

## Self-Mutilating Behavior in Patients with Dissociative Disorders: The Role of Innate Hypnotic Capacity

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**Abstract:** *Background:* Despite the fact that the assumption of a relationship between self-mutilation and dissociative disorders (DD) has a long history, there is little empirical evidence to support this premise. The present study examined this relationship and investigated whether this commonality is associated with innate hypnotic capacity. *Methods:* Fifty patients diagnosed with DD and 50 control subjects with major depression were assessed by using a self-mutilation questionnaire, Dissociative Experiences Scale, Traumatic Experiences Checklist, and the Eye-Roll Sign for their self-mutilating behaviors, dissociative symptoms, early trauma, and innate hypnotic capacity, respectively. *Results:* We have found that 82% of the present sample of patients with DD injured themselves. They had higher scores on trauma, dissociation and eye-roll measurements than controls. In addition, DD patients with self-mutilation were more likely to have high scores of trauma, dissociation and eye-roll than those without self-mutilation. Innate hypnotic capacity was a strong predictor of self-mutilating behavior in DD patients. *Conclusions:* This study strongly supports the assumption that patients with DD are at high risk for self-mutilating behavior and points to the necessity of routine screening for self-mutilating behavior as well as the hypnotic capacity which may constitute a high risk for self-injury in this patient group.

### Introduction

Self-mutilating behavior, defined as deliberate self-injury without conscious suicidal intent (1), is a symptom reported by 4% of the general and 21% of the clinical sample, and is equally prevalent among males and females (2). As a morbid form of self-help, self-mutilating behaviors often provide rapid but temporary relief from distressing symptoms such as mounting anxiety, chaotic thoughts, rapidly fluctuating emotions, hallucinations and depersonalization (1).

Literature on self-mutilation has focused mostly on self-injurious behavior in personality disorders, especially borderline personality disorder (BPD; 3). Because BPD is the only psychiatric diagnosis with self-injury as a criterion, it is common to hear the two equated in clinical settings. However, high rates of self-destructive behaviors are found in patients with many different psychiatric disorders, such as major depression (4), antisocial personality disorder (5), post-traumatic stress disorder (6) and eating disorders (7). This behavior is also prevalent in

dissociative disorders (DD; 8). Particularly, studies conducted in patients with the most complex dissociative disorder, dissociative identity disorder (DID), have found between 34% and 86% have histories of self-mutilation (9, 10). Patients with DD have been reported to have used more methods of self-injury and started to injure themselves at an earlier age than patients who have not dissociated (10).

Dissociation is the main characteristic for DD and is defined as a conscious and/or unconscious separation of mental processes (e.g., perceptions, cognition, emotions, memories, and identity) that are ordinarily integrated in and accessible to conscious awareness. This may manifest as an adaptation to stress in a healthy or pathological manner. It is becoming increasingly recognized that dissociative processes can underpin self-injury (11). Some self-mutilating patients have reported an altered state of consciousness while cutting or picking, resembling a dissociative state, and declared that they have not experienced pain (1, 12). Childhood abuse, which is supposed by many to play an etiological role in the

development of dissociative symptoms, may be a variable that leads to both dissociation and the propensity to self-mutilation (3, 11). Alternatively, several clinical observations (13) also suggest that dissociation and self-mutilation might be related independent of abuse history. It has been hypothesized that self-mutilation terminated the discomfort of dissociative experiences, in particular, deadness and depersonalization (14). Indeed, many self-injurers report feeling emotionally numb, detached from themselves or dead inside prior to the act, feeling little or no physical pain during the act, and feeling more alive, more real and more grounded following the act (12).

A connection between dissociation and hypnosis has been evident since the introduction of the term "dissociation" by Janet in 1889. Janet conceived of the process of dissociation as an explanation for the phenomena he observed during hypnosis and in hysteria patients (15). Spiegel et al. (16) described hypnotizability as "the fundamental capacity to experience dissociation in a structured setting." Similarly, dissociative states have been defined as uncontrolled autohypnosis and patients with dissociative disorders have most frequently been found to be highly hypnotizable (17). The capacity for dissociation seems to be biologically determined and is reflected in the mobility of the external ocular eye muscles. Braid reported in 1843 that a patient could most rapidly and intensely be hypnotized as indicated by an upward eye gaze (18).

Experimental studies investigating the relationship between dissociative experiences and hypnotizability have revealed conflicting results (19, 20). Actually, current data associate the hypnotic state with a trait (21, 22) that manifests as an innate capacity to shift states of consciousness and varies on a spectrum from low to high hypnotizability. In other words, innate hypnotic capacity is an ability which allows the hypnotized person to make maximal use of innate abilities to control perception, memory and somatic function. It represents both a potential vulnerability to certain kinds of psychiatric illness, such as posttraumatic stress, conversion and dissociative disorders, and an asset, in which it can facilitate various psychotherapeutic strategies. The resulting experience for the subject is a reflection of genetically endowed talent and psychosocial influ-

ences. To avoid these psychosocial influences (type, severity and current level of the psychiatric illness, comorbid psychiatric diagnoses, cognitive capacity, medication used, etc.), determining particularly biological hypnotic potential seems reasonable. Evidence has also been found of a positive relationship between childhood punishment and child abuse and hypnotizability (23). Butler et al. (24) recently proposed a diathesis-stress model to describe how pathological dissociation might arise from an interaction between innate hypnotizability and traumatic experience. They suggested that high hypnotizability might be a diathesis for pathological dissociative states, particularly under conditions of acute traumatic stress. However, because of the lack of longitudinal studies, it can be difficult to tell whether the high abilities of autohypnosis and capacity for dissociation are inherent and somehow genetically predetermined, or if long practice has developed this skill.

Although high rates of self-injury have been reported in patients with DD, no study has investigated the relationship between self-mutilating behaviors and innate hypnotizability among patients with DD. We hypothesize that DD represents one of the psychiatric diagnostic categories which most commonly engage in self-injurious behavior and this commonality may be associated with innate hypnotizability. On the premise that hypnotic potential is a construct that is related to dissociative processes, we expected that DD subjects with higher levels of innate hypnotic capacity would show higher rates of self-destructive behavior. The present study assesses the rate and clinical features of self-destructive behaviors and investigates whether innate hypnotic capacity may have predictive value of a high rate of self-destructive behavior in a group of patients who have DD.

## Methods

### Subjects

The participants of the present study were comprised of 50 subjects (41 men, 9 women) consecutively admitted to the in- and outpatient psychiatric units at GATA Haydarpasa Training Hospital, an academic, tertiary care military hospital in Istanbul, from June 2004 through May 2006. Dominancy of

male gender was due to the relatively higher admission rate of male military personnel. Only those patients who met the diagnostic criteria for any dissociative disorder according to the DSM-IV were eligible. They had no history or current symptoms of an organic condition that could cause psychiatric symptoms. Subjects less than 18 years and those who suffered from severe cognitive impairments and severe physical illness were excluded. All subjects were drug free for at least four weeks. All patients were included for testing if their treating clinician felt that they could give informed consent and there were no other clinical contraindications to their participation. Patients who were acutely psychotic or depressed were not approached.

A comparison group consisted of 50 patients (39 men, 11 women) with diagnoses of major depression (MD) was recruited. They had also applied for in- or outpatient treatment at the same hospital's mood disorders program. Similar to a recent study (10), we considered that a control group which showed self-mutilating behaviors but few dissociative symptoms would be a suitable alternative. Using a healthy control group, we could not have determined self-mutilating behaviors in comparison to the patients with dissociative disorders since they had almost no self-mutilating behavior. Patients in the control group were matched to the patients with DD on age and gender. In this way, after the subjects received a complete explanation of the study procedures and before we initiated the interviews, written informed consent was obtained from all subjects.

### Instruments

The subjects were evaluated with a comprehensive assessment battery, administered by clinically experienced psychiatrists specialized in the treatment of DD. The participants were identified by screening all consecutively admitted patients with the Turkish version (25) of the Dissociative Experiences Scale (DES; 26), the most common measure of dissociation. It is a 28-item self-report scale that requires the individual to indicate on a scale ranging from 0 to 100 to what extent presented statements of dissociative experiences apply to them. The statements include experiences such as having done something without knowing when and how or finding oneself at a place without being able to recollect

how one got there. Total scores are calculated by averaging the scores of the 28 items. The DES is not designed to diagnose dissociative disorders per se and is generally used as a screening instrument. It is widely accepted as a standard measure of spontaneous dissociation in both clinical and non-clinical samples. Typically, a score of 30 or higher is considered suggestive of severe or pathological dissociation and scores above 40 are strongly suggestive of DID. It has been used in hundreds of studies and is generally considered to have good reliability and validity. The Turkish version of this widely used screening instrument has a reliability and validity as high as its original form (25).

Patients who scored above 30 on the DES were given the Dissociative Disorders Interview Schedule (DDIS; 27). Diagnoses of DD were confirmed with the DDIS. It is a 132-item highly structured interview with a yes/no format which makes DSM-IV diagnoses of somatization disorder, borderline personality disorder and major depressive disorder, as well as all the DD. It inquires about general psychiatric history, Schneiderian first-rank symptoms, secondary features of DID, extrasensory experiences, trance, substance abuse and other items relevant to the DD. The DDIS is also designed to assess childhood trauma history, specifically, physical and sexual abuse by family members, relatives and strangers and/or nonrelatives. The instrument usually takes 30 to 60 minutes to administer. The DDIS makes categorical diagnoses and yields an index of the number of items that were endorsed in each section of the interview. It has an overall interrater reliability of 0.68, an overall kappa of 0.96 for clinician-DDIS agreement on the diagnosis of DID, and a sensitivity of 0.95 for the diagnosis of DID.

All participants received a questionnaire which assessed self-mutilating behaviors. Self-mutilation was defined as "deliberate self-injury to body tissue without the intent to die." A survey was done to obtain data regarding the type of self-mutilating behavior (skin cutting, severe skin scratching, burning, self-hitting, self-biting and hair pulling), duration and number of lifetime episodes of self-mutilating behavior and age at first self-mutilating behavior. Severity of self-injury was rated on a four-point scale. Level 1 injuries were superficial, resulting in damage to only the first layer of skin, and required no medi-

cal intervention other than cleaning the area. Level 2 injuries broke the skin, resulting in minor bleeding, and required a plastic strip bandage. Level 3 injuries led to significant bleeding and required either stitches or another sterile closure device. Level 4 wounds were serious wounds that required multiple stitches and were potentially disfiguring or life threatening. Finally, precipitating events and functions of self-destructive behavior as well as perceptions during self-mutilation were also questioned in the questionnaire. To reduce any bias in the assessment of self-mutilating behaviors, subjects were interviewed by investigators who were unaware of their psychiatric diagnoses.

To assess whole early trauma history, the Traumatic Experiences Checklist (TEC; 28) was used. TEC is a self-report questionnaire covering 29 types of potentially traumatizing events with good psychometric characteristics in clinical samples. It was found that the internal consistency of the TEC (Cronbach's  $\alpha$  test=0.86, retest=0.90) was good, as was test-retest reliability over a three to four week period ( $r=0.91$ ) as well as convergent validity. TEC total score presents the number of reported potentially traumatizing experiences (range 0–29). In addition, the composite scores per trauma type including emotional neglect, emotional abuse, physical abuse, threat to life, pain, bizarre punishment, sexual harassment and sexual abuse can be calculated in detail. In this study we used only TEC total scores.

Subjects' potential capacity for experiencing hypnosis was assessed by the Eye-Roll Sign (ERS) of the Hypnotic Induction Profile (HIP; 21, 29). HIP is a convenient and appropriate means for clinicians to assess hypnotizability systematically and correlates well with other scales of hypnotizability (30). In the HIP, stress is placed upon the ERS as a measure of a physiological or structural, rather than a psychological trait which is responsible for a person's potential to experience trance (31). Although the ERS forms an integral part of the HIP, it should not be considered as a score related to hypnotizability by itself. It is a sign of a presumed capacity to experience hypnosis. Frischholz et al. (30) indicated that there is a relationship between the eye roll, hypnotizability and absorption. The ERS consists of the roll and squint measurements added together. An ERS score was ob-

tained with a range from zero to four. Spiegel's data (31) indicate a relationship between a positive (1 to 4) or zero eye roll and the presence or absence of clinically useable hypnotizability. There are many instances in which a psychiatric diagnosis can be clarified with the ERS alone and/or the score on the HIP (21). Overall, conditions and psychiatric illnesses which manifest as cognitive impairments with obsessive features and rigidity correlate with ERS of 0–2 and low scores on the HIP; conditions and psychiatric illnesses which manifest as mood disorders and fluctuations correlate with ERS of 2–3 and mid-range scores on the HIP; conditions and psychiatric illnesses which manifest as undisciplined emotional/dissociative states correlate with ERS of 3–4, with high scores on the HIP. To obtain a standard process, all ERS measurements were made by the same researcher who was blind to the diagnostic status of the patients.

A neurologist was responsible for the somatic screening, which was performed on all patients. When necessary, additional diagnostic techniques, such as serial computed tomography brain scans or magnetic resonance imaging, were applied.

### Data Analyses

Clinical data were expressed as percentages or mean values  $\pm$  standard deviation. Comparisons of demographic and clinical data were made with two-tailed unpaired t-tests or Mann-Whitney U test for continuous variables and chi-square analysis for nominal data. Pearson's and Spearman's correlations were performed to determine the relationships between variables of self-mutilation (frequency, duration and severity) and scores on the ERS, DES and TEC. To assess the contribution of each of the selected explanatory variables to self-mutilation status, logistic regression analysis was used. Logistic regression is presented as the statistical method of choice for analyzing the effects of independent variables on a binary dependent variable (e.g., presence of self-mutilating behavior) in terms of the probability of being in one of its two categories vs. the other. The analysis necessarily yields estimated probabilities that lie between 0 and 1. The measure of association derived from logistic regression, the odds ratio, is defined. Statistical significance was set at 0.05. All

analyses were carried out using the SPSS for Windows 10.0 program.

## Results

The sample consisted of 50 participants meeting full diagnostic criteria for any of the DD by DSM-IV, with a mean ( $\pm$ SD) age of  $23.2 \pm 5.3$  years, and an age range of 18 to 50 years. Other demographic characteristics of the subjects are summarized in Table 1. The subjects were predominantly male ( $N=41$ , 82%), and most of them were single or divorced ( $N=39$ , 78%). Nearly half of the participants were recruited as inpatients ( $n=24$ ) and the remainder were recruited as outpatients ( $n=26$ ).

There were no significant differences between patients with DD and control subjects with MD in terms of socio-demographic variables, including age ( $t=-0.3$ ,  $p=0.75$ ), gender ( $\chi^2=0.3$ ,  $p=0.620$ ), marital status ( $\chi^2=0.5$ ,  $p=0.49$ ), and education ( $t=-0.2$ ,  $p=0.85$ ). Eighty-two percent ( $N=41$ ) of the patients with DD reported a definite history of self-destructive behavior.

The two groups differed significantly with respect to histories of self-mutilating behavior ( $\chi^2=38.5$ ,  $p<0.001$ ) and suicide attempts ( $\chi^2=30.6$ ,  $p<0.001$ ). Furthermore, patients with DDs reported significantly greater number ( $t=5.4$ ,  $p<0.001$ ), more different methods ( $t=3.1$ ,  $p=0.003$ ), longer duration ( $t=4.1$ ,  $p<0.001$ ), and earlier beginning of self-mutilation ( $t=-3.4$ ,  $p=0.001$ ) as compared to the control group. With respect to other clinical measures, DD group had also significantly higher scores of overall traumatic experiences on the TEC (DD  $11.1 \pm 5.0$  vs. Control  $4.7 \pm 3.3$ ;  $t=7.6$ ,  $p<0.001$ ), dissociative symptoms on the DES (DD  $56.8 \pm 16.8$  vs. Control  $14.5 \pm 8.9$ ;  $t=15.7$ ,  $p<0.001$ ) and hypnotic capacity on the ERS (DD  $3.0 \pm 0.7$  vs. Control  $1.6 \pm 0.9$ ;  $t=9.6$ ,  $p<0.001$ ) than the control subjects (Table 1). Again, significant differences were evident between DD patients with and without self-mutilating behavior. The DD group with a history of self-mutilation reported higher scores of the ERS ( $Z=4.0$ ,  $p<0.001$ ), DES ( $Z=3.3$ ,  $p=0.001$ ), and TEC ( $Z=1.9$ ,  $p=0.05$ ) measures as compared to those without self-mutilation.

Table 1. *Demographic and Clinical Characteristics of the Study Groups*

Patients' characteristics	DD group (N = 50)	Control group (N = 50)	Analysis ( $\chi^2$ or t)	p value
Age	$23.2 \pm 5.3$	$23.5 \pm 4.6$	-0.3	0.75
Gender (male)	41 (82%)	39 (78%)	0.3	0.62
Marital status (single & divorced)	39 (78%)	36 (72%)	0.5	0.49
Education (in years)	$10.5 \pm 3.5$	$10.6 \pm 2.8$	-0.2	0.85
Self-mutilating behavior	41 (82%)	10 (20%)	38.5	<0.001
Suicide attempt	44 (88%)	17 (34%)	30.6	<0.001
Number of self-mutilation	$14.8 \pm 5.8$	$4.7 \pm 3.8$	5.4	<0.001
Number of self-injury methods	$2.7 \pm 1.2$	$1.5 \pm 0.7$	3.1	0.003
Duration of self-mutilating behavior (years)	$4.9 \pm 2.2$	$2.0 \pm 1.1$	4.1	<0.001
Age at first self-mutilating behavior	$13.9 \pm 3.4$	$17.7 \pm 2.1$	-3.4	0.001
Traumatic Experiences Checklist	$11.1 \pm 5.0$	$4.7 \pm 3.3$	7.6	<0.001
Dissociative Experiences Scale	$56.8 \pm 16.8$	$14.5 \pm 8.9$	15.7	<0.001
Eye-Roll Sign	$3.0 \pm 0.7$	$1.6 \pm 0.9$	9.6	<0.001



Of the 41 DD subjects with histories of self-mutilation, 34% (N=14) reported between one and 10 lifetime episodes (infrequent mutilators), and 66% (N=27) reported more than 10 lifetime episodes (frequent mutilators). The average age at first self-destructive behavior was 13.9 years (SD=3.4) while mean duration of reported self-harm was 4.9 years (SD=2.2). The mean number of lifetime self-mutilation episodes and different types of self-mutilation (cutting, burning, etc.) were 14.8 (SD=5.8) and 2.7 (SD=1.2), respectively. Among DD patients with self-harm, 16 (39%) committed level 1 injuries, 12 (29.3%) level 2, 8 (19.5%) level 3, and 5 (12.2%) patients committed level 4 injuries. Thirty-five patients (85.4%) reported self-hitting, 22 (53.6%) severe skin scratching, 21 (51.2%) hair pulling, 19 (46.3%) skin cutting, 9 (22.0%) burning, and only 2 (4.9%) reported self-biting. The most frequent precipitating events of self-mutilation endorsed by DD subjects were feelings of worthlessness, hopelessness and helplessness (90.2%), problematic relationships (43.9%), loss of a valued subject (43.9%), social isolation secondary to restrictive conditions (36.6%), and family disruption such as divorce or separation (34.1%). With respect to the perceptions during self-mutilating behavior, 80.5% of DD patients reported analgesia and/or anesthesia, 80.5% feeling relieved by self-mutilation, 46.3% amnesia, and only 22% reported attempting to oppose to self-mutilation. Patients rated the following functions of self-mutilation as most important: acting out aggression (85.4%), interrupting negative feelings such as derealization, depersonalization, and dissociation (78%), tension reduction (70.7%), a cry for help (61%), self-punishment (61%), self-control (53.7%), and increasing self-worth (51.2%).

Research interviews revealed that 82% of the DD

subjects met diagnostic criteria for DID and 18% for dissociative disorder not otherwise specified (DDNOS). Importantly, DD patients with self-harm were more likely to be diagnosed with DID as compared to nonmutilator patients (Fisher's exact test,  $p=0.04$ ). The total number of DD subjects reporting a history of physical abuse on the DDIS was 38 (76%), and of sexual abuse 28 (57.1%); and 43 subjects (86%) reported childhood physical and/or sexual abuse. A total of 5 patients (10%) reported only sexual abuse, 15 (30%) patients reported only physical abuse; 23 (46%) patients reported combined abuse and 7 (14%) patients reported neither sexual nor physical abuse. According to the DDIS, of the 50 DD subjects, 38 (76%) met lifetime criteria for major depressive episode, 22 (44%) for somatization disorder, 43 (86%) for borderline personality disorder, and 9 (18%) described a substance abuse problem.

To assess the relationship between variables of self-mutilation and clinical measures, total number, duration and severity of self-mutilating behavior were correlated with scores on the ERS, DES and TEC by using Pearson's and Spearman's correlations (Table 2). Significant positive correlations were found between the ERS scores and all of self-mutilation determinants: number ( $r=0.73$ ,  $p<0.001$ ), duration ( $r=0.59$ ,  $p<0.001$ ), and severity ( $r=0.87$ ,  $p<0.001$ ). DES scores were correlated with both number ( $r=0.38$ ,  $p=0.007$ ) and severity ( $r=0.51$ ,  $p=0.001$ ) of self-mutilation but not with its duration ( $r=0.22$ ,  $p=0.15$ ). With respect to overall trauma history, no significant correlations were found between the TEC scores and the number ( $r=0.26$ ,  $p=0.07$ ), duration ( $r=0.22$ ,  $p=0.16$ ), and severity ( $r=0.17$ ,  $p=0.29$ ) of self-mutilating behavior in patients with DD.

Table 2. *Correlation Coefficients of Relation between Variables of Self-mutilation and Clinical Measures in Patients with Dissociative Disorders*

Measurements	Eye-Roll Sign	Dissociative Experiences Scale	Traumatic Experiences Checklist
Number of self-mutilation <sup>†</sup>	0.73**	0.38*	0.26
Duration of self-mutilation <sup>†</sup>	0.59**	0.22	0.22
Severity of self-mutilation <sup>‡</sup>	0.87**	0.51*	0.17

†: Pearson's correlation,

‡: Spearman's correlation

\*: Correlation is significant at the 0.01 level (2-tailed).

\*\*: Correlation is significant at the 0.001 level (2-tailed).

Table 3. *Logistic Regression Predicting Self-mutilating Behavior in Patients with Dissociative Disorders*

Independent Variables	$\beta$ coefficient	SE	Wald	95.0% C.I. for $\beta$ coefficient	p
Gender	-1.1	2.46	0.20	0.003–41.34	0.65
BPD co-diagnosis	5.34	3.80	1.97	0.12–358537.64	0.16
TEC score	-0.29	0.25	1.36	0.46–1.22	0.24
DES score	-0.28	0.16	3.10	0.55–1.03	0.08
ERS score	-5.83	2.45	5.69	0.00–0.35	0.017

To assess the contribution of each of the hypothesized explanatory variables predicting self-mutilating behavior in patients with DD, logistic regression equation was estimated (Table 3). Dependent variable was self-mutilation (that is, DD subjects attempted self-mutilation versus those without a history of self-mutilation) while independent variables involved gender, BPD co-diagnosis, TEC scores, DES scores and ERS scores. An overall model indicated the potential hypnotic capacity to significantly ( $\chi^2=35.4$ ,  $df=5$ ,  $p<0.001$ ) predict self-destructive behavior in patients with DD, with 96% of the cases identified correctly even when gender and clinical key features of dissociative disorders such as comorbid diagnosis of BPD, level of dissociative symptoms and severity of reported traumatic events were controlled for. Although logistic regression analysis failed to reveal an effect for the DES score, there was a trend ( $p=0.08$ ) for a predicting effect of severity of dissociative experiences on self-mutilating behavior.

## Discussion

This study attempted to investigate the frequency and clinical features of self-mutilating behavior among patients with DD and whether this behavior was associated with innate hypnotic capacity in this patient group. Eighty-two percent of our subjects with DD reported histories of self-mutilating behavior. Among these patients, those with a diagnosis of DID reported significantly more self-mutilating behaviors than those diagnosed with DDNOS. The results of this study support the assumption that patients with DD, especially those with DID, consti-

tute a very high risk group for self-mutilating behavior. The lifetime prevalence of more than 80% revealed in this patient group is in line with previous studies (9, 10).

In the current study, DD patients suffered significantly greater rates of self-destructive behaviors as compared to the control subjects diagnosed with MD. They also had higher scores on trauma, dissociation and hypnotizability measures than patients with MD. Moreover, DD patients with self-mutilation were more likely to have high hypnotic capacity, dissociation, and trauma scores than those without self-mutilation. Our results confirmed preceding data (10) which revealed that patients with DD reported more self-destructive behaviors than patients who had few dissociative symptoms. Indeed, several studies have indicated a close association between self-mutilation and dissociation, or between self-mutilators and relatively high scores of the DES (32). This study also indicated that patients with DD injured themselves at a higher rate, over a longer period, and with more different methods and began this behavior at a much earlier age than patients with MD. Supporting this, Levenkron (33) has classified self-mutilation into nondissociative and dissociative types, considering dissociative type to represent a more severe form than nondissociative type. Bohus et al. (12) have similarly distinguished analgesic from non-analgesic self-mutilators, reporting that analgesic self-mutilators had begun self-mutilating behavior at a younger age, were likely to have more abuse histories, and had higher dissociation scores than non-analgesic self-mutilators.

This study strongly confirmed the function of self-injuring as a means of “self-help” in states of

bodily or emotional discomfort in DD patients. Self-mutilating individuals have been reported to have deficits and problems in resolving their anger, anxiety, frustration and depression, in coping with stress and in reducing tension. Generally, a sense of psychological relief is common among self-mutilators (34). Self-mutilation has been suggested to have the function of terminating the dissociation precipitated by a strong emotion (11, 12, 35). Intensity of dissociative symptoms may be at a maximum just before self-mutilation, so that the self-mutilator does not feel pain normally during mutilation, but then feels immediate release with a marked decrease in the stressful symptoms (35). The relative lack of pain reported by 80.5% of our DD patients may be a result of hypnotic analgesia, which refers to the dissociative reduction or removal of pain under trance. Confirming this assumption, in a recent psychophysical pain study of patients with BPD, attenuated pain perception or analgesia during self-mutilation has been found to be due to altered intracortical processing similar to certain meditative states (36). Correspondingly, a group of researchers (37) found that PET scans of normal subjects with hypnotically induced paralysis were similar to the PET scans of the patient with conversion paralysis. These suggest that hypnotic states and dissociative reactions may share a common neurophysiological mechanism.

In this study, DD patients had significantly higher mean scores on ERS than patients with MD (3.0 vs. 1.6). Similar to our findings, other studies (17) show that dissociative disorders and mood disorders correlate with ERS scores with mean values of 3.3 and 1.8, respectively. Besides, there are several studies that have reported ERS scores in relation with dissociative experiences. An association between pain threshold, ERS scores and dissociative symptoms has been reported in a group of healthy volunteers (38). Welburn et al. (39) have recently suggested that ERS discriminates feigned dissociation from those with dissociative disorders. Also, a significant association between self-mutilation and hypnotic potential was found in the present investigation. DD patients with higher innate hypnotic capacity were more likely to report self-mutilating behaviors. High hypnotic capacity, in conjunction with high dissociative ability, was related to increased self-mutilating behavior. In addition, innate

hypnotizability was correlated with frequency, duration and severity of self-mutilation. Although BPD and chronic childhood trauma are very often found in patients with DD and frequently reported by patients who injure themselves, our study did not confirm an association between presence of self-mutilation and both BPD co-diagnosis and traumatic experiences. Because several types of abuse and higher rates of BPD diagnosis often coexist in DD patients, focusing on these variables may be misleading. Results of this study suggest that self-mutilation may arise directly as a response to the innate hypnotic capacity regardless of the severity of traumatic events and presence of BPD co-diagnosis in patients with DD. These findings also agree with those of previous studies (40), which have indicated that dissociation and self-mutilation might be related independent of abuse history.

Several limitations of the present study warrant attention. First, the relatively small sample size should be emphasized. A larger sample of subjects with DD needs to be recruited. Second, the value of retrospective histories of trauma is questionable, given the possibilities of underreporting, overreporting or "false memory." Last, the clinical characteristics of self-mutilation in this study were assessed by a questionnaire without known psychometric properties. Ideally a standardized, valid and reliable instrument for assessing self-harm behaviors would have been used. As with many surveys, self-report bias may have operated. Conclusions drawn from these results must take into account the limitations of generalizability.

In sum, the current findings have important theoretical and clinical implications for understanding the relationship between dissociation, self-injury and innate hypnotic capacity. A clinical implication of these findings is that mental health professionals need to routinely inquire about various forms of self-mutilating acts in assessing of DD patients and to address hypnotic capacity that may contribute to the self-mutilating behavior, irrespective of the presence of BPD and childhood traumatization. Examining the ERS is a particularly important target for several reasons, because there is a strong association between self-injury and innate hypnotic potential. We propose that self-mutilation is mainly an attempt to ameliorate the discomfort of the dissociative phe-



nomena of numbness and identity diffusion in this patients group who possess a genetic predisposition to dissociation or hypnotizability. From a clinical perspective, it is also possible that DD patients with self-mutilation may be particularly adept at responding to hypnosis and that this technique may have particular therapeutic benefits for these maladaptive behaviors in this patient group.

Abbreviations: BPD, borderline personality disorder; DD, dissociative disorders; DID, dissociative identity disorder; MD, major depression; DES, Dissociative Experiences Scale; DDIS, Dissociative Disorders Interview Schedule; TEC, Traumatic Experiences Checklist; ERS, Eye-Roll Sign; HIP, Hypnotic Induction Profile; DDNOS, dissociative disorder not otherwise specified;

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