Predicting Individual Differences in Autonomy-Connectedness: The Role of Body Awareness, Alexithymia, and Assertiveness

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Autonomy-connectedness is the capacity for being on one's own as well as for satisfactorily engaging in interpersonal relationships. Associations have been shown between autonomy-connectedness components (self-awareness, sensitivity to others, and the capacity for managing new situations) and various indices of psychopathology. Both in a theoretical sense as well as for enhancing treatment and prevention, it is relevant to identify which factors most powerfully predict individual differences in autonomy-connectedness: body awareness, alexithymia, or assertiveness. The present study examined this question in a clinical sample of women who were diagnosed as having autonomy problems ($N = 52$) and in a female nonclinical community sample ($N = 59$). In line with expectations, assertiveness was a strong predictor of (all three components of) autonomy-connectedness, as was emotionalizing, one of the alexithymia-components, but the latter in an opposite direction than we had expected: the higher an individual's ability to emotionalize was, the less self-aware and capable to manage new situations that person was, and the more sensitive to others. Cognitive alexithymia contributed to self-awareness as well as to the capacity for managing new situations, and one of the components of body awareness appeared to predict capacity for managing new situations. Our results indicate that assertiveness training and the enhancement of emotion regulation are important elements of autonomy-connectedness targeted interventions. J Clin Psychol 64: 747–765, 2008.

Keywords: autonomy; connectedness; self-awareness; sensitivity to others; attachment; body awareness; alexithymia; assertiveness; social skills

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The concept of autonomy-connectedness is used to describe the capacity for being on one's own as well as for engaging satisfactorily in relationships with others (e.g., Bekker, 1993; Bekker & Van Assen, 2006; Hmel & Pincus, 2002). It is generally considered a favorable, adult psychological condition resulting from secure, early attachment experiences (e.g., Bowlby, 1969; 1973; Chodorow, 1978). In contrast, deficiencies in or low autonomy-connectedness have been associated with insecure attachment experiences and have been found to be predictive of various types of psychopathology (e.g., Bekker, Bachrach, & Croon, 2007; Cassidy & Shaver, 1999).

Early childhood reflects a complex interaction between body, emotional, and interpersonal experiences (e.g., Bruch, 1973, 1978). The fact that autonomy-connectedness has its background in this interplay of body-, emotion-, and other-related experiences makes it comprehensible that therapeutic interventions targeted at strengthening clients' autonomy (e.g., "autonomy groups") usually comprise enhancement of awareness and improvement of body, emotional, as well as interpersonal functioning (Bekker, Van Houten, & Vossen, 2008). Theoretically and therapeutically, it is therefore interesting and relevant to know which of these three psychological domains, body, emotions, or relations, contributes most strongly to autonomy-connectedness. More knowledge about this issue can be used for sharpening and enhancing the specific aims and strategies of autonomy-targeted treatment.

Before outlining our study aims and hypotheses, we first describe our concept of autonomy-connectedness together with its clinical relevance, and take a closer look upon each of the three factors and their potential contribution to individual differences in autonomy-connectedness.

Autonomy-Connectedness and Its Clinical Relevance

Autonomy-connectedness has three components, namely self-awareness, sensitivity to others, and capacity for managing new situations (Bekker, 1993; Bekker & van Assen, 2006). *Self-awareness* (SA) reflects the capacity to be aware of one's own opinions, wishes, and needs, and the capacity to express these in social interactions. *Sensitivity to others* (SO) is defined as sensitivity to the opinions, wishes, and needs of other people; empathy; and capacity and need for intimacy and separation. The *Capacity for managing new situations* (CMNS) comprises uneasy or easy feelings in new situations, flexibility, an inclination to exploration, and dependence on familiar structures. The CMNS reflects the drive for exploration that, from an attachment theory perspective, follows from secure attachment or autonomy (e.g., Ainsworth & Bowlby, 1991; Bowlby, 1969, 1973). Various studies (Bekker, 1993; Bekker, Hens, & Nijssen, 2001; Bekker & Van Assen, 2006; Bekker & Van Assen, in press) revealed that, in agreement with sex differences in connectedness reported in the literature, women on average had higher levels of sensitivity to others (Cohen's $d = 1.02$, representing a large effect).

Autonomy-connectedness is a clinically relevant concept. Low autonomy-connectedness is associated with insecure attachment experiences (e.g., Bekker, Bachrach, et al., 2007). Autonomy-connectedness has been shown to be associated with anxiety and mood disorders (Bekker & Belt, 2006), eating disorders (Bekker, Croon, & Bertrand, 2008; Bouwman & Bekker, 2007), antisocial behavior in a community sample (Bekker, Bachrach, et al., 2007), and aggression among delinquents (Bakkes & Bekker, 2007). It has also been shown to be associated with milder problems such as work stress (Bekker et al., 2001) and work-family

interference (Bekker, de Goeij, & Willemse, 2008). The large sex difference in SO (Bekker & Van Assen, in press) is interesting because of the unequal sex prevalence of many mental disorders (American Psychiatric Association [APA], 2000), in particular when related to low SA. Whereas feminine identity is, compared to masculine identity, characterized by relatively high SO (Bekker & Van Assen, in press), extremely high SO reflecting neediness (Rude & Burnham, 1995) is a risk factor for psychopathology with a higher prevalence in women than in men (e.g., depression and anxiety and eating disorders, see previous section).

High SO is then related to low SA (i.e., low awareness of one's own wishes, needs, and opinions, as well as low assertiveness in realizing these–see also Gilligan, 1982; Gilligan, Rogers, & Tolman, 1991; Taylor, Gilligan, & Sullivan, 1985). Fear of rejection, inclination to put others' needs, interests and desires above those of one's own, and the tendency to suppress negative affect seem to pay a role here (e.g., Bekker, Croon, et al., 2008; Cockell, Hewitt, Goldner, Srikameswaran, & Flett, 1997; Geller, Cockell, Hewitt, Goldner, & Flett, 2000). Whereas high SO appeared related to mental disorders occurring more frequently in women than in men, low SO might substantially affect psychopathology with a higher prevalence in men. For example, antisocial behavior appeared associated with extreme tendencies toward detachment and separation, that is, to an undersensitivity to others, especially to potential victims (e.g., Bekker, Bachrach, et al., 2007; Hoffmann, Powlishta, & White, 2004).

The clinical relevance of autonomy-connectedness is apparent in clinical practice, in particular from the existence of so-called autonomy groups. The main goal of this type of therapy is strengthening and/or further developing clients' autonomy and satisfactory connectedness. In the Netherlands, autonomy groups are commonplace within most medium- and large-size institutes of mental health care. A primary reason for referral to an autonomy group is autonomy problems, such as an inability to set boundaries, indecisiveness, identity problems. Mostly autonomy groups are open to women only, but in some cases, men also participate. This is remarkable given that more masculine types of psychopathology, characterized by low self-awareness together with low sensitivity to others, might be labeled autonomy problems.

Among the therapeutic strategies used within autonomy groups are cognitive–behavioral therapy, rational–emotive therapy, psychomotor strategies, and assertiveness training. Autonomy groups have a tradition of about 35 years, and their effectiveness is supported by practice-based evidence. However, it is remarkable that despite the strong Dutch emphasis on evidence-based treatment, no effect studies have been done yet. One could argue that other well-established therapeutic treatments are aimed at strengthening autonomy-connectedness, such as cognitive–behavioral therapy (CBT). However, whether autonomy-related goals are attained with CBT or other treatments is not known from effect studies, as least to our awareness.

Body Awareness

Body awareness is generally defined as the amount of attention one pays to his or her internal body sensations (Hansell, Sherman, & Mechanic, 1991). Some people frequently focus on internal body sensations and are sensitive to many physiological fluctuations, whereas others are relatively unaware of internal sensations and easily seem to neglect high levels of pain and distress. It has been well established that

women compared to men report more physical symptoms (e.g., Gijsbers van Wijk & Kolk, 1995). Several authors (e.g., Fredrickson & Roberts, 1997) have argued that women who had been exposed to body experiences such as objectification had higher symptom perception, but less contact with their own internal body, thus less body awareness.

High symptom perception indeed does not at all imply more or better body awareness. An individual's labeling of body sensations in terms of physical symptoms, psychological factors such as emotions, or external factors seems dependent upon that individual's interpretation and attribution tendencies (for a full description of a symptom perception model, see Gijsbers van Wijk & Kolk, 1995; Pennebaker, 1982). In these processes of attributing body arousal to emotions or to physical phenomena, alexithymia or the incapacity to identify and describe feelings (Taylor, Ryan & Bagby, 1985) seems to play some role. Accordingly, participation in a treatment program aimed at increasing body awareness has been shown to result, among other effects, in an enhanced capacity for emotional expression (Landsman-Dijkstra, Van Wijck, Groothoff, & Rispens, 2004).

A specific form of objectification is sexual violence. Research by Price (2004) showed that body-oriented therapy decreased dissociation in women who had experienced sexual violence in their youth. The decrease was associated with higher somatic and psychological well-being, which has been found to be positively related to higher autonomy-connectedness (Bekker & Van Assen, 2006). A body-awareness raising treatment for patients with chronic, nonspecific psychosomatic symptoms led to higher self-efficacy, higher self-esteem, more active coping, and higher quality of life (Landsman-Dijkstra et al., 2004).

Research has also shown that self-awareness and body-awareness are related phenomena. For example, body-esteem has been shown to be a strong predictor of self-esteem (Mendelson, White, & Mendelson, 1996).

Based on these findings we hypothesize that body-awareness would be a predictor of individual differences in autonomy-connectedness. In particular, we expected that body-awareness would be positively related to self-awareness and capacity for managing new situations and negatively to sensitivity to others.

Alexithymia

Taylor and colleagues (1985) defined alexithymia as the incapacity to identify and describe feelings. They ascribed to patients with alexithymia a concrete, reality-based cognitive style and a poor, inner emotional and fantasy life. Sifneos (1972) considered the ability to identify feelings a necessary condition for the capacity to share feeling with others and to show empathy. Interestingly, both aspects are inseparable components of autonomy-connectedness. The plausibility of a link between alexithymia and autonomy-connectedness is further supported by both factors' relationships with various types of psychopathology. For example, relationships with depression have been established for alexithymia (e.g., Honkalampi, Hintikka, & Tasskanen, 2000; Lundh & Simonsson-Sarnecki, 2001) as well as for autonomy-connectedness (e.g., Bekker & Belt, 2006; Bieling, Beck, & Brown, 2000; Burke & Haslam, 2001). The same is true for other forms of psychopathology such as eating disorders (Bekker, Croon, et al., 2008; Van Strien & Ouwens, 2007).

In addition, as with autonomy-connectedness, the relationships of alexithymia with attachment experiences have repeatedly been found (e.g., Fukishi, Sei, Morita & Rahe, 1999; Montebarocci, Codispoti, Baldaro & Rossi, 2004; Schaffer, 1993; Troisi,

D'Argenio, Peracchio & Petti, 2001). According to these authors, children growing up in environments in which they feel physically and emotionally insecure, and where they are discouraged to express their emotions, will not learn how to cope with the healthy variety of emotional states present in normal adults. As a result, these children will, when adults, have difficulties in experiencing contact with their own emotions. In other words, they will have low self-awareness.

Because of the aforementioned theoretical reasons and empirical findings, we hypothesize that alexithymia would be associated with autonomy-connectedness. Specifically, we postulated negative relationships between alexithymia (defined as an *in*ability in the emotional domain) and self-awareness and capacity for managing new situations, but a positive relationship of alexithymia and sensitivity to others.

Assertiveness

In the last decades, the concept of assertiveness has been broadened from having skills such as asserting oneself and being able to say no to requests that one does not want to fulfill. It now also includes interpersonal competence in conflicts and the capacity to maintain relationships. Arrindell, de Groot, and Walburg (1984) therefore used the term *social skills* instead of assertiveness. In their opinion, social skills are necessary for attaining two types of goals, namely affective goals (establishing and maintaining satisfactory relationships with family, friends, and colleagues) and instrumental goals (successful functioning within the society).

Arrindell and colleagues have repeatedly examined the dimensions of assertiveness, and they found a robust four-factor structure (Arrindell & Van der Ende, 1985; Arrindell, Sanderman, Van der Molen, Van der Ende, & Mersch, 1988; Arrindell, Van der Ende, Sanderman, Oosterhof, Stewart, & Lingsma, 1999; Arrindell et al., 2005). The first factor is expressing negative feelings, such as defending one's rights and interests in a public situation or requesting people to change their annoying behavior. The second factor, expressing one's feelings of insecurity and inadequateness, comprises components such as acknowledging one's mistakes, being able to cope with criticism and pressure, and asking for help and attention. Asserting oneself is the third factor, and this includes introducing oneself and expressing one's opinion. The fourth factor is expressing positive feelings, such as being able to give as well as receive praise and compliments (Arrindell et al., 1999).

Lack of social skills (e.g., subassertiveness or social inhibition) characterizes a broad range of psychiatric patients (e.g., Brady, 1984). Although research has mainly been targeted at depression, particularly at the effects of interpersonal psychotherapy (IPT) on depression (e.g., Frank et al., 2000; Blanco, Lipsitz, & Caligor, 2001; see also Joiner & Coyne Blalock, 1999). Associations with other illnesses such as anxiety have also been studied (e.g., Londahl, Tverskoy, & D'Zurilla, 2005).

Conditioned anxiety might obstruct showing adequate interpersonal behavior, as Wolpe (1958, 1976, 1982) stressed in his model of classical conditioning. From this point of view, the necessary social skills are available, but their use is hampered. Also, social skills might not or insufficiently have been learned or developed, or they might not be available anymore (e.g., see Curran, 1977; Lazarus, 1971). It is well conceivable that such hampered or poor interpersonal competence contributes to poor autonomy-connectedness; being in satisfactory interpersonal relationships seems a sine qua non for the development of a firm sense of self (i.e., adequate knowledge about the self) as well as an affirmed self (i.e., good self-esteem; see, for example, Bowlby, 1969, 1973).

Summary of Study Aims and Hypotheses

The present study investigated the relationships between autonomy-connectedness, body-awareness, alexithymia, and assertiveness among a female client sample diagnosed as having autonomy problems and a female, nonclinical community sample. More insight into these relationships might be helpful in enhancing therapeutic strategies targeted at further development and strengthening clients' autonomy-connectedness. We wanted to examine to what degree autonomy-connectedness could be predicted by body-awareness, alexithymia, and assertiveness.

The present study was therefore designed to investigate to what degree each of three sets of factors reflecting psychological functioning in these domains (i.e., body awareness, alexithymia, or assertiveness) predicts individual differences in autonomy-connectedness. Study subjects were women, as the aforementioned autonomy groups are predominantly offered to women. We hypothesized that the clinical group compared with the nonclinical community sample would be lower in self-awareness and capacity for managing new situations, and lower in body-awareness and assertiveness. However, we expected this group to be higher in sensitivity to others and alexithymia. For theoretical reasons and because of the relationships reported in the literature, we expected that all three factors would be associated with each of the three autonomy-connectedness components, that is, self-awareness, sensitivity to others, and capacity for managing new situations.

Method

Participants and Procedure

Our clinical sample consisted of 52 female clients of an ambulant mental health care institute in the southern part of The Netherlands. They had been diagnosed as having autonomy problems because they exhibited either problems with boundary setting and/or identity problems and/or problems with interpersonal relationships. Therapists assigned the following diagnoses according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision* (*DSM-IV-TR*; APA, 2000): mood disorders ($N = 19$, 36.5%), adjustment disorders ($N = 14$, 26.9%), anxiety disorders ($N = 9$, 17.3%), eating disorders ($N = 3$, 5.8%), somatoform disorders ($N = 2$, 3.8%), bereavement ($N = 2$, 3.8%), identity problem ($N = 2$, 3.8%), and borderline personality disorder ($N = 1$, 1.9%). The therapists invited clients to participate in the study who were treated in autonomy groups aimed at strengthening and/or further development of the clients' autonomy-connectedness. After having given their informed consent, the respondents received a set of questionnaires at home, which they filled out and returned by stamped envelope. Eight women who had declared their willingness to participate did not return the questionnaires, including after having received a reminder.

The nonclinical community sample consisted of 59 women who were employed as geriatric helpers in institutes for the elderly. After having obtained informed consent from the management of the institutes, the women received the sets of questionnaires by post. They filled out the questionnaires at home, and returned the set anonymously to the institute. These women voluntarily participated in the study.

Both groups were highly similar regarding age, marital status, and educational level (see *Statistical Analyses*, first section, and Table 1).

Table 1
Demographics of Both Samples

	Clinical group ($N = 52$)		Control group ($N = 59$)	
Age				
M	39.7		37.6	
SD	10.4		7.8	
Marital status				
Married	$N = 34$	65.4%	$N = 38$	64.4%
Single	$N = 8$	15.4%	$N = 6$	10.2%
Divorced	$N = 3$	5.8%	$N = 1$	1.7%
Living together/unmarried	$N = 7$	13.5%	$N = 7$	11.9%
Unknown	$N = 0$		$N = 7$	11.9%
Educational level				
None/unknown	$N = 3$	5.8%	$N = 1$	1.7%
Lower	$N = 35$	67.3%	$N = 35$	59.3%
Middle	$N = 6$	11.5%	$N = 12$	20.3%
Higher	$N = 8$	15.4%	$N = 11$	18.6%

Table 2
Cronbach's Alpha Values, Means, Standard Deviations, and t Test for Dependent Variables

		Nonclinical group ($N = 59$)		Clinical group ($N = 52$)			
Dependent variables	α	*M*	*SD*	*M*	*SD*	M_2–M_1	*t*
Self-awareness	.83	3.53	.75	2.91	.90	−.62	−3.91***
Sensitivity to others	.75	3.64	.52	4.15	.38	−.51	5.63***
Managing new situations	.73	2.68	.90	2.14	.85	−.54	−3.16*
Anticipation	.68	3.23	.52	3.30	.56	.07	0.69
Noticing	.77	2.75	.56	3.21	.52	.46	4.43***
Emotionalizing	.73	2.42	.61	1.89	.62	−.53	−4.51***
Fantasizing	.80	3.24	.83	3.07	1.04	−.18	−0.98
Cognitive alexithymia	.89	2.32	.58	2.79	.78	.47	3.61***
Assertiveness	.96	3.34	.38	2.96	.44	−.38	−4.06***

*$p < .05$; ***$p < .001$.

Measures

The following instruments were used to measure the variables under study. Cronbach's alphas for all scales and subscales in the present study are reported in Table 2.

Autonomy-Connecteness Scale. Autonomy-connectedness was assessed using the Autonomy-Connectedness Scale (ACS-30; Bekker & Van Assen, 2006). The ACS-30 consists of 30 items and measures individual differences in autonomy-connectedness. In agreement with the three autonomy-connectedness components, the scale is divided into three subscales: self-awareness, sensitivity to others, and capacity for managing new situations. All items are measured with 5-point scales, ranging from *disagree* to *agree*. An example of an item from the Self-awareness subscale is "I often do not know what my opinion is." An item from the Sensitivity-to-others subscale is "I often wonder what other people think of me," whereas an item from the Capacity-

for-managing-new-situations subscale, is: "I quickly feel at ease in new situations." Due to the large sex differences in SO, different norm scores for women and men have become available, which seem clinically relevant (see Bekker & van Assen, in press). The ACS-30 has good psychometric properties as shown in various studies (for further details see Bekker, 1993; Bekker et al., 2001; Bekker & Van Assen, 2006, in press).

Somatic Awareness Questionnaire. Body awareness was measured with the 25-item Somatic Awareness Questionnaire (SAQ; Gijsbers Van Wijk & Kolk, 1995). The SAQ assesses the tendency to be aware of or sensitive to internal body processes and states that are not typically associated with either illness or particular emotional states (Bartky et al., 1988; Shields et al., 1989). Items are rated on 5-point Likert scales ranging from 1 (*never*) to 5 (*always*). In one of our previous studies using a larger sample (Spoor, Bekker, Van Heck, Croon, & Van Strien, 2005), the wide variety of body signals represented in the scale led us to the assumption that this questionnaire might be multifaceted. Principal axis factoring and subsequent inspection of the Scree plot suggested a 2-factor solution, explaining 32.9% of the variance. The first factor, Anticipation of body signals (12 items), reflected the prediction of body reactions (e.g., "When my exercise habits change, I can predict very accurately how that will affect my energy level"). Factor 2, Noticing body signals (13 items), reflected the ability to notice responses or changes in body signals (e.g., "I notice differences in the way my body reacts to various foods."). In the current study, we used both subscales.

Alexithymia Scale. The Bermond and Vorst Alexithymia Scale (BVAQ; Vorst & Bermond, 2001) is a 40-item scale measuring alexithymia. Its five subscales are Emotionalizing, the degree to become emotionally aroused by emotion-inducing events; Fantasizing, one's inclination to imagery, day dreaming etc.; Identifying, the ability to define one's own arousal level; Analyzing, the inclination to seek explanations for one's own emotional reactions; and Verbalizing, the ability to communicate about and to describe one's emotions. The scoring of the items is such that high subscale scores are indicative of a high proneness to alexithymia. Examples of items are "When something totally unexpected happens, I remain calm and unmoved (emotionalizing) and "I find it difficult to verbally express my feelings" (verbalizing). There are several indications for good construct validity, and the reliability (Cronbach's $\alpha = .85$) of the BVAQ is reported to be good (Vorst & Bermond, 2001).

According to Vorst and Bermont (2001), two subscales measure an affective component of alexithymia (emotionalizing and fantasizing); the other three scales (identifying, analyzing, and verbalizing) measure a cognitive component. However, in one of our previous studies using a larger sample ($N = 202$) than in the current study, we could not confirm the factor structure proposed by Vorst and Bermond (2001). Principal axis factoring and subsequent inspection of the Scree plot confirmed that the scales Verbalizing, Identifying, and Analyzing loaded high on the first factor, representing the cognitive component of alexithymia. The second factor however was more difficult to interpret with a high positive loading for Emotionalizing and a small negative one for Identifying. Because Fantasizing did not load on it, the second factor could not be considered as the affective component of alexithymia proposed by Vorst and Bermond (2001). Aside from the cognitive factor (verbalizing, identifying, and analyzing) we therefore treated the remaining BVAQ subscales Emotionalizing and Fantasizing as two separate variables (for

further details and agreement with other reports in the literature, see Bekker, Bachrach, et al., 2007).

Assertiveness Scale. Assertiveness was measured by means of the Scale for Interpersonal Behavior (SIB; Arrindell et al., 1984). The 50-item SIB has four subscales: Display of negative feelings or negative assertion, Expression of and dealing with personal limitations, Initiating assertiveness, and Positive assertion. However, in addition to these subscales, a score on the General Assertiveness Scale can also be used as an indication of a person's level of assertiveness across various situations and various types of assertive behavior. On this scale, assertiveness is measured across two dimensions: the probability of response (performance) and the degree of discomfort (felt anxiety/distress) associated with attempts at self-assertion in specific social situations. Respondents indicate how often they show a specific type of behavior when being in the situation that the item describes (with five answering categories ranging from *I never do* to *I always do*). Respondents then rate discomfort, with five response options ranging from *not at all* to *extremely*. Example items include "Refusing a request made by someone you are fond of" (Negative assertion), "Asking someone to explain something you have not understood" (Expression of and dealing with personal limitations), "Starting a conversation with a stranger" (Initiating assertiveness), and "Telling someone that you like him/her" (Positive assertion).

The SIB is reported to have a good reliability and validity (e.g., Arrindell et al., 1984). In the present study, we used the total score, as we were primarily interested in the general level of assertiveness across various situations and various types of assertive behavior that this score reflects (see section above); moreover, the subscales were highly correlated.

Demographic variables. In this study several background variables were measured that could be related to the variables under study, namely (see Table 1) age, marital status, and educational level.

Statistical Analyses

Before analyzing the relationships among the variables under study, we examined whether the variables were related to any of the demographic variables. This was not the case; neither the subscales of autonomy-connectedness nor those of body awareness, alexithymia, or assertiveness showed any significant relation with age, marital status, or educational level. We therefore decided not to include any of the demographic variables in our main analyses.

Our main analyses were *t* tests for comparing both groups' means on all variables under study; correlation analyses for investigating the relationships between all variables under study in both groups separately; and regression analyses for examining the unique contribution of all independent variables to the statistical prediction of each of the three components of autonomy-connectedness.

Treatment of Missing Data in Regression Analysis

Regression analyses on the estimates of the means and covariances of the core variables were obtained by the EM algorithm available in the MVA procedure in SPSS 14.0. This way of treating missing scores recommended by von Hippel (2004; see also Enders & Peugh, 2004) yields asymptotically unbiased estimates of the model parameters under quite general ignorable assumptions. The EM algorithm

was applied to the data matrix with missing scores, and the resulting vector of means and matrix of covariances were transformed in a matrix data file that could be analyzed by AMOS 6.0. A problem encountered with this approach is that the effective sample size N for the ensuing analyses is not known. Because the emphasis in this study was on the estimation of the regression parameters and their standard errors, we followed the suggestion of Enders and Peugh (2004) to set the effective sample size equal to the harmonic mean of the number of scores hat are observed for each variable. This led to an estimate of $N_{eff} = 106$, which is acceptable as it is not much smaller than the number ($N = 111$) of the total sample.

Power Considerations for the Regression Analyses

Because the effective sample size in this study was 106, we investigated whether the planned regression analyses had enough power to detect significant direct effects among the core variables. Gatsonis and Sampson (1989) gave exact tables for determining sample size for an $\alpha = .05$ test of significance of R^2, the squared multiple correlation coefficient. From their table we deduced that the power of this test was approximately 0.99 for $N = 106$ when the regression equation contained a single independent variable with the population value $R^2 = 0.16$. When seven independent variables were included in the analysis with the same values for N and R^2, the power of the test was between 0.90 and 0.95 indicating an acceptable power to detect whether a significant proportion of the variance of each dependent variable is explained by the relevant set of independent variables.

A global power analysis of this kind gives no information about the probability that an individual regression coefficient that is nonzero in the population will be detected as statistically significant in a sample of $N = 106$. Notice that power investigations for individual regression coefficients are much more intricate than the global approach we have followed and require the precise specification of the values of all regression coefficients under the alternative hypotheses, and of the variances and covariances among the independent variables. The research reported here is an example of an extreme group's observational study in which a clinical group is compared with a normal control group. Preacher, MacCallum, Rucker, and Nicewander (2005) demonstrated that the use of extreme groups increases the statistical power of tests for detecting the existence of an effect, but also showed the inappropriateness of interpreting the observed standardized effect sizes as population effects. An alternative strategy consisting of separate regression analyses in the two groups was also considered, but due to the relatively small number of observations in both groups, the power of such separate regression analyses was shown to be unacceptably low. (For $N = 55$, the power of the significance test for R^2 at $\alpha = .05$ declined to a very modest value of .24 with seven predictors.) For this reason, we preferred regression analyses on the combined group.

In extreme group research, standardized effect sizes may namely be inflated. In other words, substantive interpretation of the regression results should mainly be based on the unstandardized regression coefficients. To enhance the comparability of the unstandardized regression coefficients across explanatory variables, all variables were therefore linearly transformed so that their theoretical score range run from 1 to 5.

Results

Mean Differences Between the Two Groups

All variables were linearly transformed so that their theoretical score range run from 1 to 5. A MANOVA test on the nine core variables was carried out to test whether

the mean vectors of the two groups differed significantly. This test yielded a very significant *F*-value of 6.18 with $v_1 = 6$ and $v_2 = 65$ ($p < .001$). Next, univariate *t* tests were carried out for each dependent variable. Table 2 contains the means and standard deviations of the two groups for each of the variables, and the results of the separate *t* tests.

The means of the two groups differed significantly for all variables except two: anticipating and fantasizing. Most of the differences found were in the expected direction with the clinical group scoring lower on self-awareness, capacity for managing new situations, and assertiveness; and higher on sensitivity to others and cognitive alexithymia (all $ps < .001$, except for CMNS $p < .05$). The mean scores of the clinical group on autonomy-connectedness indicated that, compared to norm scores (Bekker, 2006), the level of self-awareness was low, whereas that of sensitivity to others was above average, and that of capacity of managing new situations below average. For the nonclinical community sample, all three levels were average compared to norms.

Unexpectedly the clinical group showed higher levels of noticing and lower levels of emotionalizing. In other words, the clinical group was more able to notice responses or changes in body signals as well as to get emotionally aroused.

Correlations Among the Variables

In the clinical sample, self-awareness was significantly positively correlated with capacity for managing new situations, and also with assertiveness ($r = .30$, $p < .05$; and $r = .51$, $p < .001$, respectively; see Table 3).

Negative associations of self-awareness were found with sensitivity to others and cognitive alexithymia ($r = -.49$, $p < .001$; and $-.37$, $p < .01$). Sensitivity with others was, aside from its negative correlations with self-awareness and capacity for managing new situations ($r = -.37$, $p < .05$), also negatively correlated with assertiveness and (the inability for) emotionalizing ($r = -.31$, $p < .05$; and $r = -.41$, $p < .01$). This latter finding indicates that the more sensitive to others one is, the higher one's level of getting emotionally aroused in emotion-inducing events. For capacity for managing new situations, a negative correlation was found with anticipation of body signals ($r = -.28$, $p < .05$), and positive associations with emotionalizing and assertiveness ($r = .32$, $p < .05$; and $r = .36$, $p < .01$). In addition, assertiveness appeared negatively correlated with cognitive alexithymia ($r = -.47$, $p < .01$), and cognitive alexithymia negatively with anticipation of somatic signals ($r = -.30$, $p < .05$).

In the community sample, virtually the same statistically significant relationships appeared, aside from some additional ones: a positive correlation of self-awareness with emotionalizing ($r = .26$, $p < .05$), and a negative association of capacity for managing new situations with cognitive alexithymia ($r = -.50$, $p < .01$). Additionally, a highly positive correlation between anticipation and noticing of body signals appeared ($r = .54$, $p < .001$), as well as a negative association between fantasizing and anticipation ($r = -.28$, $p < .05$).

Predicting Autonomy-Connectedness From Body-Awareness, Alexithymia, and Assertiveness: Results of Regression Analyses

Three separate multiple regression analyses were done with the means of each of the subscales of the ACS-30 as dependent variables, and the mean scores on the subscales of body awareness, alexithymia, and assertiveness as independent

Table 3
Bivariate Correlations for ACS-30, SAQ, BVAQ, and SIB

Scale	1	2	3	4	5	6	7	8	9
1. Self-awareness	–	−.32*	.64***	.17	.11	.01	.26*	−.52**	.43**
2. Sensitivity to others	−.49***	–	−.30*	.14	.14	−.17	−.59***	−.20	−.25
3. Capacity for managing new situations	.30*	−.37*	–	.20	.12	.04	.41**	−.50**	.53***
4. Anticipating body signals	.09	.28	−.28*	–	.54***	−.28*	−.15	−.18	.19
5. Noticing body signals	−.15	.01	−.06	.25	–	−.07	−.19	−.11	.09
6. Fantasizing	.19	−.04	−.01	−.15	−.17	–	.23	.17	.05
7. Emotionalizing	.18	−.41**	.32*	−.08	−.18	−.06	–	.11	.13
8. Cognitive alexithymia	−.37**	−.04	−.08	−.30*	.25	.01	.03	–	−.30
9. Assertiveness	.51***	−.31*	.36*	.16	−.09	−.09	.05	−.47**	–

Note. ACS-30 = Autonomy-Connectedness Scale; SAQ = Somatic Awareness Questionnaire; BVAQ = Bermond and Vorst Alexithymia Scale; SIB = Scale for Interpersonal Behavior. Clinical sample is depicted below, and the community sample above the diagonal.
*$p < .05$; **$p < .01$; ***$p < .001$.

Table 4
Regression Analysis of Self-Awareness

Predictors	*B*	*SE*	*β*	*t*
Anticipation	.03	.14	.02	.21
Noticing	.10	.13	.06	.74
Fantasizing	.12	.07	.13	1.70
Emotionalizing	.27	.10	.21	2.62**
Cognitive alexithymia	−.41	.10	−.33	−3.93***
Assertiveness	.70	.16	.37	4.34***

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

variables. Because some of the explanatory variables were significantly correlated with each other, multicollinearity might be a problem for the planned regression analyses. However, multicollinearity was checked by inspecting the variance inflation factors (VIF) of the independent variables, showing that the VIFs varied between values of 1.055 and 1.426. Because a VIF larger than 10 (Kutner, Nachtscheim, Neter, & Li, 2005) is often taken as an indication of multicollinearity, we may conclude that the results presented below are not influenced by multicollinearity. Table 4 presents the results of the regression analysis of self-awareness on the explanatory variables.

The square multiple correlation coefficient was $R^2 = .45$ with $F_{6,99} = 13.45$ ($p < .001$). Emotionalizing, cognitive alexithymia, and assertiveness were strong predictors for self-awareness (respectively, $B = .27$, $SE = 0.10$, $t = 2.62$, $p < .01$; $B = -.41$, $SE = 0.10$, $t = -3.93$, $p < .001$; and $B = .70$, $SE = 0.16$, $t = 4.34$, $p < .001$); fantasizing, and especially anticipation and noticing had nonsignificant partial effects.

Table 5
Regression Analysis of Sensitivity to Others

Predictors	*B*	*SE*	*β*	*t*
Anticipation	.13	.08	.14	1.73
Noticing	−.01	.07	−.02	−.19
Fantasizing	−.03	.04	−.05	−.67
Emotionalizing	−.38	.06	−.48	−6.50***
Cognitive alexithymia	−.10	.06	−.14	−1.75
Assertiveness	−.48	.09	−.42	−5.28***

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

Table 6
Regression Analysis of Capacity for Managing New Situations

Predictors	*B*	*SE*	*β*	*t*
Anticipation	−.27	.15	−.16	−1.85
Noticing	.33	.14	.22	2.46*
Fantasizing	−.01	.07	−.01	−.15
Emotionalizing	.48	.11	.36	4.45***
Cognitive alexithymia	−.25	.11	−.20	−2.30*
Assertiveness	.82	.17	.41	4.81***

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

Table 5 contains the results of the regression analysis of sensitivity to others on the explanatory variables.

The squared multiple correlation coefficient was .52 with $F_{6,99} = 17.66$ ($p<.001$). Emotionalizing and assertiveness contributed strongly to the explained variance of sensitivity to others ($B = -.38$, $SE = 0.06$, $t = -6.50$, $p<.001$; and $B = -.48$, $SE = 0.09$, $t = -5.28$, $p<.001$); the other explanatory variables had no significant direct effects.

Table 6 reports the results of the regression analysis of capacity for managing new situations.

The squared multiple correlation coefficient was .43 with $F_{6,99} = 12.45$ ($p<.001$). Emotionalizing, cognitive alexithymia, assertiveness, and noticing were significant predictors (respectively, $B = .48$, $SE = 0.11$, $t = 4.45$, $p<.001$; $B = -.25$, $SE = 0.11$, $t = -2.30$, $p<.05$; $B = .82$, $SE = 0.17$, $t = 4.81$, $p<.001$; and $B = .33$, $SE = 0.14$, $t = 2.46$, $p<.05$).

Discussion

The main goal of this study was to examine to what degree body-awareness, alexithymia, and assertiveness would contribute to autonomy-connectedness. We hypothesized that individual differences in (components of) these three variables would contribute to the statistical prediction of individual differences in autonomy-connectedness, that is, in self-awareness, sensitivity to others, and capacity for managing new situations. Also, we expected the clinical group compared with the nonclinical community sample to show lower levels of self-awareness and capacity for managing new situations, body-awareness, and assertiveness, as well as higher levels of sensitivity to others and alexithymia.

Differences Between the Groups in Levels of the Variables

Many of the expected between-group differences were indeed found. The clinical group was found to be lower in self-awareness, and capacity for managing new situations, and higher in sensitivity to others, reflecting a low autonomy-connectedness compared to norms. These findings were to be expected as the participants from the clinical group were preselected based on clinician's judgments in terms of their low or underdeveloped autonomy. Nevertheless, the fact that the autonomy-connectedness scores of the clinical group highly converged with clinicians' judgments further supports the validity of the ACS-30 as well as its usefulness for diagnostics and effect studies. In addition, the interrelations between the subscales were to be expected and in line with previous results (for a review, see Bekker & Van Assen, 2006).

The fact that the clinical group scored higher on cognitive alexithymia and lower on assertiveness was also in line with expectations. Apparently, having autonomy problems is associated with assertiveness problems as well as with the inability to identify, analyze, and explain emotions. The other alexithymia components did not distinguish the groups, however. First, a clear and significant difference did appear in emotionalizing, but in the opposite direction than expected. However, this finding makes sense from a clinical perspective. The women with autonomy problems appeared well capable of getting emotionally aroused in emotion-inducing situations, even more than the women in the community sample did, but without being able to label and explain their emotional problems. Second, the expected difference regarding fantasizing was completely absent. Apparently, the (in-)ability to fantasize does not play any role in distinguishing between women with and those without autonomy problems. This finding contradicts the assumptions of the authors of the BVAQ (Vorst & Bermond, 2001) regarding fantasizing. Other recent findings (Bekker, Bachrach, et al., 2007) have also contradicted these assumptions. These results can be due to a poor validity of the affective component of the BVAQ particularly regarding fantasizing (see also, Müller, Bühner, & Ellgring, 2004). But it might also be that fantasizing coincides with, predominantly male, antisocial behavior like deceitfulness, repeated lying, and the use of aliases (APA, 2000), whereas it fails to show any relationship with predominantly female, internalizing problem behavior as expressed in the autonomy problems of the present study.

Regarding body-awareness, the hypothesized between-group difference in anticipating body signals failed to appear, whereas the clinical group showed *higher* instead of the expected lower levels of noticing. The latter result might be considered in agreement with higher arousability: apparently, these women *have*—thus also notice—more arousal experienced as body signals, however without understanding their background (cognitive factor, alexithymia). This might not necessarily imply more favorable higher body awareness. In agreement with Fredrickson and Roberts (1997), we might also suspect a higher symptom perception here.

Predictive Value of Body Awareness, Alexithymia, and Assertiveness for Autonomy-Connectedness

Assertiveness and emotionalizing appeared as the most powerful predictors of (the various components) of autonomy-connectedness. Thus, being and feeling able to assert oneself in social interactions is a substantial factor in all aspects of autonomy-connectedness.

These findings regarding assertiveness might be an explanation for the unexpected direction in which emotionalizing (the inability to get emotionally aroused in emotion-inducing events) contributed to autonomy-connectedness: the more able and/or inclined to getting emotionally aroused, the less self-aware and capable of managing new situations, and the more sensitive to others. If low assertiveness leads a person to inhibit or suppress the expression of negative feelings and to adapt to (perceived) wishes of others, negative feelings and high arousal might result (e.g., Gross, 2002). This suggests that women with autonomy problems may not experience problems in getting emotionally aroused, but in labeling, explaining, and regulating their emotions. This interpretation of results is further supported by the fact that cognitive alexithymia contributed substantially negatively to two of the three components of autonomy-connectedness, self-awareness, and capacity for managing a new situation. Thus, the more able one feels to describe and analyze one's emotions, the more self-aware and capable to manage new situations. The combinations of our results underline the usefulness of therapeutic strategies of emotion-identification and emotion-regulation and assertiveness training.

One of the other unexpected results was the negative relationship of noticing body signals with capacity of managing new situations. This relationship can also be considered supportive for the explanation that high ability to get emotionally aroused indicates problems with emotion regulation: the less assertive and able to identify, describe, and explain emotions, the more arousal and body signals. The role of body-awareness in autonomy-connectedness thus seems not very prominent. If compared to the clear and high importance of assertiveness and competence to identify and analyze emotions for autonomy-connectedness, body awareness is—at least in the samples of the present study—only a secondary factor.

The fantasizing factor, considered by Bermond and Vorst as an important additive component of the BVAQ, did not play any significant role in the prediction of the autonomy problems under study. If we also take the finding into consideration that the inability to fantasize, against expectations, appeared highly negatively to antisocial behavior (Bekker, Bachrach, et al., 2007), the validity of this subscale as an alexithymia component can be seriously questioned.

Limitations and Recommendations

The present study has some limitations. First, our sample sizes were not very large, although high enough to obtain a good power. A larger and even heterogeneous clinical group in terms of mental disorders represented, might reveal specific relationships between the variables under study for these specific disorders. In addition, our community sample consisted of a rather homogeneous group in terms of professional status. An obvious advantage of this sample was the high demographic similarity with the clinical sample. It cannot be ruled out, however, that including other groups might result in changes in the relationships under study. Future research could thus be targeted at larger and more heterogeneous samples.

A second limitation concerns the cross-sectional nature of our study. Consequently, we cannot draw conclusions in terms of causality, and strictly speaking, the explanatory variables under study cannot be considered (temporal) predictors of autonomy-connectedness. Our results should thus be interpreted with caution. For future research, it might be worthwhile to use a longitudinal, prospective research design to examine the antecedent and/or consequent nature of autonomy-connectedness and the other factors.

An important additional reason why the results found in our study have to be interpreted with caution is the exclusive use of self-report measures, which might lead to the problem of common method variance. Results may have been affected by several inherent inaccuracies, such as social desirability biases. Future investigations regarding the issues under study might profit from using multiple methods (e.g., see Allen, Marsh, McFarland, McElhaney, & Land, 2002).

Despite these limitations, the results of the present study may be helpful in deepening the insight into the relationships of autonomy-connectedness with body-awareness, alexithymia, and assertiveness, and the further development and enhancement of therapeutic strategies targeted at clients' autonomy-connectedness. Our findings provide preliminary support for the assumption that particularly low assertiveness and inadequate emotion identification and regulation (i.e., a low ability to describe, analyze, and explain emotions) might predict autonomy problems. Furthermore, we obtained evidence for only a modest role of body awareness and the absence of any role for the ability to fantasize. The latter is interesting for its huge contrast to the strong correlation of fantasizing with antisocial behavior (Bekker et al., 2007), and might guide further research to gender-related psychopathology. Our results also promote the usefulness of giving priority within autonomy-targeted interventions to training clients' ability to identify, label, and explain their emotions and handle them in assertive interactions with others.

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