

THE PREDISPOSITION
TO DISSOCIATE: THE
TEMPERAMENTAL TRAITS
OF FLEXIBILITY/RIGIDITY,
DAILY RHYTHM,
EMOTIONALITY AND
INTERACTIONAL SPEED

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ABSTRACT

This paper 1) supports Braun and Kluft's hypothesis that there is a biological substrate for dissociativity; 2) demonstrates that one biological substrate might be temperament; 3) establishes additional construct and discriminant validity for Beere's perceptual theory of dissociation, namely, that dissociation involves a perceptual process in which "background" perceptual input is lost or degraded; and 4) extends the application of Beere's theory from dissociative reactions during trauma to dissociation in general. Measures of temperament and dissociation were administered to 125 undergraduate students. Results support Beere's theory that dissociation involves blocking out peripheral perceptual stimuli. DES correlated significantly with flexibility/rigidity, regularity of daily habits, social emotionality, emotionality, and social tempo. High dissociators tended to be more rigid, less regular, less emotionally responsive to negatives, and interact more quickly than low dissociators.

Kluft (1984) and Braun (Braun, 1984; Braun & Sachs, 1985) propose a biological substrate to explain why certain individuals respond dissociatively and not otherwise. The research described in this paper is an initial attempt to test this proposition and to begin to establish what that biological substrate might be.

The current research also derives from Beere's (1995, in press), perceptual theory of dissociation. The theory has focused narrowly on dissociation during trauma and has not included post-trauma dissociation. This research extends Beere's theory by extending the theoretical concepts to dissociation in general. In brief, Beere's theory proposes that

dissociation during trauma occurs when perception focuses on the threat and the "background" is lost or degraded. "Background" could be considered peripheral stimulus input; Beere defines background as distinct from figure and ground and as the peripheral perception of identity, mind, body, world, and time. Beere (1995, in press) hypothesizes that inhibiting the perception of the background is similar to not being distractible, a temperamental trait. The current research tests this hypothesis.

Despite Beere's (1995, in press) earlier hypothesizing, it was not apparent how paying attention and being distractible pertain to blocking out the background. Furthermore, attention, distractibility, and blocking out background might be separate perceptual activities. Paying close attention, for example, requires an active and task-oriented deployment of perception. Not being distracted also is active and task-oriented, requiring an active inhibition of potentially disruptive intrusions. Blocking out diffuse and non-intrusive peripheral stimuli (such as noises, bodily discomforts or smells, all of which characterize the background) is not necessarily active or task-oriented.

The authors hypothesize that the capacity to attend would *not* be associated with dissociativity since it does not directly involve peripheral perception but rather the focusing of perception. One might suppose that, since attention and distractibility were closely linked conceptually, the authors would have hypothesized that distractibility also would not be associated with dissociativity. Despite the authors' overt recognition of this link, they doggedly persisted in testing Beere's prior articulation of his theory: namely, that distractibility is associated with dissociativity. It was conceivable, the authors argued, that distractibility is an ability separate from the capacity to attend and, thus, needs to be considered separately. Finally, the authors *initially* hypothesized that no other measure of temperament would correlate significantly with dissociativity. This changed after considering the temperament measures.

Of the two adult measures of temperament found in the literature (Windle, 1992; Windle, & Lerner, 1992; Rusalov, 1989), only the Dimensions of Temperament-Revised (DOTS-R; Windle, & Lerner, 1992) has a distractibility scale. Examination of the items on this scale suggested a mismatch between what the distractibility scale measures and the dis-

sociative processes Beere hypothesizes. Consequently, all items were considered from the point of view of the theory being tested. Only the DOTS-R Flexibility/Rigidity scale seems to assess the dissociative processes hypothesized by Beere.

The final set of hypotheses were: Hypothesis 1 – Distractibility correlates with dissociativity; Hypothesis 2 – Attention does not correlate with dissociativity; Hypothesis 3 – Flexibility/Rigidity correlates with dissociativity; Hypothesis 4 – No other temperamental variable correlates with dissociativity.

METHOD

Subjects

Undergraduate college students ($N = 125$, 34 men, 90 women, one gender unspecified; average age = 18.9) were administered the Dissociative Experiences Scale (DES) (Bernstein, & Putnam, 1986) and two measures of temperament: the DOTS-R (Windle & Lerner, 1992) and the Structure of Temperament Questionnaire (STQ) (Rusalov, 1989). The study was approved by the Human Subjects Review Committee of the university. All subjects received extra-credit for their participation.

Measures

The DOTS-R has eleven subscales (Activity Level-General, Activity Level-Sleep, Approach/Withdrawal, Flexibility/Rigidity, Mood, Rhythmicity-Sleep, Rhythmicity-Eating, Rhythmicity-Daily Habits, Task Orientation, Distractibility, and Persistence) with Cronbach's alphas ranging from .53 to .91 for two samples ($N = 975$ and 295) and test-retest coefficients ranging from .52 to .66, all significant beyond the .001 level (Windle, 1992). The STQ (Rusalov, 1989) has eight dimensions of temperament (Ergonicity, Social Ergonicity, Plasticity, Social Plasticity, Tempo, Social Tempo, Emotionality, and Social Emotionality) and one validity scale with Cronbach's alphas ranging from .58 to .84 in samples from three countries: the United States (Bishop, Jacks, & Tandy, 1993), Australia (Stough, Brebner, & Cooper, 1991), and Russia (Rusalov, 1989). Both the DOTS-R and the STQ have evidence to support their validity (Rusalov, 1989; Bishop, Jacks, & Tandy, 1993; Stough, Brebner, & Cooper, 1991; Windle, 1989, 1992). The DES was used to measure dissociativity. The DES is a 28-item self-report measure that requires subjects to mark with a slash the percentage of time which they experience dissociative phenomena. It has excellent validity and reliability as a measure for assessing dissociativity (Bernstein & Putnam, 1986; Carlson, 1994; Frischholz, Braun, Sachs, Hopkins, Schaeffer, Lewis, Leavitt, Pasquotto, & Schwartz, 1990; Ross, Norton, & Anderson, 1988; Steinberg, Rounsaville, Cicchetti, 1991) with reported split-half reliabilities ranging from .83 to .93 with Chronbach's alpha equal to .95. Accurate screening of

Dissociative Identity Disorder (DID) with the DES has been validated (Steinberg, Rounsaville, & Cicchetti, 1991; Carlson, Putnam, Ross, Torem, Coons, Dill, Loewenstein, & Braum, 1993).

RESULTS

The mean DES score for the 125 subjects was 16.6 ($SD = 11.04$). Significant correlations were obtained between the DES and Flexibility/Rigidity ($r = -.2250$, $p < .05$), Rhythmicity-Daily Habits ($r = -.1876$, $p < .05$), Emotionality ($r = -.2154$, $p < .05$), Social Emotionality ($r = -.1782$, $p < .05$) and Social Tempo ($r = .1984$, $p < .05$). No other correlation between DES and temperament was significant.

DISCUSSION

Although not all of the results were predicted, they support the theory. Significant correlations were obtained between dissociativity and Flexibility/Rigidity, Rhythmicity-Daily Habits, Emotionality and Social Emotionality. These scales include the following kinds of items: Flexibility/Rigidity – "It takes me a long time to adjust to new schedules" (DOTS-R, item 13) and "When things are out of place, it takes me a long time to get used to it" (DOTS-R, item 44); Rhythmicity-Daily Habits – "I take a nap, rest, or break at the same time every day" (DOTS-R, item 21) or "The number of times I have a bowel movement on any day varies from day to day" (DOTS-R item 53); Emotionality – "Do you often feel anxious when you do not complete work that is expected of you?" (STQ, item 21) or "Are you upset for a long time when your plans have gone wrong?" (STQ, item 60); Social Emotionality – "Do you often have difficulty sleeping after a quarrel with friends or acquaintances?" (STQ, item 7) or "Are you easily offended by trivial matters?" (STQ, item 84). These results characterize high dissociators as responding more rigidly to environmental changes, having fewer regular daily habits, and being less emotionally responsive in reaction to failures in or hassles at work or in reaction to conflicts, failures, or negative assessments in relation to other people.

These significant results support the basic hypothesis that dissociators block out peripheral, extraneous or, as defined by Beere (1995, in press), background stimuli. The Flexibility/Rigidity result points out that high dissociators tend to be unresponsive to changes in the environment and persist in their prior mode of response. In this regard, they are not as adaptive or as flexible as non-dissociators. In addition, they do not have regular or predictable daily habits defined here as responses to tiredness, hunger, need to toilet and so on. It would seem that this lack of regularity might derive from blocking out bodily cues. Beere (1995, in press) defines "body" as an aspect of background. The items on the two emotionality scales sample dysphoric emotional reac-

TABLE 1
Pearson Product Correlation Coefficients Between
Measures of Temperament, the Capacity to Attend,
Low Distractibility and Dissociation (N=125)

DOTS-R (Windle & Lerner, 1992)	DES
Activity Level-General	.1776
Activity Level-Sleep	.0893
Approach/Withdrawal	-.0244
Flexibility/Rigidity	-.2250*
Mood	-.0806
Rhythmicity-Sleep	-.1693
Rhythmicity-Eating	-.1599
Rhythmicity-Daily Habits	-.1876*
Task Orientation	.0248
Distractibility	.0572
Persistence	-.0331
STQ (Rusalov, 1989)	
Ergonicity	-.0114
Social Ergonicity	.1248
Plasticity	-.0801
Social Plasticity	-.1576
Tempo	-.0509
Social Tempo	.1984*
Emotionality	-.2154*
Social Emotionality	-.1782*
Lie Scale	.1698
SCALES DEVELOPED BY BEERE & PICA	
Capacity to attend	-.1054
Low distractibility	-.0935

* $p < .05$

tions. Once again, these results could imply that high dissociators either block out perception of emotional reactions, a bodily experience, do not connect failure, conflict or difficulty with self-concept or esteem or do not respond emotionally. Note that there seems to be three possibilities: high dissociators respond emotionally but are unaware of that response; high dissociators understand situations which might be emotional for others in ways which do not activate emotions for them; or high dissociators do not respond emotionally however they understand the situation. The second and third options might be difficult to differentiate while the first option (emotional response without awareness) is not supported by other research results. The tendency not to respond emotionally is consistent with some recent research on the differential effects of trauma (for example, Perry, 1994, and Schwarz & Perry, 1994): Traumatized children who are PTSD-like responders display psychophysiological and emotional responses while dissociation-like responders do not seem to display such responses. Thus, even though three of the four significant correlations were not anticipated, they are consistent with the theory and with other research on dissociation. That other correlations were not significant is consistent with the predictions made by the authors.

The significant correlation between social tempo and dissociativity was a surprising finding. Following are examples of social tempo items: "Is your speech usually slow and unhurried?" (STQ, item 5, reversed scoring) or "Do you read quickly?" (STQ, item 72). The results suggest that high dissociators tend to talk, read, and interact quickly and are able to enjoy quicker social interactions.

Is social tempo related to the other temperamental measures which seem more clearly involved in blocking out peripheral perception? This question can be answered by considering the correlations between social tempo and these other measures. Social tempo correlates $-.2577$ with Flexibility/Rigidity ($p < .01$), $.0374$ with Rhythmicity-Daily Habits (non-significant), $-.3117$ with Emotionality ($p < .01$), and $-.2516$ with Social Emotionality ($p < .01$). In other words, Social Tempo correlates significantly with three of the four measures which also correlate significantly with dissociativity. It would appear, therefore, that Social Tempo might well involve blocking out peripheral stimuli otherwise available during social interactions or communicative activities, and, possibly, this allows the more dissociative individual to interact more speedily.

Although significant, the moderate size of the correlations make clear that other variables besides temperament also contribute to dissociativity. The internal reliabilities of two measures (Cronbach's alpha) establish an upper limit for the correlation obtainable between those measures (Bollert, personal communication, 1995). Frischolz et al. (1990) reported an alpha of .95 for the DES. Cronbach's alpha (Windle, 1992) for Flexibility/Rigidity is .78 and Rhythmicity-

Daily Habits is .62. For a U.S. sample (Bishop, Jacks, & Tandy, 1993), Chronbach's alpha for Social Tempo is .75, Emotionality .81, and Social Emotionality .59. Upper limits for the correlations between DES and the temperament measures are: Flexibility/Rigidity, -.2614; Rhythmicity-Daily Habits, -.2444; Social Tempo, .2350; Emotionality, -.2456; and Social Emotionality, -.2380. It should be apparent from the size of these correlations that temperament accounts for a small, though significant amount of the variance (5.5 to 6.8%) on the DES. This is consistent with the notion of a predisposition which, in the context of traumatic developmental experiences, leads to a dissociative style of coping.

Of particular interest was the non-significant results pertaining to the Capacity to Attend and Low Distractibility. Each item from both temperament measures was assigned to a low distractibility, ability to attend, or neither condition. Low distractibility and the capacity to attend correlated significantly ($r = .3382$, $p \leq .01$). Results of the correlations between these two measures and dissociativity were not significant. (See Table 1.) Low distractibility and the capacity to attend also correlated significantly with DOTS-R scales conceptually linked to the variables they measured: task orientation .6259, $p \leq .01$, and .7746, $p \leq .01$, respectively; distractibility, .7112, $p \leq .01$, and .5666, $p \leq .01$, respectively; and persistence, .2255, $p \leq .01$, and .8072, $p \leq .01$. These same DOTS-R measures, as can be seen from Table 1, also did not correlate significantly with dissociation. In other words, the capacity to attend and the ability not to be distracted were unrelated to level of dissociation.

These results clarified the theoretical issues raised prior to the research: that is, dissociation seems unrelated to either attending or not being distracted but dissociation is related, as theorized, to blocking out peripheral stimuli. Faulty logic was applied in developing the distractibility hypothesis: since attention and distractibility were conceptually related, either both or neither should have been hypothesized to correlate significantly with dissociativity. As noted above, the hypothesis was confused; the results clarify that confusion.

In summary, two of the four hypotheses were supported: Hypothesis 2, that the ability to attend would not correlate with dissociativity, and Hypothesis 3, that Flexibility/Rigidity would correlate with dissociativity. Although Hypothesis 1, (that distractibility would correlate with dissociativity) was not supported, the prior discussion clarifies confusion about this hypothesis, the results demonstrate a close relationship between distractibility and attention, and establish that blocking out the background is a different perceptual process than inhibiting distractions. Hypothesis 4, (that no other temperamental variable would correlate with dissociativity,) was, in general, supported in spite of four variables reaching significance. Each of those results was consistent with the theory being tested or with current research on dissociation. All other temperamental variables, as hypothesized, were not significantly correlated with dissociativity.

SUMMARY AND CONCLUSION

The results are consistent with the predictions made and other results concerning dissociation. They support Beere's theory and provide support for Kluff's and Braun's notions of a biological predisposition to dissociate. They also clarify and refine the theory: low distractibility is not related to dissociation, contrary to the hypothesis, but rather a different perceptual process which blocks out background stimuli. The differential results, consistent with the hypotheses, provide additional construct and discriminant validity for Beere's theory and extends it to dissociation in general.

Given the complexity of dissociation, the authors do not believe that loss of background fully "explains" dissociation. Further research has been planned to replicate this study with a larger sample and with multiple measures of dissociation, to differentiate the role of trauma vis-a-vis temperamental variables and to develop a new measure of dissociation based on the particular items and variables which proved significant in this study. ■

ENDNOTE

Mathematician John Bollert (1995) used the formulas for Cronbach's alpha and Pearson's correlation coefficient to estimate the upper limit of the correlation between two measures. Assuming measure X and Y are independent, the variances of the two measures are additive. Presuppose that the error variances are also independent. This will not be the case in practice since each subject will provide data on X and Y. Correlated error variance, however, will *reduce* the size of the eventual correlation. Consequently, the assumption of independence yields an upper limit to the possible correlation for ideal subjects who do not make correlated errors on both measures. Continuing with the mathematical argument, with the assumption of uncorrelated error variance, the variance of each measure equals the true variance plus the error variance. Using these assumptions and substituting terms from the formula for Cronbach's alpha into the formula for the correlation coefficient, a formula can be extracted which estimates the upper limit for a correlation between two measures, each with identified internal reliabilities (Cronbach's alpha). The formula is:

$$r(\text{upperlimit})_{xy} = \frac{r(\text{obtained})_{xy}}{\sqrt{\alpha_x \alpha_y}}$$

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