PERGAMON

Behaviour Research and Therapy 37 (1999) 49–61

BEHAVIOUR RESEARCH AND THERAPY

Dissociation in the laboratory: a comparison of strategies

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Accepted 20 February 1998

Abstract

Several methods for inducing dissociation in the laboratory were examined in a sample of 78 undergraduate students. Participants scoring high or low on the Dissociative Experiences Scale participated in three dissociation challenge conditions: (a) dot-staring task, (b) administration of pulsed photic and audio stimulation and (c) stimulus deprivation. Participants recorded their dissociative experiences both before and after each of the three challenge conditions. Across conditions, high DES participants reported significantly more dissociative sensations than low DES participants, even after controlling for pre-challenge dissociation. Moreover, regardless of DES status, pulsed photo and audio stimulation produced the greatest level of dissociative symptoms. The findings suggest that the induction of dissociative symptoms in a nonclinical sample is easily accomplished in the laboratory and that those who report more dissociative symptoms in their day-to-day life exhibit more pronounced dissociative symptoms when undergoing dissociative challenge in the laboratory. Implications for the study and treatment of dissociative symptoms are discussed. © 1998 Elsevier Science Ltd. All rights reserved.

1. Introduction

Dissociation has proved to be an enigmatic subject; it manages to surface not only through several pathological states, both psychological and physiological, but also through normal human experience. Dissociation is defined as a temporary disruption in conscious awareness, memory or sense of identity (American Psychiatric Association, 1994). Bernstein and Putnam (1986) conceptualize dissociation on a severity continuum in which normal dissociation lies at one end and the most severe form, dissociative identity disorder (DID, formerly multiple personality disorder), lies at the other.

Dissociative disorders including dissociative amnesia, dissociative fugue, dissociative identity disorder and depersonalization disorder are estimated to affect up to 11% of psychiatric

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PII: S0005-7967(98)00072-2

patients (Bliss and Jeppsen, 1985; Ross, 1991). Dissociative symptoms are also commonly found in medical conditions such as migraine headaches, head trauma and temporal lobe epilepsy (Steinberg, 1991; Grigsby and Kaye, 1993).

The linkage between trauma and dissociation has received considerable attention. Not only has dissociation been linked to childhood physical and sexual abuse in both clinical (Chu and Dill, 1990; Ross, 1991; Anderson et al., 1992; Zlotnick et al., 1996) and nonclinical populations (Sanders et al., 1989; Ross et al., 1991), but symptoms of dissociation are also commonly reported following adult trauma (Bremner et al., 1993; Marmar et al., 1996; Van der Kolk et al., 1996). It has been suggested that by altering one's state of consciousness, dissociation lessens the impact of extremely distressing events (Shilony and Grossman, 1993).

Dissociation has also been linked to a host of other psychological disorders including panic disorder (Telch et al., 1989a,b; Schneier et al., 1991), depression (Schumaker et al., 1995), eating disorders (Demitrack et al., 1990; Schumaker et al., 1995), somatoform disorders (Pribor et al., 1993) and borderline personality disorder (Ross et al., 1991; Brodsky et al., 1995).

In addition to its co-occurrence among people afflicted with psychiatric disorders, dissociative experiences such as daydreaming, 'tuning out' and feeling detached from others are also common in the general population (Ross et al., 1990; Ray and Faith, 1995) and are often perceived as a normal part of everyday life (Trueman, 1984). Certain activities such as meditation or the ingestion of marijuana and other hallucinogens are associated with increased incidence of dissociation experiences (Castillo, 1990; Mathew et al., 1993).

Despite the high prevalence of dissociative experiences in both clinical and nonclinical populations, few investigations have examined the induction of dissociative symptoms in the laboratory. Mathew et al. (1993) administered high and low-THC marijuana cigarettes and THC-free marijuana cigarettes to participants on separate occasions. Not surprisingly, more dissociation was reported by those who smoked marijuana cigarettes than those who smoked placebo cigarettes. Although the results confirm the dissociative powers of marijuana, its use as a laboratory challenge is problematic due to the obvious legal and ethical constraints of marijuana use.

Based on observations linking serotonergic dysfunction and dissociation, Simeon et al. (1995) administered the serotonin agonist, chlorophenylipiperazine (*m*-CPP) to 67 normal and patient volunteers. As predicted, those who received *m*-CPP reported significantly more symptoms of depersonalization than did those who received placebo. However, only 12 of the 67 participants experienced dissociation symptoms.

To our knowledge, only one study has used non-pharmacological methods for inducing dissociation in the laboratory. Miller et al. (1994) administered several focusing techniques (i.e. dot staring, staring at one's own reflection in a mirror and silently repeating one's name) along with two neutral activities (i.e. reading names from a phone book and looking through a photo album) to 10 panic patients with depersonalization/derealization (DD), 10 panic patients without DD and 10 non-anxious controls. Each subject completed all five conditions. After each activity, participants completed an author-constructed dissociation/depersonalization questionnaire. Results showed that regardless of group status, the mirror and dot staring tasks were more successful at eliciting DD than the other three conditions. Moreover, panic patients without DD and normal volunteers experienced few DD sensations relative to the panic patients with DD. Although this study successfully induced dissociation, the design was limited in several respects: (a) small sample size, (b) brief rest periods between tasks thus increasing the influence of carry-over effects and (c) failure to report other facets of dissociation such as absorption, imaginative involvement and amnesia.

The present study attempted to correct for some of these shortcomings. We examined the effects of day-to-day dissociative experiences on college students' response to several laboratory challenge tasks. A group of high and low scorers on the Dissociative Experiences Scale (DES; Bernstein and Putnam, 1986) underwent three 10-min challenge conditions, one of which replicated Miller's (Miller et al., 1994) dot staring task. In a second condition, participants were presented electronically pulsed audio and photic stimulation with goggles and earphones. This device was included in order to test the dissociative powers of a multi-modal stimulus, during which participants might be more focused on the experience itself and less vulnerable to distractions. In a third condition, participants were connected to the audio/photic stimulation device, without the audio and video input. This allowed us to examine the effects of stimulus deprivation on dissociation and to control for the wearing of head phones and goggles, procedural elements present in the audio/photic stimulation condition. Participants completed a measure of acute dissociative symptoms before and after each challenge task, with at least a 20 min recovery period between each task.

We hypothesized that compared to low DES participants, high DES scorers would report more dissociative symptoms in response to the two dissociation challenge tasks (i.e. dot staring and audio/photic stimulation). Moreover, we hypothesized that because of its multisensory nature, the audio/photic stimulation would produce more dissociation than the dot-staring task which in turn would produce more dissociative symptoms than the sensory deprivation control task. Participants also completed measures of anxiety and depression.

2. Method

2.1. Participants

78 students from the University of Texas at Austin volunteered for the study in order to satisfy a course research requirement. Participant ages ranged from 17 to 28, with a mean of 19.05 years (S.D. = 1.58). 42 participants were female and 36 were male. The gender distributions between groups was not significant. Ethnicity was also equally represented in the low and high groups, with the exception of African-Americans (4%), all of whom scored in the low DES range. Caucasians comprised 63% of the overall participant group, Hispanics comprised 19%, Asians 10% and the remaining 3% of participants were assigned to an 'other' category.

2.2. Design

Each of the 29 high participants and 49 low participants underwent three dissociation induction exercises including a dot-staring task, an audio/photic stimulation task and a stimulus deprivation task using the audio/photic stimulation device's mask and headset without the audio and visual input. The dependent measure was the Acute Dissociation Inventory

(ADI), which participants completed immediately before and after each exercise, or a total of six times. This procedure resulted in a $2 \times 2 \times 3$ mixed-model design, with DES status (high/low) serving as the between-subjects variable and the dissociation challenge task (audio/photic stimulation, dot-staring, stimulus deprivation) and assessment occasion (pre and post-induction) serving as the two within-subjects variables. Six different exercise orders were created to counterbalance for order effects. Each of the six condition orders were represented by relatively equal proportions of high and low DES participants. Finally, participants completed scales assessing anxiety and depression.

2.3. Setting

Participants completed the challenge tasks in one of two small rooms which were sound resistant and contained a single comfortable reclining chair and no windows. Between challenge tasks, participants completed self-report questionnaires in a separate waiting area.

2.4. Materials and apparatus

2.4.1. Apparatus

The D.A.V.I.D. 1 (Digital Audio-Video Integration Device) by Comptronic Devices (9876-A 33rd Ave., Edmonton, AB) is used by health care professionals as a relaxation device. The D.A.V.I.D. resembles a small soundboard about the size of a stereo receiver. It includes a headset which emits controllable ticking sounds, similar to those made by a metronome. The D.A.V.I.D. also includes a plastic mask, similar to ski goggles, which delivers pulsed orange lights at controllable rates. In this experiment the audio and video stimulus frequency was set at 12 Hz (cycles per second) which is the rate at which the device is suggested to maximally produce relaxation and meditative states. A microphone was also connected to the device so that participants could clearly understand final instructions once they had put on the mask and headset.

2.4.2. Process materials

For the dot-staring task, a blank piece of paper containing a black dot 2 inches in circumference was hung at eye level 6 feet in front of the participant's chair.

2.5. Measures

2.5.1. Dissociative Experiences Scale (DES)

The DES was designed as a screening measure to help identify patients with severe dissociative disorders and as a research tool to assess dissociative experiences (Bernstein and Putnam, 1986). It includes 28 self-report items which, through factor analysis, have revealed three primary factors: amnestic dissociation, depersonalization/derealization and absorption/imaginative involvement. Responses are scored on an 11-point Likert scale ranging from 0 to 100%. An overall score is derived by calculating the average of all 28 items. The DES has shown favorable test–retest reliability (an average of 0.86 across several studies) and good validity (see Carlson and Putnam, 1993 for a review).

2.5.2. Acute Dissociation Inventory (ADI)

The ADI is a 35-item self-report scale which was developed specifically for this study. It was modeled after the Acute Panic Inventory, a widely used scale for assessing participants' response to panic provocation (Harrison et al., 1989; Gorman et al., 1990). On the ADI, participants rate their sensations and thoughts in response to dissociation challenge. The first 26 questions address dissociative sensations including amnestic experiences, gaps in awareness, depersonalization, derealization, absorption and imaginative involvement. The last 9 items measure additional experiences such as relaxation, pleasure, sleepiness and anxiety. Each item is rated on a 11-point Likert scale. For example, item 1 asks, "How much of the past 10 min do you feel you can recall?" Participants choose from 11 options ranging from 0 (everything) to 100 (nothing). A total ADI score is obtained by calculating the average of the first 26 items. Psychometric data are not yet available.

2.5.3. Beck Depression Inventory (BDI)

The BDI is a 21-item self report scale assessing recent symptoms of depression (Beck et al., 1961). Each item includes 4 response options (0–3), the sum of which is calculated to produce a total score. The BDI has been demonstrated to be valid and have good internal consistency (average of 0.86 across studies) (Kendall and Watson, 1989).

2.5.4. Beck Anxiety Inventory (BAI)

The BAI is a 21-item self report scale assessing recent symptoms of anxiety (Beck et al., 1988). Each item is rated on a four point scale (0 to 3), the sum of which is calculated to produce a total score. The BAI has been shown to be internally consistent (alpha = 0.94) and has adequate test–retest reliability (0.75 for one week) (Beck et al., 1988).

2.6. Procedures

2.6.1. Participant screening

The DES was administered to 1040 undergraduate students during three research screening sessions. The mean DES score among the screened students was 12.71 (S.D. = 9.80). Students qualified for study participation if they scored either a 5 or below (low) or a 20 and above (high). These high/low cutoffs have been used in prior research (Ross et al., 1991). Students reporting history of seizures, migraine headaches, or photosensitivity were excluded from participation due to the possibility that photic stimulation might exacerbate these conditions (Simon, 1983; Striano, 1992). This resulted in the exclusion of two students.

2.7. Procedure

One directing graduate student and two undergraduate psychology students served as experimenters. In the waiting area, each participant completed a DES and health history questionnaire. They were subsequently led into a private room and seated in a comfortable chair. At this time they were instructed to complete the first ADI, based on their experiences and sensations over the last 10 min. This was explicitly defined as the period of time in which they were completing forms in the waiting area. The first challenge condition was then introduced.

2.7.1. *Audio/photic stimulation*

The experimenter explained to participants that they would be asked to put on headphones and a mask which would emit flashing lights and sounds. Participants were told that during the exercise, they should relax in the chair and keep their eyes closed. After 10 min, the experimenter would enter the room and slowly turn off the machine. Participants were also informed that at that time they would be asked to rate their sensations and thoughts during the exercise, just as they had done immediately prior. Once the subjects had put on the headphones and mask correctly, the experimenter spoke softly in the microphone to check for comfort and to remind them to keep their eyes closed. The experimenter then started the device, started the stopwatch and quietly left the room. After 10 min, the experimenter returned to the room and helped the participants remove the equipment.

2.7.2. *Dot-staring*

Participants in this condition were asked to sit in the chair and stare at the dot on the wall as intently as possible for 10 full minutes. They were told in advance that they would be asked to rate their sensations and thoughts during the exercise, just as they had done immediately prior. The experimenter then started the stopwatch and quietly left the room. After 10 min, the experimenter reentered the room and instructed the participant to stop.

2.7.3. *Stimulus deprivation*

In this condition, participants were asked to put on the mask and headset, but were informed that the device would emit no lights or sounds. As in the audio/photic stimulation condition, participants were instructed to relax in the chair with their eyes closed for 10 full minutes. They were informed that afterwards they would be asked to rate their sensations and thoughts during the exercise, just as they had done immediately prior. The experimenter then started the stopwatch and quietly left the room. After 10 min, the experimenter reentered the room and helped the participants remove the equipment.

Following each condition, participants were escorted to the waiting area where they proceeded to complete a post-exercise ADI and additional symptom measures. The questionnaires were divided so that participants would be occupied for at least 20 min, thereby providing substantial recovery time between exercises. When the interim scales had been completed, they were again escorted into an experiment room, where they received instructions about the next induction exercise. After participants had finished all three conditions, they were debriefed.

3. Statistical analyses

The main effect of order and the interaction of order and induction condition were both non-significant and thus were not included in further analyses. The single and interactive effects of induction condition, DES status and time (pre versus post challenge) on participants' self-reported dissociative symptoms were examined using a $3 \times 2 \times 2$ mixed model repeated measures ANOVA. Participants' DES status (high versus low) served as the between-subjects factor. Induction condition (dot staring, audio/photic stimulation and stimulus deprivation) and time (pre versus post challenge) served as the two within-subjects factors. Simple main effects analyses and multiple comparisons using paired *t*-tests were conducted when appropriate. To examine the effects of anxiety and depression on dissociative symptoms, we repeated the analyses controlling for both BAI and BDI scores. Finally, exploratory analyses were conducted by repeating the above analyses for each subscale of the ADI.

4. Results

Means and standard deviations of participants' total ADI scores both before and after challenge are presented in Table 1. Significant main effects were found for DES status [$F(1, 76) = 104.14$, $p < 0.0001$], time [$F(1, 76) = 169.42$, $p < 0.0001$] and induction condition [$F(2, 75) = 18.74$, $p < 0.0001$]. All three challenge tasks led to marked increases in self-reported dissociative symptoms from their pre-challenge level. Moreover, participants displaying elevated DES scores reported more challenge-induced dissociative symptoms compared to participants scoring low on the DES. However, this main effect of DES status was qualified by a significant DES status by time interaction. Simple main effects analyses were performed by comparing high and low DES participants at the pre-challenge and post-challenge assessments separately. These analyses revealed that high DES scorers reported significantly more dissociative symptoms than did low DES participants at both the pre-challenge assessment ($M_{high} = 17.79$; $M_{low} = 3.23$) [$F(1, 76) = 106.21$, $p < 0.0001$] and the post-challenge assessment ($M_{high} = 33.29$; $M_{low} = 12.46$) [$F(1, 76) = 74.53$, $p < 0.0001$]. However, as indicated by the significant DES status by time interaction, high DES participants showed a greater pre to post challenge increase in dissociative symptoms relative to low DES participants for all three conditions [audio/photic stimulation: $F(1, 76) = 6.03$, $p < 0.02$; dot-staring: $F(1, 76) = 9.29$, $p < 0.01$; stimulus deprivation: $F(1, 76) = 8.67$, $p < 0.01$]. Fig. 1 presents the increase in reported dissociation among high and low DES subjects across the three challenge tasks.

Analyses examining differences between challenge tasks revealed that participants displayed more dissociative symptoms when administered the audio/photic stimulation relative to either the dot staring task or the stimulus deprivation control task. Simple main effects analyses were

Table 1
Means and S.D.'s for Acute Dissociation Inventory (ADI) scores at pre and post-induction in each condition

	High DES (N = 29)			Low DES (N = 49)		
	audio/visual stimulation	dot-staring	stimulus deprivation	audio/visual stimulation	dot-staring	stimulus deprivation
Total ADI						
Pre	18.79 (12.14)	16.92 (9.23)	17.64 (8.21)	3.86 (4.21)	2.83 (3.29)	2.98 (3.76)
Post	37.15 (13.55)	28.54 (12.29)	34.16 (15.06)	15.79 (13.27)	9.22 (7.19)	12.36 (10.07)

Note: Pre and post condition means and S.D. = ADI mean and standard deviations for ADI total score, items 1–26.

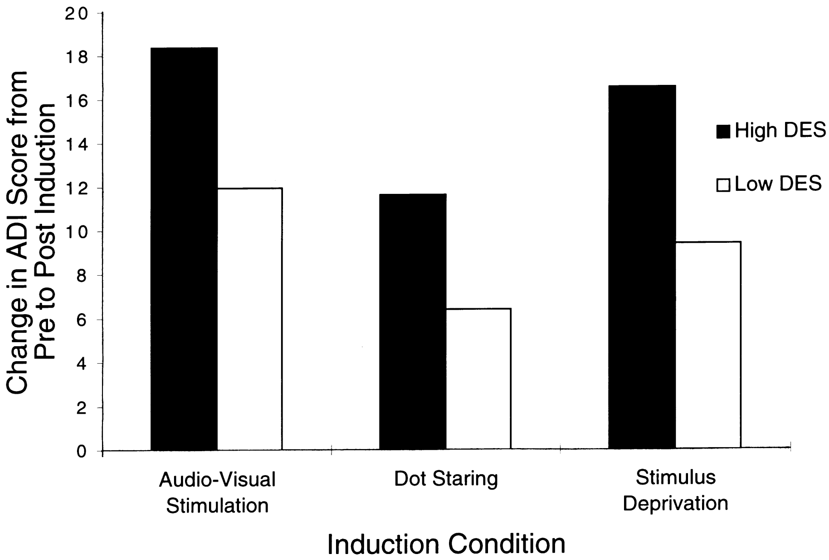

Fig. 1. Increase in reported dissociation among high and low DES subjects across three induction tasks. Note: DES = Dissociative Experiences Scale.

conducted to further examine the significant interaction between time and provocation condition. As expected, the effects of condition were not significant at the pre-challenge assessment; but the effects of condition were significant at the post-induction assessment [$F(2, 76) = 23.51$, $p < 0.0001$]. Multiple comparisons at the post-induction assessment revealed that participants displayed more dissociative symptoms when administered the audio/photic stimulation relative to either the dot staring task [$t(77) = 6.62$, $p < 0.0001$) or the stimulus deprivation control task [$t(77) = 2.68$, $p < 0.01$). In turn, the stimulus deprivation task produced more dissociative symptoms than the dot staring task [$t(77) = 4.07$, $p < 0.0001$).

4.1. Effects of depression and anxiety on dissociative symptoms

To rule out the possibility that the greater challenge-induced dissociative symptoms reported by the high DES participants were due to greater levels of pre-challenge anxiety or depression, we repeated the analyses controlling for both BAI and BDI scores. These analyses yielded findings that mirrored those already reported, with one exception. When we covaried the anxiety and depression scores, both together and individually, we found no DES status × time interaction. Although both groups reported significant increases in dissociation from pre to post induction, high DES participants did not show a greater pre to post increase in dissociative symptoms relative to low DES participants.

4.2. Exploratory analyses

The ADI items were developed with the factor structure of the DES in mind. Items were included that seemed to reflect appropriate content of the DES factors (amnestic dissociation, absorption/imaginative involvement and derealization/depersonalization) (Bernstein and Putnam, 1986). The ADI was created based upon a six factor solution, labeled amnestic experiences, gaps in awareness, depersonalization, derealization, absorption and imaginative involvement. We then performed a reanalysis of the data with each ADI subscale as the dependent measure. In general, the results mirrored the overall analyses with a few interesting exceptions. As was true with the total ADI scores, participants displayed a significant pre to post-induction increase on each ADI subscale, regardless of DES status. However, this change was significantly more pronounced among high DES participants only for the depersonalization, derealization and imaginative involvement subscales.

Analyses of condition effects for each of the six ADI subscales at post-challenge revealed that audio/photic stimulation was superior to dot-staring on all six subscales (p's < 0.02). Stimulus deprivation was superior to dot staring on four of the six subscales (amnestic experiences, depersonalization, absorption and imaginative involvement; p's < 0.01) and audio/photic stimulation was superior to the stimulus deprivation task on two of six subscales (depersonalization and derealization, p's < 0.01). Means and standard deviations of participants' total ADI scores for each subscale are presented in Table 2.

5. Discussion

The present study sought to examine nonpharmacological approaches for inducing dissociation in the laboratory. Our findings are consistent with those reported by Miller et al. (1994), in showing that dissociation could be elicited through nonpharmacological challenge techniques such as staring at a dot. Our findings provide the first experimental demonstration that nonpharmacological induction techniques can be successfully used to elicit dissociation among those with no history of a psychiatric disorder (Miller et al.'s findings were limited to those with a diagnosis of panic disorder *with or without* dissociation/depersonalization symptoms).

We also sought to test whether the predisposition to experience dissociation in one's day-to-day life as measured by the DES affects one's response to laboratory challenge. Consistent with prediction, participants scoring high on the DES responded to challenge with greater dissociation relative to those scoring low on the DES. These results held even after controlling for differences in pre-challenge dissociation symptoms as measured by the ADI. These findings suggest that those who are more prone to experience dissociation in their day-to-day lives are also more reactive to laboratory challenge. However, it should be noted the greater challenge-induced increase in dissociative symptoms observed for the high DES group was reduced to a nonsignificant trend after controlling for the effects of anxiety and depression. This finding is not surprising given the high correlations observed in our sample between the DES and both the BAI ($r = 0.58$) and the BDI ($r = 0.56$). The shared variance between dissociation and mood measures observed in our sample is consistent with data from the clinical literature suggesting a high degree of comorbidity between dissociative disorders and both mood (Schumaker et al., 1995) and anxiety disorders (Bremner et al., 1993).

We also sought to provide preliminary data on the relative effectiveness of several easily administered nonpharmacological methods for inducing dissociation in the laboratory. Our

Table 2
Means and S.D.'s for Acute Dissociation Inventory (ADI) superordinate group scores at pre- and post-induction in each condition

	High DES (N = 29)			Low DES (N = 49)		
	audio/visual stimulation	dot-staring	stimulus deprivation	audio/visual stimulation	dot-staring	stimulus deprivation
Amnestic experiences						
Pre	12.28 (9.53)	13.59 (11.68)	12.34 (8.75)	3.06 (4.55)	1.59 (3.41)	2.53 (4.20)
Post	29.10 (15.83)	20.21 (14.92)	26.28 (18.93)	12.82 (18.47)	6.24 (9.19)	10.61 (14.35)
Gaps in awareness						
Pre	21.90 (12.28)	18.10 (10.73)	21.38 (12.60)	7.88 (11.68)	5.41 (8.47)	7.96 (9.84)
Post	27.24 (18.78)	22.93 (13.13)	28.45 (21.43)	14.39 (15.43)	10.41 (14.71)	12.35 (13.19)
Depersonalization						
Pre	9.42 (14.69)	8.27 (12.33)	8.85 (11.73)	1.22 (3.64)	0.85 (2.41)	0.99 (3.77)
Post	25.46 (18.41)	16.67 (14.69)	19.77 (15.17)	8.16 (12.53)	2.38 (3.91)	4.63 (7.42)
Derealization						
Pre	13.79 (14.16)	13.22 (16.10)	15.86 (13.59)	4.29 (8.82)	2.93 (6.62)	1.70 (5.05)
Post	41.61 (24.52)	32.87 (22.36)	26.55 (21.37)	16.19 (18.87)	10.41 (10.58)	6.67 (10.50)
Absorption						
Pre	33.45 (21.09)	27.73 (19.62)	28.92 (17.65)	6.62 (7.18)	5.57 (7.16)	5.22 (7.52)
Post	53.50 (19.47)	47.14 (19.48)	53.99 (20.62)	28.34 (18.51)	18.92 (14.52)	25.42 (17.29)
Imaginative involvement						
Pre	17.13 (21.23)	17.47 (17.34)	17.01 (16.46)	1.56 (4.69)	0.68 (2.25)	0.41 (1.75)
Post	37.93 (26.49)	22.18 (24.48)	41.26 (28.65)	7.21 (16.77)	3.27 (9.22)	5.99 (13.68)

Note: Pre and post condition means and S.D. = ADI means and standard deviations for the following superordinate item groups: amnestic experiences, items 1–5; gaps in awareness, items 6–7; depersonalization, items 8–13; derealization, items 14–16; absorption, items 17–23; imaginative involvement, items 24–26.

findings revealed statistically reliable differences between challenge methods. Of the three methods examined, the audio and photo sensory stimulation administered through the D.A.V.I.D. yielded significantly higher dissociation scores than the stimulus deprivation task, which in turn led to higher dissociation scores than the dot staring task.

We can only speculate as to the factors accounting for the superior dissociation induction effects produced by the D.A.V.I.D. Perhaps the multimodal nature of the stimulation (i.e. delivery of both pulsed audio *and* video stimulation) created a more conducive environment for experiencing dissociation. Studies comparing different D.A.V.I.D. presentation formats (i.e. audio alone, video alone and their combination) are needed to clarify whether multimodal stimulus presentation facilitates dissociation induction.

Alternatively, the D.A.V.I.D. may have led to greater dissociation by virtue of being perceived by participants as being more credible than either of the other two provocation tasks. Unfortunately, the perceived credibility of the three provocation tasks was not assessed and hence we cannot rule out differential credibility as an explanation for the findings.

The superior performance of the stimulus deprivation task over dot staring was unexpected. The inclusion of the stimulus deprivation condition was aimed at controlling for the wearing of head phones and goggles - procedural elements present in the audio/photic stimulation condition. Surprisingly, people who sat for 10 min with their eyes closed wearing goggles and earphones reported more dissociation than when they focused on a small dot for 10 min. A possible explanation for this finding is that the mask and headset served to isolate the subjects from their environment, thereby lending to the experience of absorption and imaginative involvement. Support for this hypothesis comes from analyses of the six ADI subscales indicating that participants reported more imaginative involvement and absorption after stimulus-deprivation than after dot-staring.

The identification of safe, easily administered methods for inducing dissociation has implications for clinical research and practice. Despite evidence linking dissociation to a host of axis I and II disorders, advances in our understanding of dissociation and its role in psychopathology have lagged far behind that of anxiety and depression. Laboratory provocation of dissociation may prove useful in advancing our understanding of the (a) individual differences in the frequency and intensity of dissociation; (b) cognitive and emotional reactions to dissociation; (c) modification of dissociation or its sequelae and (d) the adaptive use of dissociation in response to physical or emotional trauma.

The availability of reliable, safe and easy to administer techniques for inducing dissociation may assist clinicians in working with patients for whom dissociation or its consequences result in significant impairment. For example, patients who are given the opportunity, in a controlled and supportive environment, to repeatedly experience dissociation symptoms may learn to identify the onset of the experience, explore concomitant emotional processes and perhaps learn how to avoid or manage the symptoms.

Dissociation induction may also have a role in the treatment of panic disorder. Similar to the use of other interoceptive exposure techniques such as voluntary hyperventilation or CO_2 challenge, repeated induction of dissociation using the methods described herein, may assist patients in reducing their emotional sensitivity to sensations of depersonalization or derealization.

As with most unexplored areas of research, the present findings raise more questions than they answer. For instance, we know nothing about the potency of these nonpharmacological methods relative to pharmacological challenges such as marijuana ingestion. Second, we have just begun to scratch the surface in exploring the specific ‘dissociation profiles’ induced by the various methods. It is likely that different methods may induce different subtypes of dissociative experiences. Third, further work is needed on individual differences that might moderate the effects of dissociation induction.

Acknowledgements

We wish to thank Neelam Davé and Ron Peterson for their invaluable contribution as experimenters.

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