Cognitive Environments and Dissociative Tendencies: Performance on the Standard Stroop Task for High versus Low Dissociators

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SUMMARY

Dissociative experiences are characterized by a disruption in integration of consciousness, attention, and/or memory. Most individuals have some dissociative experiences (such as 'highway hypnosis'), but some individuals have remarkably frequent and intense dissociative experiences (as in the case of Dissociative Identity Disorder (formerly known as Multiple Personality Disorder)). We hypothesized that individual differences in dissociative experiences may have an attentional basis and/or effect on attentional mechanisms. We report on a study in which we selected high and low dissociators, as measured by the Dissociative Experiences Scale (Bernstein and Putnam, 1986) and we evaluated each group's performance on a basic Stroop interference task with incongruent colour terms and control stimuli. We found that the high dissociators showed greater Stroop interference than did the low dissociators. We discuss our current theoretical understanding of this relationship in which we speculate that a history of trauma is an important causal factor in both high levels of dissociative experiences and changes in basic attentional strategies and mechanisms. © 1998 John Wiley & Sons, Ltd.

Individuals differ in the extent to which they report *dissociative* experiences. While the majority of adults report only mild dissociative experiences such as 'highway hypnosis' (the experience of losing awareness during driving and then suddenly discovering some miles have been travelled without remembering that period), a minority of adults report more extreme dissociative experiences such as finding notes or letters that they themselves have recently written, but with no memory or awareness of having actually engaged in the writing. Dissociative experiences such as temporarily losing track of one's identity, location, or place in time, are marked by a lack of integration of consciousness, attention, and memory. Thus it would seem that fundamental basic cognitive mechanisms of memory and attention are implicated for involvement in the phenomenon of dissociation.

Today the word 'dissociation' is often used in connection with diagnosable disorders of thinking or behaviour. For example, Bernstein and Putnam (1986) define

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dissociation as 'a lack of normal integration of thoughts, feelings, and experiences into the stream of consciousness and memory' (p. 727). The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM IV), published by the American Psychiatric Association (1994), recognizes five dissociative disorders: Dissociative Amnesia (inability to recall aspects of personal life history), Dissociative Fugue (sudden travel away from one's home along with the inability to recall one's past and confusion about one's identity), Depersonalization Disorder (persistent feelings of being detached from one's self and the environment), Dissociative Identity Disorder (previously termed 'Multiple Personality Disorder' – characterized by the existence of two or more personalities that are capable of controlling the individual's behaviour), and Dissociative Disorder Not Otherwise Specified (dissociative symptoms not classified by the other disorders). The American Psychiatric Association recognizes that 'Common to all of these dissociative disorders is the disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment. The disturbance may be sudden or gradual, transient, or chronic' (APA, 1994, p. 477). In addition, the existence of dissociative pathology is now recognized by the DSM IV as contributing to post-traumatic stress disorder (PTSD). High levels of dissociation may also be related to suggestibility (e.g. see Hyman and Billings, 1998).

Particularly high levels of dissociative experiences have been related to a history of trauma. Janet (1889) was one of the early theorists and researchers to observe this relationship and develop an account for the connection. This observed relationship between dissociative disorders and trauma has now been documented in a large number of empirical studies, using a variety of measurement instruments (e.g. DiTomasso and Routh, 1993; Chu and Dill, 1990; Sanders and Giolas, 1991; Miller *et al.*, 1993; van der Kolk *et al.*, 1991; Putnam and Trickett, 1997). Many have suggested that dissociation is a defense against the painful affect of traumatic experiences.

In contrast, Freyd (1994, 1996, in press) has proposed that dissociation is a result of some kinds of traumatic experiences (particularly those involving betrayal by a trusted other, such as may be the case in interpersonal violence and many other traumas involving human actions) not for the purpose of avoiding pain, but in order to allow the trauma victim to maintain a necessary system of attachment. Freyd (in press) has proposed that traumas may be roughly conceptualized as having two primary dimensions of stressors to humans: a fear-inducing or terrorizing dimension that relates to immediate threat of life, and a social-betrayal dimension that relates to longer-term threats to necessary and dependent relationships. The fear-threat dimension is conceptualized by Freyd as relating to commonly observed post-traumatic symptoms of arousal, while the social-betrayal dimension is conceptualized by Freyd as relating to commonly observed post-traumatic symptoms of avoidance, numbing, and especially dissociation. Freyd has also recently suggested that those individuals who have experienced high degrees of social-betrayal traumas may tend to create a particular 'cognitive environment' that is marked by high levels of divided, as opposed to selective, attention (see also Hilgard, 1986).

In this article we report results from a preliminary exploration of the relationship between dissociative experiences and mechanisms of selective attention. We hypothesize that those individuals with relatively high levels of dissociative experiences will show measurable differences in basic attentional functioning as compared with individuals with relatively low levels of dissociative experiences. In this study we focus on the basic function of selective attention: the ability to wilfully select certain

information while inhibiting the selection of other information simultaneously available. Human participants generally are impressive at selective attention but it is not an all or none ability. That is, while some information may be selected, other information may nonetheless intrude. We hypothesize that dissociative tendencies will be systematically related to selective attentional mechanisms.

The Stroop paradigm (Stroop, 1935) is the classic experimental demonstration of our ability to selectively attend and of our inability to completely exclude the unattended stimulus from impacting performance. In the classic Stroop demonstration participants are asked to name the *ink* colour of a list of words or strings of letters printed in different colours. In its simplest form in the experimental condition the words are colour names (e.g. 'blue' or 'yellow') and those words are incongruent with the ink colours (thus the word 'blue' is printed in yellow ink, while the word 'yellow' is printed in red ink). In a control condition the words are neutral terms (e.g. 'book' or 'river') or non-word stimuli such as strings of identical letters (e.g. 'xxxxx') and the ink colours are randomly assigned to the different words or strings of letters. Participants attempting to name the ink colour take longer when the ink colours are paired with incongruent colour words than when the ink colours are paired with neutral words, strings of letters, or congruent colour terms. The fact that participants can name the ink colours and inhibit naming the words themselves illustrates the power of selective attention. However, the fact that the meaning of the colour words apparently interferes with ink-naming demonstrates the inability to completely exclude information that is not chosen for selection.

The Stroop paradigm, one of most widely used methodologies for studying selective attention (MacLeod, 1991), seemed to us a good starting place for exploring our hypothesis that participants varying in dissociative tendencies would show a difference in basic attentional processing. In this first study we did not predict a particular direction of difference. Perhaps the high dissociators would show less interference because they are better at ignoring information. Alternatively perhaps the high dissociators would show more interference for the conflicting colour terms because their dissociative abilities are unlikely to be under conscious control. Thus any ability they have at ignoring information may depend on the content of the information or the context of the task such that they are only advantaged in filtering out information with certain content or specific contexts; in this case they may be disadvantaged when the only motivation to filter conflicting colour terms comes from the experimenter's instructions. Related to this, high dissociators may be skilled at divided attention tasks and may be disadvantaged when the task demands require focused and selective attention; if so, they should show more interference than the low dissociators in the standard Stroop task.

In addition to the basic Stroop task we included, for exploratory purposes, a modified Stroop task in which words from different semantic categories were used. We hypothesized that words significant to trauma survivors might cause more or less interference for high dissociators than words that are more neutral. A 'modified Stroop' or 'emotional Stroop' task with trauma-related and evocative words (such as 'rape' or 'bodybag') has been used in studies with trauma survivors (e.g. Foa *et al.*, 1991; Kaspi *et al.*, 1995; McNally *et al.*, 1993; McNally *et al.*, 1990; Williams *et al.*, 1996). In this study we used much more subtle word categories than have been used in other studies. Two categories contained what we hypothesized were potentially sensitive words (kinship and household terms), based on our speculation that high

dissociators may have experienced traumas perpetrated by close relatives in the home. Two categories were selected to act as controls for the sensitive words (animal and space terms, respectively). Again in this first study we did not predict a particular direction of difference. Perhaps high dissociators would show more interference for the potentially sensitive words because the content attracts attention; alternatively perhaps the ability high dissociators have to ignore threatening information would lead to less interference for the sensitive words.

METHOD

Subjects

Participants were recruited from a pool of undergraduate students enrolled at the University of Oregon. They received course credit for their participation in the study. Seventy-six female and 78 male students participated. They ranged in age from 18 to 38 with a mean age of 21 years. All participants were native English speakers, and had normal or corrected vision.

Stimuli and materials

To measure attention, a standard Stroop colour-naming task was used as well as a modified Stroop that consisted of words from four semantic categories. The modified Stroop was included for exploratory purposes. Two categories contained what we hypothesized were potentially sensitive words (kinship and household terms). Two categories were selected to act as controls for the sensitive words (animal and space terms, respectively). Eight words from each category were used. Each word in the two control categories was approximately matched for length and syllables to a corresponding word in the sensitive categories, and the lists were approximately matched for frequency according to *The American Heritage Word Frequency Book* (Carroll, *et al.*, 1971).
The six word lists were:

(1) Colour-words: PURPLE, BROWN, GREEN, YELLOW, PINK, ORANGE, BLUE, RED
(2) X's (Colour control): Strings of X's corresponding in length to the colour-words (e.g. XXXXXX, XXXXX, . . .)
(3) Kinship: DAD, NIECE, BROTHER, UNCLE, SISTER, COUSIN, AUNT, MOM
(4) Animal (kinship control): CAT, BABOON, HORSE, TIGER, WHALE, SQUIRREL, GOAT, FOX
(5) Household: HALL, CELLAR, TELEVISION, KITCHEN, BATH, GARAGE, BED, BEDROOM
(6) Space (household control): STAR, RAINBOW, AIRPLANE, PLANET, MIST, HORIZON, SKY, RAIN

Words were presented in coloured ink on stimulus cards, such that all words from each category list were arranged in a vertical, centred, column on the list. Cards were constructed from white paper and measured $8\frac{1}{2} \times 5\frac{1}{2}$ inches; the words were hand-stencilled on these cards in lower-case letters (1 cm × 1 cm) with colour pens. Cards

were then enclosed in a clear plastic container that added rigidity and protective covering.

Three cards were created for each of the six word categories for a total of 18 experimental cards. For each set of three cards the order of the words and the particular pairings between ink-colours and words differed from one another. However, the pattern was held constant between word categories such that for a given card the control words were always in the same order and had the same colour-word pairings. (For example, one particular colour-word card begins with the word 'orange' printed in brown ink. Thus, the control card begins with a string of 6 X's printed in brown ink. A different colour-word card begins with the word 'brown' in blue ink and the corresponding control card begins with a string of 5 X's printed in blue ink, and so on.)

Levels of dissociation were measured using the Dissociative Experiences Scale (DES). The DES, a 28-item self-report measure developed by Bernstein and Putnam (1986), is the most widely used instrument for screening for dissociative symptomatology (Boon and Drajer, 1993). The scale was designed to quantify dissociative experiences, determine the influence of dissociation in psychiatric disorders, and to screen for dissociative disorders (Carlson and Putnam, 1993; see also Bernstein and Putnam, 1986; Coons *et al.*, 1989; Branscomb, 1991; Boon and Draijer, 1993; Saxe *et al.*, 1993). DES items assess dissociation along a continuum, with statements ranging from common experiences to those more severe in nature. This scale is easy to administer and is not considered intrusive or painful to the participants. We used the original version of the scale which requires the participant to make a mark along a 100 mm line indicating how frequently he or she experiences the item. Each response is measured in millimetres from the left point of the line. The mean response across all 28 items is the individual's DES score and can range from 0 to 100. (In some of our recent studies mentioned briefly below, we used the revised version of the DES which instructs the participant to circle a percentage, from 0 to 100, to indicate how frequently the item is experienced.) The DES has a test-retest coefficient ranging from 0.79 to 0.94 across three studies and split-half coefficients ranging from 0.83 to 0.93 (Carlson and Putnam, 1993) across two studies. The DES was able to discriminate between subjects with a dissociative disorder diagnosis (based on the DSM III (American Psychiatric Association, 1980) diagnostic system which has been changed some for the DSM IV (American Psychiatric Association, 1994)) and those without such a diagnosis (Bernstein and Putnam, 1986). For recent reviews of DES psychometric properties also see Briere (1997) and Carlson and Armstrong (1994).

Procedure

Subjects were tested individually in a laboratory room and each completed five tasks in under an hour. Task order was held constant across all subjects. Only the first (Stroop) and third (DES) tasks will be examined here, but the other three tasks will be briefly described.

After informed consent procedures, subjects were seated in a chair 5 feet from the experimenter and were told they would be shown 18 different word lists, each containing eight words. Subjects were instructed to ignore the meaning of the words, and to name out loud the colours in which the words were printed as quickly and as accurately as possible. Subjects were told that each word would be written in one of the following colours: red, blue, yellow, purple, green, pink, orange, or brown. Before

the Stroop cards were presented, subjects were tested for colour blindness with a colour sample card. Subjects able to correctly identify colours were given a practice trial involving naming the colours of the words: FRANCE, GERMANY, ITALY, ENGLAND, SPAIN, PORTUGAL, GREECE, IRELAND. Subjects were permitted to run through the practice trial until they understood the task. The 18 experimental cards were then presented to the subjects in three blocks of six cards each. Each block contained one card from each category and category order was randomized (by shuffling the cards each time) within each block for each subject. Time to read each card was measured with a hand-held stopwatch. Timing began when the first colour was named and stopped when the last colour was named.

In between completing the Stroop task and the DES questionnaire, subjects rated half the words they had seen in the Stroop task according to how much they liked each word. The specific words rated were counterbalanced across subjects. This task will not be further considered in this article.

After completing the rating task, the DES questionnaire was administered. Subjects were told that they would be given a questionnaire consisting of 28 questions about experiences they might have in their daily life. They were instructed to determine to what degree the experiences described in each question applied to them and to mark the line with a vertical slash at the appropriate place. Subjects were given an example before they started the task and were allowed as much time as necessary to complete the questionnaire.

Following the DES questionnaire, subjects were given an explicit recall task in which they were asked to write down as many of the words from the Stroop and rating task (but not the DES) as they could remember in 5 minutes. Finally, subjects completed a word-stem task as quickly as possible with the first word that came to mind. Word-stem items had multiple possible solutions. The stem-completion exercise was designed such that half of the stems could potentially be completed with words from the Stroop task. The final two tasks will not be further considered in this article. After completion of all five tasks, participants were debriefed.

RESULTS

DES scores were calculated in the standard way. That is, the slash marks on the 100 mm line (0 to 100 mm) were measured in millimetres from the left point of the line individually for each of 28 items for each participant. Then a mean response was calculated per subject across all 28 items, resulting in an individual DES score between 0 to 100. A histogram with results for all 154 participants is presented in Figure 1. This highly skewed distribution is generally consistent with previously reported distributions for college students (although we have found in recent studies on college students distributions that are generally even more skewed; that is, with fewer high DES scores proportionally).

Normal adults generally have scores below 10 on the DES and scores of 20 and over are considered indicative of possible dissociative disorders (Carlson and Rosser-Hogan, 1993). Because it is unclear what to make of the 'middle' portion of such a skewed distribution (scores between 10 and 20 are particularly problematic), we selected two subgroups of 40 students each from the ends of the distribution for further analysis. The cut-off was selected to identify high dissociators based on
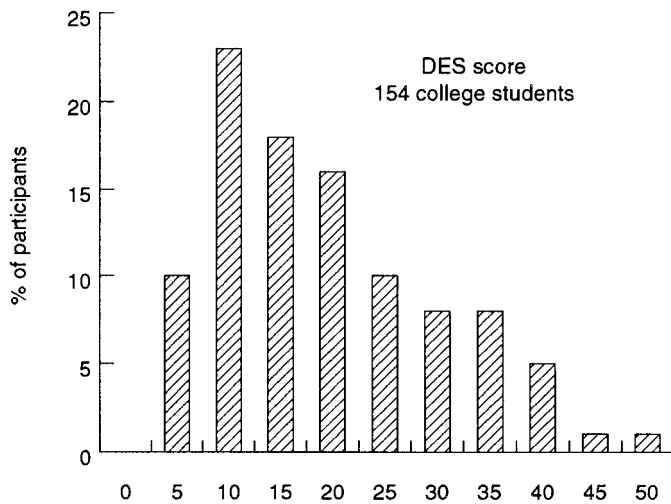
Figure 1. DES scores for 154 subjects grouped into clusters of scores by 5 points. The DES ranges from 0 to 100 points and the clusters shown here are labelled by high end (thus, the cluster labelled '10' shows the frequency of scores from 5.1to 10.0). The 40 subjects with the highest DES scores (all above 20) and the 40 subjects with the lowest DES scores (all below 10) were used in the analyses of Stroop performance

Carlson and Putnam's (1993) observation that further questions about dissociative experiences were appropriate for individuals scoring above 20 in a clinical setting. This cut-off was also motivated by Ross *et al.*'s (1989) finding that only 15% of a college sample scored above 20. (We note, but have no explanation for, the observation that compared with some other samples (such as Ross *et al.*, 1989), our DES scores are rather high overall for a college sample.) The 40 participants with the highest DES scores (range 23.03–50.53) will hereafter be called the high DES group and the 40 participants with the lowest DES scores (range is 0.89–8.75) will hereafter be called the low DES group. Table 1 presents additional descriptions of the high and low DES groups. Although the DES is not a clinical diagnostic instrument *per se*, our high DES scores were in a range that is consistent with dissociative disorders and low DES scores have a range consistent with not having dissociative disorders according to studies on clinical populations (Bernstein and Putnam, 1986).

For each of the eighty subjects, the mean reading time (in milliseconds) was computed for each category. In order to reduce variability in reading times, only the two lowest reading times for each of the three cards per category were used. Reading times for the low DES group were almost identical with the high DES for all the categories except the colour terms. The means, together with standard deviations, are given separately for low and high DES in Table 2.

Table 1. Descriptive statistics for the high and low DES group

	Low DES group	High DES group
Number	40	40
Mean	5.56	32.50
Median	5.98	30.62
Std dev.	2.13	7.68

Table 2. Mean ink-naming times (in seconds) and standard deviations for lists of eight words grouped by word categories

Category	Low DES group Time (SD)	High DES group Time (SD)
Colour	6.50 (1.15)	7.03 (1.51)
X's	4.62 (0.81)	4.51 (0.89)
Kinship	4.11 (0.63)	4.10 (0.74)
Animal	4.80 (0.93)	4.78 (0.86)
Household	4.91 (1.01)	4.65 (0.89)
Space	4.57 (0.72)	4.59 (0.80)

Table 3. Interference means and standard deviations for three matched categories

Category	Low DES group Interference (SD)	High DES group Interference (SD)
Colour–X's	1.89 (0.88)	2.52 (1.14)
Kinship–animal	−0.69 (0.71)	−0.68 (0.56)
Household–space	0.34 (0.75)	0.06 (0.36)

The reaction times were submitted to a Group (low DES, high DES) × Word Category (colour, xxx, kinship, animal, household, space) mixed repeated measures analysis of variance. There was no main effect for Group, $F(1,78) = 0.02$; $p = 0.89$. There was a significant main effect for Category, $F(5,390) = 233.06$, $p < 0.0001$ and a significant interaction between Group × Word Category, $F(5,390) = 4.61$, $p < 0.0004$.

For each of the 80 subjects, the mean reading time per word category was subtracted from each control group to calculate interference scores. The interference scores, together with standard deviations, are given separately for low and high DES in Table 3. Figure 2 displays the ink-naming times for the colour words and the control-X's.

The interference scores for the three categories were submitted to a Group (low DES, high DES) × Word Category (colour–XXX, kinship–animal, household–space) mixed repeated measures analysis of variance. Two effects were significant: Word Category $F(2,156) = 281.68$, $p < 0.0001$; Group × Word Category, $F(2,156) = 6.93$, $p < 0.0013$. Group was not significant $F(1,78) = 1.687$, $p < 0.1982$ (see Figure 2). Follow-up t-tests revealed that the high DES group differed from the low DES group for the colour-x difference ($t(78) = -2.61$, $p = 0.0109$) and for the house-space difference ($t(78) = 2.27$, $p = 0.0261$).

DISCUSSION

We found that individuals reporting high levels of dissociative experiences (as measured by the DES) show a greater level of interference on the basic Stroop colour-naming task. High DES participants took longer to name the ink colours when the lists were conflicting colour terms (such as naming the colour 'yellow' when the word 'red' was printed in the ink colour yellow) than did the low DES participants. For all
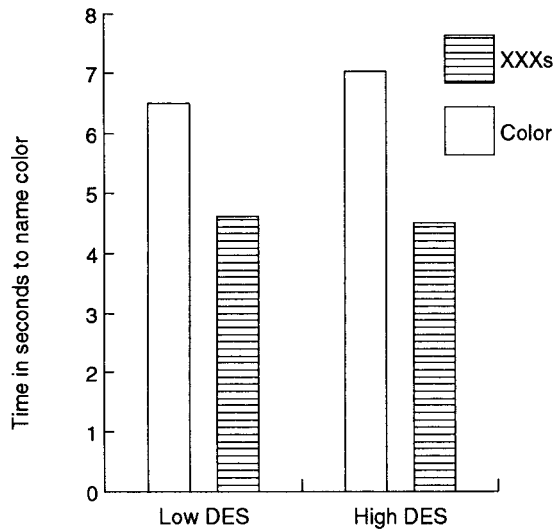
Figure 2.   Ink-naming times for 40 high- and 40 low-DES college students in the Stroop task

other categories but the conflicting colour terms, reaction times for high dissociators were equivalent to or slightly faster than the reaction times of the low dissociators, indicating that the increased interference effect is not accompanied by confounding factors such as generalized slowing among the high DES participants.

In contrast, we found little support for our exploratory hypothesis that household and kinship words lead to more or less interference, as a function of DES category, than the control categories of animal and space terms. While there was some indication that household terms lead to more interference for the low dissociators relative to space terms than for the high dissociators, this effect was very small in magnitude compared with the basic Stroop–Dissociation interaction effect we measured. More recent pilot studies in our laboratory have failed to replicate this very small household–space term effect, but such pilot studies have consistently shown the same interaction pattern as that reported here for the conflicting colour terms for high versus low dissociators for the standard Stroop task. We assume now that much more obviously sensitive terminology (such as 'bodybag' or 'rape') is needed to produce significant and reliable 'emotional Stroop' effects. Other researchers have shown Stroop effects using traumatized populations and a procedure called the 'modified Stroop' or 'emotional Stroop' in which emotion-laden or trauma-evoking words are used (e.g. Foa *et al.*, 1991; Kaspi *et al.*, 1995; McNally *et al.*, 1990, 1993; Williams *et al.*, 1996).

Our primary Stroop–Dissociation interaction finding implies that attentional mechanisms are related to dissociative experiences. The ability to selectively attend to incoming information in an appropriate way, and especially the ability to selectively admit information into consciousness, is necessary for proper functioning. However, we usually cannot completely exclude unattended information from entering the nervous system. Our results suggest a basic relationship between selective attention and dissociative tendencies: that people with high dissociative tendencies have disruptions of consciously controlled attentional abilities (suggesting that we may expect higher levels of attention deficit disorder in dissociative populations).

The finding is important in demonstrating a relationship between a basic cognitive operation and an important individual difference variable. However, many questions remain. Perhaps at the front of the list are questions about causality. Do dissociative experiences cause changes in attentional functioning, or do attentional differences lead to dissociative experiences, or is a third variable involved? In follow-up work we are attempting to learn more about the causality leading to the observed relationship.

A third variable that we hypothesize is most likely active in the interplay between attention mechanisms and dissociation is the nature and extent of traumatic experiences. Although we did not directly assess trauma in this particular study, we (and many other researchers) have, in other studies, shown a positive relationship between DES scores and reported trauma histories (see Freyd, 1996 for a review). We can thus reasonably assume that our participants with high DES scores were also more likely to have had a trauma history than our participants with low DES scores. A caution to this assumption is that it is possible that in some studies the relationship between dissociative tendencies and reported trauma may reflect in part a relationship between dissociative tendencies and false memories of trauma, perhaps mediated by a relationship between dissociation and suggestibility (e.g. see Hyman and Billings, 1998). By this argument, high dissociators would be more likely to report trauma, even if it did not occur, than would low dissociators.

However, an important point to keep in mind is that in some studies showing a relationship between dissociative tendencies and trauma histories there is external corroboration for the trauma (e.g. see Putnam and Trickett, 1997). It is quite reasonable, given the data we have to date, to hypothesize that high dissociators have both more true trauma history and are more prone to making memory errors due to suggestion. An important task for future research using prospective and/or corroborated trauma groups will be to evaluate the veracity of self reports of trauma as a function of dissociative tendencies.

Anne DePrince and the first author recently completed a new pilot study which replicated the previous methodology with a few modifications. One important modification is that we have introduced a trauma history questionnaire to the end of the session with each participant. True to our expectations, those participants with high DES scores also reported significantly more trauma in their history than did those with low DES scores. A second important modification involved the Stroop task itself. In one block of words, participants heard standard instructions (a selective attention task), but during a second block, participants were instructed to attend to the word meaning as well as word colour (divided attention). Preliminary analysis of 34 subjects (17 high and 17 low Dissociators) suggest that high Dissociators show more interference when trying to respond in incongruent trials compared to baseline in the selective attention task. However, in the dual attention task, the high Dissociators are showing less interference for the incongruent words than the low Dissociators. The results to date suggest a cross-over interaction such that high dissociators perform better in the divided attention condition, and low dissociators perform better in the selective attention condition (with better defined as showing less Stroop interference). We are currently running additional subjects to complete a full study.

We currently understand the results reported here as consistent with a 'cognitive environments' conceptualization for dissociation. The conceptualization assumes that

individuals who are high dissociators have developed ways to cope in life that allow for their dissociation. This lack of integration of experiences, memories, and thoughts creates an environment that requires constant divided attention. Individuals who habitually dissociate information may come to be best able to function in multi-tasking, divided attention, divided control structure environments. Individuals who do not so habitually dissociate may be best able to function in relatively more focused attention, task, and control environments. (The term 'cognitive environments' is based in part on the analogy to computer software environments. Some may prefer to have a lot of 'windows' and applications open, handling a number of ongoing programs and tasks, while others may have only a few windows or applications open, focusing fairly exclusively on a single task. By analogy we are speculating that high dissociators prefer to have a lot of 'windows' open and low dissociators prefer to have only one or two open. We do not mean to suggest that computer use is diagnostic of dissociative tendencies, though future research might evaluate whether dissociative tendencies are predictive of computer use.) From this 'cognitive environments' perspective, high dissociators may find the selective attention task more challenging than the divided attention task. Thus high dissociators show greater Stroop Interference than the low dissociators in the selective attention task as evidence of the difficulty. However, high dissociators may show less Stroop Interference in the divided attention task because they are adept at engaging in dual tasks compared to low dissociators.

Much research remains to be completed before we can say for sure what the causal link is between attention and dissociation. At least one possibility that is consistent with the research to date is that in coping with trauma, individuals learn to multi-task as a way of managing and controlling the flow of information. From this 'cognitive environments' viewpoint, traumatized individuals may use dissociation and multi-tasking in order to keep information that is potentially at odds with survival goals out of consciousness and other mental functions. Habitual creation of such a cognitive environment may lead to both adaptive and maladaptive consequences depending on the context and functional demands of the situation.

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