

DISSOCIATIVE EXPERIENCES AND PSYCHOPATHOLOGICAL SYMPTOMATOLOGY IN A SCOTTISH SAMPLE

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ABSTRACT

This study aimed to determine the prevalence and pattern of dissociative experiences in a Scottish student sample using standardized instruments. Dissociative experiences, as measured by the Dissociative Experiences Scale-II (DES-II), were examined in relation to demographic variables and scores on the Symptom Distress Checklist-90 (SCL-90). The relationship between dissociative experiences and irrational thought processes was specifically investigated through the use of the Rust Inventory of Schizotypal Cognitions (RISC). Findings reveal that the patterns of dissociative experiences that characterize this sample, with respect to sex, age, and concurrent psychopathological symptomatology, are comparable to patterns that have been reported in North America. The strength of the relationship between cognitive disturbances and dissociative experiences is noted. It is suggested that the low rates of diagnosis of dissociative disorders in the United Kingdom may reflect the under-recognition or misdiagnosis of dissociative pathology rather than its absence in this country.

INTRODUCTION

Arguments for the cross-cultural and trans-historical nature of dissociative phenomena have been put forth (Ellenberger, 1970; Ross, 1989). Despite this purported universality, the field remains plagued with controversy in North America and many clinicians and researchers elsewhere have not embraced this burgeoning area. A wealth of anthropological evidence documents diverse dissociative phenomena in non-Western societies, and the few reports of dissociative experiences outside North America that rely on Western definitions of dissociative experiences and disso-

ciative disorders seem to support the proposition that dissociative phenomena occur universally. Compared to their North American counterparts, similar rates of dissociative experiences are reported by students in Puerto Rico (Martinez-Taboas, 1995) and England (De Silva & Ward, 1993; Everill, Waller, & Macdonald, 1995), while elevated levels are evidenced by Dutch students (Ensink & Van Otterloo, 1989) and Japanese students (Tanabe & Ogawa, cited in Berger et al., 1994). Dissociative experiences in the general population have been reported to be common among Dutch and Flemish adults (Vanderlinden, Van Dyck, Vandereycken, & Vertommen, 1991), as well as Australians (Irwin, 1994). In this latter sample, such experiences were associated with a history of early trauma.

Further evidence supporting the relationship between traumatic experiences and dissociation is furnished by studies of patients with eating disorders in Belgium (Vanderlinden, Vandereycken, Van Dyck, & Vertommen, 1993) and Japan (Berger et al., 1994). In other clinical groups, Dutch patients diagnosed with dissociative disorders, in particular dissociative identity disorder (DID) previously referred to as Multiple Personality Disorder, evidenced dissociative experiences in frequencies comparable to reported rates in similar groups in North America (Boon & Draijer, 1993; Ensink & Van Otterloo, 1989). This pattern has also been demonstrated among Turkish (Yargic, Tutkun, & Sar, 1995) and Puerto Rican (Martinez-Taboas, 1995) patients with DID.

These findings suggest not only that dissociative phenomena exist outside North America, but also that they follow similar patterns in relation to early trauma and concurrent psychopathology. Nonetheless, others have challenged the cross-cultural generality of North American research. A low frequency of diagnosis of DID has been reported in India (Adityanjee & Khandelwal, 1989), Switzerland (Modestin, 1992), and the United Kingdom (Fahy, 1989). As the prevalence of dissociative experiences in British samples has been reported to be similar to North American samples (De Silva & Ward, 1993; Everill et al., 1995), this latter finding appears to be discrepant with the rate that may be expected. Reasons for this discrepancy remain unknown, although it has been suggested that while dissociative phenomena may be universally present, the clinical manifestations of pathological

dissociation appear to be more culturally specific (Adityanjee & Khandelwal, 1989).

Throughout Europe, the controversy surrounding this field is marked. Van der Hart (1993) has outlined his impressions of the knowledge of dissociative phenomena and principally DID among mental health professionals across Europe. Although there is discernible interest and ongoing research in some locations, notably the Netherlands, Belgium, and Israel, the circumstances elsewhere are variable. In several countries, such as Hungary, Switzerland, Sweden, and Norway, there is currently little knowledge of dissociative processes, yet open-minded attitudes prevail and some research is underway. While interest among certain clinicians can be detected in Denmark, Bulgaria, the Czech Republic, and Russia, currently there is no active research in these countries. Other areas, including Spain and Poland, appear to have little knowledge of, or interest in, dissociative phenomena. Skepticism and overt hostility are prevalent in certain countries, notably Finland, France, Germany, and the United Kingdom. Small pockets of interest appeared in many countries despite prevailing trends, and van der Hart described increasing awareness in nearly every region.

Considering the variations in acceptance of dissociative experiences, symptoms, and disorders as valid, it is not surprising that the literature from Europe on such topics remains scant. It is possible that the cross-cultural variation in attitudes among professionals is reflected in, and perhaps in part responsible for, discrepant rates of diagnosis of dissociative disorders. Such a disposition among professionals may similarly be related to the scarcity of published reports. Precisely this possibility has been articulated by a clinician from Aberdeen, Scotland, who has encountered numerous cases of DID both in northeastern Scotland and the south of England, yet has remained unable to publish accounts in British journals (Macilwain, 1992).

Cross-study comparisons of dissociative phenomena are complicated by the fact that various measures of dissociation have been employed in different studies. Vanderlinden et al. (1991, 1993) used an unstandardized measure, while Irwin (1994) utilized a measure that treated dissociative experiences as a dichotomous variable. The need for further cross-cultural investigation of dissociative phenomena with standardized instruments has recently been articulated (Krippner, 1994). In non-clinical populations, there is some evidence that the Dissociative Experiences Scale is superior (Gleaves, Eberenz, Warner, & Fine, 1995). Only two published reports have employed the DES in the United Kingdom. Both conducted in England, the first was on a mixed sample of students and non-students (De Silva & Ward, 1993), while the second was limited to female students (Everill et al., 1995). Neither of these is comparable to either the student populations or the general populations that have been studied in North America. Additionally, as Scotland is

a culturally distinct country within the United Kingdom, it is not clear whether these results are generalizable. Furthermore, these studies do not provide information on the patterns of dissociative experiences in these groups.

In the North American studies that have examined psychopathological symptomatology in high and low dissociators, methodological inadequacies can be identified. The comparison group in one study included only subjects scoring below five on the DES (Ross, Ryan, Voigt, & Eide, 1991). Because this score is well below the means or medians that characterize the population of college students, it can be argued that the results reflect the relative lack of psychiatric symptomatology in the comparison group rather than its elevation in the group of high dissociators. An appropriate comparison group should not include only low DES-scorers. Sandberg and Lynn (1992) selected a more suitable comparison group, comprised of individuals scoring below the sample mean. However, the use of the sample mean as a cut-off in a sample whose distribution is known to be positively skewed remains questionable. Furthermore, this study excluded male subjects, thus limiting its generalizability.

The positive skew of the distribution of DES scores appeared in the initial report (Bernstein & Putnam, 1986) and raises questions regarding the appropriate statistical procedures to employ. Initially, the authors recommended the use of non-parametric statistical tests. Later, Carlson and Putnam (1993) advocated the use of parametric tests when samples included more than 30 subjects as, they argue, the mean and median scores are generally equivalent in such samples. In the two previous studies comparing high and low dissociators in student samples, parametric procedures were used (Ross, Ryan et al., 1991; Sandberg & Lynn, 1992), although it is not clear whether or not the mean and median scores were, in fact, equivalent. Moreover, the use of parametric test rests on a number of assumptions, including the assumption of homogeneity of variance. Given the distribution of DES scores, groups of high dissociators would be expected to display more variability in DES scores than low dissociators. If a similar pattern emerges for the dependent variables, the assumption of homogeneity of variance would be violated. Because these previous reports failed to consider the possibility of heterogeneous variances in the two groups, it is possible that this oversight may account for some of the significant results that were reported.

The present study aimed to provide data on the prevalence and patterns of dissociative experiences in a student sample in Scotland. It was expected that patterns of dissociative experiences in relation to sex, age, and generalized psychopathology would be similar to those reported in North American studies. Previous reports have found no relationship between dissociative experiences and sex (Bernstein & Putnam, 1986; De Silva & Ward, 1993; Ross, Joshi, & Currie, 1991; Sanders, McRoberts, & Tollefson, 1989; Torem, Hermanowski, & Curdue, 1992). A negative relationship

between dissociative experiences and age has been reported (Bernstein & Putnam; Ross, Joshi, & Currie; Vanderlinden et al., 1991) although others have failed to find this association (De Silva & Ward; Norton, Ross, & Novotny, 1990; Torem et al.). The studies that have not found such a relationship have used samples with limited age ranges, such as undergraduates, or have compared two groups of adults. It appears that age-related declines may occur primarily during adolescence and early adulthood. Such a decline was expected in the present sample. A further objective was to examine the relationship between dissociative experiences and subclinical psychopathology and to investigate the possibility of systematic group differences in these variables. Although researchers have previously used a cut-off of 20 on the DES with college populations (Ross, Ryan et al., 1991; Sandberg & Lynn, 1992), Carlson and Putnam (1993) have advocated the use of 30 as a cut-off score in the identification of high dissociators. In the present paper, each of these is used and the analyses from both are presented. Furthermore, the comparison group is comprised of subjects scoring below the median. The use of this group is intended to provide a comparison group that is representative of normal subjects in this sample. Therefore, it will not be possible to attribute any obtained differences between the groups to a specifically low dissociative capacity within the comparison group. A positive relationship between dissociative experiences and various types of subclinical psychopathological symptomatology is expected as such a relationship has been discovered in non-clinical samples (Miller, McCluskey, Fawcett, & Irving, 1993; Rosen & Petty, 1994; Ross, Ryan et al., 1991; Sandberg & Lynn, 1992).

Although affective and interpersonal variables have been implicated in relation to dissociative experiences, cognitive variables have received less attention. This deficit is peculiar, considering that dissociative models are intended to provide a model of information processing and explain such cognitive processes as attention, and encoding, storage, and retrieval of memories. An historical link between DID and schizophrenia has been charted (Ellenberger, 1970; Rosenbaum, 1980) and numerous patients diagnosed with DID have received previous diagnoses of schizophrenia (Kluft, 1987; Ross, 1989; Tutkun, Yargic, & Sar, 1995). The preponderance of cognitive disturbances in DID patients has been documented (Ellason & Ross, 1995; Fine, 1988; Kluft, 1987; Ross, Miller, Reagor, Bjornson, Fraser, & Anderson, 1990; Tutkun et al., 1995) and Schneiderian first-rank symptoms, long associated with schizophrenia, have been shown to be more common in DID than schizophrenia (Kluft, 1987; Ross et al., 1990). This phenomenological overlap has been offered as an explanation for the under-recognition or misdiagnosis of patients with dissociative disorders (Boon & Draijer, 1993; Kluft, 1987). Fine (1988; 1992; 1994) has recognized the role of cognitive factors, maintaining that pervasive cognitive distortions resulting from faulty information

processing underlie DID. She has developed a model of this disorder in which alters have access to separate sources of memory which may be inconsistent and incongruent. Like dissociative experiences, cognitive distortions have been linked to childhood trauma in clinical (Bryer, Nelson, Miller, & Krol, 1987) and non-clinical groups of adults (Ross & Joshi, 1992). Developmental deficits in cognitive processing have also been described in traumatized children (Fish-Murray, Koby, & van der Kolk, 1987).

In non-clinical populations, however, the relationship between cognitive disturbances and dissociative experiences has received little mention. The one previous report specifically investigating this relationship found that irrationality was a significant predictor of dissociative experiences (Ross, Ryan et al., 1991). However, all of the predictors used were intercorrelated, resulting in difficulties with the interpretation of the regression analysis. Furthermore, its unique contribution was low, as most of its prediction power came from the variance it shared with other measures of psychopathology. The present study introduced the use of a new measure of irrational cognitions, the Rust Inventory of Schizotypal Cognitions (RISC) (Rust, 1989), to address the relationship between irrational thought processes and dissociative experiences in a non-clinical sample. This instrument measures cognitive styles associated with schizophrenia and schizotypal personality, including magical and paranoid ideation, thought isolation, and ritualistic, subjective, and delusional beliefs. Although intended for use in the general population, patients with schizophrenia and schizotypal personality, as well as occult group members, have been shown to receive high scores (Rust, 1989). Scores on this instrument were expected to be positively related to dissociative experiences.

METHOD

Subjects

Subjects were 106 student volunteers from the University of Stirling, Scotland. Eight individuals who did not complete the questionnaire packet were excluded from analysis, resulting in a final sample of 98, consisting of 56 females and 42 males who were either undergraduate ($n = 61$) or postgraduate ($n = 37$) students.

Measures

As a subset of the instruments used in a larger study on the relationship between everyday creativity and subclinical psychopathology, the following instruments were administered:

Demographic Variables

Information was collected regarding sex, age, and student status (undergraduate or postgraduate).

TABLE 1
DES Score Distribution

DES score	Frequency
0.0 - 4.9	7
5.0 - 9.9	19
10.0 - 14.9	25
15.0 - 19.9	13
20.0 - 24.9	10
25.0 - 29.9	12
30.0 - 34.9	4
35.0 - 39.9	3
40.0 - 44.9	1
45.0 - 49.9	1
50.0 - 54.9	1
55.0 - 59.9	1
60.0 - 100.0	1

Dissociative Experiences Scale-II (DES-II)

The DES-II (Carlson & Putnam 1993) is a measure of the frequency of dissociative experiences of varying severity. It is a 28-item self-report scale requiring subjects to circle the percentage of time (given in increments of 10% ranging from 0 - 100) that they have the experience described. A total score is computed as the mean of the responses to the 28 items. The DES-II is derived from the Dissociative Experiences Scale, or DES (Bernstein & Putnam, 1986), a widely used instrument which has been shown to be reliable (Bernstein & Putnam; Dubester & Braun, 1995; Frischholz et al., 1991) and valid (Bernstein & Putnam; Boon & Draijer, 1993; Carlson et al., 1993; Dubester & Braun; Frischholz et al., 1991; Ross, Joshi, & Currie, 1991; Steinberg, Rounsaville, & Cicchetti, 1991). The items comprising the DES-II remain essentially unchanged and it differs from the DES primarily through the introduction of the simplified scoring system. Convergent validity of the two forms of the scale has been demonstrated in both clinical and non-clinical groups (Ellason, Ross, Mayran, & Saiton, 1994) and scores derived from the different scoring procedures are virtually identical (Carlson & Putnam, 1993; Ellason, 1994). For the purposes of the present study, a change in wording was made to item 1. The word "subway" was replaced with "underground train" to avoid any confusion in meaning for this population. Hereafter, the DES-II

will be referred to as "DES."

Rust Inventory of Schizotypal Cognitions (RISC)

The RISC (Rust, 1989) was designed as a measure of bizarre, eccentric, or idiosyncratic thought systems in the general population. It is a 26-item self-report inventory requiring subjects to report on a four-point Likert-type scale (anchored as *strongly disagree*, *disagree*, *agree*, and *strongly agree*) to what extent they agree with statements regarding thoughts and experiences. The total score is the sum of the scores (ranging from 0 - 3) on each item. Half of the items are reverse scored to eliminate response bias. The RISC has good reliability and validity (Balogh, Merritt, & Steuerwald, 1991; Rust, 1989).

Symptom Distress Checklist - 90 (SCL-90)

The SCL-90 (Derogatis, Lipman, & Covi, 1973) is a widely used measure of current psychiatric symptomatology. In addition to a global rating, scores are calculated on nine subscales: Somatization, Obsessive-compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. The SCL-90 is a 90-item self-report inventory requiring subjects to rate on a five-point scale (numerically, 0 - 4, and verbally ranging from *not at all* to *extremely*) the extent that specific symptoms have bothered them during the past one week. Scores for subscales and the total score are computed as the mean response over the relevant items. Reliability and validity of the SCL-90 have been demonstrated (Derogatis et al., 1973). As before, to avoid any potential confusion, the word "subway" was replaced with "underground train" on item 47. Scores from this instrument will be referred to as SCL scores.

Procedure

Volunteers were recruited through announcements in first-year undergraduate psychology practicals. Additionally, flyers advertising the study were posted on campus and in student residences. The study was described as a study on thought processes and problem-solving strategies and current life experiences. No reference was made to creativity or psychopathology. As an incentive for participation, individual feedback (scores on creativity and dissociation measures) was offered through an anonymous system. First-year psychology students were able to receive credit for their participation in the study. Ethical approval was obtained from the University of Stirling ethics committee.

Participants were allowed to complete the questionnaire packet at their leisure and were given instructions for returning completed questionnaires. Informed consent was obtained from all respondents. Some subjects failed to answer individual items on a questionnaire. Therefore, the sample sizes for individual comparisons varied slightly from the total sample.

Dissociative individuals were compared to controls on

TABLE 2
Comparison of DES Scores in Student Samples

Study	Country	DES		Age	n
		Mean	Median		
Bernstein & Putnam	USA	-	14.1	(18 - 22)	31
Sanders et al.	USA	14.6 ± 11.0	11.2	(17 - 22)	309
Frischholz et al.	USA	23.8 ± 14.1	22.9	19.8 ± 3.6	259
Sandberg & Lynn	USA	12.1 ± 8.8	-	-	650
Murphy	USA	14.7 ± 10.8	12.3	23.7 ± 6.7	415
Rosen & Petty ^a	USA	14.3 ± 10.4	10.8	18.5 ± 0.9	140
Gleaves et al.	USA	16.3 ± 11.3	-	21.3 ± 3.9	170
Martinez - Taboas ^a	Puerto Rico	17.4 ± 13.8	13.5	20.1 (18 - 31)	46
Ensink & Van Otterloo	Netherlands	24.2 ± 12.3	22.7	-	40
De Silva & Ward ^b	England	11.3 ± 8.7	8.9	27.0 ± 7.9	97
Everill et al. ^{a,c}	England	12.8 ± 9.7	-	-	100
Present study ^c	Scotland	17.7 ± 11.9	13.9	23.3 ± 6.0 (18 - 52)	98

Note: Dash denotes data not presented.

^a Female-only sample. ^b Included non-students. ^c DES-II.

all other measures. Presently, there is no consensus on the appropriate cut-off score for the identification of high dissociators, although scores of 20 or 30 have been previously offered. Analyses were conducted using each of these as cut-offs. From the 98 subjects, a group of moderately dissociative subjects (hereafter referred to as mod-DES) was defined as individuals scoring 20 or above on the DES ($n = 34$). The comparison group included all subjects scoring below the sample median of 13.93 ($n = 50$).

To conduct comparisons using a cut-off score on the DES of 30, the members of the mod-DES group who achieved DES scores of 30 or above ($n = 12$) was defined as the high-DES group. However, this high-DES group was significantly younger than the control group ($t(43) = -3.03, p \leq 0.01$). To remedy this inequality, analyses were restricted to subjects aged 25 years or younger. This cut-off corresponded to the division between the third and fourth quartiles of the total sample.

All subjects over age 25 were excluded from analysis. The median DES score of the remaining subjects ($n = 73$) was calculated to be 15.36 (mean = 19.35, $SD = 12.58$). All subjects

scoring above 30 ($n = 12$) were compared to those scoring below the recalculated median ($n = 37$).

The dissociative groups were compared to controls on all other scores using Chi-square and t tests as appropriate. In a majority of the analyses, the assumption of homogeneity of variance was violated. The control groups repeatedly displayed less variability than either moderate or high dissociators. Therefore, all t tests were conducted without pooling variances. The Welch-Satterthwaite procedure for estimating the degrees of freedom (df) was used. This resulted in many df estimates that were substantially lower than what would be expected based on the number of cases used in the analyses. Because the distribution of DES scores was expected to be positively skewed, Mann-Whitney analyses were also conducted for all comparisons. An alpha level of 0.05 was used for all statistical tests.

RESULTS

Except where noted, results from Mann-Whitney tests were the same as results from corresponding t tests.

TABLE 3
Comparison of Mod-DES and Control Groups

Variable	Mod-DES		Control		t =	df	n
	Mean	SD	Mean	SD			
RISC	42.72	6.56	32.44	8.26	6.25***	76	82
SCL	0.92	0.46	0.62	0.36	2.85**	44	74
Somatization	0.74	0.59	0.59	0.54	1.21	64	81
Obsessive-compulsive	1.33	0.67	0.96	0.52	2.71**	56	83
Interpersonal Sensitivity	1.08	0.69	0.76	0.52	2.32*	56	82
Depression	1.23	0.64	0.84	0.53	2.86**	57	82
Anxiety	0.95	0.56	0.59	0.47	3.15**	61	84
Hostility	1.02	0.85	0.49	0.45	3.28**	44	83
Phobic Anxiety	0.38	0.39	0.14	0.25	3.07**	48	83
Paranoid Ideation	1.04	0.84	0.54	0.42	3.20**	42	83
Psychoticism	0.69	0.63	0.27	0.26	3.70***	40	84

* $p \leq 0.05$. ** $p \leq 0.01$. *** $p \leq 0.001$.

Therefore, only the results from the latter will be presented. The mean age of the 98 participants was 23.31 years ($SD = 6.00$; range 18 - 52) and the mean DES score was 17.65 ($SD = 11.87$; median = 13.93). Because the distribution of DES scores is not adequately illustrated by these values, frequencies are presented in Table 1. The distribution of DES scores in this population conformed to the positively skewed distribution that has been found previously. Table 2 demonstrates the reported frequencies of dissociative experiences in various student samples. Data regarding the ages of the students comprising the samples presented as they were provided, either as the mean and standard deviation, or the range, or both. It is clear that the present findings are congruent with the literature regarding both the frequencies of dissociative experiences and their distribution in student samples.

In the total sample, DES scores did not differ by sex ($t(89) = 0.03$, N.S.) or student status ($t(74) = 1.30$, N.S.), although scores were significantly negatively correlated with age ($r = -0.24$, $p \leq 0.02$). Whereas older subjects obtained lower DES scores, younger subjects achieved a wide range of scores.

The mean DES score of the 34 subjects comprising the mod-DES group was 30.65 ($SD = 10.34$) while that of the 50

controls was 9.09 ($SD = 3.73$). This is a highly significant difference ($t(38) = 11.65$, $p \leq 0.0001$). The mod-DES group did not differ from controls in age ($t(81) = -1.86$, N.S.; $n = 84$), sex (Chi squared(1) = 0.65, N.S.; $n = 84$), or student status (Chi squared(1) = 0.80, N.S.; $n = 84$). The 12 subjects in the high-DES group had a mean DES score of 41.43 ($SD = 10.27$), which was significantly different from the 37 subjects in the age restricted control group, who obtained a mean of 10.14 ($SD = 4.00$; $t(12) = 10.30$, $p \leq 0.0001$). The high-DES and control groups did not differ significantly in age ($t(18) = -0.19$, N.S.), sex (Chi squared(1) = 0.94, N.S.), or student status (Chi squared(1) = 0.01, N.S.). Therefore, in both analyses, the group with elevated DES scores and the corresponding control group were comparable on demographic variables, yet exhibited large differences in dissociative experiences.

Table 3 demonstrates that moderately dissociative subjects received significantly higher scores on nearly every measure of psychopathology than did controls. Specifically, moderately dissociative subjects and controls were significantly different on the RISC ($t(76) = 6.25$, $p \leq 0.001$; $n = 82$), the SCL ($t(44) = 2.85$, $p \leq 0.01$; $n = 74$) and all SCL subscales except Somatization. Similarly, high dissociators obtained significantly higher scores on almost all of the measures of

TABLE 4
Comparison of High-DES and Control Groups

Variable	High-DES		Control		t =	df	n
	Mean	SD	Mean	SD			
RISC	44.82	7.04	33.14	8.58	4.58***	19	48
SCL	1.14	0.50	0.66	0.34	2.83*	11	45
Somatization	1.06	0.61	0.55	0.48	2.54*	13	47
Obsessive-compulsive	1.46	0.56	0.97	0.55	2.66*	18	49
Interpersonal Sensitivity	1.35	0.69	0.86	0.51	2.20*	13	47
Depression	1.34	0.68	0.91	0.49	1.97	13	48
Anxiety	1.15	0.61	0.62	0.43	2.77*	14	49
Hostility ^a	1.04	0.70	0.61	0.54	1.97	15	49
Phobic Anxiety	0.50	0.42	0.19	0.27	2.44*	14	49
Paranoid Ideation	1.36	1.09	0.58	0.46	2.43*	12	49
Psychoticism	0.86	0.60	0.30	0.27	3.09**	12	49

^a This variable was significant in Mann - Whitney analysis. $U = 134.5$, $p \leq 0.05$; $n = 49$.

* $p \leq 0.05$. ** $p \leq 0.01$. *** $p \leq 0.001$.

psychopathology than controls, as illustrated by Table 4. High-DES and control subjects differed significantly on the RISC ($t(19) = 4.58$, $p \leq 0.001$; $n = 48$), the SCL ($t(11) = 2.83$, $p \leq 0.05$; $n = 45$) and all SCL subscales except Depression and Hostility. In Mann-Whitney analysis, the comparison reached statistical significance for Hostility ($U = 134.5$, $p \leq 0.05$; $n = 49$). A comparison of Tables 3 and 4 establishes that the high-DES group received even higher scores on all of these measures than the mod-DES group. In all cases, the direction of the difference indicated greater psychopathology in the groups of dissociative subjects. This is true regardless of whether or not the comparisons achieved statistical significance. It can be observed that the actual mean difference between the dissociative and non-dissociative groups is relatively large across the various measures.

Although there are clearly group differences in psychopathological symptomatology, the relationship between dissociative experiences and such symptomatology may be over-simplified without further analysis of its features. For example, systematic within group variations in symptomatology would not be detected by such methods. Figure 1 illus-

trates the relationship between scores on the DES and the Somatization subscale. This pattern was similar across all measures, although on most scales there were fewer high scores among the non-dissociative subjects. To explore the degree of linear relationship between DES scores and the measures of psychopathology in the entire sample, correlational analyses were conducted. Correlation coefficients are presented in Table 5. These ranged from 0.29 for Somatization to 0.57 for RISC and all correlations were significant at the $p \leq 0.01$ level. This demonstrates that the various indicators of psychopathology are strongly related to the frequency of dissociative experiences across the spectrum of dissociation.

Although RISC scores achieved the highest correlation with DES scores, it is plausible that this relationship is an artifact of the relationship that each of these variables has with generalized psychopathology. To establish whether RISC scores are uniquely related to DES scores, partial correlation coefficients were calculated. When the contribution of generalized psychopathology was removed by partialling out SCL scores, the DES and RISC remained highly correlated ($r = 0.41$, $p \leq 0.001$; $n = 82$). Conversely, when the contribution

TABLE 5
Correlations Between DES Scores and
Psychopathology Measures

Variable	r =	n
RISC	0.57***	96
SCL	0.45***	85
Somatization	0.29**	95
Obsessive-compulsive	0.34***	96
Interpersonal Sensitivity	0.32**	95
Depression	0.33***	96
Anxiety	0.40***	98
Hostility	0.36***	97
Phobic Anxiety	0.42***	97
Paranoid Ideation	0.39***	97
Psychoticism	0.46***	97

** $p \leq 0.01$. *** $p \leq 0.001$.

of the RISC was removed, DES and SCL scores were no longer significantly correlated ($r = 0.15$, N.S.; $n = 82$). In this sample, dissociative experiences were more closely related to schizotypal cognitions than to generalized psychopathology.

DISCUSSION

The prevalence of dissociative experiences in the present sample is somewhat elevated compared to the previous reports in British samples (De Silva & Ward, 1993; Everill et al., 1995). Although it is possible that there is a greater propensity to dissociate in the Scottish population, other explanations are equally plausible. For example, the discrepancy may result from the inclusion of non-students and the higher mean age of subjects in one previous study as older subjects tend to achieve lower DES scores (De Silva & Ward, 1993). On the whole, however, the distribution of dissociative experiences in this sample is comparable to reported rates in student samples elsewhere in Europe and North America and some variability has been reported even among studies in North America (see Table 2). Consistent with findings from previous reports, no relationship was found between dissociative experiences and sex, yet DES scores did display a significant negative relationship with age. Therefore,

in addition to providing further evidence that dissociative phenomena are not limited to North American samples, the present study demonstrates that the demographic patterns that characterize DES scores are not culture-specific. While there may be slight variation in absolute levels of dissociative experiences cross-culturally, the pattern of distribution remains similar. The findings concerning the measures of psychopathology strengthen this conclusion. Dissociative subjects differed significantly from controls on nearly all measures of psychopathology. On all such measures, including the few that failed to reach statistical significance, the direction of this difference indicated greater psychopathology in the dissociative groups. This is true regardless of whether a cut-off score of 20 or 30 on the DES is used to identify the high dissociators. This latter point is worthy of further elaboration.

Because dissociative experiences occur on a continuum, there has been some debate regarding appropriate cut-off scores on the DES. The relationship between dissociative experiences and the indicators of psychopathology followed similar patterns across the various measures. While subjects with elevated DES scores tended to receive high scores and those with very low DES scores scored low, individuals with intermediate scores on the DES achieved a wide range of scores on symptomatology measures (see Figure 1). Clearly, even at a given level of dissociative experiences, there can be great variability in psychopathology. It appears individuals scoring above 30 and those with very low DES scores may represent more homogenous subgroups than those in the middle.

Several of the findings deserve special mention. First, the only subscale of the SCL where subjects scoring over 20 on the DES did not differ significantly from controls was Somatization. When dissociative subjects were defined as individuals scoring over 30 on the DES, however, they were significantly different from controls. Given the historical link between dissociation and somatization and recent evidence demonstrating that somatic symptoms are widespread in patients with dissociative disorders (Ross, Heber, Norton, & Anderson, 1989; Saxe et al., 1994), it appears surprising that group differences did not emerge. Closer inspection of the relationship between these variables may explain this apparent discrepancy.

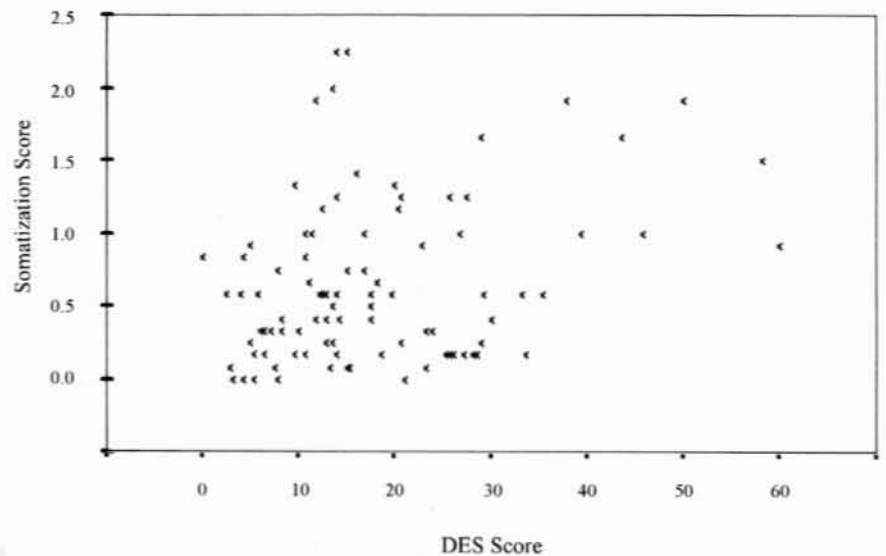
The finding that high DES scorers in this sample reported high frequencies of somatic complaints appears consistent with previous research. Like dissociative experiences, somatic symptoms have been shown to be related to childhood trauma in clinical (Bryer et al., 1987) and non-clinical (Briere & Runtz, 1988) groups. Thus, if both somatic symptomatology and dissociative experiences represent sequelae of exposure to early traumatic experiences, the relationship between these two variables may be spurious. Kluft (1987) presented a description of somatic memories of trauma manifest as a Schneiderian symptom in a DID patient, and Ross

(1994) has proposed numerous mechanisms that may account for the dissociation-somatization relationship arising from early trauma. Individuals in the present sample scoring between 20 and 30 on the DES, however, show a greater resemblance to those scoring below 20 than those scoring above 30 with respect to somatic complaints (see Figure 1). Inclusion of these individuals with those scoring above 30 in the comparison of mod-DES and control subjects substantially lowered the mean for that group (see Tables 3 and 4). It is the diversity of scores on the Somatization subscale among those scoring below 30 on the DES that demands further explanation.

The Somatization scale is somewhat distinct among the measures used because responses can be influenced by either organic or psychological factors and the scale does not discriminate between these. Therefore, high scores on this measure may reflect either actual physical illness or psychologically-based somatic complaints. It is possible, then, that there are two very distinct subgroups which cannot be differentiated by this measure. Individuals who suffer some organic dysfunction would be expected to receive high scores irrespective of their dissociative capacities, while those without such illnesses would be expected to receive scores that reflect somatic complaints attributable to a psychological substrate. It is only in this latter group that a positive relationship would be expected between dissociation and somatization. The recognition of this possibility can account for the variability of somatic complaints in low to moderate DES scorers and the absence of low scores on the Somatization scale among high DES scorers. Further, it is possible that the magnitude of the linear relationship between these two variables in the entire sample was reduced through the inclusion of a subgroup of individuals for whom dissociative experiences and somatic complaints are largely unrelated.

Although the data from this sample appear supportive of this hypothesis, there is no way to determine if, in fact, this sample is comprised of the two proposed subgroups. Certainly, further study of the relationship between dissociative experiences and somatic symptomatology, particularly in relation to traumatic experiences, in non-clinical groups is warranted. When examining this relationship in the future, it will be important to use measures that are sensitive to the possibility that a multiplicity of influences may become manifest as somatic complaints. Regarding the other discrepancies between the two analyses, namely that high-DES subjects and controls were not significantly differ-

FIGURE 1
Relationship Between DES and Somatization Scores



ent on Depression and Hostility, there are again several potential reasons. However, methodological limitations appear to be the most likely cause. Because the sample sizes were unequal and the groups displayed heterogeneous variances, the power of the tests used was greatly diminished. The failure to detect group differences on these variables can probably be attributed to this lack of power. Furthermore, the high-DES group contained only 12 subjects. In light of this small sample size, it is all the more remarkable that so many significant differences did emerge. This attests to the striking magnitude of the differences between dissociative and non-dissociative individuals with respect to these assorted measures of psychopathological symptomatology.

The finding that dissociative subjects and controls differ significantly on the RISC represents an advancement in this area of research. The strength of the association between DES and RISC scores is demonstrated by noting that in the entire sample, the correlation between these two measures is much higher than correlations between the DES and the SCL or any of its subscales. Furthermore, when the contribution of generalized psychopathology is removed, the relationship between DES and RISC scores remains highly significant. In this sample, RISC scores accounted for 32.5% of the variance in DES scores. Even after the contribution of the SCL is removed, RISC scores accounted for 16% of the variance. Conversely, the relationship between dissociative experiences and generalized psychopathology is not significant once the contribution of schizotypal cognitions is removed. Previous investigations have stressed the importance of affective and interpersonal variables in relation to

dissociative experiences and dissociative pathology. In demonstrating that high dissociators achieve greatly elevated scores on an inventory of irrational thought, the relationship between cognitive factors and non-clinical dissociation must also be recognized. Additional evidence contributing to the robustness of the claim that dissociative experiences and cognitive disturbances are related is furnished by analysis of the correlations between DES score and SCL subscale scores. The Psychoticism subscale, which includes items reflecting Schneiderian symptoms, demonstrated the highest correlation with DES. Therefore, in this sample, two independent measures of cognitive disturbances display strong relationships with dissociative experiences. The present finding provides support for the validity of the claim that dissociative experiences are related to irrational thought processes in non-clinical groups.

One particularly important implication derives from the recognition that irrational cognitive processes and dissociative experiences are strongly related. As has previously been noted, patients with dissociative disorders often present with a wide array of symptoms, and diagnosis can be difficult. The constellation of presenting symptoms typically includes a number of symptoms associated with cognitive disturbances such as schizophrenia. The phenomenological overlap between these symptoms, then, in clinical groups, may be responsible for the lack of recognition of dissociative pathology in certain settings. If cognitive disturbances are deemed pre-eminent and dissociative symptomatology is overlooked, misdiagnosis and underestimation of the prevalence of dissociative disorders will result. Schizotypal cognitions and dissociative experiences each occur along a continuum and these variables are positively related at various points along the continua.

Although the present study furnishes evidence that dissociative phenomena are common in non-clinical groups outside North America and positively related to psychopathological symptomatology, it is critical that future research investigates such phenomena in clinical groups. Until such research is conducted, the possibility remains that numerous patients may be unable to receive proper care and treatment due to misdiagnosis. The significance of such misdiagnosis is highlighted as it has been noted that dissociative disorders are more responsive than schizophrenia to treatment methods currently available (Ross, 1989). Further characterization of normal and pathological dissociative processes across various cultural backgrounds is warranted. The possibility that dissociative, psychotic, and somatic symptoms develop as components of a post-traumatic syndrome should be examined in relation to cultural and psychosocial factors. It appears that both normal and pathological dissociative phenomena occur universally despite some differences in clinical presentation or diagnosis. This should not be alarming as sociocultural variations exist in all realms of human experience. In addition to the practical implications of such a research program, further exploration of the relationship

between dissociative processes and various indicators of psychopathology will advance understanding of the basic intrapsychic processes that constitute the essence of humanity. ■

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