

## The Switch Process in Multiple Personality Disorder and Other State-Change Disorders

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### ABSTRACT

*This paper explores the properties of states of consciousness as they are revealed by the process of state-change or switching. Drawing on examples of state of consciousness transitions in infants, altered states of consciousness, and psychiatric disorders, a number of common principles are derived. These include the observation that states of consciousness are discrete self-organizing patterns of behavior differing along axes of affect, access to memory, attention and cognition, regulatory physiology, and sense of self. State transitions are marked by non-linear changes in these variables. A developmental model is outlined and the implications for treatment and further research are discussed.*

### INTRODUCTION

This paper presents a model of multiple personality disorder and other psychiatric disorders that are conceptualized for the purposes of this paper as "state-change" disorders. We will first discuss the concept of states of consciousness, focusing on the properties of states that are relevant to state-change psychopathology. Next we will explore the phenomenology and physiology of the state-change or switch process. Finally we will discuss implications of the model for clinical interventions and further research.

### STATES OF CONSCIOUSNESS

#### Definitions:

The concept of state, mental state or state of consciousness, originally derived from the Latin *status*, meaning condition of being, has a long and complex history beyond the scope of this paper. The concept of states of consciousness came into its present usage by the end of the eighteenth century, was central to the early descriptions of hypnotic phenomena, and remains a pivotal idea in modern psychology. Today the term is widely used in the psychological and psychiatric literature and represents an unquestioned assumption in many clinical formulations and psychological theories. The supposition of a dichotomy between state and trait properties is, for example, central to much of the current research in biological psychiatry.

While there is no single definition of state that covers the range of clinical uses, the one proposed by Emde et al. (1976), drawing on earlier work by Prechtl and his colleagues (Prechtl et al., 1968), is a good place to begin. They define state as: "A constellation of certain patterns of physiological variables and/or patterns of behaviors which seem to repeat themselves and which appear to be relatively stable (p. 29)." Wolff (1987) also citing Prechtl's contributions, further adds that states are "ensembles of self-organizing variables" and notes that "state transitions [switches] are discontinuous relationships among ensembles of state variables rather than linear changes along a quantitative continuum of levels of arousal or excitation (p. 19)."

### PROPERTIES OF STATES OF CONSCIOUSNESS

There is a large and diverse literature on states of consciousness including: 1) work on a variety of pathological states of consciousness such as affective, anxiety, psychotic, catatonic, and dissociative states; 2) sleep/wake alterations in state of consciousness; 3) hypnotic and meditative states of consciousness; 4) drug-induced states of consciousness; 5) psychoanalytic work on ego states; and 6) states of consciousness during infancy. A number of central properties of states emerge from a review of this literature. The first is the idea that states are discrete and discontinuous. Tart (1977) and

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others have, in fact, argued that it is more precise to speak of a "discrete state of consciousness" rather than the more commonly used "state of consciousness." The discontinuous nature of states of consciousness is best demonstrated by the work on infant consciousness (Wolff, 1987), bipolar disorders (Bunney et al., 1977), and state-dependent psychophysiology (Lydic, 1987).

A second general property of states of consciousness is that they are self-organizing and self-stabilizing structures of behavior. When a transition (switch) from one state of consciousness to another state of consciousness occurs, the new state acts to impose a quantitatively and qualitatively different structure on the variables that define the state of consciousness. The new structure acts to reorganize behavior and resist changes to other states.

A good illustration of this property comes from the work on infant states of consciousness. Wolff (1987) has shown, for example, that transitions from waking to sleep state I in infants (infant sleep is classified by "states" rather than the "stages" used in adults) follow a predictable sequence and that entry into sleep state I results in a rapid reorganization of a number of state variables. Once the infant has stabilized in sleep state I, it is resistant to destabilization caused by attempts to wake the infant. A nudge, tickle, or loud noise may briefly disorganize the sleep state and wake the infant, who rapidly reorganizes back into sleep state I. The stability of a given state and its resistance to disorganization vary from state to state, e.g., infant sleep state I is more resistant to experimental disruptions than infant sleep state II (Wolff, 1987). Resistance to destabilization declines over time in a given state; e.g., sleep state I is more resistant to destabilization early on than after it has been present for 20 minutes.

A third general principle is that switches between states are manifest by non-linear changes in a number of variables (Wolff, 1987). These variables include: 1) affect; 2) access to memory, i.e. state-dependent memory; 3) attention and cognition; 4) regulatory physiology; and 5) sense of self. For reasons discussed below, changes of state are difficult to discern in normal adults. Changes in affect and mood are, however, probably the single best marker of state switches in normal adults. The most important marker of state-dependency of learning and memory in normal adults is mood. (Blaney, 1986; Bower, 1981; Weingartner et al., 1977). State dependent access to memory and state dependent learning, while most robustly demonstrated with drug-induced manipulations of state (Overton, 1984), can be observed in a variety of psychiatric and neurologic state-change disorders (Eich, 1986; Weingartner, 1978; Silberman et al., 1985; Nissen et al., in press), with hypnotic manipulations of state (Blaney, 1986), and with mood

manipulations of state (Bower, 1981). Attention and cognition vary with state. Examples range from the extreme shifts seen across sleeping vs. waking states to the more subtle manifestations seen in state-dependent learning studies and found in state-change disorders such as bipolar illness (Reus et al., 1979).

There is an extensive experimental literature on state-dependent or state-specific physiology (Lydic, 1987). It is likely that state-specific physiology has been an unrecognized contaminant in the current search for biological traits that differentiate specific psychiatric disorders. State-dependent differences in sense of self, e.g., self-esteem and body image, are commonly noted in clinical alterations of state (Horowitz & Zilberg, 1983; Putnam, in press). As an illustration, one need only recall the dramatic transformation of sense of self from worthless to grandiose that accompanies switches from depressive to manic states in bipolar patients.

## DEVELOPMENT OF STATES

States appear to be the fundamental unit of organization of consciousness and are detectable from the first moments following birth. Wolff (1966, 1978) and others have used a standard taxonomy of states to describe neonatal behavior up to about age 1 year. As Emde et al. (1977) observe, "the amount of scientific literature dealing with state-related variables drops off precipitously after the newborn period (p. 30)." This is due in large part to the fact that behavioral states become increasingly difficult to differentiate with maturation and are less likely to show obvious physiological correlates. Researchers therefore discuss differences in subjects' readiness to respond in terms such as: attitudes, set, cognitive style and psychological structures (Emde et al., 1977). A few investigators, such as Horowitz (1979), however, continue to focus on states as clinically important determinants of cognition and behavior.

In part, the increasing difficulty in specifying state is probably a reflection of a normal developmental process that smoothes out the transitions across states of consciousness in normal individuals. We speak of this developmental task in infants as their learning to achieve homeostasis, i.e., the ability of infants/children to modulate state so that they are in a context-appropriate state and the capacity to recover from disruptions of state. This developmental task is significantly influenced by input from caretakers who help the infant/child achieve appropriate state transitions, e.g., waking up and alerting at feeding time and relaxing at nap time.

Nowhere is caretaker-facilitated state change more apparent than with premature infants, who require extensive modulating input from caretakers before they



can achieve a state of alertness and motor organization necessary for successful feeding. With experience and maturation of the nervous system, the infant/child becomes increasingly able to self-regulate state. This developmental task represents another arena in which aberrant caretaker behavior may play a role in the dysregulation of state seen in psychiatric conditions such as MPD.

A second reason that discrete states of consciousness become more difficult to discriminate as children grow older is that there are an increasing number of states, differentiated by more subtle changes in state variables. Neonatal researchers agree on a constellation of five to seven discrete states shown by normal infants. By age one year, a child may well have added dozens of states. By adulthood that child may have hundreds of discrete states and be able to make transitions among them almost seamlessly. It is only in certain disorders in which there are pathological states (e.g., depression, anxiety, catatonia, and/or the individual becomes "stuck" in a state or conversely cannot hold an appropriate state) that the role of states of consciousness in the patterning and organization of behavior can again be appreciated.

Certain psychiatric disorders can be conceptualized as "state-change" disorders, in that a major pathophysiological component of the disorder comes from a dysregulation of the state transition process. Depression can be used as an example. Everyone becomes depressed periodically, but typically cycles out of the depressed state spontaneously or with a little deliberate self-induced state manipulation, e.g., a shopping spree makes some individuals feel better. Depression only becomes a clinical condition when the person becomes "stuck" in the depressed state for a specified length of time, e.g., a minimum of two weeks by DSM-III-R criteria (American Psychiatric Association, 1987). It is the failure to switch out of this universally experienced state that defines it as a pathological condition. Other disorders, e.g., panic attacks are characterized by precipitous shifts in state from normal states to pathological states without obvious cause. In some cases, such as "specific" phobic disorders or posttraumatic flashbacks, the precipitous shift in state of consciousness is triggered by an environmental stimulus.

#### **MULTIPLE PERSONALITY DISORDER AS A STATE-CHANGE DISORDER**

Multiple personality can be thought of as a disorder in which the individual's consciousness is organized into a series of discrete dissociative states (alter personalities) centered around specific affects, body images,

modes of cognition and perception, state-dependent memories, and behaviors. By and large the transitions between these rarified states are abrupt and discontinuous compared to the smoother transitions between normal states of consciousness. These highly segregated dissociative states are developed during childhood in the context of severe trauma, generally repetitive child abuse (Bliss, 1980; 1986; Putnam et al., 1986).

At least two processes probably converge to enhance the distinctiveness and separation of these alter personality states. First, the data suggest that the trauma must occur relatively early in development and almost always before puberty (Bliss, 1980; Greaves, 1980; Putnam et al., 1986). This suggests that the trauma may be interrupting the normal developmental process of smoothing out transitions between states, thereby leaving the individual with abrupt state transitions that resemble those of infants and small children.

Secondly, it is thought that it is adaptive for the traumatized child to enter into dissociative states of consciousness which appear to heighten the state-dependence of variables such as affect, memory retrieval, and behavior (Braun & Sachs, 1985; Kluft, 1984). By binding these variables to discrete, circumscribed dissociative states, the child protects him or herself against being overwhelmed by a flood of painful affects and memories during times when he is not being traumatized. This enables the child to successfully function in other areas of his life. Over time, and in a way that is as yet not understood, the repeated entry into these heightened dissociative states of consciousness builds up alter personalities with an elaborated sense of self, who personify specific affects, behaviors and developmental ages and who often become invested in their own separateness and in conflict with other alter personality states.

#### **THE PHENOMENOLOGY OF THE SWITCH PROCESS**

For our purposes, we will define a state-change or switch as the psychobiological events associated with shifts in state of consciousness as manifest by changes in state-related variables such as affect, access to memories, sense of self, cognitive and perceptual style, and often reflected in alterations in facial expression, speech and motor activity, and interpersonal relatedness. In working with non-multiple patients, Mardi Horowitz (1979) has observed that state changes are "...commonly recognized during a clinical interview because of changes in facial expression, intonation and inflection of speech, focus and content of verbal reports, in degree and nature of empathy, and other communicative qualities." (p. 31)

## SUBJECTIVE EXPERIENCE OF THE SWITCH PROCESS

One might expect that there would be a large introspective literature on switching. What does it feel like to switch? Yet very little has been written. Researchers of altered states of consciousness in particular, have tried to study the subjective state-change experience with little success. Zinberg (1977) described a Zen sect that attempted to introspectively observe the exact moment of transition between waking and sleep without success. Tart (1977) tried to study the moment of getting "high" on marijuana, with equally poor results. The vast majority of users only became aware of "being stoned" sometime after they felt that they had become stoned. Gil and Brenman (1959) found the same problem with hypnotic state transitions. Deikman (1977) has labeled this phenomenon the problem of the missing center. It is as if the "self" that observes and remembers is state-dependence and is suspended during the moment of transition between states of consciousness. Studies of memory performance during alcohol-induced changes in state, indicate that impairment of memory is most sensitive to the rate of change rather than the absolute blood level of alcohol (Jones, 1973). Taken together, these subjective and experimental observations suggest during periods of rapid transition between states, individuals do not observe, learn, or store information well.

## SWITCH SPEED

How rapidly do switches occur? Several factors influence the precision with which we can determine the rate of a state transition. The first is the sampling rate of the measurement device. The ability to determine the rate of change is a function of how often one tests for a change. For example, the same behavioral rating scale will yield different results if it is applied every five minutes or every eight hours. The second limitation is identification of clear endpoints that signify a state change has been completed. For example, if one requires a certain amount of change in a nurse administered rating scale, e.g., four points over a previous baseline, it may take several hours to days before the subject behaviorally manifests this degree of change in the presence of the nursing staff. If one is testing for a significant change in motor activity, speech or facial expression, a switch may become apparent within minutes to hours. The obvious problem is that with so many levels of temporal resolution across different measures it is difficult to cross-validate any given measure.

## MPD Switch Durations

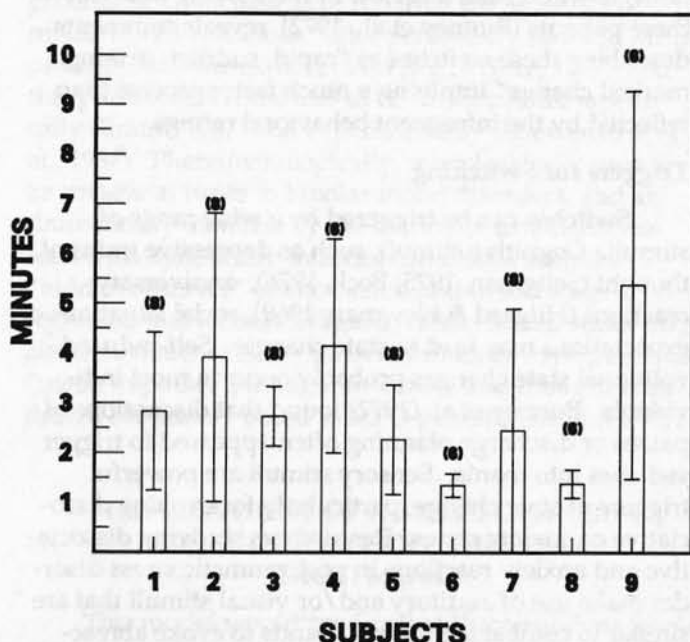


FIGURE 1

Figure 1 shows the mean duration of switching for nine MPD patients measured across six or more alter personality changes. In this case, the behavioral endpoints for determining that a new stable state, i.e., an alter personality, had emerged was based on continuous observation and verbal interaction with the subject until it was established from the individual's facial expression, behavior and verbal report that a new alter personality was present and stabilized. This data is in agreement with reports by the vast majority of therapists that alter personality switches typically occur within five minutes (Putnam et al., 1986). Similar observational data have been collected on state transitions in infants, yielding switch times of the same magnitude (Wolff, 1987). Drug-induced flashbacks and panic attacks likewise have onset/offset times of the same order of magnitude (Rainey et al., 1987).

If one studies videotapes of alter personality switches in MPD patients using facial changes as endpoint markers, some switches appear to occur within a few seconds. Similar results have been noted in bipolar patients undergoing sleep-deprivation induced switches into mania and then back into depression (Rubinow — unpublished data). Switch speed data on bipolar patients from studies conducted during the mid-1970's using nursing ratings administered every eight hours suggest a greater variability of switch speed, ranging from five minutes to several days to complete the transition between retarded depression and mania (Bunney & Murphy, 1974; Bunney et al., 1977). The majority of these switches were completed within an



hour, however, and a review of the nursing notes on these patients (Bunney et al., 1972), reveals comments describing these switches as "rapid, sudden, striking, marked change" implying a much faster process than reflected by the infrequent behavioral ratings.

### Triggers for Switching

Switches can be triggered by a wide range of stimuli. Cognitive stimuli, such as depressive trains of thought (Seligman, 1975; Beck, 1976), anniversary reactions (Hilgard & Newman, 1969), social situations or expectations may lead to state changes. Self-induced volitional state changes probably occur in most individuals. Bunney et al. (1972) found that discussions of passes or discharge planning often appeared to trigger switches into mania. Sensory stimuli are powerful triggers of state change, particularly for evoking dissociative or anxiety states. Researchers studying dissociative and anxiety reactions in posttraumatic stress disorder make use of auditory and/or visual stimuli that are similar to combat sights and sounds to evoke ab reactions and anxiety reactions (Dobbs & Wilson, 1960; Kolb, 1987), though cognitive imagery techniques can be equally effective (Pitman et al., 1987). Olfactory (Kline & Rausch, 1985) and tactile stimuli can likewise be powerful cues for triggering a switch into a dissociative or anxiety state.

Forced motor activity in depressed adults (Post & Goodwin, 1973) and postural changes in infants (Wolff, 1987) appear to induce changes in state of consciousness. Young children appear to make use of postural and motor changes, such as twirling and hanging upside down, to alter their state of consciousness (Weil, 1972). Drugs and alcohol are well-documented triggers for state changes, even when actual blood levels are very low, suggesting a cueing effect. In cocaine and opiate addictions, drug-craving or drug-withdrawal states can be produced in abstinent abusers idiosyncratic environmental cues linked to past drug use (Gawin & Kleber, 1986). Pain, fatigue, and sleep deprivation (Wehr et al., 1987) are common "physiological" state change triggers.

### OBSERVATIONS ON THE SWITCH PROCESS IN MPD PATIENTS

During our studies of hundreds of alter personality state switches in MPD patients using various combinations of slow motion videotapes, EEG, and autonomic physiological measures, a number of common features have emerged. The first is that the majority of alter personality switches occur relatively rapidly, typically in under five minutes, though determination of switch speed is subject to all of the methodological limitations discussed above. Secondly, most, but not all, patients

exhibit either a burst of rapid blinking or one or more upward eye rolls at the beginning of the switch. This may be followed by a transient "blank" or vacant gaze. Thirdly, there is a disturbance of ongoing autonomic regulatory rhythms, particularly heart rate and respiration, together with a burst of diffuse motor discharge. On videotape, one can see a rearrangement of facial musculature that coincides with the motor discharge. The facial rearrangement often occurs in a stepwise fashion as a series of grimaces. As the new alter personality state stabilizes, there are often postural shifts.

The newly emerged alter personality state differs from the preceding one along a number of dimensions. Typically there is a shift in affect. Voice and speech differences, long noted by clinicians working with MPD (e.g., Cory, 1919; Goddard, 1936; Mason, 1893; Peck, 1922; Prince, 1917), are common and are not merely secondary to changes in pitch but also involve shifts in format frequency (Ludlow & Putnam, unpublished data) as well as rate and volume. Baseline motor activity and muscle tension are usually altered. Perceptual and cognitive changes may be manifest by the newly emerged alter personality state's responses to the environment. Not infrequently, the current alter personality state will take great pains to differentiate itself from the preceding state, reflecting a significant shift in the person's sense-of-self.

While all of these changes are clinically striking, similar changes have long been reported with state-changes in other psychiatric disorders. For example, switches between depression and mania in bipolar affective patients are characterized by a dramatic shift in affect, together with changes in rate and volume of speech (Bunney et al., 1972), motor activity (Wolff et al., 1985), and cognitive function (Bunney et al., 1972). And of, course, there is a significant shift in sense-of-self from the worthless and hopelessness of depression to the grandiosity of full-blown mania. Periodic catatonia likewise is characterized by precipitous shifts in affect, speech, motor activity, and state-specific physiology (Gjessing, 1974).

### ORDER EFFECTS

Clinical observation and research on state-changes in psychiatric disorders suggests that there are a number of order effects. The first is a directional or pathway effect. i.e., that transitions from state A to state B may follow a different pathway than transitions from state B to state A. This is apparent in bipolar illness where switches from depression to mania typically pass through a transient intervening euthymic state while switches from mania into depression progress through

an "unstable period" characterized by rapid alternation between the symptoms of depression and mania until the individual finally stabilizes in a state of retarded depression (Bunney et al., 1972).

In working with MPD patients we have observed that access to a specific alter personality state may require traversing an idiosyncratic pathway passing through an ordered succession of intervening alter personality states; e.g., alter A may only be accessible through Alter D which is only accessible through alter C so that one may have to pass from C to D to reach alter A. These observations suggest the existence of an underlying hierarchical organization of states or a set of different switch pathways dependent on the direction of the switch. Wolff (1987) endorses the latter position noting from his work on infant sleep/wake transitions that "...the presumed neurological processes which effect a transition for waking to sleep may thus differ qualitatively from mechanisms required for the transition from sleep to waking" (p. 54).

A second type of order effect appears to be that certain alter personality states are likely to be preceded or followed by specific other alter personality states. While this apparent increased probability of one alter personality state, following another currently remains a clinical observation, the experiential sampling methodology used by Lowenstein and his colleagues (1987) to study a single MPD patient's naturalistic switching pattern can be applied to the question of alter personality state sequences in MPD. The increased likelihood of specific state sequences occurring in relation to feeding has, however, been well documented by Wolff (1987) and others in infants.

Based on preliminary results from our study of switching in MPD patients, it appears as if the order in which one studies a group of alter personalities will affect the psychophysiology of any given alter personality state. It is as each alter personality state, while tending towards a state-specific baseline on a given measure, e.g., heart rate, is also influenced to some extent by the characteristics of the alter personality states that preceded it. For example, alter A may show heart rate acceleration when preceded by alter B and deceleration when preceded by alter C. This order effect appears to extend retrogradely through several preceding personality states, though the number of permutations rapidly makes this a difficult issue to study.

### MIXED STATES

The issue of mixed states is one that is going to have to be addressed if we are to understand the interactional role of states in normal and psychopathological

processes. Clinicians have reported the existence of mixed or "co-conscious" alter personality states in MPD patients since the earliest cases (e.g., Prince, 1917), and this phenomena continues to be important therapeutically (Braun, 1987) and experimentally (Loewenstein et al., 1987). Phenomenologically, mixed states appear to be present at times in bipolar mood disorders, and are dramatically manifest by the duality of consciousness seen with hypnotically-induced conditions such the "hidden observer" phenomenon and in some age-regressed individuals (Hilgard, 1986). Mixed states may also contribute to such "passive influence" symptoms as "made impulses", thought insertion, and thought withdrawn commonly noted in MPD patients (Kluft, 1987).

### IMPLICATIONS OF A STATE-CHANGE MODEL OF PSYCHOPATHOLOGY TREATMENT

This model would predict that there are three levels of psychopathology involved in state-change disorders. The first is at the level of the states per se, i.e., the individual enters into a state of consciousness, for example anxiety, that is dysfunctional and/or dysphoric. The second level is a disturbance in the switch mechanism, which may malfunction in a number of ways. It may become "stuck" so that the individual does not normally cycle out of a commonly experienced dysphoric state. It may exhibit a "lability" so the individual can not stabilize in a state such as occurs with rapid switching in multiple personality disorder (Kluft, 1983; Putnam et al., 1984); or it may be highly susceptible to activation by environmental triggers leading to stimulus-induced activation of states, e.g. flashbacks. The third level of psychopathology arises from the individual's responses to the first two levels. For example, the person may attempt to modulate state by using drugs or alcohol. Loss of control over state modulation may lead to secondary depressions (Himmelhoch, 1987), generalized anxiety, or phobic avoidance of environmental triggers.

Therapeutic interventions based on this model would have to take into account the level(s) of psychopathology. For example, treatment of substance abuse that is an attempt at self-modulation of state would be expected to have a poor outcome unless the primary problem with modulation of state is addressed. It is well known that the treatment of secondary symptoms, such as depression and anxiety commonly seen in multiple personality, have little impact on the patient's psychopathology (Putnam et al., 1984). Conversely, when the dissociative alter personality states are worked with directly in therapy, many of the secondary affective, anxiety, and somatic symptoms disappear (Braun, 1987).



This model suggests several levels of therapeutic intervention in state-change disorders. The first is that of changing state. This may be accomplished in a variety of ways. Medications, for example antidepressants and anxiolytics, may act by changing state biologically. Psychotherapy may work by enabling the patient to cognitively change his or her state of consciousness. Chronobiologic manipulations such as sleep deprivation may alter state by interfering with circadian state sequences (Campbell & Gillin, 1987). Interestingly, many of the above therapeutic interventions can, in susceptible individuals, induce rapid perturbations of state such as the rapid cycling in bipolar patients (Campbell & Gillin, 1987; Wehr & Goodwin, 1987). There is also evidence of cross-reactivity between state-change modalities, e.g., certain antidepressant medications interfere with circadian rhythms (Zetin et al., 1987).

It is apparent that merely changing state is usually not enough; one must stabilize the individual in more functional states and prevent reentry into dysfunctional states. Some medications, particularly lithium, may act by stabilizing state (Wehr & Goodwin, 1987). Psychotherapy may help patients stabilize or modulate their state by enabling them to identify state-change triggers (e.g., depressive trains of thoughts, anniversary reactions, etc.), and provide them with alternative outcomes for these triggers. Psychotherapy may also act to disrupt the discreteness of some types of states, e.g., dissociative

states, by bring emotionally charged state-dependent material into non-dissociative states of consciousness to be worked through and integrated. Behavioral desensitization techniques, often used with phobic-stimulus induced panic disorders, may provide a quasi-state stabilization effect by reducing vulnerability to environmentally triggered state-change, e.g., phobic object-induced panic attacks.

## RESEARCH

The states of consciousness/state-change model of provides a unique isomorphic concept that cuts across the many domains of psychiatric knowledge. Conceivably the specification of a state of consciousness can span the current chasm from the receptor level to the "ego." It is also a model well-rooted in the new discoveries of developmental psychology with its recent emphasis on the integration of "self" (Stern, 1985). Multiple personality disorder provides a unique example of a traumatically-induced state-change disorder with a profound disturbance in sense-of-self.

Studies of the psychology and biology of the alter personality states permits us a powerful look at the variables that define states of consciousness and at the psychophysiological processes by which states of consciousnesses are created, maintained and exchanged.

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