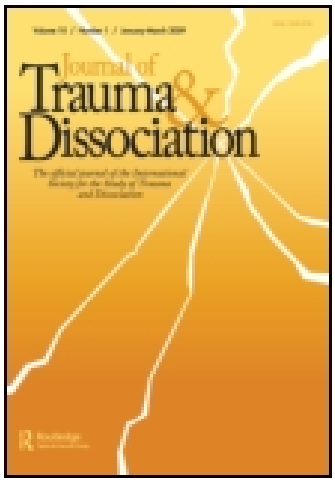

Journal of Trauma & Dissociation
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/wjtd20

Temporal Disintegration in Depersonalization Disorder

Daphne Simeon MD [a] , Ruth Hwu BS [a] & Margaret Knutelska PhD [a]
[a] Mount Sinai School of Medicine , New York, NY
Published online: 12 Oct 2008.

To cite this article: Daphne Simeon MD , Ruth Hwu BS & Margaret Knutelska PhD (2007) Temporal Disintegration in Depersonalization Disorder, Journal of Trauma & Dissociation, 8:1, 11-24, DOI: 10.1300/J229v08n01_02

To link to this article: http://dx.doi.org/10.1300/J229v08n01_02

Temporal Disintegration in Depersonalization Disorder

Daphne Simeon, MD
Ruth Hwu, BS
Margaret Knutelska, PhD

ABSTRACT. Distortions of the experience of time are central to some types of dissociative experiences. In this study, we investigated the relationship between a self-report measure of temporal disintegration and symptoms of dissociation in depersonalization disorder (DPD). Fifty-two DPD and thirty non-clinical control participants were administered the Dissociative Experience Scale (DES) and Temporal Integration Inventory (TII). The DPD group had significantly higher TII scores than the control group. Within the DPD group, there was a significant positive correlation between DES total score and TII total score, and between TII-time distinction subscale score and TII-agency subscale score. In the DPD group, TII scores were not associated with age of onset or duration of illness. Of the three dissociative domains of absorption, amnesia, and depersonalization/derealization, only absorption was a significant predictor of TII total and subscale scores by stepwise linear regression analyses. We conclude that the experience of temporal disintegration in DPD is not directly related to the core symptoms of depersonalization/derealization, but exists when the

Daphne Simeon, Ruth Hwu, and Margaret Knutelska are affiliated with Mount Sinai School of Medicine, New York, NY.

Address correspondence to: Daphne Simeon, Psychiatry Box #1230, Mount Sinai School of Medicine, One Gustave L. Levy Place, New York, NY 10029 (E-mail: daphne.simeon@mssm.edu).

This study was supported in part by grant RO1 MH62414 from the National Institutes of Health, Bethesda, MD (to Dr. Simeon), and by grant MO1 RR0071 from the National Institutes of Health, Bethesda, MD (to the Mount Sinai School of Medicine General Clinical Research Center).

Journal of Trauma & Dissociation, Vol. 8(1) 2007
Available online at http://jtd.haworthpress.com

doi:10.1300/J229v08n01_02

depersonalized experience involves more prominent absorption. doi:10.1300/J229v08n01_02

KEYWORDS. Time, temporal integration, depersonalization, dissociation

INTRODUCTION

The sense of time within normal consciousness consists of both time perception, which refers to the rate of passage and duration of time, and temporal perspective, which refers to the larger continuum of time that involves past, present, and future (Melges & Fougerousse, 1966). Therefore, alterations in the experience of time can involve distortions in either time perception or in temporal perspective; both have been associated with dissociative phenomena. In a study reviewing the phenomenological stability of depersonalization symptoms over the past century, Sierra and Berrios (2001) included distortions in the experience of time as one of the examined symptoms. They defined time distortion as subjective changes in the perception of time duration (i.e., time is experienced slower, faster, or at a standstill) and in time perspective (i.e., an inability to conceive past or future), and concluded that the presence of temporal disintegration in the depersonalization syndrome has been underreported. Several other studies have looked at temporal disintegration with respect to depersonalization phenomena (Cappon & Banks, 1969; Freeman & Melges, 1977, 1978; Lewis, 1931; Shorvon, 1946). In 1931, Lewis proposed that changes in time experience comprise a central mechanism in depersonalization. Cappon and Banks (1969) compared time and space distortions between hospitalized psychiatric patients who reported feelings of depersonalization or derealization and matched non-clinical controls. They tested participants on their ability to produce, reproduce, and verbally estimate various time intervals provided by the experimenter, and their results showed no significant difference in the ability to estimate time passage, suggesting that alterations in temporal experiences were subjective, not objective. Freeman and Melges (1977, 1978) studied depersonalization and temporal disintegration in acute mental illnesses; they found that acutely psychotic patients with schizophrenia, mania, depression, and other

diagnoses showed greater depersonalization and temporal disintegration than non-clinical controls, and depersonalization correlated positively with temporal disintegration.

Alterations in the experience of time can manifest in various manners, and a variety of terms have been used in the literature to refer to these experiences, such as temporal disintegration, temporal disorganization, time skew, and time distortion. Temporal disintegration, temporal disorganization, and time skew fall under the category of alterations in temporal perspective, while time distortion is an alteration of time perception. With temporal disintegration, the individual has difficulty in retaining, coordinating, and serially indexing memories, perceptions, and expectations (Melges, Tinklenberg, Hollister, & Gillespie, 1970). Temporal disorganization refers to time experienced as nonlinear and converting (Freeman & Melges, 1978). With time skew, one is simply unable to order events (Spiegel & Cardeña, 1991). Time distortion refers to subjective changes in the rate at which time passes, that is, a second may appear to last a lifetime, or the converse.

These time alterations can occur both in chronic forms of dissociative disorders, as well as in transient and peritraumatic dissociation. Temporal disintegration seems to occur more often in chronic dissociative conditions, whereas time distortion seems to be more strongly associated with peritraumatic dissociation. The components of self-experience that create what people experience as normal consciousness, including temporal perspective, are intricately integrated with each other. According to Schilder, "the flow of time is intimately related to the course of life and psychic processes" (1953, p. 309). Lewis (1931) noted that time consciousness is an aspect of all conscious activity, making it essential to all reality.

Experimental studies have examined both the depersonalization–and the temporal disintegration–inducing effects of tetrahydrocannabinol (marijuana) ingestion in controlled settings (Mathew, Wilson, Humphreys, Lowe, & Weithe, 1993; Melges et al., 1970). Melges et al. (1970) measured the temporal disintegration induced in healthy subjects via the administration of tetrahydrocannabinol (THC), both subjectively and cognitively, using the Temporal Integration Inventory (TII) self-report questionnaire as well as a cognitive working memory test, the Goal-Directed Serial Alternation (GDSA) task; the two measures were found to be highly intercorrelated. Under the influence of THC, subjects had dose-dependent experiences of depersonalization, and temporal disintegration correlated very strongly with depersonalization ratings ($r = 0.868$, $p < 0.001$). The study also showed that higher doses of THC resulted in a

prolongation of temporal disintegration. Melges et al. (1970) therefore suggested that THC interferes with short-term memory, which interrupts the natural flow of time, leading to temporal disintegration. In a later study, Mathew et al. (1993) administered high-potency, low-potency, and placebo THC cigarettes to 35 healthy volunteers in a double-blind fashion. They found that depersonalization peaked at 30 minutes after the ingestion of active drug, but not placebo. Stepwise multiple regression analyses revealed that of numerous predictors (temporal disintegration, "high" state, anxiety, tension, anger, confusion, physiologic indexes), the most significant predictor of depersonalization was temporal disintegration.

The experience of altered time perception is, to varying degrees, represented in a number of scales commonly used to measure dissociative symptoms, although none place great emphasis on time experiences. Still, time distortions are sometimes specifically referred to in reports of dissociative psychopathology. Ursano et al. (1999) reported that in victims of serious motor vehicle accidents, the most common peritraumatic dissociative symptom was time distortion, reported by 57% of participants. Cardeña and Spiegel (1993) reported that in the acute aftermath of the 1989 San Francisco Bay Area earthquake, those affected reported prominent distortions of time amidst other symptoms.

Questions referring to time figure as follows in some of the commonly used dissociation measures. The Peritraumatic Dissociative Experiences Questionnaire (PDEQ) assesses dissociative experiences during and immediately after a traumatic event, and contains two questions pertaining to time: "My sense of time changed–things seemed to be happening in slow motion," and "I felt disoriented, that there were moments when I felt uncertain about where I was or what time it was" (Marmar, Weiss, & Metzler, 1997). The Clinician-Administered Dissociative States Scale (CADSS), a questionnaire assessing present-state dissociative symptoms, also contains two questions about time: "Does this experience seem to take much longer than you would have expected," and "Do things seem to be happening very quickly, as if there is a lifetime in a moment" (Bremner et al., 1998). The Stanford Acute Stress Reaction Questionnaire (SASRQ), a valid and reliable measure of acute stress reactions, includes an item about time: "I felt a sense of timelessness" (Cardeña, Koopman, Classen, Waelde, & Spiegel, 2000). The Cambridge Depersonalization Scale (CDS), designed to capture the frequency and duration of depersonalization symptoms alone, contains one time-related item: "It seems as if things that I have recently done had taken place a long time ago" (Sierra & Berrios, 2000). Interestingly, the

Dissociative Experiences Scale (DES), by far the most widely used scale measuring dissociation over the past two decades, does not contain any questions directly inquiring about time distortions.

In the current study, the Temporal Integration Inventory was used to measure temporal disintegration, as in the two THC studies previously cited (Mathew et al., 1993; Melges et al., 1970). In this study, we examined temporal integration in patients diagnosed with DSM-IV (American Psychiatric Association, 1994) depersonalization disorder. We hypothesized that depersonalization disorder participants would demonstrate greater temporal disintegration than controls, and that depersonalization symptom severity would be associated with degree of temporal disintegration.

METHOD

Fifty-two depersonalization disorder (DPD) and 30 non-clinical control subjects (NC) were included. DPD participants in this study comprised a consecutive subset of the Simeon et al. (2003) DPD sample, to whom the TII was administered. Participants were diagnosed with DSM-IIIR or DSM-IV depersonalization disorder via a semi-structured clinical interview and the Structured Clinical Interview for Dissociative Disorders SCID-D (Steinberg, 1994), administered by investigators DS or MK who were both trained and experienced in the administration of the interview. NC participants were free of lifetime Axes I and II psychiatric disorders, as assessed by structured interviews (First, Spitzer, Gibbon, & Williams, 1995 and Pfohl, Blum, & Zimmerman, 1995, respectively). Subjects were recruited via newspaper advertisements, Web site postings, paper postings, or were self-referred. All subjects provided written informed consent for research participation.

Participants were given a packet of self-administered instruments to complete, two of which were the Dissociative Experience Scale and the Temporal Integration Inventory. The DES is a 28-item self-report measure of dissociative experiences, which has been shown to have to have good test-retest reliability (0.79-0.96), high internal consistency (Cronbach's alpha 0.95), and strong convergent, discriminant, and criterion validity (Bernstein & Putnam, 1986; Bernstein-Carlson & Putnam, 1993). Items are rated on a 0 to 100% scale, and total score is the mean of all 28 items. In addition to the total score, subscale scores were calculated for amnesia (DES-amn; items 3, 4, 5, 6, 8, 10, 25, 26), absorption

(DES-abs; items 2, 14, 15, 16, 17, 18, 20, 22, 23), and depersonalization/derealization (DES-dps; items 7, 11, 12, 13, 27, 28) (Carlson et al., 1991).

The TII is a 14-item self-report questionnaire that measures two components of temporal integration: temporal distinction and goal-directedness (Melges et al., 1970); it does not measure time perception. Temporal distinction (TII-distinction) refers to the ability to place separate experiences into the temporal categories of past, present, or future without confusing them, as well as the ability to use the present as the reference point of time. Goal-directedness (TII-agency) involves the ability to create or change plans to accomplish a certain goal or control the outcome of one's actions. The TII utilizes a 6-point rating scale ranging from 0 ("Not at all") to 5 ("Extremely so"). Odd-numbered items reflect temporal disintegration whereas even-numbered items reflect temporal integration and are reversed in score calculation. A higher total score reflects greater time disintegration. Extensive information is not available on the internal consistency, reliability, and validity of the TII. Melges et al. (1970) reported that the two components of the TII changed reliably in relation to each other, with a Pearson $r = 0.77$ ($p < 0.0001$) for change correlations between the two components. They also reported that the construct validity of the TII was supported by the high correlation ($r = 0.72$, $p < 0.0001$) between changes in TII and changes in an objective working memory cognitive task.

Statistical analyses were conducted via SPSS (Statistical Package for the Social Sciences, Version 12.0). Internal consistency of the TII was calculated using Cronbach's alpha coefficient. Between-group comparisons used analyses of covariance controlling for age (which tended to differ between groups, see Results). Individual TII items were compared between groups using independent-sample t-tests, Bonferonni corrected for 14 comparisons ($p \leq 0.0035$). Within the DPD group, relationships between TII scores and other variables were explored using Pearson's correlations. Stepwise linear regression analyses were utilized to determine which components of dissociation were the strongest predictors of TII scores.

RESULTS

Of the 52 participants with DPD, 25 (48%) were male and 27 (52%) were female, with a mean age of 34.1 years (SD = 11.2). Of the 30 NC

subjects, 18 (60%) were male and 12 (40%) were female, with a mean age of 29.7 years (SD = 9.2). There was a significant difference in age between the two groups ($t = 1.83$, $df = 80$, $p = 0.07$), while the two groups did not significantly differ in gender ($\chi^2 = 0.30$, $df = 1$, $p = 0.36$). In the DPD group, mean age of illness onset was 15.4 ± 7.3 years, and mean illness duration was 16.1 years (SD = 14.1). DES total score was higher in the DPD (23.9 ± 13.5) than in the NC (4.5 ± 3.3) group [$t (80) = 7.77$, $p < 0.001$]. Within the DPD group, DES subscale scores were DES-abs: 28.6 ± 19.2, DES-dps: 38.9 ± 17.1, DES-amn: 7.7 ± 8.9. Within the NC group, DES subscale scores were DES-abs: 6.4 ± 4.1, DES-dps: 2.6 ± 3.0, DES-amn: 2.1 ± 3.0.

Between-Group TII Comparisons

The TII showed good internal consistency for the combined sample (Cronbach's alpha coefficient 0.86). Table 1 presents between-group comparisons for the TII. TII total and subscale scores were significantly elevated in the DPD group, as were most of the individual TII items after correction for multiple comparisons.

TII Associations Within the DPD Group

TII total and subscale scores were not significantly correlated with subjects' age, illness onset age, or duration of illness. Stepwise linear regression analyses revealed that the three DES subscales (absorption, amnesia, and depersonalization) did not serve as equal predictors of TII total and subscale scores (Table 2). Amnesia and depersonalization possessed no significant predictive value for any TII scores, whereas absorption was a significant predictor of all three TII scores (TII-total: $F (1, 50) = 29.24$, $R^2 = 0.37$, $p < 0.001$; TII-distinction: $F (1, 50) = 41.74$, $R^2 = 0.46$, $p < 0.001$; TII-agency: $F (1, 50) = 5.83$, $R^2 = 0.10$, $p = 0.019$).

DISCUSSION

As predicted, the dissociative group manifested greater temporal disintegration compared with normal controls, as well as a significant relationship between dissociation severity and temporal disintegration

TABLE 1. Temporal Integration Inventory (TII) Summarized Items and Comparisons Between the DPD Group ($N = 52$) and the NC Group ($N = 30$)

TII Items	DPD Group	NC Group	Comparison		
	Mean (SD)		F or t[a]	df[b]	p
TII-Total	27.5 (10.7)	11.6 (5.9)	28.20	2	< 0.001*
TII-Time Distinction	11.6 (6.8)	5.6 (3.7)	9.95	2	< 0.001*
1. Swept into past and future	1.4 (1.6)	0.3 (0.8)	4.28	77.82	< 0.001*
2. Past, present, and future integrated but discrete	2.9 (1.7)	2.8 (1.9)	1.58	80	0.119
3. Past, present, and future separate and unrelated	1.6 (1.6)	0.6 (1.0)	3.34	78.93	0.001*
4. Events in proper and recognizable sequence	1.8 (1.6)	0.9 (1.2)	2.88	73.92	0.005
5. Difficult to differentiate past, present, and future	0.5 (0.9)	0.03 (0.2)	3.90	58.42	< 0.001*
6. Do not confuse memories, perceptions, and expectations	1.5 (1.5)	1.0 (1.3)	1.68	80	0.096
7. Past, present, and future mixed	0.8 (1.3)	0.1 (0.3)	3.64	60.76	0.001*
8. Realize in present when thinking about past or future	1.1 (1.4)	0.4 (1.0)	2.70	77.70	0.009
TII-Agency	15.9 (5.8)	5.9 (3.6)	36.36	2	< 0.001*
9. Little control over events	2.7 (1.4)	1.3 (1.3)	4.36	80	< 0.001*
10. Short-term goals in line with long-term goals	2.7 (1.5)	1.2 (0.9)	5.36	79.79	< 0.001*
11. Self-direction fits long-term goals	3.0 (1.5)	0.6 (0.9)	9.26	79.76	< 0.001*
12. Thoughts and actions have organized direction	2.1 (1.4)	1.3 (1.4)	2.57	80	0.012
13. Little control over immediate future	2.6 (1.4)	0.7 (0.8)	7.35	79.98	< 0.001*
14. Confidence in plans to accomplish goals	2.9 (1.3)	0.8 (0.8)	9.06	78.20	< 0.001*

*Significantly different comparisons (Bonferroni corrected for individual items).
[a]F values provided for ANCOVA, t values provided for item-by-item t-tests.
[b]If Levene's test for equality of variances was significant reported statistics are for unequal variances.

TABLE 2. Zero-Order Correlations Between TII and DES Scores in the DPD Group ($N = 52$)

	TII-Total	TII-Distinction	TII-Agency
DES-Total	0.54***	0.59***	0.29*
DES-Amnesia	0.42**	0.49***	0.20
DES-Absorption	0.61***	0.68***	0.32*
DES-Depersonalization	0.23	0.23	0.16

*p < 0.05; **p < 0.1; ***p < 0.001.

within the DPD group. The subjective difficulty in assigning a time point or frame to events in terms of time length or location on a personal timeline could relate to experiences of feeling detached or unreal. People who struggle with this may have difficulty ordering events and positioning experiences or memories into the context of other parts of their lives, leading to an intermixing of the past, present, and future. The findings demonstrate that individuals with DPD were impaired in the TII "time distinction" subscale, which reflects these capacities.

Furthermore, the intermixing of different periods in the timeline of an individual's life can be problematic with respect to the future. A difficulty in clearly distinguishing the future from the present or past can greatly hinder the ability to plan for the future and to set goals. To possess goal-directedness, people must be able to assess their current state, distinguish it from past states, and identify states that they strive for in the future. This ability involves not only the ability to recognize the present, but also the ability to recognize the passage of time within context. Another aspect of temporal disintegration that may affect goal-directedness is temporal orientation, which refers to the period of time in which an individual is fixated. Holman and Silver (1998) studied the affects of different traumas on temporal orientation and found that subjects who experienced high levels of temporal disintegration immediately after acute traumatic stressors tended to be more past-oriented. Such an orientation diminishes the ability to focus on the present and future and therefore be more goal oriented. This study's findings indeed demonstrate that individuals with DPD were impaired in the TII "agency" subscale compared with controls, more so (effect size 2.07) than TII "time distinction" (effect size 0.91). Although perusal of the individual items of the TII-agency subscale may suggest an overlap with

constructs of self-efficacy or locus of control, perception and ownership of the future is also a central aspect of being goal-directed. Ornstein (1997) describes four major varieties of time experience. One is the experience of the future and of a temporal perspective which is more strongly culture-bound, while another is the experience of duration and retrospection which is more associated with remembrances of things past (p. 20).

Results on the individual TII items showed that not all items were equal contributors to the group difference in TII scores. The items that did not contribute significantly (items 2, 4, 6, 8, and 12) belonged to the TII-time distinction subscale (Table 1), reflecting that this subscale differed less strongly between the two groups. In addition, all items that did not differ significantly between the two groups were phrased to reflect temporal integration rather than disintegration (Table 1). It is conceivable that DPD subjects may have possessed a better ability to gauge and report experiences of abnormal events or feelings and therefore showed greater differences from the control group when quantifying the disintegrated experiences rather than the integrated ones.

Temporal disintegration correlated positively with total dissociation score, but not with age of onset or duration of illness, suggesting that temporal disintegration is more likely an intrinsic component of the disorder itself rather than an indicator of chronicity, progression, or secondary impact on aspects of living. When examining the relationship of the two TII subscales with total DES scores, TII-time distinction exhibited a stronger correlation with dissociation severity (large effect size) than TII-agency (medium effect size). Contrary to our predictions, of the three dissociation subscales, depersonalization was the one least associated with both categories of temporal disintegration, non-significantly so. Amnesia was significantly correlated only with the TII-time distinction subscale; this is not a surprising finding since amnesia implies a certain degree of structural dissociation and compartmentalization of experience with disruptions in the coherent sequential ordering of time.

Absorption was the dissociative domain most strongly associated with both components of temporal disintegration, although more so with time distinction, and was the only dissociative domain that was predictive of TII scores in the DPD group. People with higher levels of absorption may be less able to differentiate between reality and fantasy, and when they return to reality their perception of time and ability to temporally integrate events may be compromised. Absorption is defined as ‘‘the use of one’s full commitment of available perceptual, motoric, imaginative, and ideational resources to a unified representation of the

attentional object" (Tellegen & Atkinson, 1974). With absorption, the individual's consciousness is altered in a way that everything, including time, can be reconstructed into a "fantasy world." Thus, self-experiences are no longer anchored into the original framework of objective geophysical time. The individual may relive the past as reality, confuse dreams or television shows with reality, or simply stare off into space (Bernstein & Putnam, 1986). Studies have generally shown that absorption bears some association to the constructs of hypnotizability, imaginative involvement, and fantasy proneness, all of which are related to dissociative propensities (Roche & McConkey, 1990). However, a small study comparing absorption between DPD and normal control participants reported no significant difference in absorptive experiences using the Tellegen Absorption Scale (Levin, Sirof, Simeon, & Guralnik, 2004), suggesting that absorption may play a lesser predisposing role toward chronic depersonalization than toward other chronic dissociative conditions such as dissociative identity disorder.

Given that absorption but not depersonalization scores were highly predictive of temporal disintegration, we suggest that absorption is the main link to temporal disintegration in DPD. Depersonalization disorder does not always involve elevated absorption, and the individuals who experienced greater temporal disintegration appear to have been the ones whose depersonalized state was associated with greater absorption. People experiencing depersonalization typically feel detached and unreal, but their consciousness continues to exist within a normal time construct. Although they feel not themselves, they may still be able to anchor themselves into the present and maintain temporal integration, and depersonalization may not be the essential component of dissociation involved in temporal disintegration. In contrast to the chronic depersonalization of DPD, acute transient depersonalization such as that elicited in the THC-induction studies or that encountered in peritraumatic dissociation clearly involves a strong component of temporal disintegration. Still, it may be that disturbances in attentional processes, such as those characterizing absorption, are the mediating link to the association between transient depersonalization and temporal distortions.

Limitations of this study include the subjective nature of temporal disintegration; objective tests measuring the perception of duration and passage of time were not used. Furthermore, the TII only measures temporal perspective but not time perception. In addition, other dissociative disorder diagnoses were not studied, to compare and contrast

our findings, and the findings were not examined in light of other comorbid psychiatric disorders.

CONCLUSIONS

Time is an essential component of integrated cohesive self-experience, and as such phenomena related to temporal perception and integration merit more study in dissociative states. In the current study, we showed that temporal disintegration was higher in depersonalization disorder compared with healthy controls, yet temporal disintegration was related to absorption rather than to depersonalization/derealization symptoms. Future investigations are merited, focusing on discrete dissociative domains and disorders, and employing both subjective and objective well-validated measures of time perception and integration.

REFERENCES

American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, DC: Author.

Bernstein, E.M. & Putnam, F.W. (1986). Development, reliability and validity of a dissociation scale. *Journal of Nervous and Mental Disease, 174*, 727-735.

Bernstein-Carlson, E.M. & Putnam, F.W. (1993). An update on the Dissociative Experiences Scale. *Dissociation, 6*, 16-27.

Bremner, J.D., Krystal, J.H., Putnam, F.W., Southwick, S.M., Marmar, C., Charney, D.S. et al. (1998). Measurement of dissociative states with the Clinician-Administered Dissociative States Scale (CADSS). *Journal of Traumatic Stress, 11*, 125-136.

Cappon, D. & Banks, R. (1969). Orientational perception: IV. Time and length perception in depersonalized and derealized patients and controls under positive feedback conditions. *American Journal of Psychiatry, 125*, 1214-1217.

Cardeña, E. & Spiegel, D. (1993). Dissociative reactions to the San Francisco bay area earthquake. *American Journal of Psychiatry, 150*, 474-478.

Cardeña, E., Koopman, C., Classen, C., Waelde, L., & Spiegel, D. (2000). Psychometric properties of the Stanford Acute Stress Reaction Questionnaire (SASRQ): A valid and reliable measure of acute stress reactions. *Journal of Traumatic Stress, 13*, 719-734.

Carlson, E.B., Putnam, F.W., Ross, C.A., Anderson, G., Clark, P., Torem, M. et al. (1991). Factor analysis of the Dissociative Experiences Scale: A multicenter study. In B.G. Braun & E.B. Carlson (Eds.), *Proceedings of the Eighth International Conference on Multiple Personality and Dissociative States*. Chicago: Rush Presbyterian, p. 16.

First, M.B., Spitzer, R.L., Gibbon, M., & Williams, J.B.W. (1995). *Structured Clinical Interview for DSM-IV Axis I Disorders, Patient Version (SCID-P), Version 2*. New York, NY: State Psychiatric Institute, Biometrics Research.

Freeman, A.M. & Melges, F.T. (1977). Depersonalization and temporal disintegration in acute mental illness. *American Journal of Psychiatry, 134*, 679-681.

Freeman, A.M. & Melges, F.T. (1978). Temporal disorganization, depersonalization, and persecutory ideation in acute mental illness. *American Journal of Psychiatry, 135*, 123-124.

Holman, E.A. & Silver, R.C. (1998). Getting "stuck" in the past: Temporal orientation and coping with trauma. *Journal of Personality and Social Psychology, 74*, 1146-1163.

Levin, R., Sirof, B., Simeon, D., & Guralnik, O. (2004). Role of fantasy proneness, imaginative involvement, and psychological absorption in depersonalization disorder. *Journal of Nervous and Mental Disease, 192*, 69-71.

Lewis, A. (1931). The experience of time in mental disorder. *Proceedings of the Royal Society of Medicine, 25*, 611-620.

Marmar, C.R., Weiss, D.S., & Metzler, T.J. (1997). The peritraumatic dissociative experiences questionnaire. In J.P. Wilson & T.M. Keane (Eds.), *Assessing Psychological Trauma and PTSD*. New York, NY: Guilford Press, pp. 412-428.

Mathew, R.J., Wilson, W.H., Humphreys, D., Lowe, J.V., & Weithe, K.E. (1993). Depersonalization after marijuana smoking. *Biological Psychiatry, 33*, 431-441.

Melges, F.T. & Fougerousse, C.E., Jr. (1966). Time sense, emotions, and acute mental illness. *Journal of Psychiatric Research, 4*, 127-140.

Melges, F.T., Tinklenberg, J.R., Hollister, L.E., & Gillespie, H.K. (1970). Temporal disintegration and depersonalization during marihuana intoxication. *Archives of General Psychiatry, 23*, 204-210.

Ornstein, R.E. (1997). *On the Experience of Time*. Boulder, CO: Westview Press.

Pfohl, B., Blum, N., & Zimmerman, M. (1995). *Structured Interview for DSM-IV Personality Disorders SIDP-IV*. Department of Psychiatry, University of Iowa. Iowa City, IA.

Roche, S.M. & McConkey, K.M. (1990). Absorption: Nature, assessment, and correlates. *Journal of Personality and Social Psychology, 59*, 91-101.

Schilder, P. (1953). *Medical Psychology*. New York, NY: Wiley.

Shorvon, H.J. (1946). The depersonalization syndrome. *Proceedings of the Royal Society of Medicine, 39*, 779-792.

Sierra, M. & Berrios, G.E. (2000). The Cambridge Depersonalisation Scale: A new instrument for the measurement of depersonalisation. *Psychiatry Research, 93*, 153-164.

Sierra, M. & Berrios, G.E. (2001). The phenomenological stability of depersonalization: Comparing the old with the new. *Journal of Nervous and Mental Disease, 189*, 629-636.

Simeon, D., Knutelska, M., Nelson, D., & Guralnik, O. (2003). Feeling unreal: A depersonalization disorder update of 117 cases. *Journal of Clinical Psychiatry, 64*, 990-997.

Spiegel, D. & Cardeña, E. (1991). Disintegrated experience: The dissociative disorders revisited. *Journal of Abnormal Psychology, 100*, 366-378.

Steinberg, M. (1994). *Structured Clinical Interview for DSM-IV Dissociative Disorders, Revised (SCID-D)*. Washington, DC: American Psychiatric Press.

Tellegen, A. & Atkinson, G. (1974). Openness to absorbing and self-altering experiences ("absorption"), a trait related to hypnotic susceptibility. *Journal of Abnormal Psychology, 83*, 268-277.

Ursano, R.J., Fullerton, C.S., Epstein, R.S., Crowley, B., Vance, K., Kao, T.C. et al. (1999). Peritraumatic dissociation and posttraumatic stress disorder following motor vehicle accidents. *American Journal of Psychiatry, 156*, 1808-1810.

RECEIVED: 03/13/06
REVISED: 08/07/06
ACCEPTED: 08/07/06

doi:10.1300/J229v08n01_02