

DISSOCIATION

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The concept of dissociation, proposed by French psychiatrist Pierre Janet in 1889, described an apparent disruption in the normally integrated functions of memory, identity, perception and/or consciousness as he observed it in hysterical patients (Perry & Laurence, 1984). Today, dissociation is used to describe a wide array of normal and abnormal phenomena as disparate as daydreaming, amnesia, hypnotic responses, feeling that elements of the environment are unreal (derealization), and not feeling like oneself (depersonalization). Dissociation is also used to refer to the *process* by which behaviors, thoughts, and feelings can become split off from one another. This dual use of the word dissociation -- descriptive and explanatory-- renders the concept ambiguous and problematic. .

Dissociative experiences are often reported in situations of low or high arousal such as excitement, fatigue, anxiety, sleep or sensory deprivation, acute stress, alcohol or drug intoxication, rituals, and as a response to hypnotic suggestions. Dissociative experiences have been observed in men and women of all ages, and across various cultures. Although considered functional in nature (i.e. having no organic cause), this view is questionable since dissociation is known to occur in a variety of neurological conditions (e.g., partial complex seizure [temporal lobe epilepsy], Ganser's syndrome, etc), and shows a high comorbidity rate with several other psychiatric disorders. Dissociative-like symptoms occur in *panic disorder* (e.g., derealization,

and depersonalization during a panic attack), in *psychotic disorders* (e.g., visual and auditory hallucinations, feelings of estrangement from the self, lack of a sense of agency), in *somatoform disorders* (e.g., functional parasthesias), in *sleep disorders* (e.g., somnambulism), in certain *personality disorders* (e.g., depersonalization during self-mutilation episodes in borderline personality disorder), as well as in *eating disorders* (e.g., derealization during bingeing episodes). Because of the crossover between pathological and non-pathological dissociative experiences and their concurrence with neurological and psychiatric disorders the prevalence of such experiences in the general population has been difficult to evaluate (Kihlstrom, in press).

I. Normal and Pathological Dissociation

The various experiences subsumed under the term dissociation have traditionally been conceptualized as lying on a continuum, ranging from the benign, such as absorption or hypnosis, to the more extreme, like dissociative identity disorder (formerly multiple personality disorder). Some twin studies have revealed a substantial shared genetic variance between normal and pathological dissociative experiences (e.g., Jang, Paris, Zweig-Frank, and Livesley, 1998). This dimensional view of dissociation has been challenged over the last few years. Statistical analyses of questionnaires indexing dissociation have shown that certain types of amnesia (e.g., finding oneself dressed in clothes one does not remember putting on) and depersonalization (e.g., not recognizing oneself in the mirror) form a distinct *taxon*, i.e. a qualitatively different collection of symptoms unrelated to other everyday dissociative-like experiences, and indicative of psychopathology (Waller, Putnam & Carlson, 1996). Whether or not normal and pathological dissociation lie on a continuum of subjective experiences is still the object of debate among researchers.

Dissociative symptoms can become manifest and sometimes persistent in response to psychological trauma. In *Acute Stress Disorder* individuals typically experience a variety of transient (peritraumatic) dissociative symptoms as the traumatic event unfolds. Several symptoms of *Posttraumatic Stress Disorder* (PTSD), a condition which may also develop in the aftermath of trauma exposure, can be viewed as dissociative, particularly symptoms of numbing, feelings of detachment as well as cognitive avoidance of trauma-related material.

Dissociation is also the hallmark of a subset of disorders known collectively as the *Dissociative Disorders* (DSM-IV-TR; APA, 2000). Depending on the specific nature of the dissociative symptoms the resultant disorder may be categorized as one of the following: *Dissociative Amnesia* is the inability to recall events from certain periods in one's life that can not be explained by organic causes or normal forgetfulness. *Dissociative Fugue* involves amnesia along with unexpected travel away from one's usual place of residence. People with this disorder frequently assume new identities during the fugue state with no apparent recollection of their previous identity. *Dissociative Identity Disorder* occurs when multiple separate identities coexist within the same individual, alternatively taking executive control. *Depersonalization* involves persistently not feeling like oneself or experiencing oneself as detached from one's own body or mental processes. The existence of certain dissociative disorders is still debated among specialists and will require more systematic research before they are widely recognized (see Kihlstrom [in press] for a more in-depth discussion of dissociative disorders).

II. Cognitive Models of Dissociation

Several theoretical models have attempted to account for dissociative experiences (see Woody & Bowers, 1994). Hilgard's Neodissociation theory tries to account for normal dissociative-like phenomena. Based on the premise that consciousness is not unitary,

neodissociation theory proposes that subordinate cognitive subsystems are arranged in a hierarchical fashion controlled by an executive monitoring system. Under certain conditions (such as hypnosis) the executive control can be cutoff from various subsystems producing a dissociation of incoming information from consciousness through an amnesic barrier. Such dissociative experiences can be experienced as ego-syntonic or ego-dystonic. Woody and Bowers (1994) have offered the alternative view that many mental functions are performed unconsciously and automatically to begin with by specialized cognitive modules. Thus, some degree of dissociation is the natural state. The experiences of dissociation reflect the failure of these modules to be integrated at higher levels of the system.

Other cognitive models focus primarily on trauma-related dissociation. According to such models (e.g., Foa and Hearst-Ideka, 1996), dissociative symptoms are attempts at mental escape from the overwhelming and dysphoric consequences of the trauma, and subsequently, of the memory of the trauma. This attempt at affective self-regulation through dissociation is deemed maladaptive in the long term because it can impede psychological processing of the trauma. At this point in time, however, none of the proposed models satisfactorily explains the domain of dissociative experiences, although all of them in one way or the other are supported by subsets of research.

III. Neurobiological Models of Dissociation

Given the intimate relationship between dissociation, memory, and trauma, researchers have begun to investigate the brain structures and neurochemical systems that mediate functions. Several substances such as sodium-lactate, yohimbine, and metachlorophenylpiperazine have been shown to elicit dissociative symptoms in patients with PTSD or panic disorder, but not in normal controls (Krystal et al., 1998). Such findings suggest a role for the locus

coeruleus/noradrenergic system, which is implicated in fear and arousal regulation and influence a number of cortical structures such as the prefrontal, sensory and parietal cortex, the hippocampus, the hypothalamus, the amygdala, and the spinal cord.

Based mostly on animal research, Ledoux (1996) has proposed that during fear conditioning (and possibly during trauma exposure), memories are laid down by various parallel memory systems. For instance explicit (conscious) memories could be laid down by a system involving the hippocampus and related cortical areas, while implicit (unconscious) memories established by fear conditioning mechanisms would operate through a separate amygdala-based system. When stimuli that were present during the fear-inducing experience are later encountered, each system can potentially retrieve its memories. The lack of integration between those systems could, in part, explain some trauma-related dissociative symptoms.

Congruent with the findings of Ledoux, there is evidence to suggest that high levels of stress hormones can induce structural damage in the hippocampus and decrease its ability to perform its memory-related integrative functions. Some magnetic resonance imaging studies suggest that individuals with PTSD have a smaller, possibly damaged, hippocampus, and such findings correlate with memory deficits and dissociation. Still, the relationship between trauma exposure, cortisol, hippocampus damage, memory, and dissociation is tentative at best, and remains to be thoroughly investigated.

IV. Conclusion

Although the concept of dissociation has been in use for a some time, a complete account of the mechanisms involved remains somewhat elusive. Basic scientific knowledge about its underlying processes derives largely from hypnosis and PTSD research. This research has provided only a tentative account of the psychological and neurobiological factors implicated in

dissociative experiences. Several aspects of these models await further validation and replication from animal as well as human studies. The hypothesis that there are several types of dissociative experiences mediated by a variety of, as yet, undiscovered mechanisms appears quite reasonable at this stage. Given the controversial state of contemporary research and theory, it may be more parsimonious to use the term dissociation in a solely descriptive rather than explanatory fashion.

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