



Dissociative experiences and their correlates in young non-patients

Jiri Modestin*, Katharina Lötscher and Thomas Erni

Psychiatric University Hospital Zurich, Switzerland

The relationship between dissociation and some of its potential correlates and antecedents was explored. Young medical students ($N = 276$) completed the Dissociative Experiences Scale (DES), Parental Bonding Instrument (PBI), 20-item Toronto Alexithymia Scale (TAS-20) and Munich Personality Test (MPT). The findings indicate that both personality characteristics (such as alexithymia and neuroticism) and, to a modest degree, environmental factors in terms of the lack of parental care contribute to the dissociation variance.

In contemporary psychiatry, a paradigm shift is taking place from neurotic to reactive disorders, from intrapsychic conflict to external trauma. In this context, the phenomenon of dissociation, defined by DSM-IV as 'a disruption in the usually integrated functions of consciousness, memory, identity or perception of the environment' (American Psychiatric Association, 1994, p. 477), was rediscovered and trauma implicated in its aetiology (Putnam, 1995). Accordingly, the past research on dissociation focused primarily on the experience of trauma: most patients with dissociative disorders reported severe traumatization (Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1998) and people with serious past trauma more dissociative experiences than people with no past trauma (Santonastaso, Favaro, Olivotto & Friederici, 1997).

Childhood trauma was found to predict pathological dissociation (Irwin, 1999): sexual and physical abuse in childhood has been associated with a higher level of dissociative symptoms in adulthood (Chu, Frey, Ganiel, & Matthews, 1999; Favaro, Dalle Grave, & Santonastaso, 1998; Kirby, Chu, & Dill, 1993; Lipschitz, Kaplan, Sorkenn, Chorney, & Asnins, 1996). A total of 88% (Ross, Norton, & Wozney, 1989) and 95% (Ross, Miller *et al.*, 1990) of patients with the most pronounced form of dissociation — the multiple personality disorder — were found to have suffered physical and/or sexual abuse. The experience of abuse in infancy predicted later dissociation in a prospective longitudinal study (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997).

*Requests for reprints should be addressed to Jiri Modestin, Psychiatric University Hospital Zurich, Lenggstrasse 31, CH-8029 Zurich, Switzerland (e-mail: modestin.sek@puk.zh.ch).

In contrast, other factors such as environmental influences in terms of perceived parental dysfunction, or an individual's personality characteristics, have received much less attention. Yet interrelations seem to exist between child dissociation and parenting qualities (Mann & Sanders, 1994), especially maternal neglect (Draijer & Langeland, 1999). In dissociative women, chaotic family backgrounds were observed (Paley, 1988). The association of abuse with dissociation was found to be accounted for by family pathology (Nash, Hulse, Sexton, Harralson, & Lambert, 1993), and also, dissociation was found to be more strongly predicted by loss of a family member during childhood than by child sexual abuse (Irwin, 1994).

The research into the dissociative patients' personality seems to be characterized by a marked heterogeneity of the findings: dissociative patients were found to rate higher on measures of hypnotizability (Covino, Jimerson, Wolfe, Franko, & Frankel, 1994), to be more susceptible to hypnosis (Frischholz, Lipman, Braun, & Sachs, 1992) and to be more vulnerable to psychotic experience (Allen & Coyne, 1995; Allen, Coyne, & Console, 1997). Patients with dissociative disorders showed personality profiles that were intellectualized, obsessive and introversive, but not histrionic or labile (Armstrong & Loewenstein, 1990), and they had the highest scores for avoidant, self-defeating, borderline and passive-aggressive personality disorder (Ellason, Ross, & Fuchs, 1995). Last but not least, dissociation-prone individuals were found to be more alexithymic (Berenbaum & James, 1994; Irwin & Melbin-Helberg, 1997).

The relationship between dissociation and alexithymia merits special attention because of the relatedness of both. Alexithymia, characterized by constriction in experiencing emotions and difficulties in communicating feelings (Sifneos, 1973), also appears to be correlated with trauma (Cloitre, Scarvalone, & Difede, 1997; Zeitlin, McNally, & Cassiday, 1993). Both dissociation (Saxe *et al.*, 1994; van der Kolk *et al.*, 1996) and alexithymia (Cohen, Auld, & Brooker, 1994) have been related to somatization, and both were found to be independently associated with self-mutilative behaviour (Zlotnick *et al.*, 1996). In addition, there is a conceptual similarity between dissociation and alexithymia: both can be described as a failure to integrate perceptions and memory, or emotions, into the stream of the whole conscious experience. Both phenomena occur to some degree in normal individuals and are more prevalent in persons with some mental disorders.

The present study explored the importance of non-trauma variables for explaining the dissociation variance. Both environmental factors (quality of parenting) and personality factors (several personality dimensions including alexithymia) were considered as possible predictors of dissociative experiences in a young non-patient population. We expected to find a positive relationship between dissociation and parental control as high control ratings could indicate a higher degree of coercion, maybe some use of force and thus some kind of traumatization. Also, we expected to find a positive relationship between dissociation and personality factors. In this regard, we were especially interested in schizoidia. A schizoidia-schizophrenia continuum was claimed to exist (Kretschmer, 1931). Both conceptions of dissociation and schizophrenia have their common roots in association psychology, and schizophrenic decompensation can be viewed to represent the most severe form of dissociation, namely ego fragmentation (Scharfetter, 1999). A positive relationship was also expected to exist between dissociation and alexithymia due to the connections mentioned above. We were interested in exploring the relative importance of all these factors with regard to the degree of dissociative experience.

Method

Participants

The study was carried out on third- and fourth-year students from the Faculty of Medicine at the University of Zurich. On two occasions, following a lecture, they were told, in general terms, about the planned 'study of some states of consciousness and factors which could influence them', and their cooperation was requested. Afterwards, and for the first and the only time, all registered students were mailed comprehensive written information along with the questionnaires described below. They were asked to complete the questionnaires and to return them anonymously by post. They were also asked to disclose their age, sex and father's occupation — the last to determine social class. Out of a total of 492 registered students, 276 students completed and returned questionnaires and were included in the study (corresponding to a response rate of 56%). Among participating students, both sexes were equally represented (129 men and 131 women), and the students' mean age was 24.4 years ($SD = 3.0$). Of the students, 69% came from higher middle and middle social class families. Not all participants completed all scales. In addition, 17 of them did not indicate their sex and 10 their age and father's occupation. Therefore, N varies in individual comparisons.

Instruments

Dissociative Experiences Scale (DES)

The DES is a 28-item self-report questionnaire developed to measure dissociation in normal and clinical populations (Bernstein & Putnam, 1986). It is a visual analogue scale with a high internal consistency (Cronbach's $\alpha = .95$), with test-retest reliability coefficients ranging from .79 to .96 and split-half reliability coefficients of .83 to .93 (Bernstein Carlson & Putnam, 1993). The scale has been shown to have excellent convergent validity with other measures of dissociative experiences and impressive predictive validity, in particular concerning dissociative disorders and traumatic experiences (van Ijzendoorn & Schuengel, 1996). Each of the 28 items of the scale scores from 0 to 100, and the average of all items scores gives an overall score ranging from 0 to 100 for each participant. In an earlier study (Ross, Joshi, & Currie, 1991), three factors were identified through principal components analysis accounting together for 47% of the combined variance of the scores: Factor 1 was absorption/imaginative involvement; Factor 2, amnesic experiences; and Factor 3, depersonalization/derealization. However, the three-factors structure of DES was not replicated by Allen *et al.* (1997), and also, the three DES factors do not appear to have been validated in a sample of university students, the target sample of the present study. Therefore, a factor analysis of our DES ratings was conducted.

Parental Bonding Instrument (PBI)

The PBI measures various attitudes and behaviours of parents as they are remembered retrospectively by an individual in his or her first 16 years. Attitudes of both parents are evaluated, and the scale consists of 25 items reflecting two dimensions: the dimension of care/involvement vs. indifference/rejection (12 items) and the dimension of control/overprotection vs. encouragement of autonomy/independence (13 items). All items are evaluated using a Likert scaling from 0 to 3. The original three-week test-retest reliability assessment yielded a Pearson correlation coefficient of .76 for the 'care' scale and .63 for the 'control' scale (Parker, Tupling, & Brown, 1979). Satisfactory reliability and validity of PBI have been confirmed in numerous subsequent studies (Parker, 1989). The instrument was developed for assessment of parental bonding considering simultaneously both dimensions and for examining the influence of possible distortions of parental bonding on psychological and social functioning of recipients. The scales measure the recipient's later judgement of the parents; nevertheless, the lack of an association between the recipient's age and scores on the scales suggests that there is no change in the report of parental attitudes over time. Incidentally, the two dimensions do not appear to be independent; control is linked with lack of care (Parker *et al.*, 1979).

The 20-Item Toronto Alexithymia Scale (TAS-20)

The TAS-20 was developed to measure alexithymia, namely a special disturbance of certain individuals characterized by constriction in experiencing emotions, difficulties in describing feelings and impoverished fantasy and dream life (Sifneos, 1973). The TAS-20 is—as a further development of TAS (Taylor, Ryan, & Bagby, 1985)—a 20-item self-report scale. Each item is rated on a 5-point Likert scale ranging from strongly disagree to strongly agree. The TAS-20 demonstrated good internal consistency (Cronbach's $\alpha = .81$) and test–retest reliability over a three-week interval ($r = .77$). Concurrent validity of the scale was confirmed. A three-factor structure was described, the factors being 'difficulty identifying feelings', 'difficulty describing feelings to others' and 'externally oriented thinking' (Taylor, 1994). However, the factor analysis of the French version of the TAS-20 only yielded a two-factor solution (Loas, Otmani, Verrier, Fremaux, & Marchand, 1996), and we replicated the latter finding with respect to the German version (Erni, Lötscher, & Modestin, 1997)—the items referring to the difficulties to identify and to describe feelings constitute the first single factor (F1), whereas externally orientated thinking is represented by the second factor (F2).

Munich Personality Test (MPT)

The MPT is a brief questionnaire that includes 51 statements, all of them being rated on a 4-point Likert scale ranging from completely true to not true. It comprises six personality scales measuring the personality dimensions of extraversion (10 items), neuroticism (10 items), frustration tolerance (six items), rigidity (eight items), isolation tendency (five items) and esoteric tendencies (three items). The last two shortest scales, isolation tendency and esoteric tendencies, can be combined to form the additional scale schizoidia (eight items), and the MPT also contains two control scales, namely orientation towards social norms (six items) and motivation to perform the ratings adequately (three items). The test–retest reliability coefficients were .54–.76 for clinical scales after one year and .32–.49 after an average interval of seven years. Also, the scales proved to discriminate well in comparisons of patients and probands from the general population (von Zerssen, Pfister, & Koeller, 1988). On the whole, the MPT offers a fairly differentiated picture of the personality structure in mental patients and healthy participants.

Statistical evaluation

A principal components analysis was performed for the 28 DES items, choosing solutions based on three and four factors. This choice reflects the original finding of three DES factors with a group of unclassified items. The factors were rotated using the varimax method. As indicated in the literature, the distribution of DES scores does not follow a normal probability curve (Bernstein & Putnam, 1986), and also the distribution of MPT scale values does not form a normal distribution (von Zerssen *et al.*, 1988). We tested the distribution of all variables in our sample for normality using the chi-square goodness-of-fit procedure. Only the distributions of TAS-20 total scores ($\chi^2(7) = 13.37, p > .05$) and scores of MPT extraversion ($\chi^2(8) = 17.72, p > .05$) were normal. Therefore, non-parametric statistical techniques were used to analyse the data of our study. Incidentally, von Zerssen *et al.* (1988) explicitly advised the use of non-parametric methods when dealing with the MPT. The Kruskal–Wallis test was used to compare participant groups, and a correlation analysis was carried out with the help of Spearman correlation coefficients. A non-parametric stepwise regression analysis (Iman, 1982) was performed, looking for the set of variables best explaining DES as a dependent variable, using $p < .15$ for a variable to enter and to stay in the model.

Results

The principal-components analysis fully confirmed the existence of the original DES Factor 3, depersonalization/derealization (DES-D/D, reflecting feelings of detachment

from one's own personality or the environment) in both, the three- and four-factor solutions. Our DES-D/D (Factor 3) is built by all five original depersonalization/derealization items, and it also contains Item 7, which clearly refers to the experience of depersonalization ('Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person'). In contrast, the two other original factors (absorption/imaginative involvement and amnestic experiences) could not be reproduced, the corresponding items not having been separated from each other and from the remaining items. Therefore, only DES total scores and scores for DES-D/D were considered in further analyses.

The scales' means, standard deviations and medians are presented in Table 1, together with the proportions of probands, who achieved higher mean scores. DES cut-off scores of >20 and >30 have been claimed to indicate the possibility of dissociative disorder (Bernstein Carlson *et al.*, 1993; Steinberg, Rounsaville, & Cicchetti, 1991).

Table 1. DES scale: means, SDs and medians along with the proportion of probands with higher mean scores

	M	SD	Median	MN score >20 N (%)	MN score >30 N (%)
	(N = 276)				
DES	10.4	9.6	8.0	31 (11.2)	13 (4.7)
DES-D/D	5.6	11.2	1.3	20 (7.2)	10 (3.6)

Note. DES = Dissociative Experiences Scale—total; DES-D/D = Dissociative Experiences Scale—depersonalization/derealization factor.

No significant differences were found with regard to the total DES and DES-D/D scores between both sexes and between all levels of social class, and no significant correlations were found with regard to age ($r = .02$ for DES total, $r = .00$ for DES-D/D). Between DES total and DES-D/D, there is a significant correlation ($r = .67$, $p < .0001$).

In Table 2, both DES scales are correlated with PBI scales, TAS-20 scales and MPT scales. Both DES scales are correlated negatively with parental care and positively with maternal control in PBI (i.e. higher levels of dissociation are associated with lower levels of parental care and higher levels of maternal control). Significant positive correlations were also found between both DES scales and TAS-20 scale and TAS-20 F1 scale. Furthermore, significant correlations were found between DES and several MPT scales, particularly the neuroticism and schizoidia scales. Thus, participants with more pronounced alexithymic, neurotic and schizoid characteristics indicated higher levels of dissociative experiences.

Table 3 explores further the relationship between dissociation and alexithymia, comparing nine alexithymic probands (TAS-20 total score >60) with 237 non-alexithymic probands (TAS-20 total score <52) with regard to DES scores. Alexithymia cut-off scores were provided by the TAS-20 author (G. J. Taylor; written communication, 3 August 1995). As Table 3 shows, alexithymic probands scored significantly higher on both DES scales.

As many of the scales we used in our study could be intercorrelated, a stepwise

Table 2. Correlation analysis relating DES and DES-D/D to PBI, TAS-20 and MPT, indicating Spearman correlation coefficients

	N	DES	DES-D/D
PBI			
Father: control care	263	.15*	.12
		– .29***	– .26***
Mother: control care	274	.20***	.22***
		– .26***	– .28***
TAS-20	275	.41***	.35***
TAS-20 F1		.48***	.46***
TAS-20 F2		.07	.01
MPT	254		
Extraversion		.10	– .01
Neuroticism		.44***	.39***
Frustration tolerance		– .19**	– .25***
Rigidity		.18**	.15*
Isolation tendency		.20**	.20**
Esoteric tendencies		.19**	.25***
Schizoidia		.23***	.26***
Orientation towards social norms		– .21***	– .10
Test motivation		– .02	– .08

* $p < .05$; ** $p < .01$; *** $p < .001$.
Note. DES = Dissociative Experiences Scale—total; DES-D/D = Dissociative Experiences Scale—depersonalization/derealization factor; PBI = Parental Bonding Instrument; TAS-20 = 20-Item Toronto Alexithymia Scale—total; TAS-20 F1 = 20-Item Toronto Alexithymia Scale Factor 1 (difficulty identifying and describing feelings); TAS-20 F2 = 20-Item Toronto Alexithymia Scale Factor 2 (externally oriented thinking); MPT = Munich Personality Test.

regression analysis was carried out for the dependent variable DES total to identify those variables contributing most significantly to the DES differences (see Table 4). Those variables appeared in the model that correlated highest with DES total in the correlation analysis (see Table 2): TAS-20 F1, PBI dimension of care with regard to both

Table 3. Comparison of alexithymic and non-alexithymic probands with regard to DES and DES-D/D scales

TAS-20 total score (N) (%)	No alexithymia <52 236 (86)	Alexithymia >60 9 (3)	Significance	
			χ^2	p
DES: MN $\pm$ SD	8.7 $\pm$ 7.3	23.6 $\pm$ 19.8	11.16	.0008
DES-D/D: MN $\pm$ SD	3.6 $\pm$ 7.0	21.4 $\pm$ 25.6	10.70	.0011

*Kruskal–Wallis test with 1 d.f.
Note. DES = Dissociative Experiences Scale—total; DES D/D = Dissociative Experiences Scale—depersonalization/derealization factor; TAS-20 = 20-Item Toronto Alexithymia Scale.

parents, and MPT neuroticism. Unexpectedly, MPT extraversion also appeared in the model, contributing — along with mother care — to a lesser degree to the explanation of the common variance of 36%.

Table 4. Results of non-parametric stepwise regression analysis for dependent variable DES, showing data of all probands ($N = 276$)

Variable	Partial R^2	Model R^2	F	p
TAS-20 FI difficulty identifying and describing feelings	.227	.227	65.65	.0001
PBI father care	.068	.295	21.44	.0001
MPT neuroticism	.034	.329	11.41	.0009
MPT extraversion	.025	.354	8.59	.004
PBI mother care	.007	.361	2.53	.113

Note. DES = Dissociative Experiences Scale—total; TAS-20 FI = 20-Item Toronto Alexithymia Scale Factor I; PBI = Parental Bonding Instrument; MPT = Munich Personality Test.

Discussion

The DES scores reached by our probands (medical students) are comparable with those found in other young samples (Kihlstrom, Glisky, & Angiulo, 1994). They are higher than the scores of some general population samples (Akyüz, Dogan, Sar, Yargic, & Tutkun, 1999; Bernstein & Putnam, 1986) and lower than the scores found in psychiatric in-patients with more psychopathology (Draijer & Langeland, 1999; Modestin, Ebner, Junghan, & Erni, 1996). In correspondence with others (Bernstein & Putnam, 1986; Ross, Joshi, & Currie, 1990), we found no association between DES scores and sex and social status. However, the negative correlation between DES scores and age found by the latter authors could not be confirmed, quite obviously because of the restricted age range of our participants.

We failed to replicate the three-factor structure of the DES, being able to separate only items of the depersonalization/derealization subscale DES-D/D. It remains unclear whether the three-factor scores 'really measure subcomponents of dissociation, or whether they just measure endorsement frequency' (Bernstein Carlson & Putnam, 1993, p. 21). Between DES total and DES-D/D, a high correlation of .67 was found. Correspondingly, the relationship of both scales to the variables we studied was similar (see Table 2).

The PBI was used in this study to identify the possible influence of subjectively perceived experiences of the suboptimal parenting on later dissociative tendencies. As expected, positive correlations were indeed found between parental control and dissociative tendencies. However, they were relatively low. More pronounced negative correlations were found (see Table 2) between PBI scales for parental care and DES scales. Thus, it was rather a lack of care than too much control that seems to be of importance. Incidentally, the variables of parental care also appeared in the multivariate model (see Table 4), making an independent, albeit relatively modest ('father care') or even negligible ('mother care') contribution with regard to the DES total differences.

No significant correlation between the DES and the PBI was found in a sample of Japanese female out-patients with eating disorders (Berger *et al.*, 1995), and PBI scores

were said not to represent a significant risk factor for dissociative experiences in female personality disorders (Zweig-Frank, Paris, & Guzder, 1994). In our previous study, we found similar correlations between the DES and scores for parental control; negative correlations between the DES and parental care were less pronounced in psychiatric in-patients (Modestin *et al.*, 1996). In agreement with the present results, a positive correlation has recently been found between the level of dissociation on DES and maternal neglect, the latter having been validated by its relation to lack of PBI parental care (Draijer & Langeland, 1999). The contradictory results reported by different authors indicate that if there is a relationship between experienced parenting qualities in childhood and later dissociation, its scope will be limited.

Our hypothesis—that there is a positive relationship between dissociation and alexithymia—was fully confirmed: our alexithymic probands reached much higher scores in both DES scales than probands without alexithymia (see Table 3). A significant positive correlation was found (see Table 2) between the DES and the TAS-20 which, however, was based on a positive correlation of .48 between the DES and our TAS-20 F1 subscale encompassing both ‘difficulty identifying feelings’ and ‘difficulty describing feelings’. The correlation between the DES and TAS-20 F2 (‘externally oriented thinking’) was .07, which seems to question the homogeneity of the alexithymia concept. Both factors (the difficulty identifying and describing feelings (F1), and the externally oriented thinking (F2)) probably represent different personality characteristics. The first factor reflects a reduced ability to experience emotions; the second refers to a non-analytical, factually oriented cognitive style (Taylor, 1994). Obviously, both factors do not need to parallel each other closely. Correspondingly, correlating TAS-20 F1 with TAS-20 F2 in the whole sample, the Spearman correlation coefficient was relatively modest, albeit significant ($r = .22$, $p = .0003$). No significant correlation between the DES and the TAS ($r = .13$) was found by Zlotnick *et al.* (1996) in female in-patients engaged in self-mutilative behaviour. In contrast, other studies yielded results comparable with ours: in undergraduate students, proneness to dissociation—measured with the help of the Questionnaire of Experiences of Dissociation (Riley, 1988)—correlated highly ($r = .47$) with TAS-20 ‘difficulty identifying feelings’, less ($r = .30$) with ‘difficulty describing feelings’ and insignificantly with ‘externally oriented thinking’ (Irwin & Melbin-Helberg, 1997). Using the same scales as the present study, positive correlations of .32 and .26 between the DES and the TAS-20 were reported for the subscales ‘difficulty identifying feelings’ and ‘difficulty describing feelings’ in college students (Berenbaum & James, 1994); both constructs (dissociation and alexithymia) were judged to be distinguishable from each other and to represent a possible consequence of trauma. Finally, higher TAS-20 scores for ‘difficulty identifying feelings’ and ‘difficulty expressing feelings’ were found in participants with pathological dissociation (Grabe, Rainermann, Spitzer, Gansicke, & Freyberger, 2000).

Relatively high correlations were found between DES scales and some MPT dimensions (see Table 2). Especially, it was the factor of neuroticism that reached the highest correlations with both DES total and DES-D/D. There was indeed a positive significant correlation between dissociation scores and schizoidia. However, compared with neuroticism, it was much less pronounced and it did not appear in the multivariate model. Thus, both concepts can be only remotely related—at least as they are represented by both scales. A comparison of these results with others is more difficult because of the different personality diagnostic tools utilized in different studies. Positive correlations between DES total score and scores for physical aggression, anger and hostility attitude were reported (Irwin, 1998). DES scores were found to be positively

correlated with measures of both neuroticism and openness to experience (Kihlstrom *et al.*, 1994), these findings confirming our results of positive correlation with neuroticism and negative correlation with orientation towards social norms. Recently, character traits of self-transcendence and self-directedness were described as predictors for dissociation (Grabe, Spitzer, & Freyberger, 1999).

Results of the multivariate stepwise regression analysis (see Table 4) indicate that both the characteristics of early parenting (parental care) and the personality characteristics such as alexithymia or MPT neuroticism are of some importance regarding the differences in DES total score. All these factors make an independent contribution, the extent of which, however, is very different for the individual factors. The appearance of alexithymia and neuroticism as mutually independent variables is in agreement with the conceptualization of alexithymia as a non-neurotic personality dimension (Taylor, Bagby, & Parker, 1993). The unexpected appearance of extraversion in the multivariate model could be a consequence of the unexpected normal distribution of this factor in our probands and could be unique for the present sample. It is the alexithymia dimension of difficulty to identify and describe feelings that correlated highly with the DES and contributed mostly to DES variance. Dissociation means a lack of the normal integration of thoughts, feelings and experiences into the stream of consciousness, and alexithymia, in its dimension of difficulty to adequately perceive and communicate feelings, could also be conceptualized as a failure to integrate feelings into the whole of conscious experience. Thus, there is some similarity, and maybe overlap, between both concepts. Altogether, our multivariate model explained 36% of the total DES variance. This indicates that the occurrence of dissociative experiences also depends on other factors, not considered in the present exploration.

Conclusions

A relatively high correlation of .48 was found between dissociation and alexithymia 'difficulty to identify and communicate feelings' (TAS-20 F1) in young non-patients, and TAS-20 F1 mostly contributed to the DES variance in a multivariate model; accordingly, alexithymic probands indicated more frequently dissociative experiences. The findings indicate that there will be more inner relatedness between dissociation and TAS-20 F1 than between both alexithymia factors TAS-20 F1 and TAS-20 F2 (externally oriented thinking); alexithymia, as currently conceptualized, obviously represents a fairly heterogeneous construct. It is not only personality characteristics such as alexithymia and neuroticism that contribute to the dissociation variance, but also the lack of parental (mainly paternal) care. Dissociation thus seems to depend on both personality and early environmental factors, the latter not limited to the frequently quoted experience of trauma.

However, as our study used mainly a correlational design, conclusions regarding causality are difficult, and the existence of intervening processes cannot be excluded. It remains open whether alexithymia, neuroticism and certain qualities of early parenting predispose to dissociation or whether these or some of these factors and dissociation are correlated, owing to some other common antecedents. Our study was carried out on a highly selected sample with a low variability, and our sample comprised only 56% of potential participants. The study design does not allow us to exclude the possibility of responders from differing from non-responders. Therefore, we must be careful with respect to making generalizations from our findings.

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