The basic needs that are sacrificed are the pleasure principle, as being persecuted is a terrifying experience, and the need for relatedness, as others are either viewed as enemies or repelled by the unrealistic behavior.

Schizophrenic disorganization can be understood as the best bargain available among the basic needs for preventing extreme misery under desperate circumstances in which fulfillment of the other basic needs is seriously threatened. Ultimate disorganization is a state devoid of conceptualization and, relatedly, therefore, of feelings. Although its anticipation is dreaded, its

occurrence corresponds to a state of nonbeing, a void in which there are neither pleasant nor unpleasant feelings (Jefferson, 1974). Thus, what is gained is a net improvement in the pleasure-pain balance (from a negative to a zero value). What is sacrificed are the needs to maintain the stability of the conceptual system, to maintain relatedness, and to enhance self-esteem.

The Four Basic Beliefs

The four basic needs give rise to four corresponding basic beliefs, which are among the most central constructs in a personal theory of reality. They therefore play a very important role in determining how people think, feel, and behave in the world. Moreover, as previously noted, because of their dominant and central position and their influence on an entire network of lower order beliefs, should any of them be invalidated, the entire conceptual system would be destabilized. Anticipation of such disorganization would be accompanied by overwhelming anxiety. The disorganization, should it occur, as previously noted, would correspond to an acute schizophrenic reaction.

The question may be raised as to how the four basic needs give rise to the development of four corresponding basic beliefs. Needs, or motives, in the experiential system, unlike those in the rational systems, always include an affective component. They therefore determine what is important to a person at the experiential level and what a person is spontaneously motivated to pursue or avoid. Positive affect is experienced whenever a need is fulfilled, and negative affect is experienced whenever the fulfillment of a need is frustrated. Since people wish to experience positive affect and to avoid negative affect, they automatically attend to whatever is associated with the fulfillment or frustration of a basic need. As a result, they develop implicit beliefs associated with each of the basic needs. Let us examine this in greater detail.

Depending on a person's history in fulfilling the need to maximize pleasure and minimize pain, a person will tend to develop a basic belief about the world along a dimension varying from

benign to malevolent. Thus, if a person experienced an environment that was predominantly a source of pleasure and security, the person will most likely develop the basic belief that the world is a good place in which to live. If a person has the opposite experiences, the person will tend to develop the opposite basic belief. The basic belief about the benignity versus malevolence of the world is the core of a network of related beliefs, including optimistic versus pessimistic views about future events.

Corresponding to the basic need to represent the data of reality in a stable and coherent conceptual system is a basic belief about the world that varies along a dimension of meaningful versus meaningless. Included in the network of related beliefs are beliefs about the predictability, controllability, and justness of the world versus its unpredictability, uncontrollability, and lack of justice. Corresponding to the basic need for relatedness is a basic belief about people that varies along a dimension from helpful and trustworthy to dangerous and untrustworthy. Included in the network of related beliefs are beliefs about the degree to which people are loving versus rejecting and trustworthy versus untrustworthy. Corresponding to the basic need for self-enhancement is a basic belief about the self that varies along a dimension from worthy to unworthy. Included in the network of related beliefs are beliefs about how lovable, competent, moral, and strong the self is compared to how unlovable, incompetent, immoral, and weak it is.

Interaction of the Experiential and Rational Systems

As previously noted, according to CEST, the experiential and rational systems operate in parallel and are interactive.

The Influence of the Experiential System on the Rational System. As the experiential system is the more rapid system, it is able to bias subsequent processing in the rational system. Because it operates automatically and preconsciously, its influence normally occurs outside of awareness. As noted previously, this prompts people to search for an explanation in their conscious rational system, which often results in rationalization. Thus, even when people believe their thinking is completely rational,

it is likely to have been biased by their experiential processing.

The biases that influence conscious, rational thinking in everyday life are, for the most part, adaptive, as the experiential system operates according to schemas learned from past experience. In some situations, however, the experientially determined biases and their subsequent rationalization, are highly maladaptive. An extreme case is the life-long pursuit of “false goals”. Such goals are false in the sense that their achievement is followed by disappointment and sadness, rather than by the anticipated happiness, enhanced self-esteem, or security that was the reason for their pursuit. It is noteworthy that the achievement of a false goal is experientially disappointing, although, at the rational level, it is viewed as a significant achievement about which the individual is proud. The following passage from Tolstoi (1887), in which he describes his thoughts during a period of depression, provides a poignant example of just such a reaction:

When I thought of the fame which my works had gained me, I used to say to myself, ‘Well, what if I should be more famous than Gogol, Pushkin, Shakespeare, Moliere – than all the writers of the world - well, and what then? I could find no reply. Such questions demand an answer, and an immediate one; without one it is impossible to live, but answer there was none.

My life had come to a sudden stop. I was able to breathe, to eat, to drink, to sleep. I could not, indeed, help doing so; but there was no real life in me. I had not a single wish to strive for the fulfillment of what I could feel to be reasonable. If I wished for something, I knew beforehand, that were I to satisfy the wish, nothing would come of it, I should still be dissatisfied.

Such was the condition I had come to, at the time when all the circumstances of my life were preeminently happy ones, and when I had not yet reached my fiftieth year. I had a good, a loving, and a well-beloved wife, good children, a fine estate, which,

without much trouble on my part, continually increased my income; I was more than ever respected by my friends and acquaintances; I was praised by strangers, and could lay claim to having made my name famous...

The mental state in which I then was seemed to me summed up into the following: my life was a foolish and wicked joke played on me by I knew not whom...

Had I simply come to know that life has no meaning, I could have quietly accepted it as my allotted position. I could not, however, remain thus unmoved. Had I been like a man in a wood, about which he knows that there is no issue, I could have lived on; but I was like a man lost in a wood, and, who, terrified by the thought, rushes about trying to find a way out, and though he knows each step can only lead him farther astray, can not help running backwards and forwards.

Two features of Tolstoi's situation are of particular interest. One is that he experiences deep despair after achieving his life goals. This suggests that his achievements, although viewed as successes in his rational system, failed to fulfill a basic need or needs in his experiential system. His success, therefore, can be said to be success at the rational level but failure at the experiential level. This raises the question of what the deeply frustrated need in his experiential system might be. In the absence of additional information, it is, of course, impossible to know, and one can only speculate. One possibility within the framework of CEST is that the frustrated need was for unconditional love in early childhood. Such a need, of course, cannot be satisfied by material rewards or accomplishments.

The other interesting observation is that Tolstoi is distressed not only because of his feelings of emptiness and meaninglessness, but that, try as he might, he cannot solve the problem of why he should be unhappy when all the conditions of his life suggest that he should be happy. It follows from CEST that the reason he cannot solve his problem, despite his considerable intelligence and

motivation, is because he believes it exists in his rational system, when, in fact, it exists in his experiential system. Moreover, assuming the speculation about frustration of unconditional love in childhood is true, its early, preverbal occurrence and its remoteness from the kinds of motives normally present in the rational systems of adults can help account for Tolstoi's inability to articulate the source of his distress.

The influence of the experiential system on the rational system can be positive as well as negative. As an associative system, the experiential system can be a source of creativity by suggesting ideas that would not otherwise be available to the linear-processing rational system. Since the experiential system is a learning system, it can be a source of useful information that can be incorporated into the rational system. Most important, the experiential system can provide a source of passion for the rational system that it would otherwise lack. The result is that intellectual pursuits can be pursued with heart, rather than as dispassionate intellectual exercises.

The Influence of the Rational System on the Experiential System. As the slower system, the rational system is in a position to correct the experiential system. It is common for people to reflect on their spontaneous, impulsive thoughts, recognize they are inappropriate, and then substitute more constructive ones. For example, in a flash of anger an employee may have the thought that he would like to tell off his boss but, on further reflection, decide this would be most unwise. To investigate this process, we conducted an experiment in which people were asked to list the first three thoughts that came to mind in response to reading a variety of provocative situations. The first thought was often counter-productive and in the mode of the experiential system, whereas the third thought was usually corrective, and in the mode of the rational system.

The rational system can also influence the experiential system by providing the understanding of the latter that allows a person to train the experiential system so that its initial reactions are more appropriate. That is, by understanding the operating principles of the experiential system as well as

its schemas, it is possible to determine how it can be improved. This can be accomplished in a variety of ways, the most obvious of which is by disputing the maladaptive thoughts in the experiential system, a procedure widely utilized by cognitive therapists. As the experiential system learns directly from experience, another procedure is to provide real-life corrective experiences. A third procedure is to utilize imagery, fantasy, and narratives for providing corrective experiences vicariously.

The rational system can influence the experiential system in automatic, unintentional ways as well as by its intentional employment. As the experiential system operates in an associative manner, thoughts in the rational system can trigger associations and thereby emotions in the experiential system. For example, a student attempting to solve a mathematics word problem may react to the content with conscious thoughts that produce associations in the experiential system that then elicit emotional reactions that interfere with performance. In this illustration, we have an interesting cycle of the rational system influencing the experiential system, which, in turn, influences the rational system

Another unintentional way in which the rational system can influence the experiential system is through repetition of thoughts or behavior in the rational system. Through such repetition, thoughts and behavior that were originally under rational control can become habitualized or “proceduralized”, with the control shifting from the rational to the experiential system (Smith & DeCoster, 2000). An obvious advantage to this shift in control is that the thought and behavior require fewer cognitive resources and can occur without conscious awareness. Potential disadvantages are that the habitual thoughts and behavior are under reduced volitional control and are more difficult to change. Although this can be desirable for certain constructive thoughts and behaviors, it is problematic when the thoughts and behavior are counter-productive.

The Lower and Higher Reaches of the Experiential System

The experiential system operates at different levels of complexity. Classical conditioning is an example of the operation of the experiential system at its simplest level. In classical conditioning, a conditioned, neutral stimulus (the CS), such as a tone, precedes an unconditioned stimulus (the UCS), such as food. Over several trials, a connection is formed between the conditioned and unconditioned stimulus, such that the conditioned stimulus evokes a conditioned response (the CR), such as salivation, that originally occurred only to the UCS. This process illustrates the operation of several of the attributes of the experiential system, including associative processing, automatic processing, increased strength of learning over trials, affective influence (e.g., emotional significance of the UCS), and arbitrary outcome-orientation (e.g., reacting to the CS independent of its causal relation to the UCS). The CS is also responded to holistically, as the animal reacts not only to the tone, but to the entire laboratory context.

A more complex operating level of the experiential system is exhibited in heuristic processing. In an article that has had a widespread influence on understanding decisional processes, Tversky and Kahneman (1974) introduced the concept of “heuristics,” which they defined as cognitive short-cuts that people use naturally in making decisions in conditions of uncertainty. They and other cognitive psychologists have found such processing to be a prevalent source of irrational reactions in a wide variety of situations. For example, people typically report that the protagonists in specially constructed vignettes would become more upset following arbitrary outcomes preceded by acts of commission than by acts of omission, by near than by far misses, by free than by constrained behavior, and by unusual than by usual acts. As they respond as if the protagonist’s behavior were responsible for the arbitrary outcomes, their thinking is heuristic in the sense that it is based on simple associative reasoning rather than on cause-and-effect analysis.

A vast amount of research on heuristic processing (see review in Fiske and Taylor, 1991) has produced results that are highly consistent with the principles of experiential processing. Although

the data-driven views on heuristic processing derived from social-cognitive research and the theory-driven views of CEST have much in common, the two approaches differ in three important respects. One is that CEST attributes heuristics to the normal mode of operation of an organized conceptual system, the experiential system, that is contrasted with an alternative organized conceptual system, the rational system. The second is that heuristic processing and the experiential system in CEST are embedded in a global theory of personality. The third is that heuristic processing, according to CEST, has withstood the test of time over millions of years of evolution, and is considered to be primarily adaptive. In contrast to these views, social cognitive psychologists, such as Kahneman and Tversky (1973) and Nisbett and Ross (1980), regard heuristics as individual “cognitive tools” that are employed within a single conceptual system that includes both associative (experiential) and analytical (rational) reasoning. These theorists further regard heuristics as quirks in thinking that, although sometimes advantageous, are common sources of error in everyday life, and therefore usually desirable to eliminate. It is of interest, in this respect, to note how resistant some of these blatantly nonrational ways of processing have been to elimination by training. From the perspective of CEST, given the intrinsically compelling nature of experiential processing and its highly adaptive value in most situations in everyday life, such resilience is to be expected.

Although the experiential system encodes events concretely and holistically, it is nevertheless able to generalize, integrate, and direct behavior in complex ways, some of which very likely involve a contribution by the rational system. It does this through prototypical, metaphorical, symbolic, and narrative representations in conjunction with the use of analogy and metaphor. Representations in the experiential system are also related and generalized through their associations with emotions. It is perhaps through processes such as these that the experiential system is able to make its contributions to empathy, creativity, the establishment of rewarding interpersonal relationships, and the appreciation of art and humor (Norris & Epstein, 2000).

PSYCHODYNAMICS

Psychodynamics, as used here, refers to the interactions of implicit motives and of implicit beliefs and their influence on conscious thought and behavior. The influence on conscious thought and behavior is assumed to be mediated primarily by vibes. Two major sources of vibes that are important sources of maladaptive behavior are early acquired beliefs and needs.

The Influence of Early-Acquired Beliefs on Maladaptive Behavior

It will be recalled that, according to CEST, the implicit beliefs in a person's experiential system consist primarily of generalizations from emotionally significant past experiences. These affect-laden implicit beliefs correspond to schemas about what the self and other people are like and how one should relate to them. Particularly important sources of such schemas are experiences with mother and father figures and with siblings. The schemas exist in varying degrees of generality. At the broadest level is the basic belief about what people, in general, are like, as previously discussed. At a more specific level are views about particular categories of people, such as authority figures, maternal figures, mentors, and peers. Such implicit beliefs, both broad and narrower, exert a strong influence on how people relate to others, particularly to those who provide cues that are reminders of the original generalization figures. The influence of the schemas is mediated by the vibes automatically activated in cue-relevant situations.

It is understandable why implicit beliefs that contribute to a person's happiness and security are maintained. But why should implicit beliefs that appear to contribute only to misery also be maintained? Why do they not extinguish as a result of the negative affect following their retrieval? According to the pleasure principle, they, of course, should. The reason they do not is because of the influence of the need to maintain the stability of one's conceptual system (Epstein & Morling, 1995; Morling & Epstein, 1997; Swann, 1990; Hixon & Swann, 1993). Depending on circumstances, the need for stability can over-ride the pleasure principle. But how, exactly, does this operate? What do

people actually do that prevents their maladaptive beliefs acquired in an earlier period from being extinguished when they are exposed to corrective experiences in adulthood?

There are three things people do or fail to do that serve to maintain their maladaptive implicit beliefs. First, they tend to perceive and interpret events in a manner that is consistent with their biasing beliefs. Biased perceptions and interpretations allow individuals to experience events as verifying even when, on an objective basis, they should be disconfirming. For example, an offer to help or an expression of concern can be perceived as an attempt to control one, and an expression of love can be viewed as insincere and manipulative. Second, people often engage in self-verifying behavior, such as by provoking counter-behavior in others that provides objective confirmation of the initial beliefs. For example, a person who fears rejection in intimate relationships may behave with aggression or withdrawal whenever threatened by relationships advancing toward intimacy. This predictably provokes the other person to react with counter-aggression or withdrawal, thereby providing objective evidence confirming the belief that people are rejecting. Third, people fail to recognize the influence of their implicit beliefs and associated vibes on their behavior and conscious thoughts, which prevents them from identifying and correcting their biased interpretations and self-verifying behavior. As a result, they attribute the consequences of their maladaptive behavior to unfavorable circumstances or, more likely, to the behavior of others. In the event that, after repeated failed relationships, they should consider the possibility that their own behavior may play a role, they are at a loss to understand in what way this could be true, as they can cite objective evidence to support their biased views. It will be recalled that an important maxim in CEST is that a failure to recognize the operation of one's experiential system surely mean that one will be controlled by it.

There is an obvious similarity between the psychoanalytic concept of transference and the view in CEST that people's relationships are strongly influenced by generalizations from early childhood experiences with significant others. Psychoanalysts have long emphasized the importance

of transference relations in psychotherapy. They have observed that their patients, after a period in therapy, react to the analyst as if the analyst were a mother or a father figure. They encourage the development of such transference reactions with the aim of providing a corrective emotional experience. Through the use of this procedure as well as by interpreting the transference, the analyst hopes to eliminate the tendency of the patient to establish similar relationships with others. Although this procedure is understandable from the perspective of CEST, it is fraught with danger, as the patient may become overly dependent on the therapist and the therapist, despite the best of intentions, may provide a destructive rather than a corrective experience. Moreover, working through a transference relationship, even when successful, may not be the most efficient way of treating inappropriate generalizations. Nevertheless, for present purposes, it illustrates how generalizations from early childhood tend to be reproduced in later relationships, including those with therapists, and how appropriate emotional experiences can correct maladaptive generalizations.

Although there are obvious similarities between the concepts of transference in psychoanalysis and of generalization in CEST, there are also important differences. Generalization is a far broader concept, which, unlike transference, is not restricted to the influence of relationships with parents. Rather, it refers to the influence of all significant childhood relationships, including, in particular, those with siblings as well as with parents. Schemas derived from childhood experiences are emphasized in CEST because later experiences are assimilated by earlier schemas. Also generalizations acquired from childhood experiences are likely to be poorly articulated, if articulated at all, in the rational system. Their influence, therefore, is likely to continue unrecognized into adulthood.

The Influence of Early-Acquired Motives on Maladaptive Behavior

Much of what has been said about implicit beliefs in the experiential system can also be applied to implicit needs. Like implicit beliefs, implicit needs, or motives, are acquired from

emotionally significant experiences. They are also maintained for similar reasons. As previously noted, when people experience a positive or negative event, they automatically acquire a behavioral tendency, or motive, to reproduce the experience if it was favorable and to avoid experiencing it if it was unfavorable. The stronger the emotional response and the more often it occurs in the same or similar situations, the greater the strength of the motive. Although this learning procedure is adaptive most of the time, it is maladaptive when past conditions are unrepresentative of present ones. One such condition is when a child has experiences involving the deep thwarting of one or more basic needs. For example, if the need to maintain self-esteem is deeply frustrated in childhood, the child will acquire a sensitivity to threats to self-esteem and a corresponding compulsion to protect himself or herself from such threats in the future. Sensitivities, in CEST, refer to areas of particular vulnerability, and compulsions refer to rigid, driven behavioral tendencies with the aim of protecting oneself from sensitivities. Such sensitivities and compulsions are considered, in CEST, to be major sources of maladaptive behavior.

The following case history illustrates the operation of a sensitivity and compulsion. In this and other case histories, names, places, and details are altered to protect the anonymity of the protagonists. Ralph was the oldest child in a family that included three other children. He was extremely bright and far outshone his siblings in academic performance. However, rather than being appreciated for it, he was resented by both his parents and siblings. When he eagerly showed his mother the excellent grades on his report card, she would politely tell him that she was busy at the moment and would like to look at it later, when she had more time. Not infrequently, she would forget to do so. It gradually became evident to Ralph that she was more upset than pleased with his accomplishments, so he stopped informing her about them.

The mother's behavior can be understood in terms of her own background. She had been deeply resentful, as a child, when her mother expressed admiration for the accomplishments of her

brighter sibling and ignored her own accomplishments. Thus, her automatic reaction to cues that reminded her of such experiences was to have resentful thoughts accompanied by unpleasant vibes. Consequently, although she meant to be a good mother to Ralph, her experiential reactions undermined her conscious intent. Being unaware of her underlying experiential reactions, she could not help but react as she did. Moreover, over time she found objective reasons for considering him as her least favored child. Little did she realize that his resentful and reticent attitude toward her and others were reactions to her own behavior toward him. She simply regarded him as a stubborn, difficult child, by nature.

As a result of his experience in the family, Ralph developed feelings of being unlovable and unworthy and felt depressed much of the time. As an adult, he devoted his energy to bolstering his self-esteem by working extremely hard at becoming a successful businessman. He succeeded at this to a remarkable extent, becoming wealthy at an early age. Yet, despite his success and accumulation of material things that other people admired, happiness eluded him. He continued to feel unlovable and depressed no matter what his possessions and no matter that he had a wife and children who tried hard to please him. When his wife praised the children for their accomplishments, he became resentful toward her and the children. He spent less and less time with his family and increasingly immersed himself in his business. He also began to accuse his wife and children of not loving him and said that was the reason he was spending so little time with them. In his eyes, he was the victim of rejection, not its perpetrator. The result was that he increasingly alienated his family, which verified for him that they did not love him. He became convinced that his wife would ask him for a divorce, and, rather than being openly rejected by her, he asked her for a divorce first. He was sure she would be pleased to oblige, and he was extremely relieved when she protested that she did not want a divorce. She said, she wanted more than anything else for them to work together to improve their relationship. This gave a great boost to Ralph, and he tried to the best of his ability to be a more

attentive husband and father. This was no easy task for him, particularly as he had no insight into the role his own behavior played in his distressing relationships with his family. It remains to be seen if he will succeed. From the perspective of CEST it is doubtful that he will, unless he gains insight into the influence of his experiential system.

This case illustrates the development, operation, and consequences of a sensitivity and compulsion. Of further interest, it illustrates the transference of sensitivities and compulsions across generations. The mother's sensitivity was to being outshone intellectually, and her compulsion was to get back in some way or other at whomever activated the sensitivity. In this case it was her own son, who provided cues reminiscent of her childhood experiences with her brighter sibling. Lest you blame the mother, consider that her reactions occurred automatically, outside of her awareness, and that she was no less a victim than Ralph.

Ralph had three related sensitivities: threats to his self-esteem, being unappreciated for his accomplishments, and being rejected by a loved one. His compulsive reaction in response to the first sensitivity was to attempt to increase his self-esteem by becoming an outstanding success in business and thereby gaining the admiration of others. His compulsive reaction to the second sensitivity was again to gain the admiration of others for his success and material possessions. His compulsive reaction to the third sensitivity was to withdraw from and reject the members of his family before they rejected him. Not surprisingly, his compulsive reactions interfered with, rather than facilitated, gaining the love he so desperately desired.

RESEARCH SUPPORT FOR THE CONSTRUCT VALIDITY OF CEST

Research generated by a variety of dual-process theories other than CEST has produced many findings consistent with the assumptions in CEST (see review in Epstein, 1994 and articles in Chaiken & Trope, 1999). As a review of this extensive literature is beyond the scope of this chapter, I will confine the discussion to studies my associates and I specifically designed to test assumptions in

CEST. Three kinds of research are reviewed: research on the operating principles of the experiential system, research on the interactions within and between the two systems, and research on individual differences in the extent and efficacy in the use of the two systems.

Research on the Operating Principles of the Experiential System

For some time, my associates and I have been engaged in a research program for testing the operating principles of the experiential system. One of our approaches consisted of adapting procedures used by Tversky and Kahneman and other cognitive and social-cognitive psychologists to study heuristic, nonanalytical thinking through the use of specially constructed vignettes (for examples of this research by others, see Fiske & Taylor, 1991; Tversky & Kahneman, 1974, 1983; Kahneman, Slovic, & Tversky, 1982).

Irrational Reactions to Unfavorable Arbitrary Outcomes. People in everyday life often react to arbitrary, incidentally determined, and unintended outcomes as if they were intentionally and causally determined. Thus, they view more favorably the proverbial bearer of good than of evil tidings, despite knowing full well that the messenger is not responsible for the message. Such behavior is an example of outcome-oriented processing. It is the typical way the experiential system reacts to events by associating outcomes with the stimuli that precede the outcomes, as in classical conditioning.

As an example of the kinds of vignettes we used, one of them described a situation in which two people, as the result of unanticipated heavy traffic, arrive at an airport 30 minutes after the scheduled departure of their flights. One learns that her flight left on time, and the other learns that her flight just left. Tversky and Kahneman (1983) found that people typically reported that the one who barely missed her flight would be more upset than the other protagonist, although from a rational perspective it should not matter at all as both were equally inconvenienced and neither was responsible for the outcome. We modified Tversky and Kahneman's experimental paradigm by having the participants respond from three perspectives: how they believed most people would react;

how they, themselves, would react based on how they have reacted to similar situations in the past, and how a completely logical person would react (Epstein, Lipson, Holstein, & Huh, 1992). The first two perspectives were considered to be mainly under the jurisdiction of the experiential system and the third to be mainly under the jurisdiction of the rational system. In order to control for and examine the influence of each of the perspectives on the effect of subsequent perspectives, we counterbalanced the order of presentation of the perspectives.

The findings supported the following hypotheses: there are two different modes of information processing, experiential and rational; the experiential system is an associative system that automatically relates outcomes to preceding situations and behavior, treating them as if they are causally related, even when the relation is completely arbitrary; the rational system is an analytical system that judges cause-and-effect relations according to logical rules; and the systems are interactive, with each influencing the other. Support for the last hypothesis is of particular interest, as it supports the important assumption in CEST that the prevalence of irrational thinking in humans can be attributed, in large part, to the influence of their automatic, preconscious experiential processing on their conscious analytical thinking.

In research on arbitrary outcomes in which we varied the affective consequences of the outcomes, the results supported the assumption in CEST that the degree of experiential relative to rational influence varies directly with the intensity of the affect that is implicated (Epstein et al, 1992). What we found is that the greater the emotional intensity of the outcomes, the more the responses reflected experiential, as contrasted with rational, processing.

The Ratio-bias Phenomenon. Imagine that you are told that on every trial in which you blindly draw a red jellybean from a bowl containing red and white jellybeans you will receive two dollars. To make matters more interesting, you are given a choice between drawing from either of two bowls that offer the same 10% odds of drawing a winning bean. One contains 1 red jellybean and 9 white ones;

the other contains 10 red jellybeans and 90 white ones. Which bowl would you choose to draw from, and how much would you pay for the privilege of drawing from the bowl of your choice, rather than having the choice decided by the toss of a coin? When people are simply asked how they would behave, almost all say they would have no preference and would not pay a cent for a choice between two equal probabilities. Yet, when they are placed in a real situation, most willingly pay small sums of money for the privilege of drawing from the bowl with more red jellybeans (Kirkpatrick & Epstein, 1992). This difference in response to the verbally-presented and the real situation can be explained by the greater influence of the experiential than the rational system in real situations with emotionally significant consequences compared to simulated situations without consequences. According to CEST, the experiential system is particularly reactive to real experience, whereas the rational system is uniquely responsive to abstract, verbal representations.

This jellybean experimental situation, otherwise referred to as the “ratio-bias experimental paradigm”, is particularly interesting with respect to CEST because it pits experiential against rational processing. The conflict between the two modes of processing arises because the experiential system is a concrete system that is less responsive to abstractions, such as ratios, than to the numerosity of objects. Comprehension of numerosity, unlike comprehension of ratios, is an extremely fundamental ability that is within the capacity of three-year old children and nonhuman animals (Gallistel & Gelman, 1992).

Even more impressive than the irrational behavior exhibited by people paying for the privilege of choosing between bowls that offer equal probabilities are the results obtained when unequal probabilities are offered by the bowls. If our reasoning is correct, a conflict between the two systems can be established by having one bowl probability-advantaged and the other numerosity-advantaged. In one study, a probability advantaged bowl always contained 1 in 10 red jellybeans, and a numerosity advantaged bowl offered anywhere between 5 and 9 red jellybeans out of 100 jellybeans,

depending on the trial (Denes-Raj & Epstein, 1994). Under these circumstances, most adults made predominantly nonoptimal responses by selecting the numerosity-advantaged bowl against the better judgment of their rational thinking. For example, they often chose to draw from the bowl that contained 8 in 100 (8%) in preference to the one that contained 1 in 10 (10%) red jellybeans. Some sheepishly commented that they knew it was foolish to go against the probabilities, but somehow they felt they had a better chance of drawing a red jellybean when there were more of them. Of additional interest, participants made nonoptimal responses only to a limited degree, thereby suggesting a compromise between the two systems. Thus, although many selected a numerosity-advantaged 8% option (8 in 100 red jellybeans) over a 10% probability-advantaged one (1 in 10 red jellybeans), almost no one selected a 5% numerosity-advantaged option (5 in 100 red jellybeans) over a 10% probability-advantaged option (1 in 10 red jellybeans). Apparently, most people preferred to behave according to their experiential processing only up to a point of violating their rational understanding. To be sure, there were participants who always responded rationally. What was impressive about the study, however, was the greater number who responded irrationally, despite knowing better (in their rational system).

To determine whether children who have not had formal training in ratios have an intuitive understanding of ratios, we conducted a series of studies in which we examined children's responses to the ratio-bias experimental paradigm (Yanko & Epstein, 2000). We were also interested in these studies in determining whether children, if they have an intuitive understanding of ratios, exhibit compromises between the two systems, like adults. We found that children without formal knowledge of ratios had a rudimentary comprehension of ratios. They responded appropriately to differences between ratios only when the magnitude of the differences was relatively large. Like adults, children exhibited compromises, but their compromises were more in the experiential direction. For example, many children, but no adults, selected a 5% numerosity-advantaged bowl over a 10% probability-

advantaged one. However, very few of the same children selected a 2% numerosity-advantaged bowl over a 10% probability-advantaged one.

We also used the ratio-bias experimental paradigm to test the assumption in CEST that the experiential system responds to visual imagery in a similar way as to real experience (Epstein & Pacini, in press). We presented participants in an experimental group with a verbal description of the ratio-bias experimental paradigm after training them to vividly visualize the situation. Participants in the control group were given only the verbal description. In support of the assumption, the visual-imaging group, but not the control group, exhibited the ratio-bias phenomenon in a similar manner to what we have repeatedly found in real situations, but not in simulated situations.

The overall results from the many studies we conducted with the ratio-bias paradigm (Denes-Raj & Epstein, 1994; Denes-Raj, Epstein, & Cole, 1995; Kirkpatrick & Epstein, 1992; Pacini & Epstein, 1999a, 1999b, 2000; Yanko & Epstein, 2000) provided support for the following assumptions and hypotheses derived from CEST. There are two independent information processing systems. Sometimes they conflict with each other, but more often they form compromises. With increasing maturation from childhood to adulthood, the balance of influence between the two processing systems shifts in the direction of increased rational dominance. The experiential system is more responsive than the rational system to imagery and to other concrete representations than the rational system, whereas the rational system is more responsive than the experiential system to abstract representations. Engaging the rational system in children who do not have formal knowledge of ratios by asking them to give the reasons for their responses interferes with the application of their intuitive understanding of ratios, resulting in a deterioration of performance.

We have also used the ratio-bias phenomenon to elucidate the thinking of people with emotional disorders. In a study of depressed college students (Pacini, Muir, & Epstein, 1998), the ratio-bias phenomenon helped to clarify the paradoxical depressive-realism phenomenon (Alloy &

Abramson, 1988). The phenomenon refers to the finding that depressed participants are more, rather than less, accurate than nondepressed participants in judging contingencies between events. We found that the depressed participants made more optimal responses than their nondepressed counterparts only when the stakes for nonoptimal responding were inconsequential. When we raised the stakes, the depressed participants responded more experientially and the control participants responded more rationally, so that the groups converged and no longer differed. We concluded that the depressive-realism phenomenon can be attributed to an over-compensatory reaction by subclinically depressed participants in trivial situations to a more basic tendency to behave unrealistically in emotionally significant situations. We further concluded that normal individuals tend to rely on their less demanding experiential processing when incentives are low, but increasingly engage their more demanding rational processing as incentives are increased.

The Global-evaluation Heuristic. The global-evaluation heuristic refers to the tendency of people to evaluate others holistically as either good or bad people, rather than to restrict their judgments to specific behaviors or attributes. As the global-evaluation heuristic is consistent with the assumption that holistic evaluation is a fundamental operating principle of the experiential system (see Table 1) it follows that global evaluations tend to be highly compelling and not easily changed. The heuristic is particularly important because of its prevalence and the problems that arise from it, such as when jurors are influenced by the attractiveness of a defendant's appearance or personality in judging his or her guilt. An interesting example of this was provided in the hearing of Clarence Thomas for appointment to the United States Supreme Court. The testimony by Anita Hill about the obscene sexual advances she alleged he made to her was discredited in the eyes of several senators because of the favorable testimony by employees and acquaintances about his character and behavior. It seemed inconceivable to the senators that an otherwise good person could be sexually abusive.

We studied the global-evaluation heuristic (reported in Epstein, 1994) by having participants

respond to a vignette adapted from a study by Miller and Gunasegaram (1990). In the vignette, a rich benefactor tells three friends that if each throws a coin that comes up heads, he will give each \$100. The first two throw a heads, but Smith, the third, throws a tails. When asked to rate how each of the protagonists feels, most participants indicated that Smith would feel guilty and the others would feel angry with him. In an alternative version with reduced stakes, the ratings of guilt and anger were correspondingly reduced. When asked if the other two would be willing, as they previously had intended, to invite Smith to join them on a gambling vacation in Las Vegas, where they would share wins and losses, most participants said they would not, "because he is a loser." These responses were made both from the perspective of how the participants reported they themselves would react in a real situation and how they believed most people would react. When responding from the perspective of how a completely logical person would react, most participants said a logical person would recognize that the outcome of the coin tosses was arbitrary, and they therefore would not hold it against Smith. They further indicated that a logical person would invite him on the gambling venture.

This study indicates that people recognize that there are two systems of information-processing that operate in a manner consistent with the principles of the experiential and rational systems. It also supports the hypotheses that experiential processing becomes increasingly dominant with an increase in emotional involvement and that people over-generalize broadly in judging others on the basis of outcomes over which the person has no control, even though they know better in their rational system.

Conjunction Problems. The Linda conjunction problem is probably the most researched vignette in the history of psychology. It has evoked a great deal of interest among psychologists because of its paradoxical results. More specifically, although the solution to the Linda problem requires the application of one of the simplest and most fundamental principles of probability theory, almost everyone, including people sophisticated about statistics, gets it wrong. How is this to be

explained? As you might suspect by now, the explanation lies in the operating principles of the experiential system.

Linda is described as a 31 year-old woman who is single, outspoken, and very bright. In college she was a philosophy major who participated in anti-nuclear demonstrations and was concerned with issues of social justice. How would you rank the following three possibilities: Linda is a feminist, Linda is a bank teller, and Linda is both? If you responded like most people, you ranked Linda as being a feminist and a bank teller ahead of Linda being just a bank teller. In doing so, you made what Tversky & Kahneman (1982) refer to as a “conjunction fallacy”, and which we will refer to as a conjunction error (CE). It is an error or fallacy because, according to the conjunction rule, the occurrence of two events cannot be more likely than the occurrence of only one of them.

The usual explanation of the high rate of CEs that people make is that they either do not know the conjunction rule or they do not think of it in the context of the Linda vignette. They respond, instead, according to Tversky and Kahneman, by the representativeness heuristic, according to which being both a bank teller and a feminist is more representative of Linda’s personality than being just a bank teller.

In a series of studies on conjunction problems, including the Linda problem (Donovan & Epstein, 1997; Epstein, Denes-Raj, & Pacini, 1995; Epstein & Donovan, 1995; Epstein, Donovan, & Denes-Raj, 1999; Epstein & Pacini, 1995), we demonstrated that the major reason for the difficulty of the Linda problem is not an absence of knowledge of the conjunction rule or a failure to think of it. We demonstrated that almost all people have intuitive knowledge of the conjunction rule, as they apply it correctly in “natural” contexts, such as in problems about lotteries. Nearly all of our participants, whether or not they had formal knowledge of the conjunction rule, reported that winning two lotteries, one with a very low probability of winning and the other with a considerably higher probability, is less likely than winning either one of them (Epstein, Denes-Raj, & Pacini, 1995). This

is particularly interesting from the perspective of CEST because it indicates that the experiential system (which knows the conjunction rule intuitively) is sometimes smarter than the rational system (which may not be able to articulate the rule.). We also found that when we presented the conjunction rule among other alternatives, thereby circumventing the problem of whether people think of the conjunction rule in the context of the Linda problem, most people selected the wrong rule. They made the rule fit their responses to the Linda problem, rather than the reverse, thereby demonstrating the compelling nature of experiential processing and its ability to dominate analytical thinking in certain situations.

The conclusions from our series of studies with the Linda problem can be summarized as follows: (1) The difficulty of the Linda problem cannot be fully accounted for by the misleading manner in which it is presented, for even with full disclosure about the nature of the problem and the request to treat it purely as a probability problem, a substantial number of participants makes CEs. (2) People tend to view the Linda problem as a personality problem rather than as a probability problem, no matter what they are told. (3) The difficulty of the Linda problem can be explained by the rules of operation of the experiential system, which is the mode employed by most people when responding to it. Thus, people tend to reason associatively, concretely, holistically and in a narrative manner, rather than abstractly and analytically when responding to the problem. For example, a number of participants explained their responses that violated the conjunction rule by stating that Linda is more likely to be a bank teller and a feminist than just a feminist because she has to make a living. (3) The essence of the difficulty of the Linda problem is that it involves an unnatural, concrete presentation, where an unnatural presentation is defined as one that differs from the context in which a problem normally appears. We found that concrete presentations facilitate performance in natural situations, in which case the two processing systems operate in synchrony, and interfere with performance in unnatural situations, in which case the two systems operate in opposition to each other. (4) Processing

in the experiential mode is intrinsically highly compelling and can over-ride processing in the rational mode even when the latter requires no more effort. Thus, many people, despite knowing and thinking of the conjunction rule, nevertheless prefer a representativeness solution. (5) Priming intuitive knowledge in the experiential system can facilitate the solution to problems that people are unable to solve intellectually without such priming..

Interaction Between the Two Processing Systems. An important assumption in CEST is that the two systems are interactive. Interaction occurs simultaneously as well as sequentially. Simultaneous interaction was demonstrated in the compromises between the two systems observed in the studies of the ratio-bias phenomenon. Sequential interaction was demonstrated in the study in which people listed their first three thoughts and in the studies of conjunction problems, in which presenting concrete, natural problems first facilitated the subsequent solution of abstract problems.

There is also considerable evidence that priming the experiential system subliminally can influence subsequent responses in the rational system (see review in Bargh, 1989). Other evidence indicates that the form, independent of the content, of processing in the rational system can be influenced by priming the experiential system. When processing in the experiential mode is followed by attempts to respond rationally, the rational mode itself may be compromised by intrusions of experiential reasoning principles (Chaiken & Maheswaren, 1994; Denes-Raj, Epstein, & Cole, 1995; Edwards, 1990; Epstein et al., 1992).

Sequential influence occurs not only in the direction of the experiential system influencing the rational system. As previously noted, in everyday life sequential processing often proceeds in the opposite direction, as when people react to their irrational, automatic thoughts with corrective, rational thoughts. In a study designed to examine this process, we instructed participants to list the first three thoughts that came to mind after imagining themselves in various situations described in vignettes (reported in Epstein, 1994). The first response was usually a maladaptive thought consistent

with the associative principle of the experiential system, whereas the third response was usually a more carefully reasoned thought in the mode of the rational system. As an example, consider the responses to the following vignette, which describes a protagonist who fails to win a lottery because she took the advice of a friend rather than following her own inclination to buy a ticket that had her lucky number on it. Among the most common first thoughts were that the friend was to blame and that the participant would never take her advice again. By the third thought, however, the participants were likely to state that the outcome was due to chance and no one was to blame.

Interaction Between the Basic Needs. It will be recalled that a basic assumption in CEST is that behavior often represents a compromise among multiple basic needs. This process is considered to be particularly important, as it provides a means by which the basic needs serve as checks and balances against each other, with each need being constrained by the influence of the other needs. To test the assumption about compromises, we examined the combined influence of the needs for self-enhancement and self-verification. Swann and his associates had previously demonstrated that the needs for enhancement and verification operate sequentially, with the former tending to precede the latter (e.g., Swann, 1990; Hixon & Swann, 1993). We wished to demonstrate that they also operate simultaneously, as manifested by compromises between them. Our procedure consisted of varying the favorableness of evaluative feedback and observing whether participants had a preference for feedback that matched or was more favorable to various degrees than their self-assessments (Epstein & Morling, 1995; Morling & Epstein, 1997). In support of hypotheses, participants preferred feedback that was only slightly more favorable than their own self-assessments, consistent with a compromise between the need for verification and the need for self-enhancement.

Research on Individual Differences

Individual Differences in the Intelligence of the Experiential System. If there are two different systems for adapting to the environment, then it is reasonable to suspect that there are individual

differences in the efficacy with which people employ each. It is therefore assumed in CEST that each system has its own form of intelligence. The question remains as to how to measure each. The intelligence of the rational system can be measured by intelligence tests, which are fairly good predictors of academic performance. To a somewhat lesser extent, they also predict performance in a wide variety of activities in the real world, including performance in the workplace, particularly in situations that require complex operations (see reviews in Gordon, 1997; Gottfredson, 1997; Hunter, 1983, 1986; Hunter & Hunter, 1984). However, intelligence tests do not measure other kinds of abilities that are equally important for success in living, including motivation, practical intelligence, ego-strength, having appropriate emotions, social facility, and creativity.

Until recently, there was no measure of the intelligence of the experiential system. One reason for this is that the concept of an experiential system was unknown. Having established its theoretical viability, the next step was to construct a way of measuring it, which resulted in the Constructive Thinking Inventory (CTI; Epstein, 2000). The measurement of experiential intelligence is based on the assumption that experiential intelligence is revealed by the adaptiveness of the thoughts that tend to spontaneously occur in different situations or conditions.

People respond to the CTI by reporting, on a 5-point scale, the degree to which they have certain common adaptive and maladaptive automatic, or spontaneous thoughts. An example of an item is, "I spend a lot of time thinking about my mistakes, even if there is nothing I can do about them" (reverse scored). The CTI provides a Global Constructive Thinking scale and six main scales, most of which have several facets, or subscales. The six main scales are Emotional Coping, Behavioral Coping, Categorical Thinking, Esoteric Thinking, Naïve Optimism, and Personal Superstitious Thinking. The main scales all have high internal-consistency reliability coefficients and evidence for their validity in numerous studies. They are predictive of a wide variety of criteria related to success in living. A review of the extensive literature supporting the construct validity of

the CTI is beyond the scope of this chapter, but is available elsewhere (Epstein, in press). For present purposes, it will suffice to note that favorable CTI scores have been found to be significantly associated with performance in the work-place, performance in the classroom, social competence, leadership ability, ability to cope with stress, emotional adjustment, physical wellbeing, and an absence of drug and alcohol abuse.

The relation of constructive thinking to intellectual intelligence is of considerable interest for theoretical as well as practical reasons. According to CEST, the experiential and rational systems operate independently, each by its own set of principles (see Table 1). One would therefore expect the intelligence, or efficacy, of the two processing systems to be independent. This is exactly what we have repeatedly found in several studies that have compared scores on the Global CTI scale with measures of intellective intelligence (Epstein, in press). Of additional interest, constructive thinking and intellectual intelligence were found to exhibit opposite courses of development across the life span. Constructive thinking is at its nadir in adolescence, when intellectual intelligence is at its peak, and it gradually increases throughout most of the adult years when intellectual intelligence is gradually declining. Unlike intellectual intelligence, constructive thinking is only negligibly related to academic achievement tests. Yet, it adds significant variance in addition to the contribution of intellectual intelligence to the prediction of performance in the classroom, as indicated by grades received and class rank (Epstein, in press). Apparently, good constructive thinkers are able to capitalize on their knowledge and obtain appropriate recognition for their achievements, whereas poor constructive thinkers are more likely to engage in counter-productive behavior, such as antagonizing their teachers, resulting in their being downgraded.

Individual Differences in Rational and Experiential Thinking Styles. If people process information by two different systems, the extent to which they employ each should be an important personality variable. To investigate this aspect of personality, we constructed a self-report test, the

Rational-Experiential Inventory (REI). The REI has main scales of rational and experiential processing. Each of the main scales has subscales of self-assessed effectiveness and of frequency in use of the thinking style.

The REI scales have internal-consistency reliabilities of .87-.90 for the main scales and .79-.84 for the subscales. There is also considerable evidence in support of their construct validity. The major findings from several studies (Epstein et al., 1996; Norris & Epstein, 2000a, 2000b; Pacini & Epstein, 1999b; Pacini, Muir, & Epstein, 1998; Rosenthal & Epstein, 2000) can be summarized as follows: (1) In support of the assumption in CEST of independent rational and experiential processing systems, the two main scales are independent. (2) In support of the inclusion of the subscales, they exhibit factorial, discriminant, and convergent validity, and they often contribute independently and in a supplementary manner to the prediction of criterion variables. (3) The rational and experiential scales are coherently associated with objective measures of heuristic processing. As expected, the relation of the rational scale with heuristic processing is inverse, and the relation of the experiential scale with heuristic processing is direct. (4) Although the rational and experiential main scales are uniquely associated with some variables, they make independent, supplementary contributions to the prediction of other variables. The rational scale is more strongly positively associated than the experiential scale with measures of intellectual performance, including as SAT scores and grade-point average, and with adjustment, including measures of ego-strength, self-esteem, openness, conscientiousness, favorable beliefs about the self and the world, and physical wellbeing. The rational scale is more strongly negatively associated than the experiential scale with measures of neuroticism, depression, anxiety, stress in college life, subtle racism, extreme conservatism, alcohol abuse, and naïve optimism. The experiential scale is more strongly positively associated than the rational scale with measures of extroversion, agreeableness, favorable interpersonal relationships, empathy, creativity, emotionality, sense of humor, and art appreciation, and it is more strongly

negatively associated than the rational system with distrust and intolerance.

It is important, when introducing a new measure, to demonstrate that it provides information that is not readily available from existing instruments. In order to determine whether the REI is redundant with more standard personality measures, we conducted a study (Pacini & Epstein, 1999b) in which we compared the REI to the NEO Five Factor Inventory (NEO-FI; Costa & McCrae, 1989), the most popular measure of the “Big Five” personality traits. The two inventories contributed independent, supplementary variance to the prediction of many of the same variables and unique variance to the prediction of other variables. Moreover, when the five NEO-FFI scales were entered into a regression equation as predictors of the REI scales, they accounted for only 37% of the variance of the rationality scale and 11% of the variance of the experientiality scale. This is of interest not only because it demonstrates that the REI is mainly independent of the NEO-FFI, but also because of the information it provides about the NEO-FFI. It suggests that the NEO-FFI mainly measures attributes associated with the rational system and is relatively deficient in measuring attitudes and behavior associated with preconscious, automatic information processing.

Consistent with gender stereotypes, women report significantly greater appreciation of, and engagement in, experiential processing than men, and men report greater appreciation of and engagement in rational processing. However, the mean gender differences are small, and there is a great deal of overlap between the groups.

Given fundamentally different ways of processing information, it might reasonably be expected that people with different thinking styles would be receptive to different kinds of messages. To test this hypothesis, Rosenthal and Epstein (2000) conducted a study with the REI in which they compared the reactions of women with high scores on rationality and low scores on experientiality with women with the opposite pattern. The groups were subdivided according to whether they received messages on the danger of breast cancer and the importance of self-examination in the form

of information designed to appeal to the rational or the experiential mode of information processing. The rational message emphasized actuarial and other objective information, whereas the experiential message included personal appeals and vivid individual cases. The dependent variable was the intention to regularly conduct breast self-examinations. Both groups reported a greater intention to conduct breast examinations when the message they received matched their thinking style.

Individual Differences in Basic Beliefs About the Self and the World. The Basic Beliefs Inventory (BBI; Catlin & Epstein, 1992) is a self-report questionnaire that measures the four basic beliefs proposed in CEST. It includes a global scale of overall favorability of basic beliefs and separate scales for measuring each of the basic beliefs: The internal-consistency reliabilities (coefficients alpha) of the scales are between .77 to .91. The scales are moderately intercorrelated, with a median correlation of .42, thereby justifying combining them into an overall scale of favorability of beliefs as well as considering them individually.

It will be recalled that according to CEST a person's basic beliefs are primarily derived from emotionally significant personal experiences. To test this hypothesis, Catlin & Epstein (1992) examined the relations of scores on the BBI and reports of two kinds of highly significant emotional experiences. The two kinds of experiences were extreme life-events, such as loss of a loved one, and the quality of relationships with parents during early childhood. In support of hypothesis, both kinds of experiences were significantly and coherently related to basic beliefs. Often, the two kinds of experience made independent, supplementary contributions to the prediction of the same basic belief. Of additional interest, the self-reported quality of childhood relationships with parents moderated the influence of extreme life-events on basic beliefs.

Summary and Conclusions Regarding Research Support for CEST

In summary, the program of research on CEST has provided impressive support for its construct validity. The following basic assumptions of CEST have all been verified: There are two

independent information- processing systems that operate in parallel by different rules. The systems are interactive, with each influencing the other, and the interaction occurs both sequentially and simultaneously. The influence of experiential processing on rational processing is of particular importance, as it identifies a process by which people's automatic, preconscious, experiential processing routinely biases their conscious rational thinking. The experiential system is an associative, rapid, concrete, primarily nonverbal system that is intrinsically highly compelling to the extent that it can over-ride the rational system, leading people to "behave against their better judgment."

When people are aware of the maladaptive thoughts generated by their automatic experiential processing, they often correct the thoughts through more deliberative reasoning in their rational system. There are reliable individual differences in the efficacy, or "intelligence", of the experiential system. The intelligence of the experiential system is independent of the intelligence of the rational system and is more strongly associated with a variety of indexes of success in living than the intelligence of the rational system. Included are work success, social facility, absence of drug and alcohol abuse, and mental and physical wellbeing. There are reliable individual differences in experiential and rational thinking styles. The two thinking styles exhibiting coherent, different patterns of relations with a variety of criterion variables. There are also reliable individual differences in the four basic beliefs proposed by CEST. As the basic beliefs influence behavior simultaneously in the form of compromises, they serve as checks and balances against each other.

IMPLICATIONS OF COGNITIVE-EXPERIENTIAL SELF-THEORY

FOR PSYCHOTHERAPY AND RESEARCH

Implications for Psychotherapy

For psychotherapy to be effective, it is necessary, according to CEST, for changes to occur in

the experiential system. This is not meant to imply that changes in the rational system are of no importance, but to suggest that changes in the rational system are therapeutic only to the extent that they facilitate changes in the experiential system.

There are three basic ways of producing changes in the experiential system. These include the use of the rational system to correct and train the experiential system, the provision of emotionally significant corrective experiences, and communicating with the experiential system in its own medium, namely fantasy, imagery, metaphor, concrete representations, and narratives. These three approaches provide a unifying framework for a wide variety of approaches in psychotherapy, including insight approaches, cognitive-behavioral approaches, and experiential approaches, including gestalt therapy and psychosynthesis (Epstein, 1994, 1998).

Using the Rational System to Correct the Experiential System. The rational system has an important advantage over the experiential system in that it can understand the experiential system, whereas the reverse is not true. Thus, one way the rational system can be used to improve the functioning of the experiential system is by teaching people to understand the operation of their experiential systems. Almost everyone is aware of having conflicts between the heart and the head as well as having unbidden distressing thoughts that they can not consciously control. These are not deep, dark, inaccessible thoughts, but ones of which people are acutely aware. Beginning with a discussion of such reactions, it should not be difficult to convince people that they operate by two independent systems. The next step is to teach them about the operating principles of the experiential system and the manner in which it influences their behavior and biases their conscious thought. They then can be helped to understand that their problems almost certainly lie in their automatic experiential processing, not their conscious thinking. Not only is such knowledge useful for correcting and training the experiential system, but it also provides a useful foundation for the other two approaches.

One of the important advantages of clients recognizing that their problems lie primarily in their experiential, not their rational systems, is that it reduces resistance and defensiveness as they no longer have reason to defend the reasonableness of their behavior. For example, if a client engages in excessive rational discourse and feels compelled to defend his or her behavior as reasonable, the therapist can remind the client that the experiential system does not operate by logic. Rather, what is important is to uncover the maladaptive beliefs and needs in the experiential system and ultimately change them so they operate more constructively.

Uncovering implicit beliefs in the experiential system can be accomplished in several ways. One way is by noting repetitive behavior patterns, and, in particular, becoming aware of sensitivities, compulsions, and ego-alien behavior and the situations in which they arise. A second way is by using fantasy to vicariously explore reactions to different situations. A third way is by attending to emotional reactions and vibes and the kinds of automatic thoughts that instigate them.

Emotional reactions are particularly revealing according to CEST, as they provide a royal road to the important schemas in people's implicit theories of reality. They do this in two ways. First, whenever an event elicits a strong emotional response, it indicates that a significant schema in a person's implicit theory of reality has been implicated. Accordingly, by noting the events that elicit emotional responses, some of the more important schemas in a person's theory of reality can be determined. Second, emotions can be used to infer schemas through knowledge of the relation between specific thoughts and specific emotions (e.g., Averill, 1980; Beck, 1976; Ellis, 1973; Epstein, 1983, 1984; Lazarus, 1991). This relation has been well documented by the clinical observations of cognitive-behavioral therapists (e.g., Beck, 1976 ; Ellis, 1973) and by research that has examined the relation of thoughts and emotions in everyday life (e.g., Averill, 1980; Epstein, 1983). It follows from the relation of automatic thoughts to emotions that people who characteristically have certain emotions characteristically spontaneously think in certain ways. For

example, angry people can be assumed to have the implicit belief that people often behave badly and deserve to be punished, frightened people can be assumed to have the implicit belief that the world is dangerous and they should be prepared for flight, and sad people can be assumed to have the implicit belief that they have sustained an irreplaceable loss, or that they are inadequate, bad, or unlovely people..

The most obvious way in which the rational system can be used to correct maladaptive feelings and behavior is by detecting and disputing the automatic thoughts that precede the feelings and behavior, a technique widely practiced by cognitive-behavioral therapists (e.g., Beck, 1976; Ellis, 1973). Clients can be taught to attend to the automatic thoughts that immediately precede troublesome emotions and behavior. By recognizing these thoughts as destructive and repeatedly substituting more constructive ones, they often can change the maladaptive emotions and behavior that had been instigated by the thoughts.

Another way that people can use their rational systems to correct their experiential processing is by understanding the value of real-life corrective emotional experiences. Clients can be helped to understand how their biased interpretations and habitual reaction tendencies, particularly those involving sensitivities and compulsions, have served to maintain their maladaptive reactions in the past and how changing them can allow them to have and learn from potentially corrective experiences.

The rational system can also be employed to teach people about the rules of operation of the two systems, the weaknesses and strengths of each system, and the importance of using the two systems in a supplementary manner. They should understand that neither system is superior to the other, and that each has certain advantages and limitations. They should appreciate that each processing mode can provide useful guidance and each can lead one astray when not checked by the other. As an example of how the two systems can be used together when making an important

decision, a client can be told to ask herself, “How do I feel about doing this, what do I think about doing it, and, considering both, what should I do?” In evaluating the wisdom of behaving according to one’s feelings, it is helpful to consider the influence of past experiences on current feelings (particularly where sensitivities are implicated), and to consider how appropriate the past experiences are as a guide for reacting to the present situation.

Learning Directly From Emotionally Significant Experiences. As its name implies, the essence of the experiential system is that it is a system adapted to learning from experience. It follows that the most direct route for changing maladaptive schemas in the experiential system is by providing corrective experiences. One way to accomplish this is through the relationship between client and therapist. This procedure is particularly emphasized in psychoanalytic transference relationships. Another way to learn directly from experience is by having corrective emotionally significant experiences in everyday life. As previously noted, it can be very useful, in this respect, for clients to gain insight into their biasing interpretations and self-verifying behavioral tendencies. In the absence of such insight, potentially corrective experiences can be misinterpreted in a way that makes them contribute to the reinforcement rather than extinction of their destructive thought and behavioral patterns. Having emphasized the contribution of insight, a caveat is in order about valuing it too highly and considering it a necessary condition for improvement. Although insight can be very useful, it is not a necessary condition for improvement. It is quite possible for changes to occur in the experiential system in the absence of intellectual understanding of the process, which, of course, is the way nonhuman animals as well as people who are not in therapy normally learn from experience. Many a novel has been written about cures through love. In fact, for clients who are nonintellectual, corrective experiences in the absence of insight may be the only way to proceed in therapy. In the absence of recognizing the limited value of intellectual insight, there is the danger that therapists will insufficiently attend to the experiential aspects of therapy.

Communicating with the Experiential System in its Own Medium. Communicating with the experiential system in its own medium refers to the use of association, metaphor, imagery, fantasy, and narrative. Within the scope of this chapter, it is impossible to discuss all of these procedures or even to discuss any in detail. It is important to recognize, in this regard, that there is no one kind of therapy that is specific to CEST. Rather, CEST is an integrative personality theory that provides a framework for placing into broad perspective a variety of therapies. For present purposes, it will have to suffice to present both a simple and a more complicated example of how communication with the experiential system in its own medium can be used therapeutically.

The simple example is about a person who, under the guidance of a therapist, visualizes a situation to learn how he might react to the same kind of situation in real life. The procedure is based on the assumption that the experiential system reacts to visualized events in a similar way as to real events, an assumption supported by research expressly designed to test it (Epstein & Pacini, in press).

Robert exhibited a life-pattern of ambivalence about getting married. Recently, the woman he had been going with for several years gave him an ultimatum. She demanded that he either pronounce his intention to marry her or she would leave him. Robert loved her dearly, but he did not feel ready for marriage. He had always assumed he would settle down and raise a family, but somehow whenever he came to the point of committing himself, something went wrong with the relationship, and he and his partner parted ways. At first, Robert attributed the partings to failings in his partners, but after repeated reenactments, it occurred to him that he might be ambivalent about marriage. Since this made no sense to him, he decided to seek the help of a therapist. The therapist instructed and trained Robert to vividly imagine being married and coming home to his wife and children after work. When he had the scene clearly in mind, he was asked to carefully attend to his feelings. To his surprise, he felt irritated and burdened when his wife greeted him at the door and the children eagerly began relating the events of the day. The therapist then instructed Robert to imagine another scenes in

which he had the very same feelings. His mind turned to his childhood, and he had an image of taking care of his younger siblings when his parents went out for entertainment. He deeply resented having to take care of them frequently and not being able to play with his peers. The result was that he learned to dislike interacting with children at the experiential level, but had never articulated this at the rational level. As an adult, although Robert believed, in his conscious, rational mind, that he wanted to get married and raise a family, in his experiential mind, the thought of being in the company of children produced unpleasant vibes. He and his therapist discussed whether he should follow his heart or his mind. In order to help him to decide, the therapist pointed out that following his heart would be the path of least resistance. He added that if Robert decided to follow his mind, it would be important for him to work on overcoming his negative feelings toward children. When Robert decided that is what he wanted to do, he was given an exercise to practice in fantasy that consisted of scenes in which Robert engaged in enjoyable activities with children. He was also encouraged to visualize whatever occasions he could remember from his childhood in which he enjoyed being with his siblings. He was given other scenes to imagine, including being pleased with himself for behaving as a better parent to his imaginary children than his parents had behaved to him.

The more complex example is taken from a book by Alice Epstein (1989) in which she described her use of fantasy and other procedures designed to communicate with her experiential system. She attributed a surprisingly rapid reorganization of her personality to this procedure. She also believed that the change in her feelings that accompanied the change in her personality contributed to a dramatic recovery from a life-threatening illness against all odds.

Alice began psychotherapy after receiving a diagnosis of terminal cancer and being informed that she would not likely live more than three months. The statistics at that time of her diagnosis on the outcome of a metastasized hypernephroma, the form of kidney cancer that she had, indicated that no more than 4 in 1000 cases experienced remission from the disease, let alone cure. Now, many

years later, Alice has no detectable signs of cancer and has been considered cured for more than a decade. Whether her belief that the psychotherapy actually saved her life is correct or not is not at issue here. What is of primary interest is the rapid resolution of deep-seated problems through the use of fantasy that usually require a prolonged period of intensive psychotherapy. However, given increasing evidence of the relation of emotions to the immune system, it would be unwise to summarily reject her belief that her psychological recovery contributed to her physical recovery. It is possible that the experiential system has a much stronger relation to physical wellbeing than orthodox medicine recognizes.

Following is one of the early fantasies described by Alice in her book. In the session preceding the fantasy, she had expressed hostility toward her mother for her mother's behavior to her during a period of extended turmoil in the household. During that period the mother surprisingly gave birth to Alice's younger sister following her denial of being pregnant and attributing the change in her appearance to a gain in weight from eating too much. During the same period, the mother's mother, who shared the household with the family, and to whom the mother was deeply attached, was dying of cancer. After the session in which Alice expressed her hostility to her mother, she experienced a prolonged feeling of isolation and loneliness that lasted until she reported and discussed the following fantasy with her therapist.

My therapist and I decided to try the same technique to try to understand my intense discomfort at being alone. Visualizing isolation was much more difficult than visualizing pain. After many attempts that we both rejected as trivial, I finally caught the spirit of what I was experiencing. I saw some figures with shrouds – very unclear. Then as they took on a more distinct form, I saw that they were witches standing around a fire. My therapist told me to ask them to come over to talk to us. They were frightening to me in the light of the fire, but they were more horrible as they came

closer. They laughed at me and started to poke at me with their sticks. The visualization was so real and their presence was so chilling to me that I burst into tears over the interaction with them.

My therapist told me to ask them what I could do to get rid of the awful fear of isolation. Finally they revealed their price. It was that I make a sacrifice so that they could become beautiful and mingle with other people. When I heard their price I began to tremble. In an almost inaudible voice I whispered, "They want my children so they can turn them into witches like them, but I'll never do it. I'll never give them my children!"

My therapist then told me to destroy them, but I told him that I couldn't possibly do it. He urged me to try to turn my fear to wrath, to try to imagine a creature that could help me. The image that came to me was a white winged horse. He told me to mount the horse and to supply myself with a weapon that would destroy them. I refused to kill them myself, but said that the wings of the horse would fan the flames of their fire, which would turn back on them and destroy them.

There was only one problem with this scenario – the horse and I were one now and I couldn't get airborne. The wings were so heavy that I couldn't flap them hard enough to catch the breeze. The harder I tried, the more I failed and the more the witches laughed at me. My therapist ... told me that another horse who loved the first horse very much would join her and together they would destroy the witches. The other horse flew above me and made a vacuum into which I could take off. Once in the air, I flew effortlessly and fanned the fire into a huge blaze. The witches ran here and there trying to avoid the flames but in the end they were consumed by the fire.

I practiced the scene over and over again until it became easy, but I never enjoyed it. I liked to fly, but I felt sorry for the witches, no matter how mean they were to me. My therapist felt that it was a mistake to feel sympathy for them because they would take advantage of any mercy that I displayed. He felt they would use any deception and illusion they could to control me. I was not so sure but I did agree with him that I must assume the right to soar into the world and be free of their influence. After the session, my therapist and I discussed the meaning of the images. Although I had begun with the concept of isolation in mind, I knew that the witches related to my mother, particularly the way she would poke at me and shame me. They probably represented my fear of isolation if I did not acquiesce to her demands. My therapist added that in destroying

the witches I was only destroying the hostile part of our relationship, the witch part of it, and leaving the loving part intact. This was necessary for me to be free, autonomous, and no longer ensnared by fear of abandonment.

The concept that I had a great deal of conflict between the need for association and the need for autonomy was not new. I believed I had to buy affection and that no one would love me if I were myself, i.e., if I attended to my own wants. I knew also that I felt that I had to carry the burden of being responsible for my mother's wellbeing, that she would die at some level if I broke the bond with her. (A. Epstein, 1989, pp. 45-47).

There are several aspects of this fantasy that warrant further comment. First, it is noteworthy that the only aspect that reached awareness before the fantasy was an enduring feeling of loneliness and isolation. The source of the feeling and its associations remained unconscious until they were dealt with at the experiential level and perhaps assimilated at the rational level.

Second, the insight represented in the fantasy, namely that Alice had a conflict between autonomy and relatedness, was not new to her. As she noted, she had been consciously aware of this conflict before. What, then, did the fantasy accomplish? What it accomplished was to produce a vicarious corrective emotional experience that had a profound effect at the experiential level. The previous intellectual insight in the absence of involvement of the experiential system had accomplished little. To make a therapeutic contribution, the same information had to be felt and processed experientially.

Third, the fantasy provided useful diagnostic clues for the psychotherapist. Alice, apparently, could not free herself from the hold of the bad mother figure until a loving figure supported her independence, after which she could soar freely. This suggested that what she needed to resolve her conflict was to be convinced, at a compelling experiential level, that it is possible to be autonomous

and loved at the same time. This was duly noted by her therapist, who made a point of encouraging its implementation in her family as well as supporting it, himself, in the therapeutic relationship.

Fourth, the fantasy illustrates the usefulness of vicarious symbolic experience as a therapeutic tool. Alice spontaneously began to practice, in fantasy, enjoying the feeling of soaring freely into space, and she was able, as a result, to gain a newfound freedom without guilt or fear of abandonment. What she learned through the fantasy, at a deep experiential level, suggests a therapeutic technique that may be more generally useful, namely, the practice in symbolic form of coping with a deep-seated problem that cannot be resolved by intellectual insight. Of additional general value of this example of a spontaneous fantasy is that it indicates how such fantasies can provide diagnostic information that can be useful in therapy.

There is, of course, no way of knowing the extent to which the use of fantasy relative to other factors, such as having a highly supportive environment, played in Alice's rapid progress. Very likely both contributed. However, it should be considered, in this respect, that the equally favorable environment before the therapy was insufficient for resolving Alice's conflict between autonomy and relatedness. As she reported, the love and affection that were abundantly available to her from her husband, her children, her extended family, and her deeply caring friends could not penetrate, so long as she felt that the price of love was the sacrifice of autonomy. Having developed a life-long pattern of self-sacrifice in order to maintain relationships, she had no way of learning before therapy that it was unnecessary.

Implications for Research

If there are two different information-processing systems, it can only be a source of confusion to conduct research as if there were only one, which is the customary practice. As an example, given the existence of two different systems, it is meaningless to investigate "the" self-concept, for a person's self-concept in one system may not conform to the self-concept in the other system.

Moreover, the difference between the two self-concepts can be of considerable importance, in its own right. The problem of treating the two self-concepts as if there is only one has been particularly evident in research on self-esteem, where individuals are typically classified as high or low in self-esteem based on self-report questionnaires. Yet, if there are the two self-concepts, then it is quite possible for people to be high in self-esteem in one system and low in the other. For example, a person might be high in self-esteem in the rational system, as measured by a self-report test, yet low in self-esteem in the experiential system, as inferred from behavior (Savin-Williams & Jaquish, 1981).

There has been much disagreement about whether elevating students' self-esteem by treating them as successful, no matter what their performance, is desirable or undesirable. In order to resolve this issue, it is necessary, from the perspective of CEST, to recognize that high self-esteem at the conscious, rational level may coexist with low self-esteem at the experiential level. It is one thing to teach students to consciously believe they have high self-regard and another to have them acquire the quiet confidence that comes from feelings of mastery and competence that are a consequence of real accomplishment. The former can be considered to be no more than self-deception and a potential source of disillusionment in the future. It follows that, not only is it important to examine self-esteem separately in each of the two systems, but it is equally important to conduct research on their convergence. What is obviously true of self-esteem in this respect is equally true of other personality variables, including basic needs and beliefs.

Although the importance of four basic needs and corresponding beliefs is emphasized in CEST, this is not meant to imply that lower-level beliefs and needs are not also very important. Recently, social and personality psychologists have emphasized midlevel motivational constructs (e.g. Emmons, 1986; Markus & Nurius, 1986; Mischel & Shoda, 1995). It is assumed in CEST that personality is hierarchically organized, with broad, basic needs subsuming midlevel motives, which,

in turn, subsume narrower, situation-specific motives. It would therefore be desirable to examine the organization of such needs and beliefs, and to determine, in particular, the kinds of relations the different levels establish with each other as well as with other variables. It might reasonably be expected that the lowest-order needs and beliefs are most strongly associated with situationally-specific behaviors and the higher-order beliefs and needs are more strongly associated with broad dispositions, or traits. The higher-order beliefs and needs can also be expected to be more weakly, but more extensively, associated with narrow behavioral tendencies. Midlevel motives can be expected to have relations that fall in between those of the higher and lower-order variables. A particularly important hypothesis with regard to CEST is that higher-order needs and beliefs are more resistant to change than lower order needs and beliefs, but should they be changed they have greater effects on the overall personality structure. Moreover, any major changes, including positive changes, are disorganizing and anxiety-producing because of the basic need to maintain the stability of the conceptual system.

Although considerable research has recently been conducted on midlevel needs that has demonstrated their theoretical importance and predictive value (e.g. Emmons, 1986; Markus & Nurius, 1986; Mischel & Shoda, 1995), the question remains as to how the midlevel needs can best be designated and measured. The most thorough and compelling list of midlevel needs to date still appears to be the list proposed by Henry A. Murray (1938) many years ago. It is interesting from the perspective of CEST that Murray measured midlevel needs both explicitly via direct self-report and implicitly through the use of the Thematic Apperception Test (TAT; Murray, 1943). A more psychometrically advanced procedure for measuring the Murray midlevel needs at the explicit level has since become available in the form of the Edwards Personal Preference Schedule (Edwards, 1959).

There is a need for research to further explore the TAT as a measure of implicit needs and to

examine, as well, additional measures of implicit needs. Included could be older procedures, such as word association and sentence completion and promising new procedures, such as priming techniques and subthreshold measures (see Bargh & Chartrand, in press, for a review of such techniques). It would be interesting to relate the various implicit measures to each other to determine whether they have enough in common to combine them into an overall measure. The implicit measure (or measures) of needs could then be related to explicit measures of needs, and both could be related to external criteria. Through such procedures it should be possible to determine in what ways implicit and explicit measures are similar and different. It could also be determined whether they contribute in a supplementary way to the prediction of the same variables and whether the degree to which they coincide in individuals is an important personality variable, as assumed in CEST. It would be informative to determine what kinds of combinations of implicit needs usually result in compromises and what kinds usually result in conflict, and how this differs among individual. Such research would not only be of theoretical importance, but would have important implications for the diagnosis of sources of distress and, relatedly, for therapy.

Although considerable research has been done with the CTI that has supported its construct validity (see review in Epstein, in press), there are many areas that could profit from further research with it. One such area is the predictive value of the CTI for success in a variety of work situations that have not yet been investigated. It would be interesting, for example, to conduct a study comparing the contribution of intellectual intelligence, as measured by a standard intelligence test, and experiential intelligence, as measured by the CTI, for predicting performance in graduate school and beyond. A hypothesis derived from CEST and consistent with previous research (Epstein, 2000) is that intellectual intelligence is a stronger predictor of grades and scores on paper-and-pencil tests, whereas constructive thinking is a stronger predictor of practical performance. The latter could be indicated by demonstrations of research productivity and creativity, by length of time to complete

the Ph. D. degree, and by successful professional performance after obtaining the Ph. D. degree.

As noted previously, with the aid of a newly constructed instrument, the Rational-Experiential Inventory (REI; Epstein et al., 1946; Norris & Epstein, 2000a, 2000b; Pacini & Epstein, 1999b), it is possible to study the effects of individual differences in processing in each of the two modes. Of particular interest is the contribution of each of the modes, uniquely and in combination, for wellbeing and performance in different kinds of activities. Although a promising beginning has been made in this area, there is a need for more extensive research, particularly with the use of objective, rather than self-report, dependent variables.

An important area of research with both practical and theoretical implications is the relation of the two thinking styles to receptivity to different kinds of messages. The one research project that has been completed on this issue (Rosenthal & Epstein, 2000) has produced interesting results consistent with CEST and suggests that it is a promising area for further research. It remains to be determined how each of the processing styles, separately and in combination, is related to receptivity to messages regarding politics, advertising, and health-related behaviors, such as smoking and sexual risk-taking.

An area of particular theoretical and practical importance is the influence of the experiential system on the rational system. As previously noted, this relation can account for the paradoxical irrationality exhibited by humans despite their unique capacity for rational reasoning. The influence of experiential on rational processing is assigned an extremely important role in CEST, equivalent to the influence of the Freudian unconscious in psychoanalysis. It is therefore important, from the perspective of CEST, to conduct further research to demonstrate the influence of experiential on rational processing under various conditions. Relatedly, it is important to test the hypotheses that such influence is often mediated by feelings, the identification of which, accordingly, can be helpful as a first step in controlling the influence of the experiential on the rational system.

Research is needed on the positive contributions of experiential processing to creativity, wisdom, and physical and mental wellbeing. It is important, in this respect, to determine how people can most effectively influence and learn from their experiential systems by communicating with them in their own medium, as illustrated in the case-history that was presented. It will be recalled that Alice, by practicing soaring freely and unaided in fantasy, helped herself to accept the belief, at a deep experiential level, that it is possible to be an autonomous being without fear of rejection in a way that intellectual insight was unable to accomplish. It will be interesting to determine how effective such symbolic rehearsals more generally are as a way of resolving deep-seated conflicts at the experiential level.

SUMMARY AND CONCLUSIONS

Cognitive-experiential self-theory (CEST) is a psychodynamic global theory of personality that substitutes a different kind of unconscious processing system for the Freudian unconscious. Unlike the maladaptive Freudian unconscious, the unconscious of CEST is an adaptive, associative learning system. It is the same system with which higher order animals have effectively adapted to their environments over millions of years of evolution. Because it is a system that learns from experience, it is referred to as the “experiential system”. In addition to an experiential system, humans uniquely have a “rational system”. The rational system is a logical, inferential system that operates with the aid of language. The experiential system can account for the widespread irrationality in the thinking of humans despite their unique capacity for rational reasoning, as it biases conscious thinking automatically and outside of awareness.

The operating principles of the experiential system were described and contrasted with those of the rational system. Although the systems are independent in the sense that they operate by different rules, they nevertheless are highly interactive. The two systems usually operate in synchrony and produce compromises between them, but sometimes they conflict with each other,

resulting in what are commonly referred to as conflicts between the heart and the head. A research program was described that provided support for many of the assumptions in CEST. The implications of CEST were discussed for psychotherapy and psychological research.

It was noted that neither system is superior to the other. They are simply different ways of understanding the world and behaving in it. One system is intimately associated with emotions and adapts by learning from outcomes. The other is an affect-free system that adapts by logical inference. Each has its advantages and disadvantages. Although the rational system is responsible for remarkable achievements in science and technology, it is less well suited for everyday living than the experiential system. Moreover, the experiential system can solve some problems intuitively and holistically that are beyond the capacity of the analytical reasoning of the rational system (Hammond, 1996). The experiential system is also a source of some of humankind's most desirable attributes, including the capacity for passion, compassion, love, creativity, and the creation of art and appreciation of esthetics. However, it is also a source of serious difficulties, including superstitious thinking, prejudice, violence, and, perhaps most important, biasing the rational system so people are unable to think rationally. Thus, the experiential system is a mixed blessing; it is difficult to live with it, but it would be impossible to live without it.

REFERENCES

- Alloy, L. B., & Abramson, L. Y. (1988). Depressive realism: Four theoretical perspectives. In L. B. Alloy (Ed.), Cognitive processes in depression (pp. 167-232). New York: Guilford Press.
- Allport, G. W. (1961). Pattern and growth in personality. New York: Holt, Rinehart & Winston.
- Averill, J. R. (1980). A constructionist view of emotion. In R. Plutchik & H. Kellerman (Eds.), Emotion, theory, research, and experience (Vol. 1): Theories of emotion. New York: Academic Press.
- Bargh, J. A. (1989). Conditional automaticity: Varieties of automatic influence in social perception and cognition. In J. S. Uleman & J. A. Bargh (Eds.), Unintended thought (pp. 3-51). New York: Guilford Press.
- Bargh, J. A., & Chartrand, T. L. (in press). Studying the mind in the middle: A practical guide to priming and automaticity research. In H. Reis & C. Judd (Eds.), Research methods in the social sciences. New York: Cambridge Universities Press.
- Beck, A. T. (1976). Cognitive therapy and the emotional disorders. New York: International Universities Press.
- Bowlby, J. (1988). A secure base. New York: Basic Books.
- Catlin, G., & Epstein, S. (1992). Unforgettable experiences: The relation of life-events to basic

beliefs about the self and world. Social Cognition, 10, 189-209.

Chaiken, S., & Trope, Y. (1999). Dual-process theories in social psychology. New York: Guilford Press.

Denes-Raj, V., & Epstein, S. (1994). Conflict between experiential and rational processing: When people behave against their better judgment. Journal of Personality and Social Psychology, 66, 819-829.

Denes-Raj, V., Epstein, S., & Cole, J (1995). The generality of the ratio-bias phenomenon. Personality and Social Psychology Bulletin, 10, 1083-1092.

Dollard, J., & Miller, N. E. (1950). Personality and psychotherapy: An analysis in terms of learning, thinking, and culture. New York: McGraw-Hill.

Edwards, A. L. (1959). Manual for Edwards Personal Preference Schedule (Revised). New York: Psychological Corporation.

Ellis, A. (1973). Humanistic psychotherapy. New York: McGraw-Hill.

Emmons, R. A. (1986). Personal strivings: An approach to personality and subjective wellbeing. Journal of Personality and Social Psychology, 51, 1058-1068.

Epstein, A. (1989). Mind, fantasy, and healing. New York: Delacorte. (This book is out of print, but copies can be obtained from Amazon.com or from Balderwood Books, 37 Bay Road, Amherst, MA 01002 by enclosing a check for \$18.00, which includes postage.

Epstein, S. (1979a). Natural healing processes of the mind: I. Acute schizophrenic disorganization. Schizophrenic Bulletin, National Institute of Mental Health, 5, 313-321.

Epstein, S. (1979b). The ecological study of emotions in humans. In P. Pliner, K. R. Blankstein,

& I. M. Spigel (Eds), Advances in the study of communication and affect, Vol. 5: Perception of emotions in self and others (pp. 47-83). New York: Plenum.

Epstein, S. (1983). A research paradigm for the study of personality and emotions. In M. M. Page (Ed.), Personality--Current Theory & Research: 1982 Nebraska Symposium on Motivation (pp. 91-154). Lincoln: University of Nebraska Press.

Epstein, S. (1984). Controversial issues in emotion theory. In P. Shaver (Ed.), Annual review of research in personality and social psychology (pp. 64-87). Beverly Hills, CA: Sage Publications.

Epstein, S. (1987). Implications of cognitive self-theory for psychopathology and psychotherapy. In N. Cheshire & H. Thomaes (Eds.), Self, symptoms and psychotherapy (pp. 43-58). New York: John Wiley & Sons.

Epstein, S. (1990). Cognitive-experiential Self-theory. In L. Pervin (Ed.), Handbook of personality theory and research: Theory and research (pp. 165-192). NY: Guilford Publications, Inc.

Epstein, S. (1993). Emotion and self-theory. In M. Lewis & J. Haviland (Eds.), The Handbook of Emotions. New York: Guilford Publications.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. American Psychologist, 49, 709-724,

Epstein, S. (1998). Constructive thinking: The key to emotional intelligence. Westport, CT: Praeger Publishers.

Epstein, S. (in press). Manual for the Constructive Thinking Inventory. Odessa, FL: Psychological Assessments Resources.

Epstein, S., Lipson, A., Holstein, C., & Huh, E. (1992). Irrational reactions to negative outcomes: Evidence for two conceptual systems. JPSP, 62, 328-339.

- Epstein, S., & Morling, B. (1995). Is the self motivated to do more than enhance and verify itself? In M. H. Kernis (Ed.), Efficacy, agency, and self-esteem (pp. 9-29). New York: Plenum Press.
- Epstein, S., & Pacini (in press). A comparison of the influence of imagined and unimagined verbal information on intuitive and analytical information processing. Imagination, Cognition, and Personality
- Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. Individual differences in intuitive-experiential and analytical-rational thinking styles. Journal of Personality and Social Psychology, 71, 390-405.
- Fiske, S. T., & Taylor, S. E. (1991). Social cognition. 2nd Ed. New York: McGraw Hill.
- Freud, S. (1900/1953). The interpretation of dreams. In Vols. 4 and 5 of The standard edition. London: Hogarth.
- Gallistel, C. R., & Gelman, R. (1992). Preverbal and verbal counting and computation. Cognition, 44, 43-74.
- Gordon, R. A. (1997). Everyday life as an intelligence test. In D. K. Detterman (Ed.), Intelligence, a Multidisciplinary Journal. Special Issue: Intelligence and Social Policy. (Guest editor: L. S. Gottfredson), 24, 203-320.
- Gottfredson, L. S. (1997). Why g matters: The complexity of everyday life. In D. K. Detterman (Ed.), Intelligence, a Multidisciplinary Journal. Special Issue: Intelligence and Social Policy. (Guest editor: L. S. Gottfredson), 24, 79-132.
- Hixon, J. G., & Swann, W. B. (1993). When does introspection bare fruit? Self-reflection, self-insight, and interpersonal choices. Journal of Personality and Social Psychology, 64, 35-43.
- Hunter, J. E. (1983). Overview of validity generalization for the U.S. Employment Service. USES Test Research Report, No. 43. Washington, DC: U.S. Department of Labor, Employment, and Training Administration.

Hunter, J. E. (1986). Cognitive ability, cognitive aptitudes, job knowledge, and job performance.

Journal of Vocational Behavior, 29, 340-362.

Hunter, J. E., & Hunter, R. F., (1984). Validity and utility of alternative predictors of job

performance. Psychological Bulletin, 96, 72-98.

Jefferson, L. (1974). These are my sisters. Garden City, NY: Anchor Press.

Kahneman, D., & Tversky, (1973). On the psychology of prediction. Psychological Review, 80,

237-251.

Kirkpatrick, L. A., & Epstein, S. (1992). Cognitive-experiential Self-theory and subjective

probability: Further evidence for two conceptual systems. Journal of Personality and Social

Psychology, 63, 534-544.

Kohut, H. (1971). The analysis of the self. New York: International Universities Press.

Lazarus, R. (1991). Emotion and adaptation. New York: Oxford University Press.

Markus, H., & Nurius, P. (1986). Possible selves. American Psychologist, 41, 954-969.

Miller, D. T., & Gunasegaram, S. (1990). Temporal order and the perceived mutability of events:

Implications for blame assignment. Journal of Personality and Social Psychology, 59, 1111-

1118.

Miller, D. T., Turnbull, W., & McFarland, C. (1989). When a coincidence is suspicious: The role

of mental simulation. Journal of Personality and Social Psychology, 57, 581-589.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality:

Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure.

Psychological Review, 102, 246-268.

Morling, B., & Epstein, S. (1997). Compromises produced by the dialectic between self-verification

and self-enhancement. Journal of Personality and Social Psychology, 73, 1268-1283.

- Murray, H. A. (1938). Explorations in personality. New York: Oxford University Press.
- Murray, H. A. (1943). Thematic Apperception Test manual. Cambridge, MA: Harvard University Press.
- Nisbett, R., & Ross, L. (1980). Human inference: Strategies and shortcomings of social judgment. Englewood Cliffs, NJ: Prentice Hall.
- Norris, P., & Epstein, S. (2000a). The measurement of analytical and intuitive thinking styles with a short form of the Rational-Experiential Inventory. Manuscript submitted for publication.
- Norris, P., & Epstein, S. (2000b). [Objective and subjective correlates of rational and experiential thinking styles]. Unpublished raw data.
- Pacini, R., & Epstein, S. (1999a). The interaction of three facets of concrete thinking in a game of chance. Thinking and reasoning, *5*, 303-325.
- Pacini, R., & Epstein, S. (1999b). The relation of rational and experiential information processing styles to personality, basic beliefs, and the ratio-bias phenomenon. Journal of Personality and Social Psychology, *76*, 972-987.
- Pacini, R., Muir, F., & Epstein, S. (1998). Depressive realism from the perspective of cognitive-experiential self-theory. Journal of Personality and Social Psychology, *74*, 1056-1068.
- Pavlov, I. P. (1941). Conditioned reflexes in psychiatry (W. H. Gantt, Trans.). Madison, CT: International Universities Press.
- Rogers, C. R. (1951). Client-centered therapy: Its current practice, applications, and theory. Boston: Houghton-Mifflin.
- Rosenthal, L., & Epstein, S. (2000). Rational and experiential thinking styles as related to receptivity to messages syntonic and dystonic with thinking style. Unpublished manuscript, University of Massachusetts at Amherst.

- Smith, E. R., & DeCoster, J. (2000). Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. Personality and Social Psychology Review, 4, 108-131.
- Swann, W. B., Jr. (1990). To be known or to be adored: The interplay of self-enhancement and self-verification. In R. M. Sorrentino & E. T. Higgins (Eds.), Handbook of motivation and cognition: Foundations of social behavior (Vol. 2, pp. 408-448). New York: Guilford.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and wellbeing: A social psychological perspective on mental health. Psychological Bulletin, 103, 193-210.
- Tolstoi, L. (1887). My confession. NY: Crowell.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. Science, 185, 1124-1131.
- Tversky, A., & Kahneman, D. (1982). Judgments of and by representativeness. In Kahneman, D., Slovic, P., & Tversky, A. (Eds.), Judgment under uncertainty: Heuristics and biases. New York: Cambridge University Press.
- Yanko, J., & Epstein, S. (2000). [The intuitive knowledge of ratios in children without formal training in ratios and the interference produced by requesting explanations]. Unpublished raw data.

Table 1.

COMPARISON OF THE EXPERIENTIAL AND RATIONAL SYSTEMS

<u>EXPERIENTIAL SYSTEM</u>	<u>RATIONAL SYSTEM</u>
1. HOLISTIC	1. ANALYTIC
2. EMOTIONAL: PLEASURE-PAIN ORIENTED (WHAT FEELS GOOD)	2. LOGICAL: REASON ORIENTED (WHAT IS SENSIBLE)
3. ASSOCIATIONISTIC CONNECTIONS	3. CAUSE-AND-EFFECT CONNECTIONS
4. MORE OUTCOME ORIENTED	4. MORE PROCESS ORIENTED
5. BEHAVIOR MEDIATED BY "VIBES" FROM PAST EXPERIENCE	5. BEHAVIOR MEDIATED BY CONSCIOUS APPRAISAL OF EVENTS
6. ENCODES REALITY IN CONCRETE IMAGES, METAPHORS, & NARRATIVES	6. ENCODES REALITY IN ABSTRACT SYMBOLS, WORDS, & NUMBERS
7. MORE RAPID PROCESSING: ORIENTED TOWARD IMMEDIATE ACTION	7. SLOWER PROCESSING: ORIENTED TOWARD DELAYED ACTION
8. SLOWER TO CHANGE: CHANGES WITH REPETITIVE OR INTENSE EXPERIENCE	8. CHANGES MORE RAPIDLY: CHANGES WITH SPEED OF THOUGHT
9. MORE CRUDELY DIFFERENTIATED: BROAD GENERALIZATION GRADIENT; CATEGORICAL THINKING	9. MORE HIGHLY DIFFERENTIATED; DIMENSIONAL THINKING
10. MORE CRUDELY INTEGRATED:	10. MORE HIGHLY INTEGRATED

**DISSOCIATIVE, ORGANIZED IN PART BY
EMOTIONAL COMPLEXES (COGNITIVE-
AFFECTIVE MODULES)**

**11. EXPERIENCED PASSIVELY AND
PRECONSCIOUSLY: WE ARE SEIZED
BY OUR EMOTIONS**

**12. SELF-EVIDENTLY VALID:
"EXPERIENCING IS BELIEVING"**

**11. EXPERIENCED ACTIVELY AND -
CONSCIOUSLY: WE ARE IN
CONTROL OF OUR THOUGHTS**

**12. REQUIRES JUSTIFICATION VIA
LOGIC & EVIDENCE**