BORDERLINE PERSONALITY DISORDER AND AUTISM SPECTRUM DISORDER IN FEMALES – A CROSS-SECTIONAL STUDY

Göran Rydén, Eleonore Rydén and Jerker Hetta

Abstract

Object: The first aim of this study was to find out whether Autism Spectrum Disorder (ASD) co-occurs with Borderline personality disorder (BPD). Secondly, we wanted to compare BPD-patients with and without ASD on a number of important clinical measures such as suicide attempts, self-harm, inpatient days, symptom burden, and describe characteristic features in patients with comorbid ASD and BPD.

Method: Consecutively referred female patients with SCID-II-verified BPD were assessed for autistic traits. All patients were extensively investigated with interviews, neuropsychological testing and self-rating questionnaires and medical records were reviewed. Among the instruments used in the structured assessment procedure for all patients were measurement for self-image (SASB) and global functioning (GAF).

Results: Six (15 %) of 41 patients with SCID-II-verified BPD fulfilled criteria for ASD. ASD patients had significantly more frequent suicide attempts. They also had significantly lower global functioning (GAF median 30 versus 44). The two groups did not differ in number of comorbid Axis I and II disorders with the exception of substance abuse which was more common in patients without ASD. Patients with ASD were found to have a more negative self-image in SASB.

Conclusions: Comorbid ASD and BPD might indicate a group at high risk for suicide. Absence of substance abuse and pronounced negative self-image should lead to a clinical suspicion that Autism spectrum disorder might be present. These findings need to be replicated. There is a need for more studies in this complex patient group that challenges our capacity in therapeutic work.

Limitations: The referral procedure of severely ill patients and the small number make it hard to generalize these findings to all patients with BPD.

Key Words: Adult – Autistic disorder – Asperger syndrome – Borderline personality disorder – Mental processes – Personality Inventory – Suicide, Attempted -

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Introduction

During the past ten years there has been a growing interest in mentalising, both in research of autism and personality disorder (Fonagy 1998, Frith 2001). Even though there are some differences in the use of the term and the kind of mentalising difficulties described, mentalisation might become a common ground in understanding central areas of pathogenetic mechanisms (Sharp 2006).

Mentalisation is defined as an explicit and implicit understanding of other persons' acts as motivated by inner mental processes such as beliefs, wishes and fears (Gergely 2003). Mentalisation is a skill, probably evolutionary, imposed to handle social complexity in groups. There is reason to believe that there is a common ground in defect mentalising skills both in personality disorder (e.g. borderline personality disorder) and autism spectrum disorder (Bateman and Fonagy 2004, Frith and Frith 2003). Failure in mentalising due to borderline personality disorder is considered to be partial, often in an interpersonal context and when the emotional climate is subjectively experienced as too high. In Autism spectrum disorder (ASD) mentalisation is considered as one of many possible mechanisms that account for the difficulties in relating to other persons. Therapeutic interventions based on enhancing mentalising capacity have also been evaluated in both borderline personality disorder (BPD) and ASD. This kind of treatment has shown positive outcome results

in BPD, but not in ASD (Bateman and Fonagy 1999, Golan and Baron-Cohen 2006, Hadwin et al. 1997).

In spite of the apparent differences in clinical appearance there are a number of similarities between ASD and BPD. The core features of the borderline pathology are interpersonal relationship problems with extreme difficulties handling separation, identity disturbance and affect regulation. Suicide attempts and self injurious behaviour is common (Oldham 2006). Acting out instead of verbalizing emotions is also frequently seen, especially in stressful situations.

According to DSM-IV the core symptoms of Autistic Disorder are qualitative impairment in social interaction and communication as well as restricted repetitive and stereotyped patterns of behaviour, interests and activities. This is seen in a delay in the development of social interaction, language as used in social communication and/or symbolic or imaginative play (APA 1995)

Both BPD and ASD involve severe executive dysfunction and functional impairment in social- and occupational functioning even though this seems to resolve with time among patients with BPD to some degree (Gillberg 1983, Goddard et al. 2007, Mugno et al. 2007, Zanarini et al. 2005).

A possible link between ASD and BPD has been proposed (Fitzgerald 2005). However, to our knowledge no study has been published primarily focusing on the prevalence of ASD in BPD patients.

In the present study we wanted to investigate female patients with BPD for autistic traits. The first aim of the study was to find out whether or not ASD co-occurs with BPD in a cohort of severely ill patients. If a group with ASD could be identified, the second aim was to compare the ASD patients with the non-ASD BPD patients on a number of important clinical measures such as suicide attempts, suicide ideation, inpatient days and symptom burden. A third aim was to try to describe characteristic features observed in patients with comorbid ASD and BPD.

Material and methods

Population

The MBT-team (Mentalisation Based Treatment-team) started in the spring of 2005. The goal of this team was to thoroughly assess and treat difficult-to-treat-patients with BPD within a treatment program based on Mentalisation Based Therapy, as described by Anthony Bateman and Peter Fonagy. The catchment area for referred patients is the south-western part of Stockholm, Huddinge and Botkyrka. The population in this area aged 18-65 years old was ~180 000 in 2005.

Patients with BPD were mainly referred from the psychiatric outpatient units within the catchment area. The patients were accordingly referred to take part in the treatment program. They had to speak the Swedish language sufficiently enough to benefit from treatment and show at least a rudimentary interest in taking part in treatment. Of the first 63 consecutive patients referred from 1st March 2005 to 31st February 2007, nine patients did not want to participate in the assessment or did not

answer after several telephone calls and/or letters (n=8). One of these patients committed suicide before coming to our unit. The assessment was constructed as a stepped assessment. If a patient did not meet the criteria for BPD (using SCID-II) the assessment was terminated (n=4). Some patients met BPD criteria but did not take part in all tests (n=5) mainly because they were not going to participate in the treatment program for various reasons. Forty-five patients completed the assessment. Of the 45 remaining patients, 5 were male (all fulfilled criteria for BPD) and were excluded in these analyses. Accordingly, 41 female patients met the criteria for BPD. A number of these patients were further clinically assessed grounds for ASD.

Assessment procedure

Background data and clinical history

Patients were interviewed for clinical history, family situation, traumatic events, earlier and recent symptoms including self-harm. They were also asked to provide us with written information about socio-demographic data (marital status, children, educational status, occupation, economy, parents' marital status, siblings etc.), traumatic life events and treatment history.

Axis-II-diagnosis

An Axis-II-diagnosis was obtained using a full Structured Clinical Interview for DSM-IV, Axis II (SCID-II). The interview was videotaped and the borderline part of the interview was discussed within the whole team to monitor interrater reliability. The patients were also interviewed using the Zanarini borderline interview (ZAN-BPD) (Zanarini et al. 2003). This interview rates DSM-criteria for BPD in an operationalised manner about the severity of symptoms during the past two weeks. The subfactors in ZAN-BPD are affectivity, impulsivity, cognition and relationship problems. A total score is also calculated. Since these instruments are widely used and published interrater reliability was not assessed apart from the clinical discussion mentioned above. The interviews were carried out by experienced clinicians used to SCID-II and M.I.N.I. (see below) and with a long experience of assessing patients with personality disorders (Mean clinical experience 10.2 years). The questionnaire has been shown to have acceptable reliability and validity levels.

Axis-I-diagnosis

Patients meeting criteria for BPD were further assessed for comorbid Axis-I-disorders according to DSM-IV using the Mini International Neuropsychiatric Interview, M.I.N.I. (The first 15 patients were interviewed with SCAN. The SCAN diagnoses were obtained using algorithms and then transferred to MINI-diagnoses) (Sheehan et al. 1998).

Personality traits and self-image

Self-image was assessed using Structural Analysis of Social Behavior (SASB) (Benjamin 1996). SASB is a circumplex model structure aimed at measuring self-image and interpersonal interactions. The model which is theoretically based in interpersonal theory describes three "surfaces": actions of others, reaction to the actions of others and introject, or what might be called the self-image. It is this last surface that is presented here. Eight clusters have been defined in the model: Self-emancipation, self-affirmation, active self-love, self-protection, self-control, self-blame, self-attack and self-neglect. This gives a nuanced picture of the self-image and the model has been widely used in different research areas (Bjorck et al. 2003, Erickson and Pincus 2005, Pincus et al. 1998).

Suicidality, suicide attempts and self-injurious behaviour

Information about suicide attempts and self-harm was based on medical records. These reports have been summarized in number of suicide attempts (e.g. intoxication and hanging; other methods have not been reported in this patient cohort) and serious suicide attempts (prolonged hospital stay, observation on Intensive Care Unit, continuous telemetry or other medical intervention more than routine emergency attendance) and self-harm needing medical care (e.g. sutures or similar). Unfortunately however, self-harm data was difficult to interpret, since it was not possible to collect data with sufficient validity. Patients tend to take care of their injuries themselves or seek treatment at different locations due to feelings of shame. Data concerning self-harm were therefore not further analyzed. Suicide assessment scale (SUAS) has been developed to assess suicide risk. SUAS covers known aspects of factors influencing suicide risk: affect, bodily states, control and coping, emotional reactivity and suicidal thoughts and behaviour (Stanley et al. 1986). We used a self-reporting version of Suicide Assessment Scale, SUAS (Nimeus et al. 2006). Ratings of SUAS in a cohort of inpatients was shown to be the only significant difference between suicide attempters and completers where the completers had a median of 43 compared to suicide attempters who had a median of 24.5 (Holmstrand et al. 2006).

Neuropsychological profile, assessing for ASD

All patients were assessed using the Wechsler Adult Intelligent Scale (WAIS-III), a well-known neuropsychological test which has also been tested in different clinical samples (Brown and Ryan 2004, Christensen et al. 2007, Kaufman et al. 2001).

If the clinical interview, heredity, neuropsychological findings or observation in the assessment setting gave reason to consider ASD, further assessment was performed. ASD was based on an interview considering diagnostic criteria for Autistic disorder, Asperger's syndrome and Pervasive developmental disorder NOS. The Asperger Syndrome Diagnostic Interview (ASDI) for adolescents was conducted (Gillberg et al. 2001). The ASDI for parents was also performed when clinically indicated. In the clinical interview there was a focus on behaviour, social interaction, oddities and stereotypes.

A childhood anamnesis was obtained by "Five-to-fifteen" (FTF) or autism - tics, attention-deficit hyperactivity disorder and other comorbidities (A-TAC) when we were able to contact or interview parents or older siblings. In "Five to fifteen", parents are asked to rate 181 items and these can be arranged in 8 domains: memory, learning, language, executive functions, motor skills, perception, social skills, and emotional/behavioural problems (Kadesjo et al. 2004). We have used FTF to assess domains (memory, learning, language, executive functions, motor skills, perception, social skills, and emotional/behavioural problems). The A-TAC interview gives cut-off scores for neuro-psychiatric conditions. The A-TAC is a 30 minute long telephone interview with one of the parents (Hansson et al. 2005). The findings were discussed with an experienced clinician (ER) who is assessing and working with ASD and ADHD/ADD. Thus, diagnosis of ASD is based on clinical decisions with help from the above-mentioned questionnaires when clinically indicated but no cut off scores were determined for any of these instruments.

A flowchart of the assessment is shown in Figure 1.

Statistics

Parametric statistics were used in the analysis of WAIS-III, SASB, SUAS and GAF (Independent T-test). Nonparametric statistics (Mann-Whitney U-test) were used for categorized data and discrete variables. Some of the data could not be considered normally distributed. Fisher Exact test was used in the analyses for dichotomous variables due to the small numbers in this study.

In all analyses a 2-sided p-value of less than 0.05 was used as a minimum significant level. If this requisition was not obtained this is noted as non-significant (ns). Computing statistics were carried out using SPSS 14.0 for Windows.

Ethics

This assessment procedure was primarily developed to be used in the clinical setting and not primarily for research purposes. No grave ethical issues have been found in publishing these data. The patients were also included in a pilot study for an upcoming randomized controlled study for which the Board of Ethics at Karolinska Institute has given its approval (2006/1392-31/3).

Results

Background data

Table 1 shows background data for the cohort of female patients with BPD. The mean age for the cohort

Figure 1. *Flowchart for the Assessment of ASD diagnosis*
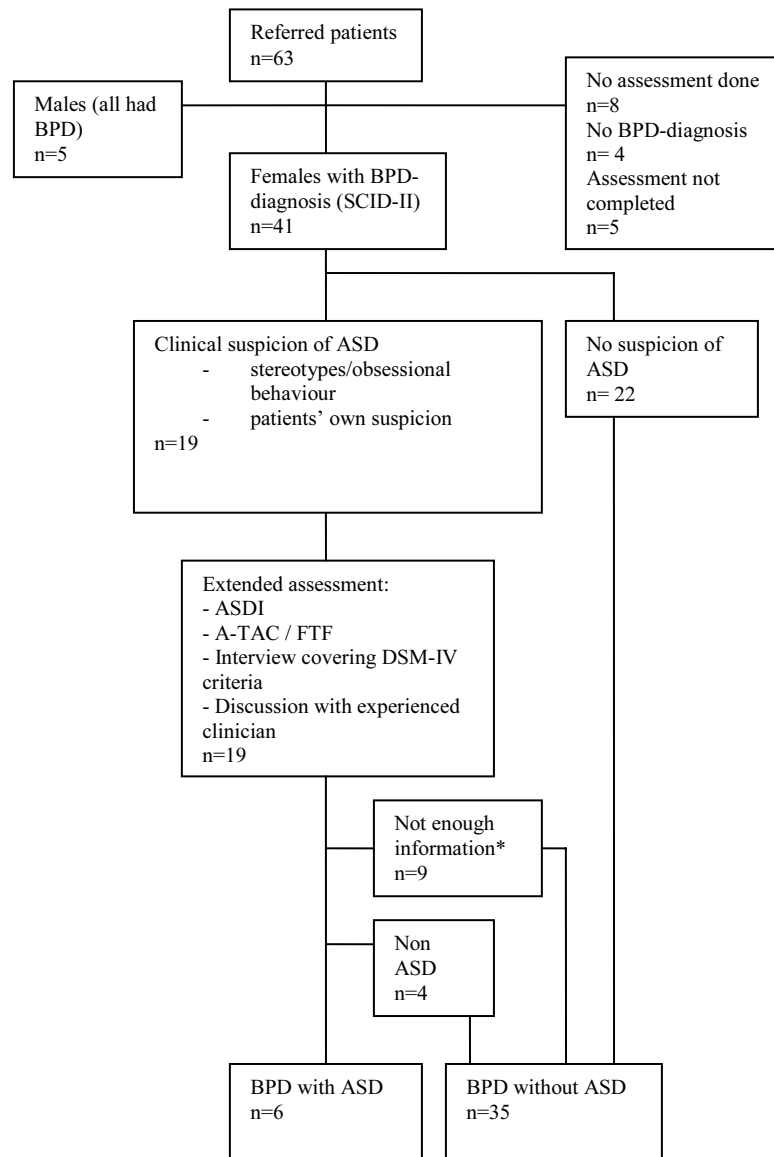
BPD=Borderline personality disorder, ASD=Autism Spectrum Disorder, SCID-II= Structured Clinical Interview for DSM-IV, axis II, ASDI= Asperger's Syndrome Diagnostic Interview, A-TAC=autism-tics, attention-deficit hyperactivity disorder and other comorbidities, FTF=Five-to-fifteen, *No information from parents available, the patient is not interested in ASD assessment.

was 29 years. Twenty-eight patients (70%) lived alone and most of the patients did not work or study (80%). Only 7 patients (17%) were able to support themselves financially. None of the patients in the ASD group had children, compared to the non ASD group where 8 patients had children. There were no apparent differences between the groups (ASD and non ASD) in any of the background variables.

The comorbidity for Axis I disorders is high in the study group. Current and lifetime diagnoses reveal that major depressive disorder (73%), panic disorder (63%) and substance abuse or dependence (60%) are by far the most common disorders on Axis I. Other common disorders in the cohort were posttraumatic stress disorder (33%), generalized anxiety disorder (30%), eating disorder (28%), bipolar disorder (23%),

obsessive compulsive disorder (21%) and ADHD/ADD (20%). Psychotic episodes were more rare (10%). The median of Axis I disorders per patient was 4 (interquartile range = 3). There was no significant difference between patients with or without ASD except for substance abuse or dependence where patients with ASD did not fulfil criteria for any of the substance disorders and the non ASD group had a substance disorder in 71 % (p-value 0.02 using Fisher Exact test).

Median Axis II diagnoses according to SCID II were 3 (interquartile range = 2). We found no significant differences in SCID II diagnoses between ASD and non ASD patients. The total number of fulfilled criteria in the SCID II Interview might be used as a marker for overall personality problems. In this patient Cohort the median number of fulfilled Axis-II criteria was 26

Table 1. *Socio-demographic, socio-economic and background data in patients with severe borderline personality disorder, with and without Autism spectrum disorder (n=41)*

Variable	BPD with ASD N=6	BPD without 5 ASD N=3	All BPD patients N=41
Age (y) Mean (SD)	31.2 (8.89)	28.6 (8.17)	29 (8.21)
Socio-demographics			
Parents born abroad N(%)	1 (16.7)	11 (31.4)	12 (29.3)
Living with partner N(%)	2 (16.7)	10 (29.4)	12 (30.0)
Children N(%)	0 (0)	8 (22.9)	8.0 (19.5)
Higher education N(%)	2 (33.3)	14 (40)	16 (39)
Currently unemployed N(%)	5 (83.3)	27 (77.1)	32 (78)
Need for economic support N(%)	5 (83.3)	29 (82.9)	34 (82.9)
WAIS-III			
Verbal IQmean (SD)	103.0 (18.9)	99.1 (11.4)	99.5 (12.1)
Performance IQmean (SD)	94.5 (18.4)	101.1 (12.5)	100.4 (13.1)
Verbal understanding IQmean (SD)	105.7 (15.5)	105.0 (11.4)	105.1 (11.7)
Perceptual organisation IQmean (SD)	96.2 (23.0)	104.3 (14.0)	103.4 (15.0)
Working memory IQmean (SD)	100.0 (22.5)	92.7 (13.5)	93.3 (14.2)
Speed IQmean (SD)	91.2 (12.9)	98.8 (15.5)	97.9 (15.2)
Total IQmean (SD)	98.7 (18.8)	100.1 (11.1)	99.9 (11.8)

BPD=Borderline personality disorder, ASD=Autism spectrum disorder, SD=Standard deviation, WAIS-III=Wechsler Adult Intelligence Test –III, IQ=Intelligence Quotient.

Table 2: *Comparing ASD and non ASD patients according to, suicidality, suicide attempt, number of inpatient days, global functioning, self-image and personality dimensions*

Variable	BPD with ASDN=6	BPD without ASDN=35	Statistics	P-value
Lifetime number of Suicide attempts in medical recordsMean (SD)	5.8 (6.2)	1.5 (2.3)	M-W	ns
Lifetime number of serious suicide attemptsMean (SD)	1.0 (1.4)	0.2 (0.4)	M-W	ns
Number of patients with more than 5 suicide attempts N(%)	3 (50)	2 (5.9)	Fisher Exact test	0.018
Number of inpatient daysMean (SD)	46.3 (53.1)	38.6 (77.7)	T-test t=0.12	ns
GAFMean (SD)	32.3 (7.8)	43.9 (6.7)	t=3.84	0.000
SUASMean (SD)	50.5 (12.8)	41.7 (10.2)	t=1.87	ns
SASB, self-emancipationMean (SD)	31.6 (21.1)	37.3 (18.7)	t = 0.57	ns
SASB, self-affirmationMean (SD)	13.0 (16.0)	27.1 (20.1)	t = 1.77	ns
SASB, active self-loveMean (SD)	10.0 (13.9)	28.6 (18.9)	t = 6.32	0.036
SASB, self-protectionMean (SD)	26.5 (29.6)	37.8 (24.1)	t = 4.79	ns
SASB, self-controlMean (SD)	30.8 (11.0)	44.8 (20.8)	t = 8.84	0.046
SASB, self-blameMean (SD)	62.0 (29.1)	66.2 (19.3)	t = 4.52	ns
SASB, self-hateMean (SD)	74.0 (33.6)	57.5 (18.8)	t = 4.37	ns
SASB, self-neglectMean (SD)	53.5 (25.5)	51.1 (18.6)	t = 4.63	ns

BPD=Borderline personality disorder, ASD=Autism spectrum disorder, GAF=Global Assessment of Functioning, SUAS=Suicide Assessment Scale, SASB=structural Assessment of Social Behaviour, ns=non significant, T-test=Independent sample test. If P-value >0.05 it is considered non significant (ns).

(Interquartile range = 14.5). All patients fulfilled in median 7 borderline criteria (Interquartile range = 2). There was no significant difference between the two groups. All patients with ASD fulfilled criteria for interpersonal problems, suicidality, affective instability and paranoid ideations and/or dissociation. Anger (criterion 8) is more common in the ASD patients than non ASD patients (83% vs. 65%).

Assessment and prevalence of ASD

During the general assessment, 19 patients (42 %) had possible autistic traits at a clinically relevant level and were assessed further. Six patients (15 %, CI 95%: 3-26) were diagnosed as having either Asperger syndrome (5 %, n = 2) or Pervasive developmental disorder NOS (10 %, n = 4). No patient received an autism diagnosis.

Comparing Patients with BPD with and without ASD

As shown in Table 2, there was a difference in the occurrence of suicide attempts overall but the difference was not significant. The difference between the groups could be shown when serious suicide attempts requiring extended medical treatment were compared. However, the normal distribution was skewed to the right. Analyzing this showed the skew could be explained by a significantly larger relative amount of patients with ASD in the group with more than 5 or more suicide attempts. When the patients were dichotomized in two groups; non-frequent suicide attempts and frequent suicide attempts ($\geq$ 5 suicide attempts), we found a significant difference. The global functioning scored with GAF at Assessment was significantly lower. Even though there was a trend towards a higher amount of suicidal thoughts in SUAS in the ASD group this difference was not significant.

In SASB, self-love and self-control were significantly lower in the ASD group. The SASB profiles are presented in Figure 2.

Discussion

In the present study we found that a substantial portion of patients with BPD had a co-occurring ASD (15 %). Frequent suicidal acts were significantly higher in the ASD group. Patients with ASD had also lower GAF scores, indicating that the group with autistic traits is a more severely ill subgroup of BPD. We could also show that these patients differ from other patients with BPD in regard to substance abuse and self-image.

ASD has a high degree of comorbidity (Gillberg and Billstedt 2000) Presence of BPD has been described in patients with ASD but gender was not taken into consideration (Anckarsater et al. 2006). In this study the researchers reported a 10.6% prevalence of BPD in patients with ASD. Most comorbidity studies on adults with ASD have focused on males with psychopathic traits and cluster A personality disorders mainly in forensic psychiatric cohorts (Rogers et al. 2006,

Soderstrom Anckarsater 2005). We have not found studies where ASD has been investigated in cohorts of personality disordered patients. The prevalence proportion of ASD in the BPD group in our study is of the same magnitude as the above-mentioned prevalence of BPD in ASD patients mentioned above.

In a recently published editorial the suicide risk in ASD associated with depression and anxiety disorders has been discussed (Fitzgerald 2007). The high suicide risk in BPD is, however, well established (Oldham 2006). Patients with ASD have difficulties in mentalising their own and other people's inner mental states (thoughts, wishes, fears) (Sharp 2006). Self-harm is probably not primarily used as a manipulative strategy to gain other peoples' attention. It is rather understood as a strategy to regulate unbearable affects and fragmentation of the self (Bateman and Fonagy 2003). When the mentalising capacity is further compromised, as in ASD, it is reasonable to expect a higher incidence of suicide attempts and self-harm. Our study gives some support to this assumption.

The SASB model has been used to describe a BPD profile of self-image (Ruiz et al. 1999). Our SASB data is in line with earlier findings and the ASD group has an even more pronounced profile with less self love and more self hate even though this last dimension was not significantly different. Negative self-perception has been shown to be associated with suicide ideations in adolescents (Laukkanen et al. 2005).

The limitations of this pilot study are apparent. The small numbers of patients make it difficult to rely on comparisons between the groups. It also leads to difficulties to show significant differences between ASD and non-ASD patients. The cohort is highly selected from a psychiatric sample where traditional treatment has failed at some point. This might lead to a selection bias and difficulties in generalization of our data. It would have been preferable to have used an observational instrument like the Autism Diagnostic Observation Schedule, ADOS in the diagnosis (Lord et al. 2000). Since further investigation for ASD was based on clinical reasons, all patients were not assessed with Questionnaires like ASDI, A-TAC or FTF. During the study period we changed from FTF to A-TAC as we were planning to use this telephone Interview further on. These questionnaires, though, have many similarities and have been developed by the same constructors. We have tried to compensate these shortcomings by letting an experienced neuro-psychiatrist (ER) go through the cases. The patients who are presented here are clinically assessed as ASD. Due to the unsystematic approach we had to be conservative in our assessment. Some of the patients in the cohort did not want these diagnoses assessed further, or did not want to involve relatives. A number of patients are therefore candidates for ASD-diagnosis but have not been thoroughly assessed.

Caregivers have often considered patients with BPD as manipulative and difficult to treat (Cleary et al. 2002, Potter 2006) . Autistic traits lead to a lesser degree of social functioning and a compromised capacity for mentalising feelings and self states. This may lead to psychiatric symptoms like a negative self-image, high anxiety symptoms, and interpersonal problems. It has been proposed that mentalising depends

Figure 2. *SASB profile in ASD and non ASD*
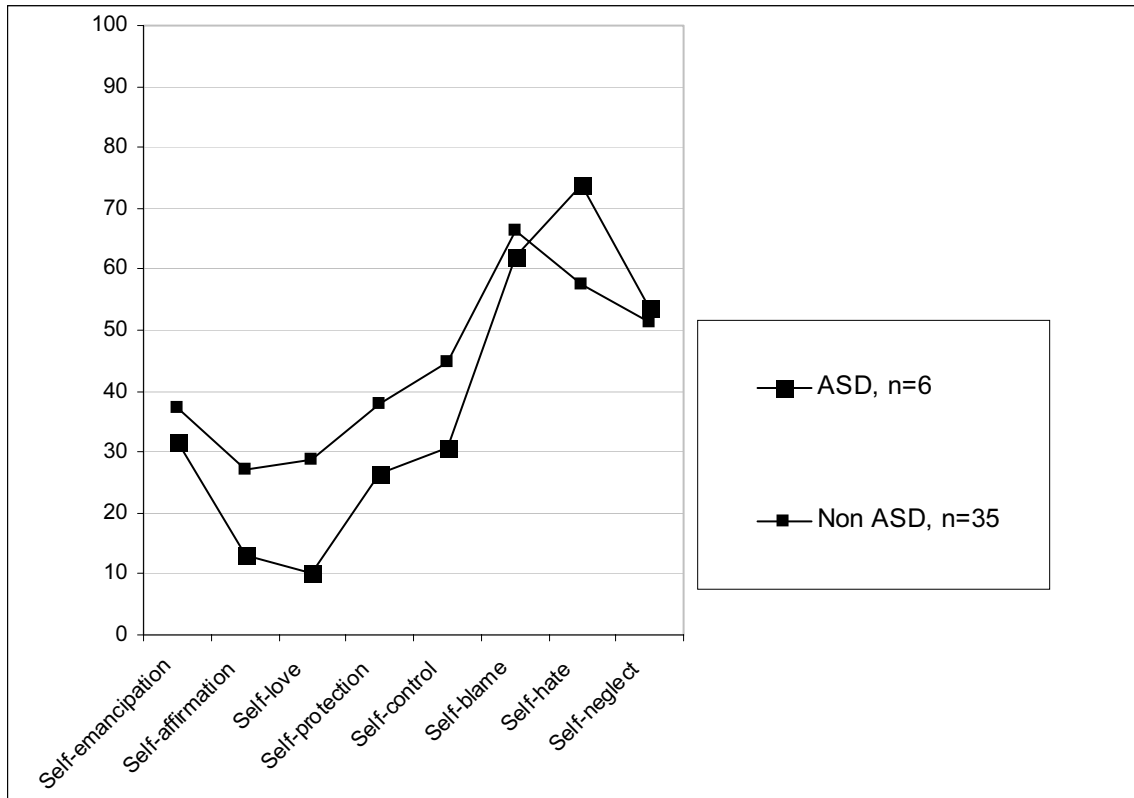
SASB = Structured Assessment of Social Behaviour, ASD =Autism Spectrum Disorder. The difference between ASD and non ASD is significant on active self-love and self-control (independent T-test).

on the ability to understand another person as represented as independent from the self. This has been called an allocentric stance. If the other person is understood only in relation to the self, this is called an egocentric stance. It has been suggested that people with ASD suffer from a disconnection between these two ways of mentalising (Frith and de Vignemont 2005). This may account for some of the difficulties to think of the possibility to receive help from another person. Therefore, they might be more prone to self stabilizing activities as self-harm, and when this does not help, suicide attempts. Our study gives some support to this assumption.

One perspective on comorbidity is that disorders change their expression in older age. It may be that a young girl would be diagnosed as having ASD, but as a teenage female, she would be diagnosed as having BPD. Not everyone with ASD has self-harming behaviour or interpersonal problems and not everyone with BPD has autistic traits but patients with both disorders are worse off and it is of importance to identify them since it should influence the treatment. This indicates a way to understand borderline symptoms in terms of autistic functioning.

Patients with BPD are today to a larger extent offered participation in specially designed treatment programs such as Dialectical Behaviour Therapy, Mentalisation Based Treatment, Schema Focused Cognitive Therapy and Transference Focused Psycho-

therapy, and there is growing evidence that these programs work (Bateman and Fonagy 1999, Binks et al. 2006, Giesen-Bloo et al. 2006, Linehan et al. 1991). All treatment programs suffer from high numbers of patients who drop out or do not improve and we do not know enough about these patients. Our study aimed to investigate a group of patients that are considered difficult to treat and there are compelling needs to evaluate how patients with co-occurring ASD are faring in these treatment programs. There is a need for more studies in this field with a more differentiated approach since this complex patient group challenges our capacity for flexibility and adaptation in the therapeutic work.

We could show that there is a group of patients in a cohort of severely ill borderline patients that also fulfil criteria for ASD. Some preliminary data indicate that they are more suicidal and have a lesser degree of global functioning than other BPD patients. There are some features that might help to identify patients with ASD: Female patients without substance abuse, but with intense suicide ideation, frequent episodes of suicide attempts and a pronounced negative self-image should lead to a clinical suspicion that ASD might be present.

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