

The Interrelatedness of Disconnection: The Relationship between Dissociative Tendencies and Alexithymia.

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ABSTRACT. This study explored the extent to which alexithymia can be seen as a dissociative phenomenon, examining three facets of dissociation in relationship to the five dimensions of alexithymia. The dissociative facets were: pathological psychoform dissociation (amnesia and derealization/depersonalization), non-pathological psychoform dissociation (absorption) and somatoform dissociation. The alexithymia facets were: difficulties emotionalizing, fantasizing, identifying, verbalizing and analyzing emotions. Various self-report measures were used including the latest developed measure of alexithymia, the Bermond Vorst Alexithymia Questionnaire (BVAQ). Canonical correlation results indicated that somatoform dissociation was the strongest predictor of alexithymia. For younger males, somatoform dissociation was directly related to all facets of alexithymia except for fantasizing. Males with somatoform dissociation, irrespective of age, appeared to have the highest difficulties emotionalizing and identifying emotions. Whilst somatoform and pathological psychoform dissociation were related to difficulties identifying emotions for younger females, no type of dissociation directly influenced the development of any alexithymia dimension for women.

KEYWORDS. Dissociation, alexithymia, somatoform, pathological.

Alexithymia, meaning “lack of word, mood or emotion,” involves “reductions or incapacities to fantasize, experience, and verbalize emotions, plus an absence of tendencies to think about one’s emotions” (Sifneos, 1973). Taylor, Ryan, and Bagby (1985) added another element “the difficulty identifying emotions,” conceptualizing that for some alexithymic individuals emotional feelings are vague and indistinct rather than absent (Vorst & Bermond, 2001). However, alexithymia inadvertently came to be defined as “no words for mood or feeling” and characterized by deficits in emotional communication, cognitive processing and the regulation of emotions (Taylor, 2000), thereby omitting two facets (fantasizing and emotionalizing) originally deemed to characterize alexithymia. As this shift was unintended (Sifneos, 1991), Bermond and co-workers (1996) reintroduced these facets into their definition and measure of alexithymia.

Research suggests that, although alexithymia is unlikely to present in its entirety in any one individual (Berenbaum, 1996; Shapiro, 1996), 30-40% of general psychiatric outpatients (Nyklicek, & Vingerhoets, 2000) and approximately 13-19% of the normal adult population exhibit some alexithymia characteristics (Salminen, Saarijarvi, Aarela, Toikka, & Kauhanen, 1999). Increasing age and male gender have exhibited strong associations with alexithymia (Carpenter & Addis, 2000; Posse & Hallstrom, 1998). Vorst and Bermond (2001) noted older people were less able to fantasize, males less able to emotionalize, and anxious people more likely to fantasize and emotionalize, irrespective of the cognitive components. These results suggest that the affective dimension (emotional arousability and fantasy) and the cognitive dimension should be viewed as distinct factor groupings (Bermond, 1997). Recent neuropsychological investigations of individuals’ emotional experiences and conscious awareness offer support for this view (Stone & Nielson, 2001).

While commonly viewed as a dimensional construct, Freyberger (1977) and Sifneos (1991) hypothesized the classifications of primary (genetically or biologically based) alexithymia and secondary (trauma/stress related) alexithymia. Similarly, Bermond (1997) posited two main variants of alexithymia: alexithymia I (possibly biologically determined), defined by a low degree of conscious awareness of emotional arousal and a low degree of cognition accompanying emotions, and alexithymia II (possibly trauma related), characterized by a normal or high degree of conscious awareness of emotional arousal together with a low degree of accompanying cognitions.

Researchers from a wide range of fields (i.e., neurophysiological, psychoanalytic, social learning, developmental and genetics) have postulated that many different pathways are involved in the etiology of alexithymia (Jula, Salminen, & Saarijarvi, 1999; Valera & Berenbaum, 2001). Some theorists advocate that as a reaction to abuse (especially in childhood), trauma (Berenbaum, 1996) or family factors (King, 2000; Lumley, Mader, Grzmsown, & Papneau, 1996), alexithymia becomes allied with maladaptive defenses and coping styles which result in a “suspension” of the boundaries between bodily sensations and emotions (Taylor, Bagby, & Parker, 1997; Wise, Mann, & Sheridan, 2000). Individuals with this “suspension” often report joint stiffness or general body soreness, and have no awareness of or ability to identify the connection between these somatic symptoms and the associated emotion. These losses of connections, which often makes therapeutic interventions all the more difficult (Grabe, Spitzer, & Freyberger, 2001), have also been observed in those who suffer dissociative disorders.

Pierre Janet (1859-1947) has been credited as the first researcher to define and explore the manifestations of dissociation (Atchison & McFarlane, 1994). In his work with patients suffering “hysteria” and dissociation, Janet (1889) noted that intense emotional experiences often became dissociated from the habitual personality, complete with amnesia, and reappeared in “hysterical crises,” now more commonly termed flashbacks or intrusive thoughts (van der Hart, Brown, & van der Kolk, 1989). Janet distinguished between the ‘retraction of the field of consciousness’ (Nijenhuis, 1999) and the dissociation of systems of ideas and functions that constitute the personality. For Janet, the former involved a reduction of the attentional span e.g., as occurs when one is daydreaming, fantasizing, or being absorbed in a movie; the latter (dissociation) involved reactions and functions that are part and parcel of memory and identity structures that are not integrated in the personality

at large, manifesting symptoms such as dissociative amnesia and identity fragmentation (Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1996). However subsequent researchers, overlooking Janet's work, came to define dissociation as the structured separation of mental processes that are ordinarily integrated (i.e., thoughts, memories, feelings and identity), thereby including absorption (Spiegel & Cardeña, 1991).

Until recently dissociation was conceptualized as a continuous trait ranging from normal to pathological levels, and as such relatively common, with 80-90% of individuals reporting the experience of some type of dissociative symptom some of the time (Atchison & McFarlane, 1994). Waller, Putnam, and Carlson (1996), however, identified two distinct types of psychological dissociation: the first, which encompassed non-pathological experiences (e.g., absorption in movies and books), was seen as inherently genetic and on a continuum (Finkel & McGue, 1997). The second type, pathological dissociation (e.g., depersonalization, amnesia), was viewed as a typological construct (latent class variable) and thus not continuous as previously thought (Bernstein & Putnam, 1986; Cardeña, 1994). In this classification an individual either has or does not have pathological dissociative experiences.

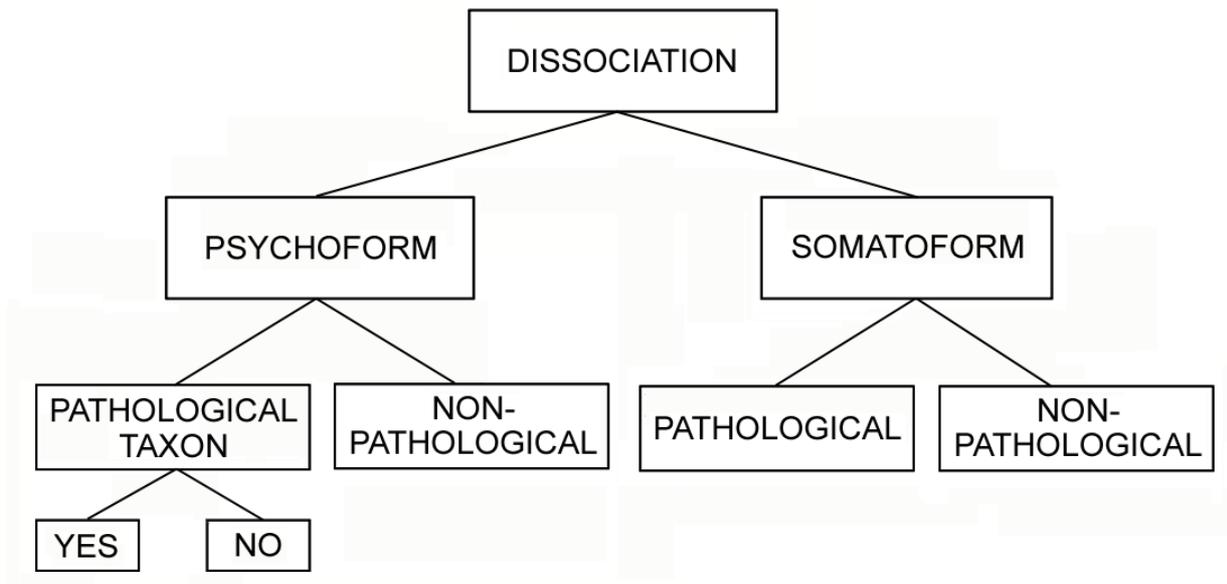
This conceptualization of dissociation focuses on the psychological aspects of dissociation and does not recognize the somatoform (bodily) aspects originally noted by Janet, and reinvestigated by Nijenhuis from 1996 onwards (Nijenhuis, 1999). Janet proposed that in addition to psychological manifestations of dissociation, (i.e., dissociated emotion and knowledge), somatoform functions and reactions (i.e., speech, hearing, sensation and movement) could also be subject to dissociation and be core aspects of dissociated memory/identity states (Nijenhuis, Spinhoven, van Dyck, van der Hart, & Vanderlinden, 1998).

Somatoform dissociation, which appears to be independent of age and gender (Nijenhuis, 1999; Irwin, 2000), refers to the partial or complete loss of the normal integration of somatoform components of experience, reactions and functions (Nijenhuis, 1999), and involves negative (e.g., anesthesia) and positive (e.g., pain) symptoms. Although apparently "physical," no organic cause is found (Engel, 2000), as many of these symptoms affecting sensations, perception and behavior are "mental" in nature.

Somatoform and psychological dissociation are thus "highly intertwined phenomena" (Nijenhuis & van der Hart, 1999). Indeed Janet argued that the *same* mental dissociative processes generated psychological and somatoform dissociation, (Sandberg & Lynn, 1992; van der Hart et al., 1989), positing psychological trauma to be the linking etiological factor (Buhler & Heim, 2001; Vanderlinden, Vandereycken, van Dyck, & Vertommen, 1993).

In line with Janet's original research and more recent studies (Nijenhuis, 1999; van der Hart et al., 2000), both psychological (henceforth termed "psychoform" in this paper) and somatoform aspects of dissociation will be considered (somewhat artificially) as separate categories. Furthermore, while acknowledging Janet's concept that absorption does not necessarily entail dissociation, this study adhered to the more common practice (in research and measures available) of including absorption in the dissociative genre. As such, Waller et al.'s (1996) terminology of non-pathological/pathological for the subcategories of psychoform dissociation was employed. While there is little doubt that somatoform dissociation can also be non-pathological, a measure for this component is yet to be developed (Irwin, 1999; Nijenhuis, 1999). Therefore only the pathological component of somatoform dissociation can be examined in this paper (see Fig 1).

FIGURE 1. A typological view of dissociation.



When examining the characteristics of alexithymia and dissociation, one cannot help but notice how intriguingly similar they are. Alexithymic characteristics of appearing emotionally constricted, expressionless, machine-like, frozen, and exhibiting an inability to establish close ties with others (Krystal, 1998; Wise, Mann, & Shay, 1992) are all similarly used to describe aspects of dissociation. The similarities are particularly evident when looking at the negative dissociative symptoms (i.e., losses of knowledge, sensations, affects, perceptions and will-power) rather than the positive symptoms (i.e., hearing voices and re-experiences of trauma).

The influence of trauma and/or abuse in infancy (Ogawa, Sroufe, Weinfield, Carlson & Egeland, 1997), childhood (Berenbaum & James, 1994; Chu & Dill, 1990; Irwin, 1999) and adolescence (Brunner, Parzer, Schuld, & Resch, 2000; Carrion & Steiner, 2000), is strongly indicated in both dissociation and alexithymia. Terr (1991), cited in Chu, Mathews, Frey and Ganzel (1996), aptly captures this, noting that following trauma, children who develop dissociative tendencies (or a dissociative coping style) tend to present with “failure” to define or acknowledge feelings and often have significant impairment in social and emotional functioning. Dissociation frequently appears related to escalations in feelings of disconnection and psychic numbing (van der Kolk, Perry & Herman, 1991). Higher rates of illness, anxiety (Fukunishi & Rahe, 1995; Griffith, 1998) and depression have consistently been linked with both phenomena (Honkalampi, Hintikka, Tanskanen, Lehtonen & Viinamaki, 2000; Marchesi, Brusamonti, & Maggini, 2000).

Janet, one of the first to look at the interplay between dissociative tendencies and emotions, noted that a high level of “psychological tension” or “integrative capacity” (Steele, 2001) is required for daily life emotional systems to be consistently activated and for the realization and integration of trauma (Janet 1925). Low levels of integrative capacity, and the effects of neurochemicals released during stress (i.e., from overwhelming emotions), may result in a poor and inconsistent activation of daily life emotional systems, with reflexive action based on emotionality and impulsivity, avoidance and lack of critical thinking and integration in one’s life (van der Hart et al., 1989).

The impaired capacity for the cognitive integration of experiences, the inability of individuals to locate, identify, or experience feelings, or capture emotional experiences in words (van der Kolk, 1994), and diminished differentiation of relevant from irrelevant

information (van der Kolk et al., 1996, Waller, Quinton, & Watson, 1995) are apparent in both alexithymia and dissociation.

This leads to the question of what exactly is the relationship between alexithymia and dissociation. In both phenomena individuals often relate to their environment and themselves in an “as if” or “object like” manner (Taylor, 1984; Morton, 1996). Both evidence complex characterological adaptations, as well as disturbed regulation of affective arousal. Might it be that dissociation (a blocking of connections between affects, cognitions, and voluntary behavior control) influences the development of alexithymia, resulting in the “dissociation” of the physiological, cognitive, and affective components of emotions? Would alexithymia be better conceptualized from a dissociative theoretical stance?

To ensure the plausibility of this idea, this author reviewed previous studies that investigated the alexithymia/dissociation relationship. Berenbaum and James (1994) reported alexithymia to be associated with, yet distinguishable from, dissociation. However, only two of the five elements theorized to define alexithymia were included (the ability to identify and to describe feelings), along with only the total dissociation score. Similarly, Grabe and colleagues (2000) concluded that alexithymia predicts pathological dissociation, yet there was no explicit mention of how dissociation was categorically determined into “pathological or non-pathological,” nor of how they reached their total dissociative scores. Irwin and Melbin-Helberg, (1997) reported that dissociative individuals experienced a dissociation between the verbal and affective processes, additionally indicating that alexithymia involved the inability to link personal states to emotional words. Wise et al. (2000) determined that dissociation was related to a greater difficulty in identifying feelings and lower difficulty in fantasizing. However dissociation scores were categorized into negative and positive groupings, dependent upon scores achieved on the DES (non dissociative ≤ 15 ; dissociative > 15), and not dimensionally, as is the preferred method. Collectively, no study examined the five dimensions of alexithymia in relationship to dissociation. Therefore, while the three cognitive dimensions of alexithymia were generally taken into account, the unmeasured affective dimensions could potentially lead to invalid results (Deary, Scott, & Wilson, 1997). Few studies controlled for psychopathology, none for age or gender, thereby raising concerns of methodological shortcomings, particularly as age (Pasini, Delle Chiaie, Seripa, & Ciani, 1992; Ross, Joshi & Currie, 1990), gender (Irwin, 1994) and psychopathology (Simon, Gater, Kisely, & Piccinelli, 1996) have demonstrated relationships to dissociation and alexithymia. The lack of consistency in the measurement, scoring and categorization of dissociation (notwithstanding that no study included somatoform dissociation) makes comparing and contrasting the results of all the studies difficult.

Thus, while previous studies found some interesting results, there is a need to investigate more fully the relationship between the five dimensions of alexithymia and the three measurable facets of dissociation.

METHOD

Participants

Two hundred and sixty (260) potential participants were approached by the researcher in person or responded to a centrally located advertisement. The majority of participants were recruited on the campus of Macquarie University. Most participants were university students, however a substantial minority were university employees and/or visitors. Two hundred and twenty-six (226) questionnaires were returned. However, seven questionnaires were discarded because of incompleteness. The final sample of 219 comprised 163 females and 56 males ranging in age from 18 to 65 years. The average age for the group was 29.9 years (median = 27, $SD = 11.05$). Most participants indicated no previous or current physical illness, while psychological disorders ranged from none through to diagnoses such as bipolar depression, schizophrenia, and dissociative identity disorder.

Instruments

All participants completed an inventory comprising five questionnaires. One was a brief demographic form, the other four questionnaires, in order of presentation, measured alexithymia, somatoform dissociation, psychopathology, and psychoform dissociation.

Alexithymic tendencies were measured using the Bermond Vorst Alexithymia Questionnaire (BVAQ; Vorst & Bermond, 2001). This measure encapsulates the distinct factor groupings of three cognitive and two affective dimensions (i.e., emotionalizing and fantasizing), believed to make up alexithymia (Bermond, Vorst, Vingerhoets, & Gerritsen, 1999). The five dimensions combine into two factors at the second order factor level (Vorst & Bermond, 2001). Factor one is an affective dimension of a conscious awareness of the arousal (internal and external processes) of emotions (emotionalizing and fantasizing) while the second factor is a cognitive dimension that refers to the cognitive processing and conscious interpretation of the emotions aroused (identifying, analyzing and verbalizing). Both dimensions are needed to diagnose alexithymia validly (Bermond, 1997). The fit between the five aspects of alexithymia and the five scales of the BVAQ in the factor structure of the BVAQ-items has been demonstrated to be very high (Zech, et al., 2000; Vorst & Bermond, 2001). The BVAQ total scales (AB) are reliable and valid as demonstrated in the following studies (Moormann, Bermond, Albach, & van Dorp, 1997; Zech, Luminet, Rimé & Wagner, 1999). The reliability for the total scale and its subscales is good and varies between 0.75 and 0.85 (Vorst & Bermond, 2001).

The five subscales of alexithymia conceptualized as continuously varying latent traits are: (1) "Verbalizing": degree to which a person is able or inclined to describe or communicate about their emotional reactions, e.g., "I find it difficult to verbally express my feelings"; (2) "Fantasizing": degree to which someone is inclined to fantasize, imagine, and daydream, e.g., "Before I fall asleep, I make up all kinds of events, encounters and conversations"; (3) "Identifying": degree to which the person is able to define their arousal states, e.g., "When I am distressed, I know whether I am afraid or angry or sad"; (4) "Emotionalizing": degree to which someone can be emotionally aroused by emotion-inducing events, e.g., "When something totally unexpected happens, I remain calm and unmoved"; and (5) "Analyzing": degree to which the person looks for an explanation for their own emotional reactions, e.g., "I hardly ever go into my emotions."

This study used the BVAQ English version, recommended by Bermond and Vorst, (personal communication, January 2001). It comprises 40 items, covering the five dimensions of alexithymia. Participants mark each item, on a 1 to 5 point scale "definitely not applicable" to "definitely applicable." High scores represent stronger alexithymic tendencies.

The Somatoform Dissociation Questionnaire (SDQ-20) measures proneness to somatoform dissociation tendencies. The SDQ-20, a self-report instrument, comprises 20 items pertaining to negative (e.g., "It is as if my body or part of it has disappeared") and positive (e.g., site-specific pain) physical symptoms and bodily experiences indicative of somatoform dissociation. The items are strongly scaleable on a one-dimensional latent scale. On each item, respondents indicate on a 1 to 5 point scale, "not at all" to "extremely," the extent to which the statement is applicable (Nijenhuis et al., 1996). The SDQ-20 demonstrates good reliability (Cronbach's alpha = .95 to .96), excellent factorial purity, and its convergent and discriminative validity have been adequately documented (Nijenhuis et al., 1996, 1998b). The SDQ-20, (theoretically underpinned by the traumagenic model and developed by Nijenhuis et al., 1996), measures the dimensional construct of somatoform dissociation, and while there is little doubt that somatoform dissociation can be non-pathological, the SDQ-20 focuses solely on the pathological component (Irwin, 1999; Nijenhuis, 1999).

The General Health Questionnaire measures global psychopathology for control purposes. The shortest available version, the GHQ-12 developed by Goldberg and Blackwell (Goldberg & Williams, 1988) was selected due to its robustness and applicability across a broad selection of individuals (Goldberg, Gater, Sartorius, Ustun, Piccinell, et al., 1997). The GHQ is often used as a measure of depression and anxiety in communities and non-

psychiatric clinical settings (Papassotiropoulos & Heun, 1999; Pini et al., 1997). The GHQ-12 consists of twelve items (e.g., "Have you been feeling unhappy and depressed" and "Have you been losing confidence in yourself") that the respondent answers on a Likert 4-point scale, with anchors such as 1 "less than usual" and 5 "much more than usual." The GHQ-12 has strong reliability (Werneke, Goldberg, Yalcin & Ustun, 2000), high convergent validity and high concurrent validity, (.71 to .93; Hardy, Shapiro, Haynes & Rick, 1999).

The Dissociative Experiences Scale (DES) developed by Bernstein and Putnam (1986), measures proneness to psychoform dissociative tendencies. The DES, a 28-item self-report measure, surveys the frequency of various experiences of dissociative phenomena in the daily life of the respondent (Bernstein & Putnam, 1986; Carlson & Putnam, 1993). The version of the DES in this study required participants to circle a number on a 21-point scale (from 0% to 100% in 5% increments) to indicate the percentage of time they had experienced the various dissociative experiences in their daily lives.

The DES was used to generate two scores for each participant. One score, based on eight items of the scale (the DES-T; Waller & Ross, 1997), indexed the pathological form of dissociation (e.g., the experience of being in a familiar place, yet not recognizing it). This score was obtained utilizing an Excel spreadsheet translation of the SAS computer program reported in Waller and Ross (1997).

The second score, derived from the 20 DES items not contained within the DES-T scale can be used as an index of normal dissociative experiences (e.g., the feeling of becoming so involved in a daydream that it feels real). The DES has been shown to have good reliability (Cronbach's alpha = .95, test-retest reliability = .79 to .96; Carlson & Putnam, 1993; Frischholz, Braun, Sachs, Hopkins, Shaeffer, et al., 1990), and excellent validity and reliability (Carlson & Putnam, 1993; Frischholz et al., 1990). Concurrent and discriminative validity for the DES is also extensively documented (Carlson & Putnam, 1993; Dubester & Braun, 1995; van IJzendoorn & Schuengel, 1996).

Procedure

A plain language statement was attached to the front of the questionnaires explaining the nature of the study. Participants were asked to be as honest and spontaneous as possible in their responses and were assured of anonymity and confidentiality. Participants returned their completed questionnaires to a central location in a sealed envelope supplied by the researcher.

RESULTS

All analyses were carried out using the SPSS for Windows (version 10) statistical program. A power analysis with an effect size of .2 and power of .8, determined at least 216 participants would be required (Stevens, 1996).

Initial data inspection of 219 participants scores revealed slight skewness for the alexithymia dimensions and more extreme skewness for the dissociation facets. While acknowledging that scores on the DES and DES-T often result in highly skewed distributions, data was discarded from 3 participants, because their unusually high endorsement on the DES resulted in their scores being statistical outliers. Thus, while acknowledging that these scores were possibly valid, they were excluded from further analyses as a precautionary measure.

Descriptive statistics (mean and standard deviation) for all the research measures are given in Table 1.

TABLE 1. Descriptive statistics on research measures for the complete sample (N=216).

Predictor Variables	Mean	SD	Minimum*	Maximum*
Pathological Psychoform Dissociation (Dimensional Score)	5.75	8.78	0	53.75
Pathological Taxon Membership	.07	.25	0	1.00
Somatoform Dissociation	27.99	9.65	20.00	75.00
Nonpathological Psychoform Dissociation	3.62	4.64	-8.52	20.12
Age	29.89	11.12	18.00	65.00
Psychopathology	24.70	6.23	12.00	45.00
Dependent Variables				
Fantasizing	18.73	6.70	8.00	38.00
Emotionalizing	19.56	5.61	8.00	38.00
Identifying	18.73	5.77	8.00	40.00
Analyzing	15.80	5.56	8.00	33.00
Verbalizing	20.70	6.97	8.00	39.00
Total Alexithymia (BVAQT)	93.54	19.50	46.00	159.00

* Minimum and maximum scores in this sample

Table 2 presents initial correlations between the dissociation and alexithymia factors before controlling for age, gender and psychopathology, while Table 3 shows correlations for age, gender and psychopathology to indicate the strength of their relationships to the dissociation and alexithymia factors.

TABLE 2. Correlation matrix of dissociative and alexithymia facets before controlling for age, gender and psychopathology

	Pathological psychoform dissociation	Nonpathological psychoform dissociation	Somatoform dissociation
Emotionalizing	-.021	.030	.039
Fantasizing	-.163*	-.034	-.131
Analyzing	-.008	-.023	.014
Identifying	.151*	.099	.227**
Verbalizing	.030	-.012	.056

* $p < .01$ (2-tailed), ** $p < .001$ (2-tailed)

TABLE 3. Correlation matrix of dissociative and alexithymia variables for age, gender and psychopathology.

	Age	Gender	GHQ-12
Pathological Psychoform Dissociation (DES-T)	-.230**	-.061	.257**
Somatoform Dissociation (SDQ-20)	-.162*	-.073	.253**
Non-pathological Psychoform Dissociation	-.220**	.053	.158*
Emotionalizing	.042	.370**	-.136*
Fantasizing	.311**	.095	-.141*
Analyzing	.098	.204**	-.028
Identifying	-.176**	.025	.179**
Verbalizing	.008	.245**	.067

* $p < .01$ (2-tailed), ** $p < .001$ (2-tailed)
 Gender: 0=female; 1=male

Intercorrelations amongst all the measures were examined (after controlling for age, gender and general health). No intercorrelation was higher than .464 (see Table 4).

TABLE 4. Correlation matrix of dissociative and alexithymia variables after controlling for age, gender and psychopathology.

	PPD	SD	NPPD	Emotionalizing	Fantasizing	Analyzing	Identifying	Verbalizing
PPD	1.00	.245**	.078	.046	-.068	.034	.081	.033
SD		1.00	.235**	.114	-.054	.051	.175*	.063
NPPD			1.00	.044	.047	-.009	.040	-.034
Emotionalizing				1.00	.272***	.363***	-.013	.209**
Fantasizing					1.00	.341***	.094	.074
Analyzing						1.00	.300**	.464***
Identifying							1.00	.395***
Verbalizing								1.00

Note: PPD = Pathological Psychoform (DES-T), SD = Somatoform Dissociation (SDQ-20), NPPD = Non-Pathological Psychoform Dissociation.

* $p < .05$, ** $p < .01$, *** $p < .001$

All measures demonstrated adequate reliability. The internal consistency of the BVAQ measured by Cronbach’s alpha was .86 for the current sample. The internal consistency of the five subscales proved adequate – the lowest being .71 being for “difficulty emotionalizing emotions” and highest of .83 being for “difficulty verbalizing.” The SDQ-20, DES, and GHQ-12 evidenced high reliability (.80, .94 and .89 respectively). No item was removed from any scale.

A principal components factor analysis with varimax rotation was performed on the BVAQ, in order to explore the suitability of this measure for the current Australian sample of 216 participants and to ascertain whether five “forced” factors derived from the forty BVAQ items concurred with Bermond and Vorst’s theorized factors.

The data met the Kaiser-Meyer-Olkin's criteria for sample adequacy (MSA; minimum accepted level of .05), and the Bartlett's test of sphericity (MSA=. 82, $\chi^2 = 2887$, $df = 780$, $p < .0005$). The five factors extracted accounted for 44% of the variance and confirmed those identified by the BVAQ authors. Most items loaded upon the same factors with similar loadings to those previously found by Vorst and Bermond (2001), however the Australian sample differed slightly in that more items loaded on to more than one factor.

The factors which indicated some difference between Bermond and Vorst's measure and this study's were the cognitive components of alexithymia, namely: factor one (verbalizing emotions) and factor five (analyzing emotions). Further analysis revealed this difference to be gender-related with males' responses scoring significantly higher in the answering of the particular items relevant to these factors.

The second order two-factor analysis met the Kaiser-Meyer-Olkin's criteria for sample adequacy (MSA; minimum accepted level of .05), and criteria for Bartlett's test of sphericity (MSA=. 64, $\chi^2=184.76$, $df = 10$, $p < .0005$). The two "forced" factors extracted accounted for 66% of the variance. Further examination of the factor structure revealed that the cognitive component, "analyzing emotions," loaded significantly onto the cognitive and affective components of alexithymia (see Table 5). Overall, while some slight differences existed, the Australian factorial structure appeared sufficiently similar to that of Vorst and Bermond (2001), hence the BVAQ authors' scoring system was used in subsequent analyses.

TABLE 5. Confirmatory factor loadings for the BVAQ-AB dependent 2-factor model.

Factors of Alexithymia	Component	
Difficulty Emotionalizing Emotions	.781	.076
Difficulty Fantasizing Emotions	.752	-.042
Difficulty Analyzing Emotions	.641	.545
Difficulty Identifying Emotions	-.163	.836
Difficulty Verbalizing Emotions	.262	.786

Canonical correlation analysis (a multivariate procedure that simultaneously analyses differing sets of variables, finding linear combinations from each set such that the correlation between each is maximized (Tabachnick & Fidell, 1996)), was performed to explore the relationship between the dissociation set (somatoform, pathological, non-pathological psychoform dissociation, age, gender, and psychopathology) and alexithymia set (emotionalizing, fantasizing, identifying, analyzing, and verbalizing emotions) of variables.

To ensure the results of the canonical analysis were interpretable, Stevens' test of the assumption of reliable estimates of factor load of number of variables by 20 was conducted. This assumption was met, as the sample size was larger ($N = 216$) than the requirement (Stevens, 1996).

Large scores signified greater difficulty for the dimensions of alexithymia, higher dissociation and older age; positive scores on gender indicated male. Results for the canonical correlation analysis are presented in Table 6.

TABLE 6. Correlations, standardized canonical coefficients, canonical correlations, percents of variance, and redundancies between alexithymia and dissociation variables and their corresponding variates.

	First Canonical Variate		Second Canonical Variate		
	Correlation	Coefficient	Correlation	Coefficient	
Alexithymia Set	Alexithymia1		Alexithymia2		
Emotionalizing	-.499	-.169	.798	.867	
Fantasizing	-.772	-.677	-.110	-.394	
Identifying	.502	.634	.387	.327	
Verbalizing	-.169	-.267	.570	.258	
Analyzing	-.359	-.081	.401	-.024	
Percentage of variance		.251		.257	Total = 50.8
Redundancy		.051		.044	Total = 9.5
Dissociative Set	Dissociation1		Dissociation2		
PPD	.448	.126	.248	.141	
SD	.464	.226	.418	.435	
NPPD	.190	-.069	.166	-.056	
Psychopathology	.478	.280	.034	-.046	
Age	-.751	-.708	-.346	-.184	
Gender	-.427	-.437	.843	.866	
Percentage of variance		.238		.183	Total = 42.1
Redundancy		.049		.031	Total = 8.0
<i>Canonical Correlation</i>		.452		.415	

Note: PPD = Pathological Psychoform (DES-T), SD = Somatoform Dissociation (SDQ-20), NPPD = Non-Pathological Psychoform Dissociation.

Multivariate results (see Table 6) revealed two statistically significant and unique relationships, indicating the overlap in each set of variables to be significant (Wilks lambda = .6336, $\chi^2 = 3.311$, $p = .0005$; Wilks lambda = .7961, $\chi^2 = 2.434$, $p = .0005$). Additional canonical correlations added little interpretative power. Correlations between the canonical variables and the original variables are presented to aid in interpreting these relationships.

The first canonical correlation of .452 accounted for 50.90% of the total explained variance; the second canonical correlation of .415 accounted for 41.28% of total explained variance. The third canonical correlation of .150 was not statistically significant (Wilks lambda = .9616 $\chi^2 = .679$, $p = .772$) and accounted for 4.57% of the explained variance, and thus is not interpreted. In canonical correlation analysis the percentage of variance that can be predicted or explained by the vector of independent variables comes from the redundancy statistic (Tabachnick & Fidell, 2000). The index for the largest function and for

both functions combined is, respectively, 0.095 and .175. Thus the two functions explain 17.5% of the variance on the dependent variable vector.

The standardized canonical coefficients presented in Table 6 show the ratio of importance of each of the original variables in calculating the canonical score for each of the canonical variables. Generally, only coefficients with an absolute magnitude of 0.30 or higher are treated as meaningful (Tabachnick & Fidell, 1996). Using this guideline for the criterion vector of dissociation-alexithymia, one would conclude that there are meaningful loadings on both canonical variates. The structure coefficients show that the first canonical variable for the dissociation group is a weighted sum of the variables age (younger at $-.708$) and gender (female at $-.437$) with more emphasis on age. The coefficient for the variable psychopathology is near $.3$ ($.280$). Thus, a younger female with higher levels of psychopathology would score high on the first canonical variable for dissociation. The coefficients for the alexithymia variables show that "fantasizing emotions" ($-.677$) and high levels of "difficulty in identifying emotions" ($.634$) contribute heavily to the first alexithymia canonical variable.

Table 6 also shows the correlations between the canonical variables and the original variables. These are useful in the identification of the canonical variables. The correlations for the dissociative variables show that the first dissociation canonical variable seems to represent nearly all the measured variables, "psychopathology" ($.478$), "somatoform dissociation" ($.464$), "pathological psychoform dissociation" ($.448$), and "femaleness" ($-.427$), with "age" (younger) being the most influential ($-.751$). Abilities to fantasize emotions and to a lesser degree emotionalize and analyze emotions are strongly associated with the alexithymia canonical variable with correlations of $-.772$, $-.499$, and $-.359$, while difficulty identifying emotions correlated strongly ($.502$) with the canonical variable. Thus the first alexithymia canonical variable seems to represent "difficulty identifying emotions" while still being able to fantasize and emotionalize.

The standardized canonical coefficients for the dissociative variables show that gender (male $.866$) and "somatoform dissociation" ($.435$) contribute to the second dissociation canonical variable. The coefficient for the second canonical variable for the alexithymia group is a weighted sum of the variables "difficulty emotionalizing emotions" ($.867$) and "ability to fantasize" ($-.394$) and "difficulty identifying emotions" ($.327$), with the most emphasis on "difficulty emotionalizing." Thus a male able to fantasize emotions, but with high difficulties emotionalizing and to a lesser degree identifying emotions would score high on the second alexithymia canonical variable.

The correlations for the dissociation variables indicate that the second dissociation canonical variable represents male gender ($.843$), somatoform dissociation ($.418$) and to a lesser extent younger age ($-.346$). The alexithymia variable "difficulty emotionalizing" strongly correlates ($.798$) with the second alexithymia canonical variable. Slightly less influential are the variables "difficulty verbalizing" ($.570$), analyzing ($.401$) and "identifying emotions" ($.387$). The results of the canonical correlation analysis are also presented in graphical form depicting the suggested relationships based on correlations (figure 2) and coefficients (figure 3).

FIGURE 2. Alexithymia from a dissociative viewpoint based on canonical coefficients.

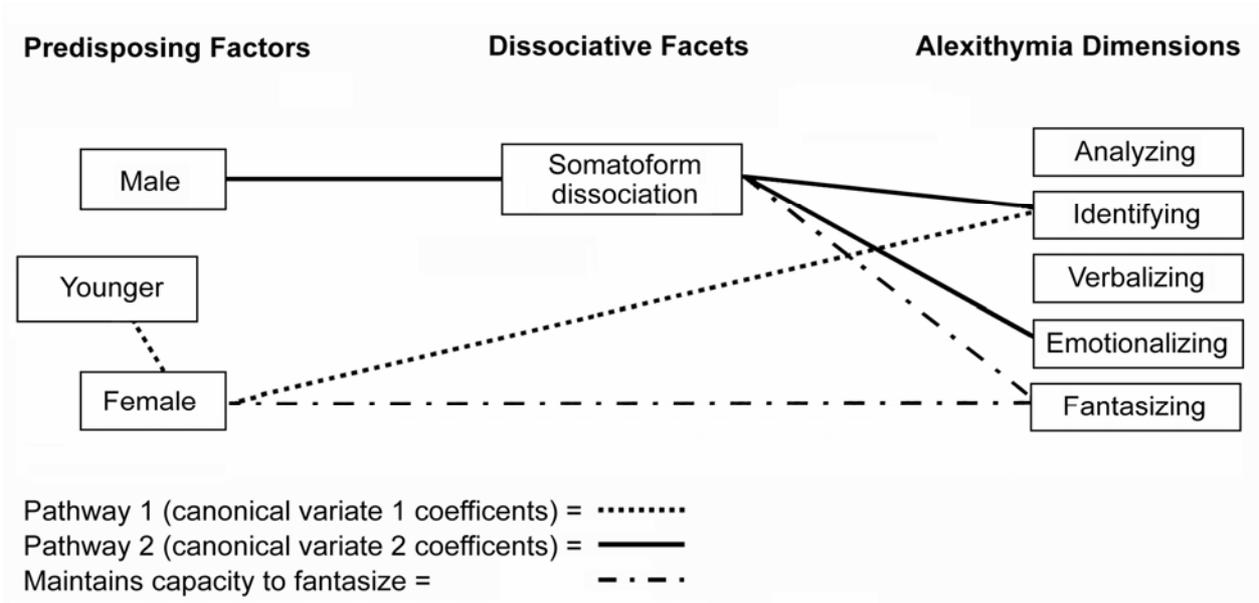
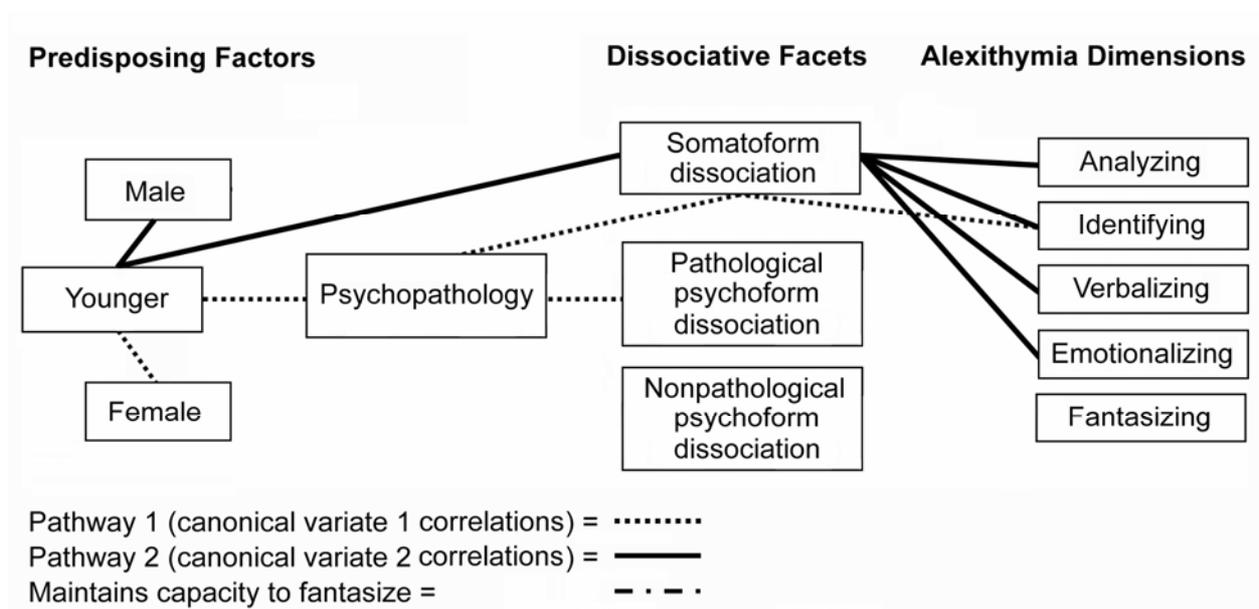


FIGURE 3. Alexithymia from a dissociative viewpoint based on canonical correlations.



DISCUSSION

Before addressing the main outcomes of this study, brief mention must be made of the factors of age, gender, and psychopathology. These three control variables correlated strongly with dissociation and alexithymia. Younger age appeared not only predictive of psychoform dissociation, concurring with previous research (Nijenhuis, 1996; Irwin, 2000), but also significantly correlated with somatoform dissociation, which offers an interesting result, as this was not found by Nijenhuis (1999). Turning to alexithymia, older age appeared related to increased difficulties in fantasizing, while being older increased individuals' ease in identifying emotions, thereby supporting Vorst and Bermond, (2001). The finding that males scored higher than females in all facets of alexithymia also supports Posse and Halstrom's (1998) more general findings. Psychopathology correlated positively and significantly with all facets of dissociation, supporting Nijenhuis' (1999) suggested link between somatoform dissociation and psychopathology. Higher levels of psychopathology related to increased capacity to fantasize and, to a lesser extent, to emotionalize emotions, concurring with Bermond's (1997, 2001) findings. Higher levels of psychopathology related to one cognitive dimension, difficulties identifying emotions, expanding on the more general results of Marchesi et al., (2000). While no specific hypotheses were formulated as to the influence each of these control factors may have had on the relationship between dissociation and alexithymia, the following discussion indicates their importance.

Despite some initial relationships between pathological psychoform and somatoform dissociation and alexithymia (Table 2), after controlling for age, gender and psychopathology, only somatoform dissociation remained significantly related to any facet of alexithymia (Table 4). The results of the canonical correlation analysis (Table 6) indicated that, overall, somatoform dissociation was the most influential of the dissociative facets in predicting alexithymia facets, suggesting, albeit tentatively, a previously unrecognized link between somatoform dissociation and alexithymia.

Exploratory results suggest that males may differ to females in the proposed dissociative alexithymia relationship (Figures 2 and 3). For males, the canonical correlations indicated that younger aged males with higher levels of somatoform dissociation were more likely to have difficulties with all facets of alexithymia except fantasizing. The canonical coefficients suggest that regardless of age, males with somatoform dissociation appeared to have greater difficulty emotionalizing their emotions, and to a lesser degree identifying emotions; however, their ability to fantasize emotionally remained. The difficulties males exhibited may in part be due to socialization, as males in general are often not encouraged to focus on emotions. In particular though, males who score high on somatoform dissociation may have specific difficulty realizing their emotions autoethically – a level of self-awareness which according to Wheeler, Stuss, and Tulving (1997) "allows healthy human adults to both mentally represent and become aware of their subjective experiences in the past, present, and future" (p. 331). When this mental process of realization remains undeveloped or incomplete, the emotion may perhaps become "stuck" at the bodily level of information processing. This bodily level could be seen as the first level of emotionality, as the "somatic marker" of emotion and feelings, to use Damasio's terminology (1994). He claims that persons become aware of emotions at a basic level of consciousness through bodily signals that then need further processing to go from very basic forms of consciousness to higher levels of consciousness, i.e., their realization.

Turning to females, younger age with higher levels of psychopathology, combined with pathological psychoform and somatoform dissociation, related to greater difficulties identifying emotions while their ability to fantasize emotions remained high (Figure 3). In referring to Bermond's posited types of alexithymia, this suggests that younger females may be more aligned with alexithymia II. If pathological psychoform dissociation, somatoform dissociation and alexithymia II are trauma-related, as research suggests, then females may be initially dissociating as an avoidance reaction to trauma or to cope with aversive or stressful environments, thereby resulting in a disconnection of emotions and a general

incapacity to identify emotions. That females maintained a high capacity to fantasize suggests some involvement of dissociation – possibly a paradoxical combination of dissociation, psychopathology, and a socialization process that encourages emotionality for females. Perhaps though, while women may be socialized to experience and express emotions, they may, when traumatized, have too little integrative capacity – thinking in terms of Janet – to realize the trauma, and thus develop dissociative symptoms and other types of psychopathology that are trauma-related (e.g., fear, phobia, depression, etc.). This may also explain why the canonical coefficients demonstrated that while younger age in females remained extremely important in relationship to greater alexithymia difficulties, no direct links remained between psychopathology or any of the dissociation factors and alexithymia (Figure 2). Alternatively, lower levels of maturity or perhaps high levels of confusing emotionality may have contributed to the alexithymic difficulties identifying emotions.

An area for further research is the interesting finding that females and males retained the capacity to fantasize emotions. This is unexpected in the light of traditional alexithymia theory (Sifneos, 1973) but not surprising in view of dissociation theory, which suggests a strong relationship between fantasy and dissociation (IJzendoorn, & Schuengel, 1996). Notably however, the results of this study suggest that pathological dissociation (not nonpathological dissociation as may be expected, Putnam, et al., 1996) may influence one's ability to fantasize emotionally. Possibly the act of dissociating from, and not having to reflect upon experiences (e.g., via amnesia or derealization) protects individuals and buffers against the loss of their ability to fantasize emotionally.

If the results of this study are further explored and confirmed, it may well be that the etiology and development of alexithymia may need to be viewed, theoretically and practically, from different gender slants. Similarly, given that there is a low success rate therapeutically with alexithymics, different therapeutic approaches may need to be taken for males and females. If males do appear to exhibit more difficulty emotionalizing emotions and cognitively identifying emotions, therapists possibly could focus upon retraining male individuals to feel emotions, rather than having them default to bodily symptoms.

While demonstrating some interesting results, this study remains exploratory in nature, and is intended to serve primarily as a starting point from which new hypotheses may be generated for future research. To the best of this author's knowledge, it is the first time that the relatively new measures of alexithymia (BVAQ-40) and somatoform dissociation (SDQ-20) have been incorporated into a study exploring the relationships between dissociation and alexithymia. It is also the first time that canonical correlation analysis has been applied to investigate the possible multiple relationships between three dissociation facets and the five alexithymia dimensions.

This study does have some limitations. The cross-sectional design limits our ability to determine causal relationships between dissociation and alexithymia. Similarly, as only self-report scales were used, no external verification of scores was available. Future studies could focus on longitudinal data, incorporating the Alexithymia Observer Scale (Haviland, Warren & Riggs, 2000) and a dissociative diagnostic interview as a way of verifying the self-report measures. Finally, it is important to note that the applicability of these findings to a wider sample of the general population and to the clinical population is unknown. Addressing these limitations, and incorporating potential predisposing factors, mediators or moderators such as trauma, coping strategies, emotional neglect, family environment, attachment, and others, could allow a more in-depth investigation of the relevance of a theoretical and causal model of alexithymia from a dissociation perspective.

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