# DISCONTINUITY THEORY: COGNITIVE AND SOCIAL SEARCHES FOR RATIONALITY AND NORMALITY-MAY LEAD TO MADNESS

Philip G. Zimbardo

## I. Overview

A theoretical framework is presented to understand the fundamental process of adapting to experiential discontinuities that are of personal significance to one's self-concept. The central dynamic of this approach is the motivation triggered by perception of a discontinuity, which is defined as a violation of expectation in any domain of functioning highly valued by the self. Such discontinuities may arise from the experience of failures, deficits, or transformations in intellectual, social, sexual, sensory, physical, or career domains. The motivation to understand the cause of a discontinuity, and to appear rational to one's self and others, generates a cognitive search process, while the motivation to appear normal, to be like others, generates a social search process. A behaviorally oriented search may be generated to take actions to suppress the arousal and deflect or ignore the distress associated with discontinuities. Although these three search processes are variants of what makes humans smart, connected, and functional, they may become biased in their operation in ways that distort their typically adaptive use. When that happens, various forms of social pathology and psychopathology may emerge in people without evident premorbid dispositions. These pathologies are referred to as aspects of "madness." This broad term is used to cover a continuum from ordinary irrationality, fears, anxieties, obsessions, compulsions, addictive behaviors, prejudice, and mass hysteria, to more extreme forms of mental disorders such as phobia, paranoia, and depression. Direct links are posited between the kinds of search process biases activated in some people and the specific forms of pathology that appear as people try to make sense of, or cope with, their discontinuity.

This chapter first details the assumptions and principles of Discontinuity Theory, elaborates on the search processes and their biases, and relates their rigid use to predictable symptom development in the first stages of the transformation of ordinary people becoming "mad." A variety of case studies then illustrate many of the interesting features and wide-ranging implications of this approach in everyday life. Next, a series of experimental investigations are presented that were designed to test predictions about the operation of several kinds of discontinuities and associated search biases. The chapter concludes by considering the ethical issues raised by this research and outlines procedures used to reconcile them.

The model I've developed blends constructs from cognitive and social psychology with those from clinical psychology, and its research foundation revives a dormant paradigm of experimental psychopathology (Kietzman, Sutton, & Zubin, 1975; Maser & Seligman, 1977). The reason for this integrated approach is that my starting point is the ordinary person faced with a serious challenge to his or her basic sense of self-identity and self worth (Markus, Cross, & Wurf, 1990; Steele, 1988). That Actor resorts to a host of strategies and tactics to achieve the goal of re-establishing internal and external equanimity—actions that cut across any of our traditional disciplinary boundaries. A scientific understanding of them demands a holistic orientation based on a wide-ranging psychological foundation.

A paradox that emerges from this approach is that while innovation and scientific curiosity are induced by discontinuities that lead to seeking new meanings and understandings, some personal searches triggered by discontinuities may follow a twisted path that ends in madness of various kinds. It will be instructive to compare the objective search of the empirical scientist guided by the canons of the scientific method with the egocentrically biased search of a naive theorist seeking to confirm hypotheses with selected evidence and distorted validity checks (Ross & Sicoly,1979; Skov & Sherman, 1986).

Before turning to the detailed exposition of this approach, let's consider its relevance in making sense of a recent report from the U.S. Secret Service about the profiles of political assassins (Dedman, 1998). This new study in "Preventing Assassinations" concludes that the 83 people who attacked or tried to attack an American political figure or celebrity in the past 50 years fit no common physical or psychological profile (Fein & Vossekuil, 1997). Rather, the strongest pattern that emerged from an analysis of their recent experiences is that nearly all had suffered from a recent trauma, such as a marital breakup or job loss. While these "discontinuities" are experienced daily by many ordinary people (see Meyer, 1995), they led to a "downward spiral" in the lives of those who became assassins. The report noted that "relatively few suffered from serious mental illnesses that caused their

attack behaviors" (Dedman,1998, p. A6). Instead of labeling such individuals as "irrational" or "crazy," the Secret Service report argues that it is more productive and accurate "to examine a chain of thinking that leads a person to see assassination as an acceptable and necessary action, and to attend to behaviors that may precede an attack" (Dedman, 1998, p. A6).

Let's turn now to do just that, to examine chains of thinking and acting that may lead ordinary people to do extraordinary things in their lives as they grapple with significant personal discontinuities, such as loss of jobs, spouses, status, virility, and physical functioning, and of course, the divorce, illness, and death of loved ones.

## II. **Discontinuity Theory**

Man never reasons so much and becomes so introspective as when he suffers: since he is anxious to get at the cause of his sufferings . . . . When [one] is happy, he takes his happiness as it comes and doesn't analyze it, just as if happiness were his right.
                    -Luigi Pirandello, Six *Characters in Search of an Author*

Do you know what you have done? [Sherlock Holmes asked Sigmund Freud] You have succeeded in taking my methods—observation and inference—and applied them to the inside of a subject's head. [Freud replies to Holmes]: Yet, what I have surmised might be totally erroneous, for you yourself have noted the dangers of reasoning with insufficient data at one's disposal.

                    -Meyer, *The Seven Percent Solution*

—Techniques need to be devised to discover and recognize the indelible imprints that discontinuous perturbations invariably leave behind.
                    -Klauder, 1978

I am sure that you, like me, live your daily life relying on a set of deterministic operating assumptions of lawfulness, regularity, consistency, and continuity. It is curious that we do so despite functioning in a world filled with randomness, coincidence, chaos, and discontinuity. The human mind seems to have evolved to discover causes among correlated events, correlations among coincidentally arranged events, patterns amid flux, and structure where ambiguity resides (Chapman & Chapman, 1967,1969; Hamilton, Dugan, & Trolier, 1985). Noticing an effect, we infer its cause or we construct an attributional analysis that gives it causal significance ( Jones & Davis, 1965; Hastie,1985; Heider, 1958; Kelley, 1967,1971; Nisbett & Ross, 1980; Proudfoot & Shaver, 1975). Imposing such cognitive organization on

our experiences makes the new familiar, the confusing understandable, and structures the transient or scattered into neat mental categories. This process gives rise to a comforting sense of predictability and welcome to its companion, the illusion of control (Geer, Davison, & Gatchel, 1970; Langer, 1975).

Yet the brain is also designed to attend to change, to detect novelty, to orient with surprise to sudden perturbations in our environment, in short, to dishabituate in a moment's notice to anything that is new to us. Even before we are consciously aware of an anomalous stimulus event, the brain registers its presence by the P300 electroencephalogram (EEG) "surprise" wave pattern (Donchin, 1981; Donchin & Coles, 1988). All novel stimuli, change, discontinuities, and perturbations get fast-tracked to our attention center because they carry the potential for danger or opportunity, until proven otherwise, and then we can put them out of mind by silently engaging automatic habituation processes. There is obvious evolutionary significance to developing "discontinuity detectors" and to acting rapidly and wisely on the information they offer for aiding survival to environmental threats, adjusting to homoeostatic imbalances, and discovering unexpected pleasures. However, although this mind machine works wonderfully most of the time for most of its users, sometimes the wrong modules are engaged when dealing with input from its discontinuity detectors (Fodor, 1983; Ornstein, 1986). Then the mind generates premature conclusions based on minimal, readily available information, mistakes correlations for causation, or uses familiar, but inappropriate, heuristics for dealing with new experiences (Massad, Hubbard, & Newtson, 1979; Tversky & Kahneman, 1973).

Discontinuity Theory is in part a formalized attempt to recognize and investigate some consequences of such curious aspects of the human experience and the fallibilities of our usually reliable and trustworthy minds (Ross, 1977, 1978). Starting with a few basic assumptions, the theory elaborates the processes by which perception of an anomalous experience triggers a motivational state that drives a host of reactions at various levels of functioning. After outlining the main features of this approach, I expand on the nature and operation of discontinuities, examine in detail the primary reactions triggered by some kinds of discontinuities, and conclude this section by considering how "madness" may become an unintended consequence, or by-product, of the very attempt by some people to appear rational and normal to themselves and others.

## A. BASIC ASSUMPTIONS AND PRINCIPLES

The theory starts with some basic assumptions about the three fundamental human needs involved and their motivating effects. It also depicts the

nature and varieties of discontinuities that can impact on human behavior, and spells out the relationships between cognitive and social needs and processes of rationality and normality. After describing special features of reason-based choices for the explanations and misattributions generated to account for discontinuities, this section concludes by showing how "madness," or initial forms of psychopathological symptoms, may emerge from distortions of the operation of the principles underlying rationality and sociability.

### 1. The Needs to Belong, to Know, and to Gain Esteem

Two of the most basic needs of our species, beyond those of biological and safety concerns, are the cognitive need to know and the social need to belong. In Maslow's (1970) hierarchy of needs they are sandwiched around esteem needs. Discontinuity theory assumes that some kinds of experienced discontinuities directly challenge personal esteem, and when they do, the needs to know and to belong are activated. The *need for esteem* is the individual's generalized need for confidence, sense of personal worth and competence, self-esteem, and respect of others (Brown, 1998; Markus, 1977; Steele, 1988).

The *need to know, or to understand,* is the desire to make sense of all human experience, to understand how the world functions, how stimuli are associated, how consequences emerge from prior events, and how the future can be predicted by knowing past and present circumstances. This cognitive need is the driving force in our constant, often automatic, processing of information bombarding us from within and without (Bargh, 1982; Cacioppo & Petty, 1982; Wegner, 1989). It is our dynamic travel guide that finds patterns in apparent randomness, extracts meaning from ambiguity, gives coherence to chaos, and discovers causal mechanisms that locate anomalous events and relationships within explanatory networks (Frankl, 1970).

The *need to belong* is the basic human desire for attachment, connection, and affiliation to others who will recognize, accept, and love us (Baumeister & Leary, 1995). This bonding demands that people seek contact with others by going beyond the confines of self-focus to make and strengthen the human connection. It leads to behaving in ways that are socially approved by significant others in one's life space, and for those actions to be evaluated as situationally appropriate. Much research has established that social isolation is a major risk factor in a range of pathologies, while having a sense of being enmeshed in a supportive social network contributes to one's mental and physical well-being (Cohen & McKay, 1983; Gottlieb, 1981;

House, Landis, & Umberson,1988; Kulik & Mahler, 1989; Pilusuk & Parks, 1986; Taylor, 1986).

In my model, the role of social isolation figures prominently in the development of delusions and other psychopathological symptoms. First, the isolated person may be unaware of the kinds of prevailing explanations that would be socially acceptable in many reference groups, and thus she or he could utilize them without prejudice. Second, once explanations are initially composed, there are not available social correctives on their reasonableness or logicality. Third, without a particular audience in mind when forming or refining explanations, they may become loosed from the moorings of social constraints and travel far from known shores of reality. Fourth, the absence of ready affiliations eliminates the option of seeking normalizing functions to cope with the threats posed by discontinuities when the rationalizing function is not working effectively.

In addition to providing a sense of social security and enhancing selfworth, the need to belong provides the basis for social comparison (Festinger, 1954; Miller & Zimbardo, 1966; Schachter, 1959; Zimbardo & Formica, 1963). It is by means of social comparison processes that we assess our abilities, opinions, values, and emotions when objective standards are unavailable or vague. Less commonly recognized is the value of engaging social comparison processes as a prophylaxis against autistic thinking in which one's personal conception of reality (including beliefs, wishes, and fantasies) can become the criterion for assessing the validity of external reality (Johnson & Raye,1981). This is a reversal of the usual basis of reality testing in which validity checks and constraints on the appropriateness of one's thoughts, feelings, and actions come from evidence in the external physical world and consensual validation from one's social world. When that idiosyncratic thinking occurs chronically, it becomes the basis of the "psychotic pursuit of reality," using internal reality as the foundation for assessing external reality (Meyer & Ekstein, 1970). Less extreme forms of this distorting, denying, or disregarding physical-social reality can be found under conditions of high ego involvement, sensory deprivation, daydreaming, taking poetic license for creativity, and other mental states that overtax or disengage ordinary consciousness (Kihlstrom, 1984).

### 2. The Motivating Effects of Discontinuities

> The grand thing about the human mind is that it can turn its own tables and see meaninglessness as its ultimate meaning.
>
> -John Cage, *Silence*

At the core of this model is the central role played by the perception of a discontinuity as a motivating trigger for informational, social, or behavioral

search processes. A *discontinuity* is here defined as a perceived change in the level or quality of one's functioning in a domain that is important for one's sense of self-worth or self-image. Such discontinuity involves an awareness of a noticeable deviation from an expected normative standard of how one usually feels, thinks, perceives, or acts—in those areas that figure into the calculation of one's global sense of self. As that self-involvement increases, a threshold is reached when the discrepancy qualifies as a "significant" violation of an expectation. We know that expectancies represent beliefs about some future states of affairs, and "expectancies constitute the fundamental building blocks on which behavioral choices are built" (Olson, Roese, & Zanna, 1996, p. 211). The four dimensions on which expectancies vary, and thus their violations correspondingly vary in personal significance, are certainty, accessibility, explicitness, and importance (Olson et a1.,1996). In the current theory, discontinuities assume special personal relevance when the expectancies they rest on are held with certainty and confidence, are accessible or readily activated, become explicitly generated, and have motivational importance through relevance to one's needs and values as well as to their scope of connectivity to other expectations.

A violation of expectation with those attributes is obviously a discontinuity that holds special significance for the integrity of the self-construct. Motivations arise to reduce the confusion, threat, and distress that such discontinuities engender. It is assumed that negative affect is aroused as a correlated consequence of the cognitive disruption produced by discontinuities. Attempts are made to reestablish harmony, intrapsychic and interpersonal, as well as to restore any balance between self and nature or self and spiritual forces, which existed prior to the anomalous experience. Research has found that "expectancies can play an important role in triggering individuals to undertake causal analyses" (Pysczynski & Greenberg, 1981, p. 36). In addition, more thorough attributional search processes are activated for unexpected than expected events. Expectancy violations can generate a range of reactions from humor to horror, depending on context, medium of exposure, ease of clarification, and other situational and dispositional variables (Deckers & Devine, 1981; Lefcourt & Martin, 1986; Rothbart, 1976; Suls, 1972, 1983). Expectancies also color our interpretations of social issues, our framing of social problems, and interpersonal relationships (Burgoon, 1993; Jussim, 1990a,b).

Violations of expectations come in many forms, each of which typically elicits characteristic affective reactions. Consider the following array of some V.O.E. types.

*1. Misfortune:* Distress at unexpectedly negative outcome, bad luck.
2. Good *fortune:* Joy at unexpectedly positive outcome, good luck.

*3. Magic:* Amazement at magician's "trick" that defies beliefs about physical reality or human limitations.

*4. Miracle:* Awe (fear, reverence) at unexpected positive outcome that has no known material, physical, natural causal explanation, thus assumed to involve spiritual intervention.

*5. Humor:* Laughter at, enjoyment of, joke's punch line or visual comedy routine that does not follow from initial premises; when its puzzle is resolved, we laugh, when not resolved, we are confused, "don't get the joke."

*6. Horror:* Fear revulsion, terror at sudden negative, violent, destructive outcome, which violates context expectations created in plot, or in one's experiences, or from traditional "standards of decency."

*7. Natural disasters, cosmic perturbations:* Fear, awe, confusion by experiencing earthquakes, eclipses, volcanic eruptions, and other such calamitous events when they are unpredicted.

*8. Social Deviance:* Rejection of, anger at, a person or group for violating social norms of situationally appropriate, relevant behavior.

*9. Aesthetic Value Violation:* Shock, anger, resentment, disbelief, when art challenges established way of representing, viewing, reality (such as the early labeling of Impressionist painters as crazy "Fauvists").

Informational search activities may then be initiated to understand what is happening, what is being experienced, how to explain and label the discontinuity, and to decide what personally relevant meaning it may convey. Information-gathering strategies and hypothesis-testing processes are cognitively and socially complicated since they may seek confirmation or disconformation, be influenced by action agendas, limited by cognitive skills and access to evidence (see Klayman & Ha, 1987; Skov & Sherman, 1986; Snyder, Campbell & Preston, 1982; Trope & Bassok, 1982, 1983).

A memory search seeks historical comparisons, analogies, correlated similar occurrences of negative reactions and prior unusual causes, along with other reasoned analyses. There is an emotional asymmetry between positive and negative affect (Taylor, 1991). Negative outcomes elicit more extensive analytic reasoning than do positive ones (Schwarz, 1990), and are more likely to promote attributional searches (Weiner, 1985). Because negative emotions often arise under circumstances that threaten well-being and thus require immediate coping (Ellsworth & Smith, 1988; Taylor, 1991), they demand more precise identification of the cause of the current affective state. Faced with the negativity of a discontinuity, the person should engage a causal search focused on single, isolated causes for which a coherent remedial action can be taken, rather than the more diffuse, generalized search typical in identifying causes of positive emotions (Liu, Karasawa, & Weiner, 1992). We also know that having a negative affective expectation

will help to create correspondingly negative affective experiences (Wilson, Lisle, Kraft, & Wetzel, 1989). This cognitive search may be complemented by a concurrent situational analysis that checks out the social and physical environment, along with an assessment of the condition of one's body/health/general status for causal clues.

However, when the discontinuity is perceived as having positive, favorable effects (such as an unexpected promotion or prize), there is not the same urgent need for understanding or action taking. Indeed, for many people thinking analytically about one's good fortune seems to dilute its pleasure. So, as Pirandello (1923) reminded us in the opening quote, we accept such delightful anomalies as due us, to be accepted at face value without question. That view of the passive processing of positive discontinuities is supported also by John Stuart Mill (1873) who says: "Ask yourself whether you are happy, and you cease to be so."

Can discontinuities that bring sudden considerable benefits, such as winning millions of dollars by chance, or unexpected fame from one's actions, ever have negative consequences and symptomatic outcomes? Although they are less likely to do so than those that threaten loss of control over important spheres of functioning, "positive discontinuities" may have similar negative consequences depending on how the discontinuity is interpreted. I am aware of one such case of a young journalist who happened to be in his home neighborhood in Watts, California, when a dramatic racial uprising erupted in *1965*. Since he was African American, he was able to cover the story at a time when white reporters were banned from the area by the residents. Bob Richardson, though not actually a reporter, was given permission to send in daily reports to his boss at *The Los Angeles Times*. The stories won the prestigious Pulitzer prize for investigative reporting shared by *The Times* and Richardson, and he was awarded reporter status—the first Black reporter on a major urban newspaper. From there it all went precipitously downhill for the neophyte reporter. He did not feel he deserved the acclaim, was lucky to happen to be on the scene at the right time, and was unable to follow up that prize-winning journalism with other important stories. He did not even attend the Pulitzer Prize ceremony, began drinking, taking drugs, missing work, not meeting deadlines, got fired, lived as a homeless person on the streets for years, hungry and penniless. His story became known only after a young screenwriter, Michael Lazarou, writing a script for a movie about the Watts riots, tracked Richardson down to invite him to be his consultant. Being able to relive his experiences at a temporal distance from them, and to share his sense of not deserving what he had earned, helped Richardson to get back on track and come up from the gutter to a more productive, if low-key, lifestyle. This moving story about the downside of a fame-based discontinuity was

presented in a special television show on ABC-TV's 20/20 program (August 3, 1990).

The perception of a discontinuity is usually at a level of conscious awareness, although it can also occur at preconscious or unconscious levels of awareness (Kihlstrom, 1985; Marcel, 1983). We know that actors may behave in predictable ways, yet not have access to their underlying mental processes, for any number of reasons (Nisbett & Wilson, 1977). Some people may respond with strong, immediate emotional reactions before they know why they are "acting without thinking." LeDoux (1989, 1995) speculates that they may be overly emotional because the direct response of their amygdala is stronger than the cortex's slower ability to constrain it with rational interpretations. He argues that this same process may trigger "mindless acts of aggression." The amygdala has recently been shown (on PET scans) to respond more strongly to externally stimulated emotional stimuli than to memory-generated emotions (Reiman et al., 1997). Thus, we may become aroused without knowing why for many reasons. Some of that unexplained arousal may become discontinuities of note.

Freud's (1946) repression model is consistent with aspects of Discontinuity Theory. It contains two sources of discontinuity and a uniquely psychodynamic way of coping with each of them. The initial discontinuity resides in the conflict between feeling strong biologically driven (libidinal) impulses and recognizing socially learned constraints on their expression (superego). One's positive self-regard is threatened by experiencing these sexual and aggressive impulses, and that is the primary discontinuity. Repressing that conflict removes it from consciousness and obviates attempts to deal with it directly. The second source of discontinuity occurs later on when the person confronts a seeming innocuous situational stimulus that directly or symbolically is associated with the potential satisfaction or expression of that libidinal impulse. A state of anxiety is activated, as a signal system warning that a repressed conflict is about to emerge into consciousness. The strong autonomic response with diffuse bodily effects that occurs is clearly a negative affective state. The dominant response to that unexplained arousal, that we label as anxiety, is to socially isolate one's self from others since the reaction seems situationally inappropriate (see Bromberg, 1968; Sarnoff, 1971). By contrast, the arousal of high levels of fear in response to an objective, external source of anticipated bodily threat activates needs for affiliation (Sarnoff & Zimbardo, 1961).

In the Freudian model, this anxiety is coped with by activating any of a host of defense mechanisms that diffuse, dampen, or misdirect its impact. This second source of discontinuity is really between cognitive and affective systems that, up to this point, have been isolated by repression mechanisms. The anxious person is experiencing sudden, strong, negative affect without

cognitions about sources justifying such heightened arousal. Pathology results in this psychodynamic model only when anxiety becomes so chronic that defense mechanisms are overused or improperly developed to start with, and the individual's coping system is overextended.

*a. Functions of Discontinuity Explanations.* Why is it important to seek to explain discontinuities rather than to conceal them by repressing or suppressing them? This is where the discontinuity model differs from the Freudian account in emphasizing the reason-based nature of a search for explanation rather than a reason-repressing process. Consider the following set of functions served by discontinuity explanations; it is these functions that drive the search mechanism:

1. To establish the origin of a discontinuity as either internal, in one's mind or body, or external, "out there"

2. To establish one's relationship to the event as either accidental, coincidental, or causally implicated

3. To reduce the mystery created by a discontinuity, by locating it in a familiar scenario with a known label

4. To minimize the potential threat discontinuity poses by understanding its origins and consequences

5. To determine whether discontinuity is transient or likely to recur

6. To distinguish between consensually validated experiences, shared by others, and idiosyncratic ones, unique to one's self, as in the difference between illusions and hallucinations

7. To discover how to prevent, avoid, escape, minimize, or overcome the discontinuity's impact

8. To activate self-directed interventions to cope with the anxiety the discontinuity generates

9. To respond to the problem-solving challenge that all discontinuities pose

These activities overlap with the basic goals of the scientist and the clinical practitioner: to describe, explain, predict, and control behavior, as well as to take therapeutic actions to improve functioning. The key difference lies in the greater efforts scientists invest in maintaining an objective detachment, in using the scientific method as protection against uncontrolled observations, biased search for relevant data, and also premature and inflexible conclusion drawing.

The ordinary person in the throes of dealing with a subjectively significant discontinuity does not have the training, the luxury of reflection time, nor the detached perspective of the scientist. Instead, she or he begins as a biased observer, selectively attending to available and especially salient evidence, making sampling errors, integrating various data sources without

adequately weighting the multiple factors involved (Nisbett & Ross, 1980; Ross, 1977; Ross & Sicoly, 1979). The search for explanation then comes to rely on stored schema, readily available heuristics, analogies, folk wisdom, and currently prominent "pop" psychology views, all mixed with limited and faulty reasoning strategies to generate one's personal theory of this discontinuity (see Malle, in press). Under such circumstances, a biased theorist is born, eager to validate that theory by searching only for confirmatory data—likely of course, to be found, theory affirmed, search terminated, and true cause uncovered (sometimes) or not (perhaps more often). Regardless of the actual truth value in the outcome of this discovery process, the beliefs it generates will persevere in the mind of the theorist (Anderson, 1983; Anderson, Lepper, & Ross, 1980; Fleming & Arrowood, 1978; Jennings, Lepper, & Ross, 1981; Lord, Ross & Lepper, 1979; Ross & Lepper, 1980). When that perseverance becomes inflexible and rigidly defended despite contrary evidence, prejudice and paranoia may emerge as but two of the forms of resulting pathological thinking.

Unlike Schachter and Singer's (1962) assumption that the search to understand discontinuities in the form of "unexplained arousal" begins as a general, neutral scanning process, Discontinuity Theory assumes that for adults the experience of sudden arousal with an insufficient immediately available explanation triggers a biased search process. This assumption is predicated on the notion that such arousal signals a loss of personal control, which is a negative state of self-awareness (see Marshall & Zimbardo, 1979; Maslach, 1979). Events perceived as unpredictable and uncontrollable are threatening and anxiety arousing, and demand explanation when they are schema-incongruent (Hastie, 1985; Mineka & Kihlstrom, 1978). A later section will offer experimental data that support this assumption.

*b. Locating the Discontinuity without or within.* An early phase in the search for a discontinuity explanation involves locating its potential cause either in (a) some aspect of external reality—and thus perceivable, or perhaps experienced, by others in that situation; or (b) in the internal reality of one's mental or bodily condition—and thus a private, idiosyncratic cause. Social comparison search and/or interpersonal disclosure helps to determine whether others (especially appropriate companion targets) in that situation are responding similarly to one's self, and also differently from their usual prior state. If they are, the likely cause is having a general effect and a common search for situationally based causes can be instituted, perhaps with help from those others. However, if they are not, then the likely cause is not socially shared, and the effect may be limited, specific, and unique to one's dispositions or state. That realization poses new concerns for our Actor since it marks the self as currently "different," or deviant from comparable others. The discontinuity may then be interpreted as carrying

diagnostic information about something going wrong, or the start of worse things to follow. Under such circumstances, the person experiencing this profound discontinuity may choose social isolation at least temporarily, to figure out what is going on, without the intrusion and concern for others noticing his or her arousal or differentness. Disclosure, which ordinarily might help in the mutual discovery of an external cause, or get one a sympathetic hearing about an internal cause, will be avoided because to now disclose aberrant personal feelings will only heighten the interpersonal contrasts. Several experiments on disclosure of unexplained arousal will be presented that sought to examine disclosure processes among those who were in the midst of experiencing a powerful discontinuity.

Discontinuities are most likely to be noticed if they are sudden, intense, disruptive of ongoing behavior, situationally inappropriate, or especially unusual for the person in a particular domain. These observations lead the Actor to make an inductive leap to a dispositional inference, one that goes beyond the observed evidence to add the baggage of surplus meaning. The behavioral state characterization, "I am *acting* irrationally, or anxiously, or nervously," becomes a state description, "I am irrational, anxious, or nervous." This progression may end up as a trait diagnosis, "I am an anxious person," "I am a boring speaker," "I am an incompetent student." This attributional sequence moves the analysis of the discontinuity away from any original instigating (perhaps external) conditions toward focusing on the self as causal agent. When that happens, the likelihood of coming up with the true cause of the original discontinuity is seriously constrained. That happens because the Actor's thinking suffers a loss of specificity in denoting any situational correlates involved, the time parameters of onset or variation of response, the response channels involved, recall of prior comparable reactions, or assessment of whether others are reacting similarly. It becomes quite reasonable for our Actor then to conclude that the problem is: "something is wrong with *Me."*

In addition to the original, or prime, discontinuity, there are also correlated, secondary discontinuities in physiological reactions, cognitive, emotional, behavioral, and social responding. The Actor may react with changes in one or more physiological channels, such as heart rate increase, respiration changes, tremor, muscle tension, or EEG signs of unusual brain wave activity. Or there may be evidence of distractability, distress, or nervousness which is apparent to others who want to know what is wrong. Usual social relationships may become strained as the person focuses inward, avoids self-exposure, and becomes overly sensitive to any social source of further arousal, such as criticism, "prying," or even expectations that life should go on as if nothing had happened. The matter also gets complicated once others are involved since they will also generate explanations for the discon-

tinuity in behavior they are witnessing. In addition, where that behavior is extreme and atypical for the person, such as dramatic mood shifts, memory loss, or overt anger, these others will be motivated to keep up appearances by concealing it from outsiders. This was sadly true among family members of men who were unknowingly suffering from neurotoxic damage from workplace chemicals, as will be described in one of our case studies.

A Machiavellian strategy might also be utilized by those without an adequate causal explanation for their experienced discontinuity. Whether enacted consciously or not, they could attempt to arouse strong, unusual reactions in others so that they are rendered more emotionally comparable. Tactically this could be accomplished in many ways: by spreading warnings about the dangers of violent crime in our midst, environmental pollution, the thinning ozone layer, conspiracies of all kinds, not to mention the imminent abduction by beings from UFOs, and the end of the world as the Millennium approaches (see Jacobs, 1993; Lattin, 1988; Mack, 1995).

A word about the prevalence of conspiracy beliefs in the general population. In a field study of reactions to Oliver Stone's provocative film, *JFK,* we interviewed 53 people on their way into the movie and 54 on their way out, from a middle-class, educated audience (Butler, Koopman, & Zimbardo, 1995). One of our questions asked about the likely conspiracies in the film that might have led to Kennedy's assassination, whereas others asked about likely conspiracies in the lives of the respondents. Remarkably, 64% reported a history of one of more conspiracies in their personal lives, with the most, 42%, reporting conspiracies against them at work (50% before viewing, 35% after viewing the film). Such results add to my belief that there is much "soft-side" madness among otherwise normal people, whose beliefs and symptoms are not extreme enough nor dysfunctional enough to be pathological, but nevertheless, they are on the negative side of the normal-pathological continuum.

There is less harm to be suffered in being mad among madmen than in being sane all by oneself.

-Denis Diderot, *Supplement to Bougainville's Voyage*

The cognitive and social searches may blend when the individual comes up with an explanation that seems reasonable, but is not convincing to others among her or his usual reference groups. In this case, those skeptics will be abandoned and replaced by new alliances who are more willing to accept one's discontinuity explanation. One form of the social search seeks those who are more easily persuaded to accept, or at least tolerate, the "working discontinuity explanation" than can be expected from one's family, friends, or co-workers. This search for approving others who will believe

the unusual discontinuity explanation may be supplemented with a second type of social search for normality by submerging one's self in a subculture that is judged as "deviant" on some societal dimension. And to go a big step further, with sufficient social skill, personal power, or charisma, that person can create a group that endorses the discontinuity explanation as an article of faith, while also willingly acting in ways that this new group leader presents as appropriate and central to the group's identity. This has happened in cases of cult leaders imposing their bizarre beliefs and action rituals on followers under the guise of ordinary operating procedures for that group. One of our case studies will document a recent instance of a cult leader directing his male members to castrate themselves, at a time when he was grappling with problems of strong, unacceptable homosexual feelings—his discontinuity, in my sense of the term (Miller, 1997).

*c. Culturally Constructed Discontinuities.* Our focus thus far has been how an individual Actor attempts to cope with the challenges posed by perceiving a personally significant discontinuity. That level of analysis is appropriate in individualistic cultures, such as in the United States. However, it is possible to take the person off the hook of the "self-is-solely-responsible" for generating acceptable discontinuity explanations. In some collectivist cultures (Marsella, 1979; Triandis, 1994), discontinuities are acknowledged as a source of potential danger to the harmonious functioning of the entire society and not just a personal problem for the individual to cope with in the solitary fashion I have outlined above. Such cultures may develop, and hand down across generations, discontinuity scenarios likely to be experienced along with societal remedies and even preventive strategies. As soon as the first signs of an individual's discontinuity are manifested publically, societal agents take over and intervene with socially sanctioned procedures to restore the harmony disrupted by that discontinuity. Communal treatment rituals always involve the Actor along with all significant others among family and tribal members.

Two examples of this social construction of discontinuity and its treatment come from the Navajo in the United States, and the Nyakusa of Tanzania, Africa. For the Navajo, well-being comes from social harmony as well as harmony between people and nature. When this balanced, ideal state of "hozho" is disrupted, illness is seen as an outcome of the resulting disharmony. The disharmony is a form of evil introduced through taboo violations, witchcraft, overindulgence, or bad dreams. The individual who experiences or reports a disharmony (a discontinuity in our terms) is neither personally responsible, nor at fault for it. Rather, the illness, or evil, is taken as a sign of broader disharmony that must be dealt with at the tribal level with communal healing ceremonies that repair that disharmony, with the ever-present goal of restoring hozho.

Similarly, among the Nyakusa, at the first sign of deviation from the expected norms of harmonious living, communal interventions are swiftly enacted to set the situation right. In this culture, everyone is aware of signs of discontinuities that are violations of natural laws, such as multiple births (since they are common to animals, but rare in humans), sudden death of young people, expressions of strong anger, or any form of illness. The rituals begin with social acceptance of the afflicted person(s) and a search to discover the source of the discontinuity, as it holds the potential for afflicting others and so must be counteracted immediately. Appropriate medicine is administered not only to effect biological change, but to modify the habits, dispositions, and desires of people (namely psychological cures). There is special medicine for anger in husbands, employers, and police, and other remedies to cure thieves of criminal habits. Still other tribal medicines make lonely men and women more attractive, and make those who would be leaders more persuasive. Remarkably, and perhaps as a consequence of these societal explanations and interventions, there was no evidence in this tribe of any behavior that could be classified as "pathological" over the dozen years that anthropologist Monica Wilson (1951, 1962, 1970), studied them extensively (personal communication, September 16, 1971). These examples frame in stark contrast the prevailing situation in most individualist cultures where discontinuities are experienced as personal events that must be coped with and treated at an individual level.

Another current instance of utilizing a prevailing belief system to account for a widespread, shared societal discontinuity is the rise of anti-Semitism in Russia (Reynolds, 1998). Loudly and crudely blaming the country's woes on Jews follows a "time-dishonored" tradition. "Anti-Semitism is as perennial in Russia as the snow. It tends to arrive in force during seasons of economic discontent, and it lurks beneath the surface the rest of the time as stubbornly as permafrost," according to investigative reporter Maura Reynolds (p. A20). Since the Soviet collapse as a world power, the people have been suddenly thrust back into conditions more common in underdeveloped nations, of severe deprivation, crime, lawlessness, and chaos. "As a result, Russian nationalism and its anti-Semitic corollary have become a kind of default ideology" (p. A20).

### 3. On the Nature and Varieties of Discontinuities

Discontinuities come in many shapes and forms. They may be transient events, dramatic first time events, cyclical, or cumulative over some time period. I'll examine how these various forms of violation of expectation influence human behavior patterns.

*a. Expectation Violations in Daily Functioning.* The most commonly experienced discontinuities are those that violate one's expectations about domains related to one's daily functioning. These expectations are based on activities and observations that are routinely made about aspects of the self in relationship to others, to specific tasks, to desired goals, and to a sense of well-being and self-worth. You discover your parent does not love you, you are rejected by those you like and thought liked you, you are shown no respect when you deserve it, you fail when you should have passed or excelled. In other words, you do not perform intellectually, physically, socially, sexually, or athletically as you have come to believe (and take for granted) that you should. If the domain in which this violation of expectation occurs is one that is significant for the individual's sense of self-worth, then it demands attention and some remedial action to cope with the challenge it poses to self-image maintenance. This type of discontinuity is the most basic foundation on which this conceptual model is constructed.

*b. Dramatic First-Time Experiences.* Another form that discontinuities take are first-time events in one's life that are dramatic in their sensory, physical, or psychological impact. Consider someone's first headache or nightmare, the death of a loved one, the sudden divorce of parents, a young girl's first menstrual period or a boy's first nocturnal emission, and a child's first abuse by a parent. Assume further that neither family, friends, nor society provided preparatory information that could mitigate the confusing impact that such powerful events may have on the individual. How then would one understand the nature of these vivid discontinuities? What inferences might be made about the structure of one's social, biological, and physical worlds? It is not unreasonable to suppose that under such dramatic and confusion-eliciting conditions, individuals might generate explanations that are mystical or spiritual, or not bound by conventional rules of reasoning. In addition, we might expect that people would also make "arrangements" with culturally dictated higher forces. They ask to be protected, to prevent recurrences, or to help conceal the fearful experiences from others. Their part of the bargain may involve promises to be good, asexual, penitent, to enact other forms of submission, or even to leave the payback open to the later demands of that higher authority. That deal will always succeed—if the event is transient and the discontinuity does not appear again with any regularity. Then even after gaining intellectual understanding about the nature of the discontinuity later on, the individual may feel secretly or nonconsciously bound for life to pay back on that higher-order contract. That arrangement could lead to a variety of dysfunctional beliefs and ritual actions.

*c. Cumulative Build-up of Discontinuities over Time.* Other discontinuities are not noticed until their impact gradually accumulates over time to

create profound functional deficit or excess. This occurs, for example, with exposure over time to work situations where low levels of neurotoxins are gradually but steadily released from work materials, such as lead paints or plastics. In some instances, OSHA standards are not based on tests of long-term exposure to such chemical pollutants, thus workers, company, and union officials are unaware of this toxic consequence of their work setting. We shall see in one of our case studies how this kind of discontinuity may generate tragic outcomes, such as memory loss, dysphoric mood swings, and violent behavior—which are misattributed to psychological disorders and mistreated as such.

Incipient deafness may also result in discontinuous experiences. Some forms of deafness (conductive deafness) are gradual and continuous in their progression. Consequently, they are often not noticed for a long time, if ever. The person may not realize that deafness is the problem because the auditory mechanisms have deteriorated gradually, and because he or she may have unknowingly started to use lip reading and bodily gestures to fill in what was not heard. In addition, the stigma of deafness may lead to denial among some people even after the first signs of hearing loss seem apparent. This denial may motivate misattributions to psychological causes instead of acknowledgment of their organic origin.

This happened in the case of a college dean who hated to go to cocktail parties even though they were an essential part of the public relations function of his job. The background noise at such parties made it difficult to detect speech patterns, and when someone asked a question about a recent book, review, or article, he was forced to ask them to repeat the question. Believing they thought he was unsure of that information, which any scholar of his stature should know, he found such events increasingly aversive. He was about to quit his post until his wife forced him to acknowledge that his primary problem was his organic deafness (that he was denying because it symbolized old age). His was a condition that required a hearing aid, not a new job.

*d. Transient, Rare Phenomena That Are Shared Collectively.* The most apparent discontinuities come from natural physical phenomena that are rare, irregular, and dramatic in their impact on individuals and collectives, such as comets, eclipses, hurricanes, tornadoes, earthquakes, volcanic eruptions, lightning, famine, and plague. While science now informs most societies about the dynamic properties of the physical nature and natural causes of such discontinuities, in some less scientifically informed cultures, these cosmic discontinuities assume personal relevance, demanding immediate explanation and remedial action.

Some years ago it was reported (Reuters, in *S.E. Chronicle,* 11/23/73) that the Brazilian government was trying to give advance warning to its

Indian tribes of the impending arrival of the comet Kohoutek in order to prevent "a revival of old myths and cults" and to quell their distress. Their concerns were based on the Indians' reactions to an earlier eclipse of the sun. In one tribe the chief demanded his members engage in self-imposed reproductive restrictions, as a pledge made in return for the normalization of the elements. Another tribe, surprised by the eclipse of the sun during their lunchtime, believed they were being punished by the gods for eating too much. They induced vomiting and the tribe began a regularly scheduled fasting ritual. The stuff of myths also comes from this same report, since the warriors in one tribe gathered in the center of the village and sent salvos of flaming arrows toward the darkened sun to light it up again. When the sun reappeared, "the warriors were hailed as heroes for having lit the sun with their arrows." We may assume that future generations will celebrate their wisdom and bravery with a special festive ritual.

There are parallels between this example and the phenomenon of "Cargo Cults." This fascinating social movement fits the development of superstitious behavior practiced by an entire society as a collective behavioral ritual to correct a socially shared discontinuity (see Lawrence, 1964; Strelan,1977; Worsley, 1968). Across vast distances in the Pacific islands of Micronesia, different groups practice similar rituals designed to bring back ships that once appeared filled with bounty and then suddenly vanished—a dramatic discontinuity to be explained and corrected. In earlier times, these ships were sailing vessels exploring the area for treasures; later they were Japanese and then American war ships that occupied and then abandoned these islands during World War 11. A common assumption in all these groups is that the ships were originally sent by their ancestors who filled them with goods for their tribe. But evil men stole the ships and the bounty that really belonged to them. To appease the gods and ancestors, a leader will assert that the cargo will return only if certain tribal actions are taken collectively. These may include destroying crops, burning down the village, migrating to another area, or making any dramatic change of lifestyle that can be taken as a sign of their devotion and sacrifice. Of course, when that action fails to make the cargoes materialize, the leader is deposed or killed, and a new leader with a new solution takes over. What is amazing about this superstitious collective action is that it is so widely practiced and has been going on for decades.

The relevance for our theory is that the discontinuity is socially shared, an ideology constructed as an integrated set of explanations to account for an anomaly, an action sequence put into practice, and when it fails to correct the situation, the entire process is recycled. As with the celebrated case of a failed prophecy of a doomsday cult studied by Festinger, Riecken, and Schachter (1956), the greater the members' commitment to the group's

beliefs, the more postdecisional dissonance will arise when the leader or the group's prophesy fails. The dissonance will then energize new actions to right the wrong. However, in this instance, it is remarkable that after so many replications of failed predictions, the Cargo Cults continue to operate at full strength fueled by the perception of a single discontinuity so long ago.

With education, we tend not to believe that natural disasters are causally related to the self. However, such "primitive" thinking is typical of all of us during the early childhood preoperational period. Piaget (1954, 1977) describes this stage in cognitive development as one in which children engage in egocentric thought that positions them at the center of all phenomena. However, under conditions of stress, or when personally experiencing repeated occasions of natural disasters, adults may revert to such "childish" thought patterns. Just as Job asked his god, "Why me?," we may do likewise when faced with personal tragedy or trauma—of rape, death of our child, ruined crops, or failed ambition, to mention but a few instances. When that question is posed in a subjective form, the answer must be based on some personal qualities of the Actor, or on the operation of mystical forces conceived of as being directed against the individual—and not based on laws of nature or other external considerations.

*e. Categories of Discontinuities.* Discontinuities can be categorized along the following dimensions:

1. Relevance to sense of survival, of self-worth: very significant to relatively insignificant

2. Duration: transient and brief to chronic and permanent

3. Scope: discrete and specific to general and pervasive

4. Onset: sudden to gradual development

5. Source: external (climactic, celestial, environmental, social-situational) to internal (biological, physiological, emotional, mental, behavioral)

6. Occurrence: rare, random, irregular; to cyclical; to recurring and common

7. Perceived hedonic valence: positive to negative

8. Degree of expectation: anticipated to some degree as a feature of a transitional period (into adolescence, for example) to totally unexpected or anomalous occurrence

9. Experiential basis: personally experienced to vicariously experienced

10. Societal preparation: none to much

11. Origins: symbolic or unconscious origins to concrete or consciously acknowledged origins

*f. Relating Memory Processes to Discontinuity Processes.* It is also possible to relate the construct of discontinuity to three basic types of memory processes: semantic, episodic, and procedural (Tulving, 1972,1983). *Seman-*

*tic discontinuity* involves an experience in which one's general knowledge about the world is violated when physical or social "facts" do not occur as expected from previously learned contexts. This schematic violation disrupts routine information processing, thus forcing a heightened awareness of the discrepancy. "What is wrong here?" "What doesn't fit as it should?" are the questions that come readily to mind—to the scientist, the inventor, or the simply curious. *Episodic discontinuity* occurs when a semantic discontinuity becomes self-referential, seen as personally relevant, or containing information that might have predictive value for the individual's well-being. The abstract nature of the observed informational discrepancy assumes personal significance when the individual poses the questions, Why is this happening to ME? or "What does this mean for MY survival, well-being, self-image? Finally, *procedural discontinuity is* the awareness that one does not know or recall the rules of logic or of inferential thinking which are essential for discovering the basis of these semantic or episodic discontinuities. The person believes he or she ought to be able to explain the discontinuity, but can't figure out how to do it effectively. Efforts fail to clarify the situation or correct the disruption in functioning. This may occur because of extreme stress, fatigue, sensory or discontinuity overload, or pressing situational or time demands to generate an immediate and satisfactory explanation to self or others. Of course, another reason that some people are not able to figure out the nature of a given discontinuity is a basic lack of cognitive capacity to engage in such conceptual analyses.

## B. KNOWING IS TO RATIONALITY AS BELONGING IS TO NORMALITY

The mind is a strange machine which can combine the materials offered to it in the most astonishing ways.

-Bertrand Russell, *The Conquest of Happiness*

In this section we will outline three search processes that individuals employ when coping with significant personal discontinuities, the cognitive and social searches and then the behavioral search.

### 1. The Cognitive Search Process

The desire to *know—to understand* the world around us and the inner workings of our minds—is a fundamental need of homo sapiens. Some would argue that the search for meaning is a powerful human drive (Frankl, 1970). Typically, it is realized through thought processes grounded in ratio-

nality. Under most conditions, intelligent and educated people make use of logical reasoning, rules of inference, heuristics, analogies, accepted canons of evidence, and tentative conclusion drawing based on observations that are open to correction by better data. We learn to see and represent the world conceptually according to the way "it really is" by not always accepting the phenomenal reality of perceptual experience. This change from perceptually driven views of the world to conceptually driven ones is a developmental landmark that gets elaborated as children develop "foundational theories"—frameworks for initial understanding—to explain their experiences of the world (Carey, 1985; Wellman & Gelman, 1992). Rationality differentiates analytical thinking, "I think, therefore I am," from solipsistic thinking, "I think of it, therefore *it is*." Formal education transforms magical, animistic, solipsistic thinking into reasoned analysis (cf. Bruner & Goodman, 1947). We use evidence to substantiate our beliefs, and other people to consensually validate and approve our conclusions. Moreover, we are motivated to seek reasonable causes to account for experienced effects, and to generate causal explanations that are both analytically "correct," and socially "right" rationalizations (Aronson, 1968).

Because of the centrality of this need to know and understand, it becomes vital to our sense of self-competence that we appear to be rational to ourselves and to significant others. We put ourselves at risk for being perceived as not rational, as "ir-rational," when we are unable to generate adequate explanations for discontinuities, or we fail to discover causes that account for powerful effects currently being experienced. As one moves closer to recognizing or experiencing that aversive state of irrationality, even greater mental energy is directed toward the internal search mission for rationality.

Paradoxically, there comes a point when cognitive-emotional resources become overtaxed and the search becomes truncated, ending with an irrational conclusion that is rigidly defended. Resources become limited when the individual is dealing simultaneously with the motivations aroused by the initial discontinuity, the looming failure of the need to understand the whys of this experience, and perhaps exhaustion of one's usual modes of rational analysis. At the same time, there may be increasing concerns about what others will think of this peculiar state of affairs.

Consider, for example, the case of an assistant professor whose whole life was entirely centered around teaching and research, but who was then told by colleagues that his chances for tenure were not good. It was suggested to him that a face-saving option to the potential failure of his tenure evaluation, and its associated stress, would be simply to decline to come up for that problematic evaluation. But by taking that option, the candidate rejected himself. Doing so denied him the possibility of expressing his rage

outward toward an unjust system or unsupportive colleagues. Who could he then blame for this discontinuity? At some level, only himself. This self-blame redirects the negative affect inward, and adds a secondary emotional load to attempts to make sense of the situation and take constructive action. (In this real-life example, such a scenario contributed to the sudden onset of this young man's serious mental disorder.)

There comes a point in the cognitive search process when a systematic, rational search is transformed into accepting any explanation which seems minimally plausible, justified by any spurious, perceptually salient, or cognitively primed data. Once such an explanation is put in place, then defenses are erected against considering alternative hypotheses. Now the Actor has switched from being a tentative hypothesis tester to a dedicated advocate for this new "theory."

> Self-knowledge is a dangerous thing, tending to make man shallow or insane.
> -Karl Shapiro, *The Bourgeois Poet*

Under most circumstances the explanation advanced is accepted, or at least tolerated, by others if it fits their general understanding of the person and the situation. But sometimes it doesn't, and instead of modifying it to make it more socially acceptable, the person may insist on telling the story without making functional adjustments. When significant others disagree with the conclusions of this "totalitarian ego" (Greenwald, 1980), and sense its rigidly defended fortress, they judge the person to be irrational. They may then begin to avoid or exclude the person, or classify her or his unacceptable thinking as "psychopathological" in clinical terms, or "crazy," "weird," in lay terms (Lemert, 1962). That negative social response adds to the person's feeling of deviance and social isolation. Another aspect of the social dimension of Discontinuity Theory comes from considering the second need postulated as basic to human functioning, the need to belong and to affiliate with others.

### 2. The Social Search Process

Through the process of *belonging* we are in a better position to establish the normality of our actions, feelings, and thoughts through reference to community standards of acceptability, appropriateness, and desirability. The normative basis of our behavior is usually established via social comparison processes of observing comparable others in similar behavioral settings (Festinger, 1954; Wood, 1989). In contrast to the Why? questions of the rationality-seeking internal search, the normality-seeking external search mission seeks answers to questions, such as: "Who or what is doing this to

me?", "How should I act and what should I feel in this setting?", "Who else is reacting as I am?", and "What are they thinking about me?"

This search may go beyond the rather passive process of merely observing, judging, and deciding on the normativeness of one's reaction and its situational inputs. Instead, it can be transformed into a proactive process, as when detecting discrepancy between self and others, the individual actively tries to modify others' beliefs or actions to be more consonant with his or her own. This normative discrepancy can also be handled in other ways, by changing reference groups, by giving up on usual or traditional ones perceived as difficult to influence or as exerting too much pressure toward unanimity of behavior. At this point, the person may seek out new groups that seem more open to such "deviant" ideas or actions. With sufficient social influence skills, one can reassert the "normality" of one's unusual reactions by proselytizing for a new social movement, starting a cult-like group, initiating an anonymous Internet chat group around controversial issues or conspiracies and multiple chemical sensitivities, or spreading rumors that create arousal states in others which are similar to one's own.

During World War 11, research on rumor transmission revealed that there was a marked increase in the spread of fear-arousing rumors among soldiers on their way to combat zones, rather than (as might be expected) rumors that reduced the level of already high arousal. But this greater spread of fear-arousing rumors occurred only under conditions of high ego-involvement and high ambiguity (Allport & Postman, 1947; Rosnow & Fine, 1976). By creating and transmitting such highly arousing communications among similarly situated peers, any soldier's extreme fears were normalized by spreading a net of arousal over the entire comparison group.

There are a number of measurable behavioral concomitants of each of these cognitive and social search processes. For Actors focused exclusively on the *internal cognitive search* for explanations of discontinuity, Discontinuity Theory predicts that they will

1. prefer a period of initial temporary social isolation rather than be in the company of others, until a suitable explanation is available to test out;
2. prefer information gathering from experts to social support from family and friends;
3. misattribute unusual psychological reactions to more ordinary biological causes (for example, anxiety may become hunger);
4. misattribute chronic, negative potential causes to reversible, modifiable ones;
5. misattribute unrecognized organic causes of discontinuity to psychological constructs that are familiar or currently fashionable;

6. use intrapsychic defense mechanisms, such as denial, compartmentalization, or intellectualization, rather than those based on interpersonal strategies, such as projection.

By contrast, the Actor enmeshed in the *external situationally-centered social search* for normality will:

1. be more conforming, compliant, and imitative;
2. seek out others who are reassuring and supportive, but not necessarily experts with relevant information;
3. affiliate more with others who are acting "unusual" or in ways comparable to one's state of tension/arousal;
4. mislabel subjectively experienced states, such as anxiety, to objectively specified external dangers, such as fear, which are situationally shared;
5. use defense mechanisms that are primarily interpersonal, such as projection.

When conditions make it difficult for one of these needs to be satisfied, then pressures increase for the other need to take prominence. When an adequate explanation for a discontinuity is not forthcoming, then greater effort will be expended toward normalizing activities. Similarly, if the normalizing function cannot be satisfactorily exercised in a given situation, then we should expect more sustained efforts toward generating rational or rationalizing accounts of the discontinuity. However, when it begins to appear that neither the search for rationality nor normality is functioning effectively, then arousal levels are increased because of new concerns for being perceived as both "ir-rational" and "ab-normal," and thus not comparable to others in one's thinking, feeling, acting. That new high level of arousal can interfere with both reasoned analyses and systematic social search processes. This dual impediment fuels a downward spiral toward more primitive and regressive ways of thinking, rigidified functional fixedness, social isolation, or even socially deviant acts.

It is not clear whether these two search processes occur sequentially, simultaneously, or in an alternating pattern. It is also not clear which process takes initial precedence. That probably depends on the specific type of discontinuity encountered (to be elaborated in the next section); the person's relative hierarchy of needs to know versus needs to belong; features of the situation in which the discontinuity emerges (alone or with others present); priming factors; and any learned tendencies or dispositions toward focusing on analytic or social modes of thinking.

Discontinuity Theory posits that some social affiliations are sought by those experiencing significant discontinuities of various kinds. By doing so, the Actor "normalizes" unusual personal reactions being experienced

privately or enacted publically, to the extent that the group is accepting or supportive of those deviant, exaggerated, or atypical reactions. This change in reference group reduces the Actor's risk of not being able to adequately explain the discontinuity to former peers and enhances general self-esteem through the initial acceptance and positive social comparisons with the new group members.

A recent study offers some interesting support for this prediction by revealing a paradoxical relationship between self-esteem, delinquent behavior, and delinquent peer associations. Jang and Thornberry (1998) found that contrary to traditional analysis, low self-esteem does not lead either to increased association with delinquent peers or to engaging in delinquent behavior, as shown in their multiwave panel study repeated over several years. However, among their large sample of "at-risk" urban adolescents, engaging in delinquent behavior lowers self-esteem (r = -.22), whereas making delinquent associations enhances self-esteem (r = -.30). This general effect holds across gender and racial or ethnic groups, and is even stronger for females and African Americans than for Caucasian male adolescents. The elevated self-esteem that follows associating with delinquents, but not engaging in delinquent behavior, is strongly related to self-acceptance *(r = .76)* and negatively related to measures of self-rejection *(r = -.72)*. Thus, global self-worth of individual "at-risk" adolescents is enriched via this social affiliation, which I would argue entails the search for normality. The authors conclude that normative support from associating with delinquent peers promotes self-esteem possibly through the intervening processes of reflected appraisals and social comparison rather than those of self attribution.

### 3. The Behavioral Search Process

But I will complicate the situation a bit more, by proposing that a third alternative search, the behavioral, may be instituted in place of either the cognitive or social, or at any time when those searches are not satisfactory. Although conceptually less interesting than our dynamic duo, it is likely to be more widely practiced among the less educated general population (especially by those who are not typically given to engaging intrapsychic analyses and complex reasoning) or among the introverted and already socially isolated. The behavioral search, when energized by a significant discontinuity, is concerned not with the "Why?" or the "Who?" questions of the cognitive and social searches, but instead with the "How?" question: "How can my distressing feelings be reduced?" And the answer is relatively easy. The Actor can directly or indirectly deal with the arousal or anxiety

component of the discontinuity by dulling cognitive processing through taking alcohol or drugs, by engaging in a variety of high-intensity physical or emotional activities that justify one's strong feelings, or by immersion in distracting activities that redirect attentional focus away from even thinking about the discontinuity and its precipitates. These mental and emotional activities may create a dissociated state. But in another sense, such a person moves into a state of deindividuation where cognitive controls that usually govern behavior are dumped out of consciousness (Zimbardo, 1970).

Discontinuity Theory thus combines elements of both cognitive dissonance (Festinger, 1957) and social comparison processes (Festinger, 1954) with self-perception theory (Bem, 1972) and also attributional processes (Heider, 1958; Kelley, 1967). The seeds of this approach were evident in a conclusion I advanced in my book on motivational aspects of dissonance theory (Zimbardo, 1969):

> A systematic integration of social-comparison theory (Festinger, 1954), Bern's (1967) provocative self-perception model, and dissonance theory is needed to develop the social implications of this aspect of dissonance generated by inconsistency between a discrepant commitment and concern for evaluation of the self by others.
> (p. 280)

Counter-normative commitments elicit dissonance under high choice—low justification conditions because they are not rational actions given the subjects' lack of awareness of the situational forces impinging on them. However, the usual "rationalizing" dissonance-reduction tactics repeatedly found in such experiments should be undercut when subjects are provided with other information that "normalizes" their discrepant decision. Craig Haney's (1978) dissertation research supported that prediction by showing that the classic dissonance-reducing changes in attitudes (from writing essays contrary to one's initial position) were minimized by social information that several others had also made that same commitment, but were maximized when subjects believed that others had refused to make that commitment. When they could make relevant social comparisons, the subjects' needs to justify a discrepant attitude position, and seem more rational, were either significantly reduced, or exaggerated.

## C. BIASED RATIONALITY

Why is it that people do not always generate the correct causal explanation for the observed effect when they are trying to account for a significant discontinuity? Of course, many times, or even most times, we do advance

the correct explanation, and the search ends there. Lost a good job? Answer: company is downsizing. Failed a test? Answer: I haven't prepared for it. But there are many answers to why that doesn't always happen, and why we come up with false, faulty, or misleading explanations and causal misattributions.

First, since the information search is personally motivated, and not a dispassionate search for truth, it is more vulnerable to distortion by the operation of various cognitive biases operating at both stages of discovery (predecision) and justification (postdecision). Prior experience, or recent priming, may make the Actor attend selectively to some probable causes more than to others. When the discontinuity involves any negative state of arousal or physical distress, the search is directed toward finding only previously established classes of negative causes, and not all possible causes.

If the discontinuity occurs in an interpersonal setting where an explanation must be generated quickly to satisfy others in addition to one's self (such as in the midst of failing to perform sexually), that additional time pressure imposes constraints on the search to overvalue situationally salient stimuli or readily available personal schema (Kihlstrom & Cantor, 1984; Natale & Hantas, 1982). More obvious figural stimuli get noticed and other background ones (that may be the causal agents) get ignored. It may also lead to reliance on the heuristic with top-of-the-memory answers seeming most relevant and true (Taylor, Kahneman, Slovic, & Tversky, 1982; Tversky & Kahneman, 1973). When others are involved, this search for reasons is also constrained from the start by awareness of what kinds of explanations they are likely to accept as reasonable (Darley & Fazio, 1984; Schlenker, 1980; Shotter, 1984; Tetlock & Manstead, 1985). Other biases may operate to influence how available data are processed, integrated, stored in memory, retrieved, and acted upon (Bower, 1981; Bern, 1972; Dodge & Frame, 1982; Goldfried & Robins, 1983; Hodgins & Zuckerman, 1993; Quattrone & Tversky, 1984).

There are two other general ways in which the search for meaning can become misdirected. Accurate identification of the true source of any discontinuity may be limited by the operation of either learned or situationally induced cognitive biases (Nisbett & Ross, 1980; Wong & Weiner, 1981). While some of these biases direct attentional focus *away* from the true source, others misfocus search strategies *toward* specific types of explanation and attributions that are more appealing, though wrong. Although some misattributions may intensify emotional reactions, others may reduce them by transferring the locus of arousal from internal states (fear or anxiety) to neutral, objective external conditions, such as noise, or crowds, for example (see Brodt & Zimbardo, 1981; Davison & Valins, 1969; Nis-

bett & Schachter, 1966; Ross, Rodin & Zimbardo, 1969; Schachter & Wheeler, 1962). Let's outline how each of these opposite forces work to produce inaccurate causal explanations-despite a lot of reasoning.

*1. Misattributions away from the Primary Discontinuity Source*

Why does reasoning move away from the correct causal explanation of a discontinuity? Some of the relevant conditions are as follows:

1. Refusal to acknowledge causes that seem chronic, irreversible, negative and trait-like (you are ugly, stupid, incompetent, unloved, undesirable, old, etc.).

2. Refusal to accept the accountability of the true casual agent because of his/her power, credibility, authority, or dependent relationship, and social support for doing so (your father abused you, your mate is cheating on you, your leader betrayed you, etc.).

3. The cause is not salient because it is embedded in a complex stimulus context.

4. The onset of the cause is gradual, delayed, or requires an additional catalyst, or interacting second variable to become active.

5. The cause is the absence of something critical, which is harder to detect than its presence (as in the slow development of hearing loss).

6. The causal agent is not visible and needs special detection methods (as in hormonal, imbalances or selective cerebral damage).

7. The causal agent is not yet known to medical science, or is not yet part of the current knowledge base.

8. The active causal agent is seemingly neutral because it is a conditioned, or symbolic, representation of the original powerful unconditioned stimulus.

9. The true cause is not accessible for conscious processing (as with emotion-arousing information "heard" under surgical anesthesia, or amnesia for childhood abuse).

10. Others purposely conceal the true cause from the Actor "for the person's own good" (as happens when parents do not prepare a child for their imminent divorce, or the expected demise of a loved one, despite the obvious conflict or stress in the environment, or when a child is given a falsely elevated sense of her or his ability or competence).

11. The cognitive state of the Actor at the time of the search may be suboptimal for careful, reasoned analyses (fatigued, stressed, depressed, excited, confused, drunk, etc.).

12. Correlated patterns are mistaken for causally related events.

13. Chance or coincidental events are assumed to be causal agents.

14.  The true situational determinants are cleverly concealed by experimental social psychologists in deception research paradigms.

### 2. Misattributions Toward Alternative but False Sources

In addition to these reasons for not noticing or acknowledging the true cause, the Actor may be drawn *towards* certain classes of explanation that are wrong, doing so because of the operating force of other competing biases, such as the following:

1.  The presence of a salient, dramatic event that dominates possible causes.
2.  The desire to find and endorse explanations that enable behavior or bodily conditions to seem modifiable or improvable, or to pursue goals achievable by effort, time, and expert intervention (for example, your problem is motivational rather than an ability deficit, the condition is psychological rather than physical and organic, etc.).
3.  The ready availability of culturally sanctioned explanations (stress, PMS, in the genes, conspiracies, the Evil Eye, celestial or spiritual activities, etc.).
4.  Priming by recent exposure to a particular stimulus class.
5.  The wish to have the explanation absolve the Actor of personal responsibility for the discontinuity.
6.  Choice of causal explanations that elicit attention, sympathy, support from others.
7.  Selection of a cause that maintains consistency with the Actor's relevant beliefs, values, or ideology, even if false.
8.  The reliance on learned, reinforced explanatory categories to guide the Actor's search for meaning.

The operations in both categories of (4) and (5) are combined in those for whom the discontinuity is a dysfunctional lifestyle that is misattributed to their being abused as children. The significance of the final category of learned search frame biases is elaborated next because it is one of the unique aspects of this theoretical approach.

### 3. Explanatory Search Frames Biasing Discontinuity Explanations

Many of us get reinforced for using particular classes of explanation when faced with a discontinuity to be explained. I term this construct *explanatory search frames*. We may imitate explanatory modes that are preferentially used by family models, or learn them from our exposure to other models in religion (Proudfoot & Shaver, 1975), education, the media,

friends, or others. These classes of explanation can be conceptualized as being arranged in a personal hierarchy of availability or accessibility (in the Tversky & Kahneman, 1973, sense), readily activated by the perception of a discontinuity. They determine how the search for meaning is framed initially, by focusing on either physical or social sources of discontinuity, and what questions are likely to generate answers relevant to that realm— What? for the physical versus Who? for the social potential cause. They may direct searches either internally to aspects of body or self, or externally to the environment, to other people, or agencies. It is instructive to realize that anomalies of experience may occur in many domains of cognitive functioning, such as attention, imagery and perception, recall, recognition, judgment and belief, and anomalies in experiences of the self (Reed, 1974).

To get a sense of how people explain a wide range of possible discontinuities, I asked several hundred of my students to respond to thirty hypothetical scenarios involving a variety of unexpected events that each had a positive or negative outcome. Their open-ended responses were coded and then given to another large class of students who reacted to the discontinuity scenarios by choosing one of the fixed-response alternatives that best explained the anomalous experience. Specifically, they were invited to imagine each scenario as having just happened to them, and then to ask: "How could this have happened, or why?" They were instructed then to "provide whatever possible explanations) you can come up with." The gist of these scenarios can be gleaned from the following examples:

1. "You get together with a group of people to work on a joint project. Everyone else seems to be whispering. When you ask them why they are talking so quietly, they deny that they are doing so-but keep it up." Explanations: (a) The others are talking about me and/or trying to exclude me from their group. (b) There must be something wrong with my hearing that I was unaware of. (c) the background noise and room acoustics are creating conditions that make communication difficult.

2. "You've been doing an excellent job at your place of employment. Promotions are being passed around, but your boss ignores you and your good work is not acknowledged." Explanations: (a) The company criteria for promotion place more emphasis on being socially attractive than on being accurate and reliable. (b) My boss doesn't like me and is out to undermine my confidence. (c) It's divine intervention because the promotion would not be in my best long-run interests.

From this exploratory study, it was apparent that across this set of quite varied types of discontinuities, eight categories of explanation exhausted most of the variance, as shown in Table I.

TABLE I

EXPLANATORY SEARCH FRAMES UTILIZED TO ACCOUNT FOR A VARIETY OF DISCONTINUITIES

Internal focus
  1. My body and health status
  2. My self-attributes, dispositional tendencies, personality traits (such as being "unlucky,' or a "shlemiel")
  3. Something from my past
External focus
  4. The currently experienced physical environment
  5. My social environment, another person, or group
  6. Mystical or spiritual forces (such as gods, angels, devils, witches, extraterrestrials)
  7. Structural or ideological systems (such as racism, sexism, Communism, liberalism)
Dispersed focus
  8. Chance, coincidence, "dumb luck," or merely correlated events

The last category of chance or coincidence was the least frequently proposed as a cause for these varied and often extreme instances of discontinuity. Instead of "dumb luck" operating in a discontinuous experience, people are more likely to interpret it dispositionally ("I am a lucky/unlucky person") as the causal mechanism. Incidentally, this exercise helped me to understand a pedagogical puzzle, why so many bright students in my classes do not learn the maxim that "correlation does not imply causation." I now believe that the mind is designed to transform perceived correlations into causal experiences, so it becomes difficult to accept the fact that they are really different processes.

In the final part of this section, I will advance another special feature of Discontinuity Theory, namely the prediction of specific types of pathology based on which of these characteristic explanatory search frames are habitually used when dealing with personally significant discontinuities. But before doing so, I will discuss the more general role of reasons, attributions, and narrative stories in formulating decisions.

### 4. Reason-Based Decisions about the Best Discontinuity Analysis

Our prototypical Actor perceives a discontinuity that qualifies as "significant" according to the criteria noted previously, reflects upon alternative causes, and makes the decision that one of them is most probable. Having chosen that option, the Actor then seeks evidence to bolster that decision (Lord, Ross, & Lepper, 1979). Although some Actors exert considerable mental effort in searching for a compelling rationale for choosing one alternative rather than any alternatives, other Actors' choices may be imme-

diately and nonconsciously influenced by affective judgments (Kihlstrom, 1984, 1985; Marcel, 1983; Rachman, 1981; Rosenberg, 1960; Zajonc, 1980). Research on reason-based choice (Shafir, Simonson, & Tversky, 1993) shows that the reasons considered in making a choice may be influenced by the effects of context, salience, compatibility, framing, and elicitation procedures, which are all manipulable. These variables "highlight different aspects of the options and bring forth different reasons and considerations that influence decision" (1993, p. 34). In the situations we have been considering so far, classical decision theory does not hold because people do not have stable values or preferences; rather these are constructed "on-line" during the process of dealing with a given discontinuity scenario. These cognitive scientists (Shafir et al., 1993) conclude their experimental investigation of how reasons guide choice with a statement quite compatible to those advanced earlier in this chapter:

> We often search for a convincing rationale for the decisions we make, whether for inter-personal purposes, so that we can explain to others the reasons for our decisions, or for intra-personal motives, so that we may feel confident of having made the `right' choice. (p. 33)

This cognitive approach to the role of reasons that precede and guide choice contrasts with the postdecisional processes of generating rationalizations and justifications that has characterized much social psychological theorizing and research (e.g., Aronson 1968; Bern, 1972; Cooper & Fazio, 1984; Festinger, 1957; Wicklund & Brehm, 1976; Zimbardo, 1969). Discontinuity Theory, as outlined here, proposes that the role of reason operates at both pre- and postchoice stages of generating alternatives, choosing among them, and then constructing adequate rationales for why that choice was best. I prefer to think about these two temporally distinct phases as the *context of discovery* and the *context of justification,* respectively. Precisely because Actors must often consider the necessity of convincing others of the reasonableness of the causal argument selected, they need to create accounts, narratives, or mini-theories that enrich the central reason(s) guiding and justifying their position. A similar view has been argued by Billig (1987), who advances a rhetorical approach to understanding such issues, noting that, "our inner deliberations are silent arguments conducted within the single self" (p. 5). Surely that notion captures the process going on inside the mind of the Actor coping with the tension created by a significant personal discontinuity. We will see evidence for such a claim in both the case studies that follow this general section, and also in some of the personal accounts collected during the experimental testing of various aspects of our theory.

### D. MADNESS AS *IR*-RATIONALITY PLUS AB-NORMALITY: ENACTING ONE'S THEORY IN SEARCH OF DATA

-The mind is its own place, and in itself/Can make a heaven of hell, a hell of heaven.
                                                        -Milton, *Paradise Lost*

When the Actor does generate reasons, or a story, in the form of a personal theory that seems to account for the discontinuity, then that theory takes on a centrifugal force that sucks up all evidence into its vortex of justification. Only confirming evidence is noticed, catalogued, and packed into the emerging pattern of self-evident truth, while critical disconfirming data are set aside as irrelevant. This person gets into trouble in two ways. First is the failure to be an objective, diligent, bottom-up monitor of available data, and the second is the failure to generate a top-down set of the most reasonable hypotheses with alternatives that must be disconfirmed and discarded before accepting the most probable one. As a biased theorist enamored of one's little theory, one's conjectures and misattributions soon become "facts" on which other decisions are based. Under some circumstances, these mental transformations cause the initial perturbations from a discontinuity to escalate into pathological reactions.

If a discontinuity is personally significant and ongoing, rather than transient, and the Actor's searches for rationality and normality do not adequately achieve a sufficient degree of anxiety reduction, then the possibility exists that more drastic psychological processes will be called into action. There are several forms this action can take. Failing to discover order, logic, and a satisfactory reasoned analysis of the original discontinuity, the person may impose a spurious kind of order and organization on the rest of one's life through reliance on compulsive thinking and obsessive behavior. She or he may develop a ruminative thinking style that replays aspects of the old discontinuity scenario, exaggerates self-blame for negative outcomes, and thereby encourages a depressive disorder (Nolen-Hoeksema, Parker, & Larsen, 1994).

If there is the danger that others will reject the Actor's explanation and not be socially supportive, then social withdrawal and isolation handles that challenge to one's self-esteem. If the discontinuity-generated anxiety cannot be reduced by the cognitive, social, or behavioral searches, then it can be eliminated by suppressing all forms of arousal and becoming motive-less, or affect-less. If there is not consensual validation for the Actor's explanation, nor acceptable external validity checks, he or she can reverse the process by making internal reality the standard against which to validate the external. Finally, if standard forms of reasoning have proven ineffective, then reliance on nonstandard forms of logic, reasoning, and language can

prevent refutation of the Actor's proofs. Such tactics, operating at various levels of conscious and unconscious processing, obviously describe the cognitive, affective, motivational, and behavioral characteristics of serious mental disorders. In some cases, we can observe the development of a rigid character structure that comes to dominate the person's lifestyle. Shapiro (1981) notes that "such a continuously deliberate, purposive, and tense self-direction involves a special kind of self-awareness or self-consciousness. Rigid people direct themselves with a greater and more extensive awareness than others have of what they are doing, and how they are doing it" (p. 70). In the final experiment to be presented in this chapter clinicians judged many of our ordinary, "normal" research participants as suffering from "pathological" disorders. I believe their judgments were swayed by the extreme rigidity with which these students maintained untenable explanations to account for the discontinuity of their unexplained arousal.

Sociologist Edwin Lemert (1962) concludes his analysis of the conditions that lead to paranoid reactions among usually normal individuals with this summary of social and personal discontinuities:

> A number of studies have ended with the conclusions that external circumstances—changes in norms and values, displacement, strange environments, isolation, and linguistic separation-may create a paranoid disposition in the absence of any special character structure. (p. 70)

We can now advance the strong form of our argument: All forms of madness that do not have their origins in organic, brain, or hormonal defects, are the perversion of the most natural and basic human functions, the needs to know, to belong, and to gain esteem. In the process of engaging in the fundamental aspects of being a thinking, relating human being who desires to understand the unknown, to order chaos, and to enrich the human connection, some of us get led astray. We start down the wrong path to getting the answers we seek by using biased thinking strategies when trying to find causal explanations for experienced discontinuities. These explanations become the sypmtoms of faulty thinking, of pathological reasoning, of delusional beliefs of inappropriate affect. The symptoms of madness emerge from, and are sometimes isomorphic with, the explanations generated to provide a narrative account of certain discontinuities. Explanations need not be verbally stated propositions, but can be nonverbal messages that convey various meanings to the Actor and observers. For example, a headache can be an explanation for academic or sexual performance failures, or a muscle spasm may become the reason for sports failures—both are forms of nonconscious self-handicapping reactions.

Discontinuities that are unexplainable and not open to normalizing through social affiliations may trigger a transformation of the disturbed

psychic energy they create directly into somatic symptoms, such as asthma (Eastwood, 1975). We may "choose" physical symptoms that convert ineffable psychological distress into bodily problems that can be treated, discussed, and that often get sympathy (Pennebaker & Epstein, 1983). That happened to me during my junior year in high school. I had always been very popular in my Bronx neighborhood and in the various schools I attended, but was totally rejected for almost an entire school year when I went to North Hollywood High School. This social status discontinuity was alien to me, and did not make sense since I had not changed in any way, but it was evident that I was being shunned. After a month or so, I developed nighttime asthma, that made it difficult to sleep, caused me to miss classes or come late, and elicited much concern from my family. So much so, that they moved back to the Bronx at the end of the school term. I learned late in this unfortunate experience that a rumor had been circulated that I was a New York Italian connected to the Mafia, and the other students were afraid of me! Back in the Bronx, I was elected the most popular boy at James Monroe High School the very next term. That transformation based on situational context and not dispositional variability was a source of interesting dialogues with my classmate, Stanley Milgram.

The secondary anxiety about appearing to be irrational, without a satisfactorily reasoned analysis for important discontinuities in one's life, may also lead to some forms of social pathology as the Actor eschews usual reference groups for more exotic, bizarre, deviant ones that normalize idiosyncratic behavior in the unusual behavioral context they provide. We have also described how more extreme reactions can surface when the Actor becomes aware of seeming to be both irrational and abnormal—such reactions as social isolation, affect suppression, and reversed reality checks. Another form of personal pathology that can result from the processes described is the emergence of addictive and compulsive behaviors that get reinforced while trying to suppress the anxiety component of discontinuities by resorting to direct behavioral strategies.

*1. Why Call it "Madness?"*

What is madness/To those who only observe, is often wisdom/To those to whom it happens.

-Christopher Fry, A *Phoenix Too Frequent*

Using the term "madness" permits inclusion of a wide spectrum of reactions across a diverse body of available literature in anthropology, sociology, law, drama, history, as well as psychiatry and clinical psychology (see Claridge, 1985/1995; Foucault, 1967; Franzini & Grossberg, 1994; Henry,

1971; Orford, 1976; Scheff, 1975; Shapiro, 1965; Szasz, 1973; Wing, 1978). Madness, in such a view, is not an objectively verifiable fact, as is cancer or stroke. Madness is always an attribution about a deviation from expected normative behavior. It is an attribution made by human observers and is particularly significant when they have expert or legal power. Morton Schatzman (1973) asserts such a view in his book, *Soul Murder:* "Many people feel persecuted, but no one ever feels paranoid. Paranoia is not an experience; it is an attribution one person makes about another" (p. 147).

Such attributions, explanations, and accounts of unusual behavior must be understood in terms of the social transactions among people (see Antaki, 1981). To be labeled "mad" is dependent on cultural and contextual factors, on interpersonal power relationships, on the current value to the society of the Actor in question, as well as on the degree of social support or isolation of that person (Medvedev & Medvedev, 1971; Mezzich & Berganza, 1984). Standards of rationality and normality are culturally determined, varying as well over historical epochs as knowledge changes and as culturally sanctioned explanations for discontinuities and madness also change (Bell, 1980; Eaton, 1980; Levi-Strauss, 1966; Porter, 1989; Rosen, 1968; Rosenbaum, 1970; Van Gennep, 1960).

Madness also varies across a broad continuum from mildly deviant, aberrant, eccentric in thoughts, feelings, and actions to "being out of one's mind," running amok, going berserk, certifiably crazy, and *Diagnostic and Statistical Manual (DSM )*pathological (APA, 1980; Fabing,1956; Luborsky, 1970). My predictions about the madness-engendering consequences of some discontinuities and their associated biased search frames do not extend to any pathologies that are organic in origin, or genetic, or developmental, but to learned adaptations or maladaptations. The normal side of madness involves "functional perturbations" in normal people in their obsessions (Kohler, 1958; Rachman & Hodgson, 1980); motivated irrationality (Frankel, 1973; Pears, 1982); benign paralogical thinking (Glasner, 1966); self-deceptions (Goleman, 1985; Gur & Sackheim, 1979; Sarbin, 1981); mental epidemics (Young, 1927); "love melancholy" (Burton 1621/1977); "creative malady (Pickeri, 1974); everyday paranoid thinking (Amiss & Bullard, 1966); eccentric and bizarre behaviors (Franzini & Grossberg, 1994); suspicions that merge into delusions; occult beliefs (Singer & Benassi, 1981); and other forms of abnormal behavior in normal people, such as prejudice, vandalism, violence, self-derogation, and addictions (see Gruder, Gurwitz, & Reiss, 1977). We also need to recognize the extent to which apparently functioning members of society may still be carrying around a high degree of pathological symptoms. In a recent study of more than 600 students at three private and public colleges, 18% had average scores on a general symptom inventory that exceeded outpatient norms, and for 17%

the number of symptoms they reported exceeded even inpatient norms (Holman & Zimbardo, 1999).

It can be argued further that madness decreases in a society to the extent that (a) the society provides a ready storehouse of sanctioned hypotheses, theories, or rationales for the appearance of discontinuities in thinking, feeling, and acting; and (b) the society intervenes to restore harmony by accepting some responsibility for its role in the discontinuity, as we saw earlier in the example of the rituals practiced by the Nyakusa (Wilson, 1962). For some kinds of discontinuities, readily available societal explanations abound in the form of truisms, homilies, folklore, wisdom of the elders, and white or black magic. When the culture has the answer, the individual's search for a discontinuity-based reason is short-circuited. By accepting the dominant, prevalent explanation, and being open to whatever prescribed ritual practices accompany it, the Actor does not risk social rejection. Simply following the standard operating procedures ensures the Actor will be perceived as doing the "right thing." Normality is thus assured, even if the treatment does not change the state created by the discontinuity. Conversely, madness becomes more prevalent to the extent that individuals are forced to generate their own explanations for experienced discontinuities, and also to provide necessary data sets that verify those attributions-to the approved standards of critical societal judges. This reasoning leads to the obvious conclusion that the frequency of psychopathology should be greater in more individualistic than collective societies.

My perspective suggests that madness is not an "alien" aspect of humanity, but merely a perversion of human perfectibility. In understanding madness, we understand some of the most fundamental dynamics about the human mind: how we know reality, distinguish internal from external, represent sensory and social experiences in memory and reasoning, make causal attributions, and find evidential bases for our theories.

Instead of focusing on inner "disease states" that need to be "cured," or on "premorbid" personalities with a ready vulnerability to mental illness, the present model postulates that madness is to be treated by first ruling out organic impairments and dysfunctions, and then by examining (a) the nature of the explanations for discontinuities that ordinary people generate; (b) how and why these explanations have become biased; (c) why people persist in maintaining them despite contrary evidence; and (d) what can be done to correct these biased explanatory searches, misattributions, and faulty

### 2. Explanatory versus Confirmatory Processes in Symptom Development

What is madness? To have erroneous perceptions and to reason correctly from them.
-Voltaire, *Madness, In Philosophical Dictionary*

Mad is a term we use to describe someone who is obsessed with one idea and nothing else.

-Ugo Betti, *Struggle Till Dawn*

So far, I have argued for the central role of discontinuity as a catalyst of various search processes, some of which swerve off the path of rationality and normality to create disorders in cognition and affect that may result in the formation of pathological symptoms. Further, I have maintained that biases in the explanatory search frames used to make sense of discontinuities mediate the development of unusual explanations that serve as symptoms, some functioning as self-handicaps (Kolditz & Arkin, 1982).

However, I have combined two different processes that should be considered separately. While the *explanatory search,* triggered initially by the need to explain a discontinuity, leads to the development of theory building, the *confirmatory search* integrates the Actor's current experience and situational information as support for the established personal theory about the nature of that discontinuity. This distinction was first made in a brilliant thesis by Lisa Butler (1993), working in my laboratory, as a way to understand how paranoid symptoms could reflect a disorder of affect (specifically, anger) and not a disorder of cognition, as traditionally believed.

Although Butler's distinction limits the two searches to her primary interest in paranoid processes, I believe it is more widely applicable to other pathological processes as well. Her analysis also distinguishes between bottom-up and top-down information processing as they operate in each of these two cognitive processes. Butler argues that the development of paranoid symptoms, such as suspicions and delusions, precipitated by discontinuities in explanatory or reactive paranoia, depends on a data-driven or `bottom-up' process of explanation or theory building. She contrasts that process with confirmatory or proactive paranoia, in which "the expectations of a paranoid personality or the delusional beliefs of a paranoiac drive an inspection and `top-down' interpretation of features of the social and physical environment with its goal being to reconcile experience and information with the prevailing predispositional theory" (p. iv).

Paranoia is a mental disorder that ought to be of considerable interest to social psychologists because of the critical role played by people schema and misattributions about actual or imagined others (Maher, 1974a,b; Maher & Ross, 1984). It also shares features with prejudice in its creation of adversaries, resistance to change of belief structures, the central position of the self in paranoia, and of one's identity group in prejudice (Fenigstein & Variable, 1992).

John Kihlstrom effectively develops the view that paranoid delusions are explanations of anomalous experiences that are best understood within

the framework of attribution theory and social cognition (Kihlstrom, 1979; Kihlstrom & Hoyt, 1988). He elaborates upon Brendan Maher's (1974a,b) analysis that delusions are the product of normal reasoning processes initiated by an unexplained perceptual anomaly, one that arouses anxiety and demands explanation. In this formulation *unexplained* anomalistic experiences are primary while delusions are secondary. Similar views have been advanced by Jaspers (1962) and Reed (1974), who argued that primary delusion was a contentless, diffuse, ineffable perceptual experience. Delusions are then developed as belief systems—false beliefs—that provide the content, structure, and meaning for the anomaly. They are self-referential ideas about oneself, whose "content is crucially related to the individual's fears, needs, or security" (Reed, 1974, p. 83). Such delusional beliefs "reflect the patient's attempts to describe, from attributions about, and explain primary delusional experiences. These explanations draw on the person's fund of world knowledge and repertoire of inferential processes" (Kihlstrom & Hoyt, 1988, p. 83). In a sense, these delusions are reminiscent of the explanations given by Gazzaniga's (1998) split-brain patients whose verbal, left hemisphere generates explanations, sometimes bizarre, to account for the perceptual or sensory experiences of the right hemisphere. Just as it is difficult to convince such patients that "believing is not seeing," so too, it is difficult for normal individuals and schizophrenics alike to self-correct their delusions and irrational explanations as long as the anomalies persist that they purport to explain. This is so for all the reasons that they do not behave like professional scientists in using optimal hypothesis-testing strategies, searching for diagnostic information, seeking disconformation, and minimizing subjective biases.

Mark Leary and Rowland Miller (1986) effectively articulate the general utility of social psychology for understanding the origins, diagnoses, and treatment of dysfunctional behaviors, usually the sole province of clinical psychology and psychiatry. They elaborate on a number of the processes and constructs outlined in this chapter that link basic aspects of social psychology to those of "abnormal" psychology (long ago linked before JASP became JPSP).

A new, social-information-processing model of paranoid social cognition, elegantly developed by Rod Kramer (1998), highlights the importance of the informational and social context in which an individual's perceptions and cognitions are embedded. This analysis of the formation of suspicion and distrust at all levels of social organization proposes three input variables: feeling uncertain about one's social standing, or "tenure status," perceiving one's self to be distinctive, to stand out, in a group setting; and perceiving one's behavior under evaluative scrutiny. They combine to promote a dysphoric, negative self-consciousness, which in turn, leads to

hypervigilance and rumination. When filtered through a series of judgmental biases, these selective, obsessive thoughts emerge as paranoid delusional beliefs. Here is another instance of a social psychological approach to understanding paranoia that deserves experimental testing, as well as application to clinical populations.

The social psychology of paranoia is interestingly revealed in one of our experiments (to be presented later on) that induced paranoid symptoms in normal college students through several alternative discontinuity manipulations (Zimbardo, Andersen, & Kabat,1981). In a matter of minutes, these participants, chosen for their mental and physical health, were behaving in ways that peers and clinical test results agreed was deserving of a diagnosis of a paranoid disorder.

### 3. Predictions Relating Biased Explanatory Search Frames to Forms of Pathology

> A man's worst enemy can't wish him what he thinks up for himself.
> (Yiddish proverb)

Finally, let's move from abstract generalizations to more specific predictions about how particular types of pathology are linked to each of our eight categories of biased explanatory search frames. Table II outlines the

TABLE II

PREDICTED PATHOLOGICAL REACTIONS AT INDIVIDUAL AND SOCIAL LEVELS BASED ON BIASED USE OF SPECIFIC EXPLANATORY SEARCH FRAMES TO ACCOUNT FOR PERCEIVED DISCONTINUITIES

| Biased focus | Individual pathology | Social pathology |
|---|---|---|
| Internal orientation | | |
|   Body/health status | Hypochondriasis, Somatoform disorder | Mass hysteria |
|   Self-attributes (Negative) | Depression | Prevalence of shyness |
|   Personal past (Aversive, Negative) | Depression | Prevalence of "false memory syndrome" |
| External orientation | | |
|   Physical environment | Phobias | Vandalism |
|   People | Paranoid disorders | Prejudice, discrimination |
|   Mystical/spiritual forces | Paranoid disorders, spirit possession | Witchcraft. satanic cults |
|   Structural/ideological agencies | Fanaticism, suicidal martydom | Terrorism, war |
|   Chance, luck, fate (Present fatalism) | Learned helplessness, addictions, depression | Maintenance of low socioeconomic status |

expected relationships between each type of biased explanatory focus and the forms of individual pathology to which it gives rise. This perspective is extended further by also relating biased search frames to forms of social pathology that are a product of collectives of people employing similar search frames when some of them are experiencing discontinuities. The experimental research section of this chapter presents evidence for the validity of some of these linkages, based on studies that manipulated various biased search frames and measured resulting pathological outcomes.

For each type of biased focus, or explanatory search frame, there is a corresponding extreme reaction when it is overused as the only source to account for a significant discontinuity, and is rigidly maintained despite evidence to the contrary. The correspondence rule specifies that when thoughts, feelings, motivations, and behavior are organized around a particular biased focus, then the fundamental feature of that bias acts as an organizing schemata which leads to specific pathological disorders that share the properties of those central schema. The determination or diagnosis of pathology is typically made by those with expert status in the realm of mental health, psychiatrists and clinical psychologists. But such evaluations are routinely made also by those familiar with the Actor, and at times by the Actor as well. Here pathology refers both to the professional judgments of mental disorder and the lay evaluations as well.

It is also possible to extend these ideas to social situations where many people share the same discontinuity bias, despite differences in the origins of their discontinuities. Social pathology refers to actions by a collective of people, acting individually or in concert, to engage in behaviors that are nonnormative, socially undesirable, or that violate some higher-order ethical standards.

The predictions I feel most confident about are those positing the following correspondences:

1. Those judged to have hypochondriacal, or somatoform, disorders, will most likely be those whose internal biased search frame centers around their Body/Health Status.
2. Those with phobic disorders will be overrepresented among those whose biased external search frame centers on aspects of the Physical Environment.
3. Paranoid disorders will be traced back most directly to those whose external biased focus is on People. In addition, the biased focus on Mystical/Spiritual forces can also contribute to paranoia if the Actor either personalizes those gods and demons, or assumes that others are influencing evil spirits to act against him or her.

These three predictions were directly tested in experimental research to be presented later in this chapter. Manipulated search frames focusing

on environment, body or health, and people among those coping with unexplained arousal resulted in mental and behavioral reactions that were classified as pathological for some research participants. We found correspondences between environment framing and phobia, health framing and hypochondriasis, and also people framing and paranoia. Returning to the remaining predictions, from Table II, I cite the following:

4. Depression is most likely to be linked to both an internal biased focus on Self Attributes, if that focus centers on personal inadequacies, deficits, or failures to achieve goals. It can also be linked to an explanatory search bias that focuses on one's past, if that construal of the past is primarily negative or aversive. A Past-Negative focus centers around ruminations of trauma, abuse, neglect, mistreatment, and failures, which combine to lower self-esteem and raise depression.
5. The external biased focus on Structural/Ideological Agencies, as a causal agent in discontinuities, is most likely when the Actor has a salient identity as a member of a particular group in opposition to competing or more dominant groups in the society. Then the "isms" come to play a significant role in attributions of one's personal failures and troubles, and for the inequities experienced by one's group. At an individual level of pathology, the extreme involvement in this form of thinking leads to fanaticism, authoritarianism, and suicidal martyrdom.
6. Those who attribute discontinuities to the operation of chance, luck, or fate feel that their lives are controlled by random forces or are predestined by religious or mystical agencies, rather than by their personal agency. That orientation leads to the pathologies of learned helplessness (Seligman, 1975), pessimism, depression, and addictions to immediate pleasures regardless of long-term costs.

Before turning to examine the predictions relating these explanatory search frames to corresponding forms of social pathology, I want to mention another line of research that identifies individual time perspective profiles, using a new metric, the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999). In one of our validation studies, those whose time perspective scores mark them as high on the Past-Negative factor (focus their thinking on aversive aspects of their past life) were lowest in self-esteem and highest on depressive symptoms, and also on trait anxiety, of any group, with robustly significant correlations for each of these negative outcomes.

The Social Pathology side of the agenda extends the conceptualization that went into formulating the individual pathologies to societal forms of dysfunctional behavior. These predictions are made more tentatively than those for the Individual Pathologies, but are perhaps more interesting.

1. Instances of mass hysteria represent a form of emotional contagion that occurs only among those whose primary search frame is Body/Health. When people are in proximity to others in a collective setting, any of whom experience and display reactions to a current discontinuity that is symbolically related to a prior discontinuity, such as a personal loss, a social psychogenic process will be triggered.

2. The focus by individuals on Negative Personal Attributes could, when aggregated, contribute to the high levels of shyness being reported in our society and in others (Carducci & Zimbardo, 1995). Shyness, like paranoia, is as much a social process as it is an individual one.

3. Overemphasis on the negative aspects of one's Past, as a biased cognitive focus, when combined with a currently dysfunctional lifestyle, and mass media exposure to cases of traumatic abuse, could contribute to the recent phenomenon of False Memory Syndrome versus recovered memories of abuse (see Freyd, 1996, Hechler, 1994; Loftus & Ketcham, 1994; Ofshe & Watters, 1994; Pope & Brown, 1996; Schooler, Bendiksen, & Ambadar, 1998; Winegrat, 1985; and entire issues of *Current Directions in Psychological Science,* Lynn & Payne, 1997, and *Child Mistreatment,* Vol. 2, May, 1997).

4. Destruction of aspects of the environment through acts of vandalism is the social pathology of those with an extreme Environment bias (Zimbardo, 1976).

5. Prejudice is the social pathology aspect of individual paranoia. Instead of simply fearing others are out to harm them, the collective of such individuals focuses on others whom they can harm or exploit because these others are inferior relative to their own dominant status as the discriminators (J. Jones, 1997).

6. Practicing witchcraft, and other Satanic cult-like activities, assumed to harness the power of mystical forces for personal or collective gain, is an instance of the social pathology dimension of a biased focus on Mystical/Spiritual Agencies (see Baroja, 1973; Middleton, 1967; Sebald, 1978).

7. While the positive dimension of this orientation toward explaining discontinuities in terms of Structural/Ideological Agencies is a constructive activism that seeks to change systems of assumed oppression or dominance hierarchies (Pratto, 1999), the negative dimension is anchored by those who form collectives that endorse terrorism and war, the ultimate social pathologies.

8. Finally, an insidious form of social pathology is the maintenance of low socioeconomic status (SES) for entire groups of poor people as a consequence of their adopting a fatalistic, present-orientation that leaves vital decisions to the operation of chance and luck, rather than a developed sense of self-efficacy (Bandura, 1997).

These ideas and predictions about social pathology are based neither on compelling evidence, nor rigorously derived from Discontinuity Theory.

Rather, they are presented for their heuristic value in provoking consideration of a range of dynamic relationships between the cognitive and social psychological constructs outlined in this theory, clinical perspectives on psychopathology, and sociological views of collective forms of pathology.

Each biased search focus, hypothesized to lead to particular pathologies when misused in the process of accounting for anomalies in one's experience, also has an "idealized" version. Such a focus may function productively and constructively to promote value orientations, guide decisions, and initiate individual and collective actions in socially approved directions. When they are practiced by many people within a society, these biased frameworks help form the foundations of many "approved disciplines" and institutions. Consider one set of parallels between such socially shared biased search frames and the approved societal disciplines they engender.

1. Body/health focus supports medicine
2. People focus supports social sciences
3. Environmental focus supports physics, ecology
4. Self attribute focus supports drama, personality/character analysis
5. Temporal focus supports history
6. Temporal focus plus people focus supports psychoanalysis
7. Structural/ideological focus supports politics, military
8. Mystical/spiritual focus supports religion, shamanism
9. Ideological focus plus spiritual focus supports right-wing religious politics

We next consider a set of illustrative case examples of various aspects of Discontinuity Theory before turning to our experimental evidence.

### III. Case Studies Illustrating Aspects of the Theory

I wish now to introduce a more clinical perspective to this presentation by describing case study examples that enrich the conceptual side of the theory by illustrating its applicability across a spectrum of real-life experiences. Some come from people I have worked with directly, or known personally, others derive from the literature and media sources. They are grouped under headings that relate to different aspects of Discontinuity Theory.

### A. FAILURE TO RECOGNIZE OR ADMIT THE TRUE SOURCE OF ONE'S DISCONTINUITY

The first of these two cases is perhaps the single best instance of the power of this new approach to understand and deal with psychological

disorders that stem from the failure to recognize or admit the true source of a discontinuity. The second is a reinterpretation of a classic case study in clinical literature, that of Dr. Schreiber. The memoirs of his psychotic experiences formed the basis of Freud's theory of homosexual projection in paranoid disorders (Freud, 1911).

### 1. Gary, the Almost Perfect Student

Gary, a freshman in my Introductory Psychology course, came to an office hour to request a referral to a Student Health Clinic therapist. He reported having three problems that started recently and were interfering with his concentration and study, and thus were negatively affecting his grades. Before making that referral, I asked if he first wanted to discuss his problems with me so that my referral would be more informed. In response, he reported the following: (a) that eating difficulties were making him nauseated and unable to eat much food, causing weight loss and a general weakness that made studying difficult; (b) that sexual impotence made it impossible to get or maintain an erection, causing much concern over his sexual identity and masculinity; and (c) that he was experiencing uncontrollable hostile impulses and violent ideation at the slightest sign of disagreement with anyone, and these were very bothersome since he had always been a mild-mannered person. This combination of acknowledged physical and mental problems was responsible for his recent low grades in many courses since they impaired his concentration both in class and studying in the dorm, according to Gary's reasonable self-analysis.

Indeed, this set of "presenting symptoms" deserved expert clinical treatment, which I arranged for him to receive from a colleague, who happened to be psychoanalytically trained. But before leaving, I asked Gary two more questions about the specific timing of the onset of these events, his teachers, and grades. Because these experiences were recent and fresh in his mind, Gary was able to state with certainty the week or so when each of them first were noticed during the current school term. "I am a perfect student" was his answer to the grades question. He had always gotten straight-A grades, graduating at top of his class (in a small rural high school), which made his parents so proud they typically referred to their son as "Perfect Gary."

My colleague in Student Health confided to me that Gary's was a very serious case, requiring long-term treatment, more than could be handled through their services. His diagnosis integrated all three seemingly disparate problems around the theme of repressed homosexuality impulses beginning to emerge into consciousness (briefly, the impotence was around contact

with females, eating food was symbolic fellatio, and the hostile imagery was projection of his fears of being discovered).

Meanwhile, I had checked with each of Gary's teachers who told me the dates on which he received his low test or paper grades in their courses. When Gary returned the next week, I invited him to verify the timeline of the origin of each of his three personal problems that were causing his academic problems. He was surprised to discover that in every instance, his poor grades *preceded* the onset of any of the troubling symptoms of distress. The causal sequence was totally reversed!

I explained that the path of my reasoning started with the violation of a vitally important aspect of his self-image—being the perfect student—when he first started performing subpar in his courses. Such difficulties are common among many new students at top academic institutions where most other students were also selected because they had been outstanding. Lower grades are a fact of life where grading is "on the curve," evaluating students' performance relative to each other, rather than to absolute norms. The true source of his problems might be traced to the discontinuity occasioned by his sudden fall from academic grace and perfection, which had more to do with the new elevated comparison group of "academic sharks" among whom he was now swimming than a loss of brain power.

After further discussion of the impossible burdens imposed on him by having to sustain that image of perfection, and learning that the college no longer sent student grades home to their parents, Gary left feeling much less anxious. I checked with him several weeks later and he reported that all those terrible problems had stopped, and his grades were beginning to pick up. He never went back to the therapist, and graduated four years later with satisfactory, average grades from a quite respectable college.

Among the conceptual morals of this story relevant to Discontinuity Theory are the following:

1. When the true source of a discontinuity is perceived as negative, chronic, and unchangeable (I am not smart), alternative misattributions are generated to create sources that are perceived as modifiable by expert treatment (I have a psychological problem, rather than an intellectual deficit).

2. Self-handicapping substitutes a motivational basis for failure or anticipated evaluation in place of an ability-based explanation (Arkin & Baumgardner, 1985).

3. Physical symptoms can be the nonconscious, nonverbal explanations for discontinuities (Pennebaker & Epstein 1985)

4. There may be anticipated "secondary gains" in the preconscious choice of symptoms (e.g., Gary got attention, sympathy, and acceptance of the "reasons" for his academic problems)

5. The longer the time gap between experiencing the original discontinuity and seeking expert or lay help for it, the harder it is to discover the true causal timing sequence of discontinuity triggers and consequences, since memory distortion and other intervening discontinuities add to the causal attributional confusion.

6. While many students have similar problems, few develop such extreme solutions as Gary's, because academic performance had become the most important, or only, yardstick for measuring his self-worth.

7. Biases of observer-listeners to the accounts of someone experiencing a discontinuity will influence their interpretation of its likely causal factors and sequences, and in turn, will get communicated to the Actor as a "working script" for understanding why it is happening.

I will elaborate briefly on two of these points. Most people who seek professional help for mental problems often wait months or years from the onset of the problem to their first visit, a time span that makes it difficult to do what I was able to do to create Gary's "miracle cure" by uncovering a precise causal-sequence timing. Had he come to see me the next year, he would likely recall only vaguely when his problems began, and his alternative causal sequence would have been difficult to challenge and disprove, especially since it was so reasonable.

Secondly, notice that not only did the psychoanalytic training of the therapist direct him to frame Gary's symptom triad solely within that Freudian theoretical perspective, but he failed even to recognize what my academic bias focused on immediately—the significance of grades in Gary's narrative (for a report of attributional biases among clinicians, see Plous & Zimbardo, 1986). (In a subsequent section, I will report a more detailed example of the way that such a theoretical bias distorted the understanding by a clinical expert of why my research participants were experiencing intense distress.)

### 2. Dr. Schreber Is Mad Because He Can't Tell the World that Dr. Schreber Abused Him

A second instance of misattributing the cause of a discontinuity to a nonveridical source has a less happy ending than our first case. Daniel Paul Schreber (1842-1911) was an eminent German judge who became a paranoid schizophrenic mental patient at age 42, spent 13 of the next 27 years in asylums, and died there. During this time period he collected the notes about his thoughts and experiences into a published book, *Memoirs of My Nervous Illness* (Schreber, 1903/1955). Schreber's memoirs provided Freud with extraordinarily clear descriptions of the patient's thinking pro-

cesses and fantasies, according to analysts Kanzer and Glenn (1980, p. 329). So much so, that they became the basis of one of Freud's most famous cases, his first literary-historical writing of "pathography," and the basis for his theory of the origin of paranoia as a defense against homosexual love (Freud, 1911).

There are a number of curious facts and inferences about this case that fit aspects of Discontinuity Theory. First, all portions of the "Memoirs" related to Schreber's childhood were deleted by Schreber's editors prior to publication. The second related curiosity is that Freud exercised remarkable "analytic restraint" in not using a major source of available information about Schreber's childhood, namely the voluminous writings of his father, Dr. Daniel Gottlieb Schreber. His father was the preeminent pedagogue of his era. He authored 18 books that were widely read and reprinted, covered a wide range of topics, but primarily focused around hygiene, physical culture, and rigorous educational systems for parents and teachers to raise strong, disciplined, obedient, and moral children. He was the medical director of an orthopedic institute in Leipzig, and the founder of "therapeutic gymnastics" throughout Germany, and of Schreber Associations, which Freud clearly lauded in his writing (1911). So great was his influence, that one biographer said of Dr. Schreber, the father: "Every age produces a man who expresses its spirit as if with the power of Providence . . . the generation of our century demanded and created a man like Schreber" (Politzer, 1862, p. 2).

Schreber, the mad son, suffered from painful bodily experiences which he wrote were "miracles" performed on him by "God," who sent "rays" upon his body. However, these were malevolent miracles, "of such a threatening nature that I thought I had to fear almost incessantly for my life, my health, or my reason" (Schreber, 1955, p. 131). He had sufficient insight to suspect that others reading about these miracles would doubt his sanity because they "will naturally sound extremely strange to all other human beings, and one may be inclined to see in it only the product of a pathologically vivid imagination" (p. 132). However, his insight was blindsided when it came to identifying the true source of his lifelong suffering—most obviously Dr. Daniel Schreber, his father.

Extensive research by William Neiderland (collected in Kanzer & Glenn, 1980), and elaborated by Morton Schatzman (1973), compares the published child-rearing doctrines of Schreber, the father, with the persecutory delusions of Schreber, the son. For each of his "supernatural miracles" of head or chest compression, of heat or cold, of being tied to earth, or fastened to rays, there is a direct correspondence with a physical device or special treatment recommendation in his father's writings about how to educate children to be physically and morally straight. Drawings of these devices

resemble tools of the medieval torture chamber more than of the classroom. Nevertheless, the father proudly reported testing each of them on *his own children,* some beginning as early as when they were three months old.

Of the many interesting aspects of this case, four deserve special mention here. First, Dr. Schreber's goal of training a child to be "unconditionally obedient" to authority was carried to fruition later on as a primary feature in Hitler's Nazi ideology. It also presaged George Orwell's "doublespeak" in 1984. The elder Dr. Schreber, wrote that "unconditional obedience was nobly independent," "submission is freedom," and "self-control is control by parents" (see my analysis of the psychological dimensions of 1984, Zimbardo, 1984a,b).

The second point of direct relevance to Discontinuity Theory is the son's inability to indict his father as his abuser and tormentor, selecting instead a narrative that makes God's malicious miracles the agent or agency of evil, and the cause of his madness. The mad son comes tantalizingly close to acknowledging the sadistic abuse by his father, time and again in the *Memoirs,* but then deduces a safer source instead. Interestingly (given the use of hypnosis as the experimental paradigm in my research described in the next section), son Schreber compares his nervous state of what he calls "soul murder" to that of an hypnotic subject whose own will power is imprisoned by the hypnotist who takes possession of his soul. He concludes, "At a time when my nervous illness seemed almost incurable, I gained the conviction that soul murder had been attempted on me by somebody" (p. 55). Not by some God, but by *some body,* namely, the person who was treated by his contemporaries as the god of pedagogy.

The third point is the relevance of this case to understanding one of the dynamics in current cases of recovered memories of early childhood abuse. It speaks to the powerlessness of children to speak up against powerful adults who abuse them, and their lack of societal support when society does not want to believe such horror stories about respectable parents.

Finally, what should we make of Freud's failure to recognize the obvious links between this Father's tyrannical training methods that he applied to his children, and the Son's corresponding symptoms of mental disorder? I believe it reflects Freud's theoretical bias that motivated him to overextend the notion of repressed infantile psychosexual fantasies—over the realities of parental abuse, and actual seduction of children—to apply it to his analytic patients, in explaining hysteria and obsessional neuroses. (For a fuller account of this provocative dimension of Freud's deceptive accounts of his psychoanalytic reconstructions, see Esterson, 1998.) We are also forced to note Freud's unquestioning acceptance of the public esteem of Dr. D. G. Schreber (perhaps the same reason editors deleted those un-

flattering memoirs dealing with Daniel Schreber's childhood). Such esteem is frankly surprising, when that widespread acceptance in Germany of Dr. Schreber's child-rearing strategies and tactics, and his lofty reputation as an esteemed educator, are weighed against these stark facts: one of his sons had to be institutionalized for his madness, and his other son (curiously also named Daniel Schreber) committed suicide at an early age.

## B. MISATTRIBUTIONS OF ORGANIC, PHYSICAL SOURCES TO PSYCHOLOGICAL SOURCES OF DISCONTINUITY

Many physical illnesses with an organic basis also have symptoms that show up as behavioral, cognitive, or affective disturbances (such as hypothyroidism, pernicious anemia, or brain tumors), while others worsen an existing mental disorder. Without adequate medical examinations, patients may be misidentified as having a psychiatric illness when the cause of their problem is a disease or organic impairment. They may be treated by psychiatrists, clinical psychologists, and even sent for treatment to mental hospitals when their primary problem is an undetected physical one, requiring medical care.

Strong evidence for this point comes from a study that administered thorough medical evaluations to more than 500 patients from a variety of California mental hospitals. The researchers found that many of these mental patients had active, important physical diseases, a large percentage of which were not detected. "The mental health system had recognized only 47% of study patients' physical diseases, including 32 of 38 causing a mental disorder, and 23 of 51 diseases exacerbating a mental disorder" (Koran et. al., 1989, p. 733). If health-care professionals so often fail to identify the origin of an unusual psychological reaction as due to physical causes, we can assume that many lay individuals make the same mistake. Let me illustrate some of the consequences of this failure to identify the physical, organic origin of a discontinuity that instead is experienced as psychologically induced, in four case examples.

### 1. The Case of Anna O: Hysteria or Tuberculosis?

Freud and Breuer used the case of Anna O. as the basis for their earliest diagnosis of psychogenic illness as an hysterical conversion reaction (Breuer & Freud 1895/1955). Among her various sensory and motor problems was a severe cough, which began when she was taking care of her sick father. Diagnosed as a "nervous" cough, its dynamic origins were explored under hypnosis with Anna O. as the first patient to ever experience

the new "talking cure." However, this extraordinary women, Bertha Pappenheim, who became a leader in women's rights and a pioneering social worker, terminated her unsuccessful analytic treatment with Breuer and entered a sanitarium. She was later released largely free of her initial symptoms-of tuberculosis. It is most likely that she had been suffering from an organic illness contracted from her close contact with her father and not primarily a psychological one at all, although she may have suppressed her frustration about having to care for her father so long and about the lack of opportunities for woman. It is ironic that the vital concept of psychogenic illness was developed from a case of organic origin that was misconstrued as psychological (see Rosenbaum & Muroff, 1984; Thornton, 1984).

Montaigne *(Essays* 1580/88) told us long before the psychodynamicists, that, "The mind has great influence over the body, and maladies often have their origin there." But we might add, which There?

### 2. My Colleague Confuses Lack of Sleep with Lost of Interest in Psychology

A colleague known for his dedication to, and love of, psychology, recently began to question whether he should stop doing research or maybe even change his field. That conclusion was based on his apparent loss of interest in research his students were presenting during lab meetings or colleagues during colloquia. The evidence he used in making this inference was his yawning, and overwhelming feelings of sleepiness, taken as symptoms of being bored. It was not until his wife detected he had a sleep disorder, which was verified by the local sleep disorder clinic as sleep apnea, that he received the right treatment for it. With that change in attribution, he resumed his overproductive research career.

### 3. Old Joe Goes Ballistic on the Pharmacy Line

In another personal case, an elderly man in front of me on the waiting line for hospital prescriptions told the nurse he was late for work and needed his medication as soon as possible. She turned from him to ask the pharmacist how soon he could get his prescription filled, and before turning back to help me as next in line, she said they would rush his order. As she walked back to the waiting line and began talking with me, Old Joe began to scream at her, shouting obscenities and racial epithets about his repeated lack of respect by her kind of people. Naturally she got furious, and started to yell back at him. I grabbed his shoulder and said in a loud voice as he

stared at me, "She is doing you a favor, and will get your medicine right away, just sit down and wait a few minutes." Old Joe calmed down, apologized, and the tension was broken, and the line moved on. I realized that Joe had not heard the nurse talking with the pharmacist when her back was turned to him, so he must have a hearing disorder. My remedy was simple action to make it loud and clear to him that he was getting what he asked for. But it was evident to me that from his perspective of not having heard her solicitous exchange, he was being disrespected. It must happen enough for Joe to have formed a categorical conclusion about Black nurses who act in a hostile way toward him. His ultimate remedy is, of course, wearing a hearing aid, but there are many reasons why people do not use them even when they realize they are hearing impaired. This is the stuff of paranoia, reasoning correctly from an initial misperception, and the basis of one of our early experiments (Zimbardo, Andersen, & Kabat, 1981), elaborated on in the next section of this chapter.

### 4. Terry Paints a Mad Portrait of Himself at Bud Plastics

While the last two examples ended with positive outcomes, a tragic conclusion emerges from another instance of mistaking an organic problem as a psychological one. The Bud Plastics Company in Ohio makes the bodies for Corvettes using the help of many different union workers to handle various aspects of its manufacture. A few years ago, individual workers began to experience a variety of severe symptoms, memory loss, emotional volatility, blind rages, and exhaustion that made them sleepy all the time. Many of the men were quite young, in their twenties, and had been perfectly "normal" when these bizarre discontinuities started to surface. Neither they nor their spouses could understand what was happening, but it was sufficiently weird and extreme that they tried to conceal their symptoms from others. As their conditions worsened, they got medical exams, which were negative, so were referred for psychiatric evaluation. Some ultimately went into therapy, and others were sent to a mental hospital. But nothing helped improve their condition. It was not until a relatively large number of these workers reported sick that a union supervisor took notice of a potential workplace issue. The resulting investigation uncovered a tragedy in the making. These men were suffering from incurable neurotoxic brain poisoning caused by their chronic exposure over many years to low levels of neurotoxic substances in the paints and plastics they were using. OSHA safety tests and evaluations of these substances had not included long-term exposure to substances that had been proven benign

in briefer exposures (reported on *National Public Radio,* "Chemicals in the workplace," 10/21/1985).

This case raises several issues relevant to Discontinuity Theory. First, it is possible to misread a physical cause as a psychological one and to be mistreated for it if the attendant symptoms are behavioral or psychological. Second, discontinuities in behavioral reactions demand explanations not only by the Actor, but also by all those personally connected to him or her, especially when they are obvious, atypical, and cause social shame. Third, when many individuals are experiencing the same symptoms but do not disclose them to others, they create a state of pluralistic ignorance that fosters dispositional attributions, "what is wrong with me?" (Prentice & Miller, 1996; Wetzel & Walton, 1985). That orientation leads them to seek individualized medical treatments, rather than advancing situational attributions of "what is wrong with the job?" that is affecting many workers. Doing the latter, calls into action a public health approach rather than a medical one. This case led me to conduct a study on disclosure of a discontinuity among students in a dyad, each experiencing similar symptoms of unexplained arousal, to be presented subsequently.

A final instance of the interaction of organic, medical conditions and psychiatric complications comes from an old study that first chronicled the development of psychopathology in previously mentally normal patients following their open-heart surgery (Freyhan, Giannelli, O'Connell, & Mayo, 1971). Every one of 150 patients needing cardiac surgery, over a three-year period, was referred to preoperative psychiatric and EEG evaluation, and was then followed up during postoperative recovery using interviews and a wide spectrum symptom profile. Open-heart surgery is obviously stressful, and the associated experiences of mortality represent a unique kind of discontinuity for the patient. Nevertheless, the data from this carefully controlled study are astonishing. Over 50% of the patients manifested psychiatric complications postoperatively, which the authors say is "probably a conservative estimate" for a number of reasons. The "symptoms resemble a kaleidoscopic view of mental illness" (p. 187), with 42% of the patients being symptomatic for more than 3 weeks, 75% rated as moderate or severe in severity of the psychiatric symptoms, and 59%0 having multiple syndromes—delirious syndrome, paranoid-hallucinatory syndrome, and/or mood-disorder syndrome. Of relevance to one of my experiments (to be reported on the generation of paranoia in normal subjects experiencing unexplained deafness) is the observation made by these psychiatrists and physicians:

"Patients developed typical ideas of references, suspecting that nursing and medical staff were secret agents observing and recording their activities. The monotonous

noises of electronic monitoring equipment lends itself to such notions particularly in individuals whose cognitive functions are already impaired." (p. 189)

## C. IGNORANCE OF TRUE SOURCE OF DISCONTINUITY REPLACED BY PREVAILING EXPLANATIONS

Sometimes the inability to generate the correct causal attribution is the result of current lack of public knowledge about the nature of the true causal factors involved. When the discontinuity is severe, and shared by many people, alternative hypotheses will center around whatever prevailing theories are accepted in a given community. Many of history's most bizarre and inexplicable societal episodes may fall within this category.

### 1. Was Salem Witchcraft Caused by Eating LSD-Laced Rye Bread?

Although witchcraft persecution trials were a widespread effect of the European Inquisition, they occurred in North America in only one town (Salem), in only one year (1692). The set of intense symptoms that flared up in a group of farm girls (fits, spasms, tremors, feeling pinched or bitten, hallucinations—the discontinuity to be explained) was explained by the prevalent religious/demonic interpretation (Hansen, 1969). A likely alternative explanation appears to be food poisoning, ergotism, a fungus that grows on rye grain and produces a natural form of the hallucinogen, LSD. This interpretation was first proposed by psychologist Linnda Caporael (1976), and supported with additional archival data by historian Mary Matossian (1989).

Most of the reported symptoms of bewitchment are identical with those of ergotism, and also were found among Salem's farm animals. Available evidence indicates that the cold, wet climate that year favored growth of this fungus that was ingested by poor farm families in their heavily rye diet. Matossian argues persuasively that serious outbreaks of such microbiological contamination of the food supply have played a significant role in shaping social behavior, and thus explains many social discontinuities recorded throughout Europe for hundreds of years. Wherever peasants relied on a rye-based diet, and the climactic conditions generated fungus poisoning, mass reactions to the shared discontinuity of their bizarre symptoms led to revolutionary riots in 1789 by French peasants gripped by "the grand fear," religious revivals in the 18th century, and many other social epidemics. This example illustrates another way in which a discontinuity experienced at an individual level can have social psychological implications when aggregated across a population.

Incidentally, the Inquisition was given its impetus by the publication in 1486 of a theological treatise on *The Witches' Hammer* or *The Malleus Maleficarum* (Kramer & Sprenger, 1486/1971). It is said to have been on the bench of every judge and the desk of every magistrate in both Catholic and Protestant countries of Europe that were driven to combat the "Society of Witches." Curiously, its distorted reasoning begins with reflection on a cosmic discontinuity, namely the existence of evil in a world created and controlled by an omniscient, omnipotent, God. By turns it focuses on human agents of the Devil, witches, who facilitate evil by undermining human virtue and resolve, thus must be found and destroyed.

## D. DISCONTINUITY-MOTIVATED SEARCH FINDS CAUSALITY IN CHANCE, CONSPIRACY IN COINCIDENCE

As nature abhors a vacuum, the human mind abhors chance in human affairs. It finds patterns in randomness (Chapman & Chapman, 1967,1969), order in chaos, meaning in nonsense, causes for correlations, and planned conspiracies behind coincidental events. Thus, we should not be surprised that when a person has experienced some significant discontinuity, she or he will be readily able to generate a "reasonable" causal explanation, and sustain it despite all evidence to the contrary. When that erroneous explanation leads to social action, it could become dangerous.

### 1. Mrs. Lincoln Fears That 1 Am Controlling Her Mind

Mrs. Lincoln was a middle-aged, African-American housewife, whose apparent discontinuity experience was hearing voices of several people talking to her. At first, she reacted to them with benign interest, curiosity, and some amusement. But when she started acting out their suggestions, she got in trouble at work, first losing her job at the post office (when the voices told her to take frequent breaks), and later as a bus driver, when the voices suggested new routes for Mrs. L. to follow.

She was very concerned about getting her job back because she had a family to feed, and so came to see me at Stanford University to implore me to intervene-since she believed I had been responsible for starting up her voices! Prior to our initial conversation, she had sent me a New Year's greeting card, had learned much about my background and family, and sat patiently outside my office all day for many days (during winter recess) until my secretary noticed her there and made a formal appointment with me.

Our conversation began with her asking whether I taught a course on Stanford University on mind control, which I said was not likely, given the recent ethical guidelines against any such research. Nevertheless, Mrs. L. insisted that I was somehow controlling her mind, was responsible for the voices she was hearing, and wanted me to silence them so that she could get her job back at the post office. Despite my reasoned arguments, she insisted there was a definite link between her voices and being a subject in mind control research at Stanford.

The meandering link was created from the following circumstances. She had come to the university earlier for diagnostic screening of her eligibility for inclusion in shyness treatment groups that we were starting at our Shyness Clinic. After taking a battery of psychological tests and a brief interview, she was told by the therapist that she was not really shy enough to warrant therapy.

Five months later, her voices began to speak up, and Mrs. L. associated this unusual experience with the only other recent unusual event in her life, visiting Stanford University and being studied by psychologists under my supervision. This "ego-correlation," pairing personally experienced unusual events, became ever more viable the more she thought about it. This belief had persisted for a full seven years, up to the time of our first appointment, when she wanted to know my intention in implanting those voices in her mind (see Malle, in press). She returned repeatedly, sitting outside my office for hours on end, always with a smile, but refusing to leave until she spoke with me again.

I arranged with a female Afro-American clinical psychologist to talk with her, who encouraged her to see her therapist and take her medications, and provided rewards for doing so, like taking her to lunch. Nevertheless, Mrs. L. insisted on my writing a letter of recommendation to the post office, which I finally wrote, sending her a carbon copy. However, because her copy was unsigned by me, she got angry believing the original was also not signed or even sent. Mrs. L. then refused to leave my office until I wrote a better letter, signed and mailed in her presence, that got her job back. At that point we all became concerned about the potential for violence and informed her therapist that he had to talk her into leaving or university security would intervene. I never heard from her again, but have not forgotten Mrs. L. and what her voices might tell her to do next.

At about the same time as Mrs. L. appeared and disappeared, a colleague in the Math Department, Karel deLeeuw, was brutally murdered by a graduate student as he sat working in his office. His killer, Theodore Strewleski, was "unnaturally sensitive to what he called `put downs,' and once he felt someone had insulted him, he brooded on it for years" (Ciotti, 1980, p. 42). Strewleski's discontinuity may have been the failure to complete his dissertation 18 years after starting out as a promising graduate student

in an outstanding program. Professor deLeeuw was but one of many faculty on Strewleski's list to be murdered for their arrogance and show of disrespect to students. Thus, sometimes discontinuities can lead from thoughts to feelings to actions, in some cases, destructive ones.

A sad, remarkable parallel to the Strewleski case occurred recently when another graduate student confessed to fatally shooting his engineering professor as he was in the process of collecting final examinations at Wayne State University (Reuters News Service, 1998). A colleague hinted at a possible motive, saying, "The math is extremely difficult. (The suspect) was just unable to do it. He did not know how to evaluate himself correctly. He wasn't at all able to get the degree." (p. A2). This 48 year-old student, turned premediated murderer, was also like Strewleski in having been around his university for many years, unsuccessfully trying to graduate with a doctoral degree. Another illustration of a chronic discontinuity with lethal consequences.

## E. SOCIAL SEARCHES FOR NORMALITY MAY END IN BIZARRE PLACES WITH STRANGE BEDFELLOWS

People experiencing discontinuities that have a noticeable effect on their behavior may become more concerned over their apparent abnormal appearance than in generating an adequate rational explanation for it. Regardless of the origin of the discontinuity, if people feel that it is affecting their behavior and demeanor sufficiently to mark them as "different" by their usual reference groups, they may seek out new bases of social comparison with similarly deviant others. The first case illustrating this social aspect of Discontinuity Theory has a medical basis for her suddenly aberrant behavior that drove a conservative college student to become a punk rocker. The second reveals what can happen in a similar situation when the person experiencing a discontinuity has sufficient personal power to persuade others to act in ways that normalize his discontinuity.

### 1. Mary Jane, The Punk Rocker Graduate Student, Needs Sugar

As an undergraduate, Mary Jane began experiencing sudden, dramatic mood swings from anger to rage to depression to elation within a few hours. She was easily irritable, temperamental, and hyperkinetic at times alternating with listless apathy in the mornings. Her dorm roommates found her hard to deal with since she became hostile and argumentative as well, but as suddenly could function normally and be sweet and happy.

She first attributed these atypical reactions to her sister's death from a drug overdose since they began shortly after that salient event. It is significant to note that she also had started a vegetarian diet at that time to cope with her feelings of listlessness, and would faint during religious services if she fasted. Mary Jane began to worry about "what's wrong with me?" as her anomalous reactions persisted for a year after a reasonable mourning period. Her mother interpreted her negativity as an "attitude problem" and referred her to a therapist, a family friend, who also focused his causal analysis on her mixed feelings regarding her sister's death. She "bailed out" of therapy when her symptoms continued to worsen. Her family felt that she was "creating problems for herself," and that her problems were obviously mental, even though her father was a physician.

Her roommates got increasing irritated by her staying up all night reading and studying then sleeping in all morning, not to mention her abusive behavior that got her labeled as "weird." She also started smoking, along with drinking lots of coffee and alcohol, and began to get interested in hard-core punk rock music and rockers. She attended concerts regularly (X, Sex Pistols, Chaos), would slam dance, get battered, punch others, scream obscenities, and be physically exhausted, but then would sleep deeply and wake up feeling better. She also donned punk attire totally—spiked Mohawk, leather, chains, studs, piercing, and other regalia. Mary Jane then gave up entirely on her former friends, and associated exclusively with punk rockers who, like her, were angry and existentially depressed. They needed no explanations nor gave any, and she fit in perfectly like her cut-down glove. At that point in time, she made a character attribution, "I am just an angry person."

At the end of senior year she outgrew the punkers, realizing that she hated that kind of music and joined a new social set which embraced total apathy, negativity, and depression. She reported later basking in their depression and being "bummed out," feeling no affect at all, and not needing to explain why to anyone. They listened only to "gloom and doom" music (like "Care" and "Joy Division"), dressed totally in black, and were united in their anti-establishment social activism. She felt that finally she was able to "get away from Me; I was a Group now!"

Despite this lifestyle, Mary Jane continued to focus on her studies, got energized by studying, enjoying snacking a lot as she did, and got good enough grades to be admitted to Stanford University that fall. When I met her, Mary Jane was still in a socially alienated mode, and clearly "different" from our traditional, rather conservative graduate students, but obviously smart and surely "interesting." She had just discovered that her vague associations of her mood swings and diet "sugar rushes," "starch highs," were the result of her chronic, severe hypoglycemia. Her abnormally low

blood sugar levels were worsened by a vegetarian diet, by fasting, coffee, alcohol, and a long night's sleep. They were elevated by snacking junk food. Although her father was a physician and her mother also had been hypoglycemic, they did not interpret her obvious medical symptoms accordingly because of the vividness of the alternative explanation of grieving over her sister's death.

With a new diet and new interpretation, Mary Jane began to change her dress and demeanor to resemble that of a more typical graduate student. Over time she performed well enough to earn her a fine job as an assistant professor in a traditional liberal arts college.

In retrospect, as we discussed her earlier behavior, she interprets joining the punkers and the nihilists as "social facilitators" that immediately established her unusual reactions as usual, made explanations unnecessary and provided needed social affiliation to offset rejection by former friends. The association with these particular groups also served to exchange an external focus for her prior egocentric preoccupation and failed internal search mission for an adequate explanation of the discontinuities she was experiencing.

I would argue that a comparable social psychological process may be at work among many ordinary individuals who join various social/religious/political cults (Zimbardo, 1997). Steven Hassan, a former member of the Unification Church ("the Moonies") and author of *Combatting Cult Mind Control* (1988) informed me that the majority (as high as 75%) of those recruited into cults are experiencing some form of "discontinuity" in their lives, often of a spiritual or mystical nature, but it may also come from a personal loss (personal communication, January 9, 1995). At times the attraction of cults may derive in part from the group's unusual demands for extreme behaviors that are alien to the usual lifestyle of the recruits, thereby allowing them to submerge their feelings of differentness or inadequacy within the cult's new normative structure.

### 2. Prophet Applewhite Castrates His Followers on Their Way Through Heaven's Gate

It was strange enough for the world to learn that 39 members of a cult had committed mass suicide in a posh mansion in San Diego, California, March 26, 1997, but the story got ever stranger as more information was uncovered about the Heaven's Gate cult (Chug-Eoan, 1997; *Newsweek,* 1997). This group, composed of highly educated, technologically sophisticated members (with a group web site), varying widely in age, were totally obedient to their leader/prophet, Gordon Applewhite. He imposed a rigid lifestyle, with detailed rules and routines that controlled their every action,

so as to "prepare their seed for harvesting" when they were transported beyond earth to Heaven's Gate by a UFO. As they waited patiently for a celestial sign, they first assumed their signal for imminent ascendance was the movie *Cocoon,* with its UFO transport ending. But when that failed to materialize, they later found a better signal in the advent of the well-publicized comet, Hale-Bopp. Applewhite, a.k.a. "Leader Do," told his followers that a hidden UFO was trailing behind the comet and would be their designated heavenly transport. To be carried out of this world, they first had to give up their corporal bodies in their well-choreographed group suicide (Gleick, 1997).

My special interest in this case stems from the leader's social power to rectify a discontinuity that he was experiencing by imposing a severe demand on his followers that normalized his unacceptable impulses. Applewhite is reported to have struggled for years against the emergence of his homosexual impulses that were unacceptable to him. A central goal of leader Applewhite was to eliminate the negative "vibrations from the vehicle" (body), primarily by controlling sensuality in all of its forms. He advocated first abandoning gender distinctions, then all sexual behavior, even masturbation (Taylor, 1997). Later, when apparently that was not sufficient for him, he urged his male followers to "remove the battle" they were fighting within by castrating themselves, as he did. Many of his blindly obedient followers also had themselves castrated *(CNN Special Report,* 3/30/97; Miller, 1997; Roberts, Hollifield, & McCarty, 1998).

## F. CHRONIC, SHARED DISCONTINUITIES CAN LEAD TO MASS SOCIAL REACTIONS

The phenomenon of Cargo Cults was presented earlier as an instance of a widespread societal reaction to the perceived discontinuity caused by the sudden disappearance of the abundance that had been created by the sudden appearance of foreign ships. Part of that analysis includes a socially shared perception of the discontinuity, and a common way of responding to it that is socially acceptable in that setting, even when it entails bizarre reactions. Our final case study involves a socially shared pathological reaction among children who earlier had all experienced a similar kind of personal discontinuity.

### 1. Mass Hysteria among Schoolchildren Experiencing Chronic Loss and Family Disruptions

An outbreak of illness spread swiftly among a large group of schoolchildren attending an assembly at an elementary school in a Boston suburb

(Small & Nicholi, 1982). Thirty four of the 224 children at that school function had to be hospitalized with severe dizziness, hyperventilation, headache, nausea, abdominal pain and general weakness. However, extensive epidemiological investigation failed to detect an organic cause, and since the symptoms went into remission as quickly as they surfaced, and were more common among girls than boys, the investigators concluded it was a case of "mass hysteria."

When a sixth grade boy, a class leader, fell from the stage during the play being performed for the assembly, immediately several other students became ill and in minutes clusters of children throughout the auditorium were similarly stricken down. Two aspects of this case are particularly relevant to our theory. First the initiating setting was the last gathering of the student body for the year, with the sixth graders moving on to new schools, leaving some of their old friends behind. This may have been perceived as a significant loss to them that could not be individually expressed since graduating was supposed to be a joyous event. Second, evidence was found that the majority of children hospitalized had suffered a previous loss that may have made them vulnerable to the current loss and predisposed those children to mass hysteria. Comparisons of the hospitalized children with their nonhospitalized peers revealed that they had a much higher incidence of family disruption, assessed as significantly higher rates of parental divorce and death within the family. These sources of discontinuity loom large in a child's life. They may be stored as chronic perturbations in consciousness that can influence behavior in settings that share in symbolic significance, in this case, an anticipated new source of loss.

Having outlined and elaborated on features of Discontinuity Theory and illustrated some aspects of it with a variety of case study examples, we are ready to turn to a series of experiments conducted over many years to examine its empirical support. Several of the studies have been published, but some additional data will be presented here, while several more are unpublished and will be presented for the first time.

## IV. Experimentally Creating Discontinuities, Search Frame Biases, and Their Consequences

This section begins with a summary of the basic paradigm that guided each of the series of experiments that will be elaborated subsequently. I then describe in more detail the ways in which hypnosis was utilized as our methodological tool for inducing the experience of discontinuity. As part of this overview, it is helpful to lay out other common features of our

research, such as the assessment of the psychological and physical status of our participants, the procedural sequence and standardized controls used, the types of outcome and process measures recorded, how the extensive debriefing phase was developed, and the follow-ups conducted.

## A. BASIC EXPERIMENTAL PARADIGM

Earlier research from our laboratory that attempted to replicate and extend the conclusions of the Schachter and Singer (1962) two-factor model of emotion revealed that the discontinuity created by hypnotically induced unexplained arousal (Maslach,1979) had many advantages over the discontinuity induced by misattributions of arousing drugs, such as epinephrine (Marshall & Zimbardo, 1979; Maslach, Zimbardo, & Marshall, 1979). These advantages are listed in Table III.

I am aware of the potential limitations and controversy of using posthypnotically induced discontinuity experiences and search frame biases. Hypnosis is still not well accepted among mainstream researchers, nor are the mechanisms by which it works well understood. Nevertheless, I decided to adopt that procedure for my basic paradigm because I felt confident in its research utility for testing the predictions from my conceptual model based on my personal familiarity with hypnosis along with successfully using it over many years professionally (see Marshall & Zimbardo, 1979; Maslach, 1971; Maslach, Marshall & Zimbardo, 1972; Monteiro & Zimbardo, 1987; Piccione, Hilgard, & Zimbardo, 1989; Zimbardo, 1969; Zimbardo, Marshall, White & Maslach,1973; Zimbardo, Maslach & Marshall 1971,1972). I have also relied on the successful use of hypnotic programming of research subjects by Blum (1979), amnesia studies by Evans (1979) and by

TABLE III

RESEARCH BENEFITS ASSOCIATED WITH HYPNOTICALLY INDUCED AROUSAL COMPARED TO AROUSAL BY EPINEPHRINE INJECTIONS

Arousal effects are equally strong

Onset and offset are immediate and stimulus cued

Less variability across participants within the same condition Can be limited to specific and minimal arousal symptoms

Effects do not carry over beyond the research setting

Less suspicion and disbelief among participants

Does not require elaborate and costly medical cautionary procedures (demanded by Medical School Panels for Human Research)

Evans, Orne, & Orne (1980); and the knowledge gained from my long association with Jack Hilgard's hypnosis laboratory at Stanford. The major relevant criticism to contend with is the subject-selection factor, since only about a fourth of the population is highly hypnotizable. I've tried to deal with that constraint by randomly assigning these subjects to the various conditions in each experiment, using within-subject controls in one experiment, hypnotic simulators in some studies, and by comparing high and low hypnotizable subjects in another study.

In this program of research, *discontinuities* were operationally defined as experiences of "unexplained arousal" induced in highly hypnotizable subjects by means of posthypnotic suggestions to feel changes in their physical functioning, (e.g., increases in heart rate and respiration) at the sight or sound of a pre-determined cue. Suggestions for *source amnesia* in the experimental treatment added the "unexplained" component to the standard arousal manipulation for these participants, while controls remained aware that their arousal was hypnotically induced.

A second posthypnotic suggestion was used in some studies to provide participants with explanatory frameworks to guide their attributional search for the meaning of their aroused state. These "biased" search frames included other people (social), the physical environment (external), or their body/health (personal, internal).

Following the standardized hypnotic induction and suggestions, participants continued to engage in various prearousal tasks, then received the arousal cue, and then continued to work on their task alone, or sometimes with another peer or confederate. Participants completed personality scales and other measures during, and sometimes after, this discontinuity experience. In some studies, they were also wired for psychophysiological recordings. While still in a state of arousal, each participant was interviewed by the experimenter or a clinical psychologist (blind to their experimental condition) to assess her or his judgments, attributions, emotions, and memory. Subject reactions were sometimes videotaped for later analysis, rated by judges, also by clinical psychologists, and made available to our Human Subjects Institutional Review Board on request. Extensive debriefing ended the experimental session, which typically lasted about 90 minutes.

### 1. Participant Characteristics

Our research participants were Stanford University undergraduates (assumed to be both intelligent and well educated), who were recruited from Introductory Psychology courses and given experimental course credit and modest payment for their services. Prior to their research involvement, we determined that they were normal and healthy, both physically and

psychologically. We did so by means of interviews and self-report questionnaires that revealed they all were not in therapy, or on psychiatric medication, had no current medical or psychological problem, were not anxious (all were within one SD of the nonclinical norm on the Manifest Anxiety Scale), and showed no evidence of paranoia, phobia, or hypochondriasis on relevant Minnesota Multiphasic Personality Scale (MMPI) subscales (within the normal range). Finally, all had to report feeling "good, well, or great" at the start of any experiment to be included during that session.

### 2. Hypnotizability and Hypnosis Enhancement Traning

Participants were selected on the basis of their scores on measures of hypnotizability (using a slightly modified, shorter version of the Harvard Group Hypnotizability Scale, Form A, Shor & Orne, 1962, and in some studies, also individual assessment via the Stanford Hypnotic Susceptibility Scale, Form C, Weitzenhofer & Hilgard, 1962). Two groups were used: highs scoring 8-10, and lows scoring 0-2. In addition, it was necessary for those who were highly hypnotizable to also demonstrate their ability to experience posthypnotic amnesia, as shown by high scores on the amnesia section of the above scales, and validated in specific tests during hypnosis training sessions.

Hypnotizability is a reliable individual difference measure of responsiveness to hypnotic suggestions to experience a range of phenomena not typical in ordinary consciousness (Hilgard, 1965). It is this ability that creates the hypnotic experience and not some special talent of the hypnotist, who is merely the coach or guide. Neither gender differences nor any valid dispositional correlates have been found for hypnotizability (Hilgard,1982), although it does decrease with age and education. Hypnotizability is a highly reliable trait, as shown by our 25-year test-retest correlation coefficient of .71 (Piccione, Hilgard, & Zimbardo, 1989).

A special feature of this research program was the use of a training procedure designed to enhance hypnotizability by enabling participants to enter a deep hypnotic state quickly, by means of instructions administered by me in person or via tape-recording, or later on by self-administration. During the training, participants attended one or two small group sessions (3 hours of training in total). Among the features of this training was practice by participants in rapid induction, deepening of hypnosis, and the experience of a wide range of hypnotic phenomena, such as sensory imagery, positive and negative mood arousal, amnesia, carrying out posthypnotic instructions, age regression, pain control, self-esteem boosting, and concentration for studying (only some were relevant for our research; the last four were for the personal benefit of the students). This training also included

repeated self-ratings of subjective arousal on a 10-point SUA scale (Subjective Units of Arousal, where 0 = totally relaxed and 10 = extremely tense), a measure used later in all our studies. Participants also received training in how to write about and discuss their reactions during each phase of the hypnotic training. It was important that participants realized that they were able to communicate their feelings and thoughts while deeply hypnotized or during a posthypnotic phase, so that this knowledge could be transferred to the experiment proper, when they were actively engaged in various tasks, or in debriefing. To control for this pre-experimental exposure time and contact with the researchers, comparable training was used for low hypnotizable participants in the one study where they were included. For hypnotic simulators (used in another study), the preliminary small group sessions, also held in the same laboratory, included watching a video on hypnosis, discussion about hypnosis phenomena and research, and experience with induced relaxation and role-playing being hypnotized.

### 3. Common Procedural Features

To save space in describing the methodology for the individual studies that follow this section, those procedural features common to all studies will be outlined here, so that only special aspects particular to those studies need be mentioned later.

All participants were randomly assigned to experimental and control treatments. The treatments included posthypnotic suggestions for somatic arousal (cued to a specific stimulus) with or without explicit amnesia, or awareness, of this suggested arousal source. The arousal cue was varied between studies to minimize any specific associations of a particular stimulus, and thus to increase its generic value. The cues included a bell sounding, a timer being started or stopped, or a specific word projected on a slide or on a memory drum. Hypnotic inductions and experimental treatments were standardized and presented via tape recordings, written instructions, or both.

Instructions for somatic arousal were limited to the two basic symptoms of most arousal states, increased heart rate and respiration. Pretesting with other, additional symptoms, such as tense muscles or moist palms, revealed no greater effect than did these two basic symptoms on any of our assessments. Interestingly, many subjects spontaneously reported feeling those, and other symptoms when they were "generically aroused." Either the entire procedure, or final interview, was video-recorded, both for data analysis and so that the Human Subjects Research Committee could monitor the research protocol.

The *Amnesia Suggestion* stated, "You will NOT remember the reason you are feeling aroused, and will have no desire even to try to remember

the suggestion made to you. You will feel aroused and not associate it with the suggestion you got." The *Awareness Suggestion* stated: "Of course, you will remember fully that the reason you are feeling aroused is because of this suggestion I made to you to alter your heart rate and respiration. You will feel aroused and associate it with the suggestion as you try to understand the reason for your feelings of arousal."

The engagement of an explanatory search process was encouraged by further instructions in the Amnesia condition, to the effect: "However, it will be important for you to try to figure out why you are feeling as you are, and to try to understand the reason why you are feeling aroused." Experimentally induced search frames were added to the above instructions in some studies, by inviting the individual to consider the possibility that what she or he was experiencing "might have something to do with other people/the physical environment/your body or health." Obviously any subject was given only one of these search frames to consider using during the attributional search process. In pretesting, we also explored the effects of the induced biased search frame of "with mystical or spiritual forces."

A wide variety of assessment measures were used in various studies, including self- and peer-ratings (especially subjective units of arousal [SUA] ratings); videotaped behavior ratings; Thematic Apperception Test (TAT), Rorschach, MMPI, emotion circle, interpersonal circle ratings; psychophysiological measures of heart rate, respiration, galvanic skin response (GSR), electromyography (EMG), and EEG. Each study concluded with a long three-phase debriefing of participants both in and out of hypnosis. Subjects had to make written and oral statements of their understanding of the nature of the experiment and the manipulations; they were dismissed only when they gave evidence of full understanding; and they had to have returned to near their initial base rate levels on the final SUA rating (the debriefing process will be more fully described in the Ethics section of this chapter). All participants who showed particularly strong reactions during treatments were called by me or the clinical psychologist that evening or the following day, in order to assess and help resolve any negative sequelae (there were none). A written mail survey was conducted several weeks later in one study, and a year after another study to determine negative or positive enduring effects, and the value of participating in this research. (Some of that data will be presented in the next section on Ethical issues.)

### B. PILOT-TESTING FEATURES AND OBSERVATIONS

Extensive pilot-testing was conducted with several dozen participants to determine the ideal procedure for creating discontinuities using posthypnotic suggestions, the minimal number and type of symptoms needed to

create a general state of arousal, and the effects of various induced search frame biases. In addition, piloting helped us to evaluate the reality and validity of the amnesia induction, as well as to determine and deal with any negative sequella of this unique research experience.

The posthypnotic suggestions used in early pilot studies instructed participants that at some time during the day's session, when they saw a brown circle on the cover of a book, they would begin to experience feelings of anxiety. The book was about hypnosis (Fromm & Shor, 1979), which later I asked them if they had read. This procedure was abandoned when I learned that some students were getting aroused outside the experimental setting by seeing brown circles on various objects. Thus, we learned that the arousal cue had to be specifically limited to the experimental setting.

We also found that directly suggesting "anxiety" as the arousal state created too wide a range of negative consequences since it tapped into multiple interpretations, including anticipations of upcoming future events over which one might feel anxious, as well as the recall of past events that had been anxiety-provoking. Consequently, we settled upon limiting the suggestion to specific physical symptoms associated with generalized arousal. It also becomes more conceptually interesting (from the perspective of the current model) if such a generic arousal state leads to misattributions that are in some way judged to be pathological.

We had to discontinue using the biased search frame of "spiritual or mystical forces" as a possible explanation for the arousal, even though it generated fascinating accounts of religious influences, UFOs, intelligent extraterrestrials, and remote mind control by unseen technologies, among other accounts. (Recall my case study of Mrs. L. who resolutely believed I was controlling her mind at a distance.) This interesting search frame was not utilized in our formal studies because the after-effects it created in some students were disturbing. Some science and engineering students remained upset after being debriefed when they discovered that they could even entertain such preposterous beliefs that were alien to their scientific orientation and value system.

It was evident that our various arousal manipulations had a powerful, observable impact on most pilot students, as shown in their strong emotional reactions, unusual thinking and overt behavior. However, the nature or power of the amnesia induction was less clear. Although almost all participants reported not recalling the experimental instructions, it was impossible to determine whether that was evidence for a true deficit in memory retrieval (i.e., a dissociative experience in highly hypnotizable individuals), or merely an active suppression of memory, or a socially motivated act in which they appeared as though they had forgot. Although "genuine" amnesia has been found among high hypnotizable subjects in other studies who

met the criterion of amnesia that we also used (Evans, Orne & Orne, 1980), it was important to demonstrate the reality of our amnesia conditions in our laboratory setting. Initially, we tried to do so by seeing if an experienced clinician, totally blind to the experimental treatments, could breach the induced amnesia during a diagnostic interview, and thus discover the nature of the manipulations.

A practicing therapist was invited to assist me by dealing with a problem I told her I was having in a new research project, namely, some subjects were becoming upset during the experiment. She was paid to interview each of seven high hypnotizable students who shortly before had been given the arousal induction in a sound chamber (while selected psychophysiological measures were being taken). When next in an adjacent room with another student, they were exposed to the arousal cue word that appeared on a memory drum as part of a memory task. The clinician's goals were: to find out what the student-subjects were feeling, and why they were feeling that, and to try to make them feel better—all while the subjects were still in the midst of their induced amnesic arousal. Analysis of the tape-recorded interviews revealed some encouraging outcomes, as well as some discouraging findings.

Amnesia was never breached; the therapist was totally unable to discover the true explanation of the arousal symptoms as suggested by our experimental instructions. This result encouraged us to continue using our arousal-amnesia induction procedure.

The therapist did find out that the students were aroused, upset, anxious, nervous, distressed, and were experiencing a variety of physical symptoms. She also discovered that hypnosis was somehow involved in the research. But curiously hypnosis was not entertained as the causal candidate for the negative reactions being experienced because the students insisted it could not be the responsible agent since hypnosis in the past had always made them feel good, relaxed, focused, and positive. That is the good news we had hoped to find. We were surprised, however, to hear that in every case, a suitable alternative explanation was generated based on "leading questions" derived from the therapist's psychodynamic orientation. For example, when told that the first experience of distress came while the student was in the sound chamber, she asked if he were alone there, and/ or felt abandoned by Dr. Zimbardo, and then she explored his prior feelings of rejection. To another student who said she got aroused when taking the memory test in the large lab room along with another student, the therapist explored issues of performance anxiety and excessive competitive needs. Desires to please his demanding parents as a source of high levels of "text anxiety" seemed appropriate as her causal attribution proposed for yet another subject's discontinuity.