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*Published in:*  
Schizophrenia Bulletin

*DOI:*  
[10.1093/schbul/sbz036](https://doi.org/10.1093/schbul/sbz036)

*Publication date:*  
2020

*Document version*  
Publisher's PDF, also known as Version of record

*Document license:*  
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*Citation for published version (APA):*  
Nilsson, M., Arnfred, S., Carlsson, J., Nylander, L., Pedersen, L., Mortensen, E. L., & Handest, P. (2020). Self-Disorders in Asperger Syndrome Compared to Schizotypal Disorder: A Clinical Study. *Schizophrenia Bulletin*, 46(1), 121-129. <https://doi.org/10.1093/schbul/sbz036>

## Self-Disorders in Asperger Syndrome Compared to Schizotypal Disorder: A Clinical Study

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**Objective:** There are historical and theoretical indications of a difference in subjective experience between autism spectrum disorder (ASD) and the schizophrenia spectrum. However, this difference has not been empirically explored. Therefore, to explore potential differences in subjective experience between the 2 spectra, we examined the presence/absence of self-disorders in Asperger syndrome/autism spectrum disorder (As/ASD) compared to schizotypal disorder (Sd). Self-disorders represent changes in basic self-awareness which have been found to accumulate within the schizophrenia spectrum. **Methods:** All participants were recruited from clinical units and interviewed with a focus on the exploration of presence/absence of self-disorders, with the Examination of Anomalous Self-Experience (EASE) scale, and a general assessment of present psychopathology, with Schedules for Clinical Assessment in Neuropsychiatry (SCAN). **Results:** A total of 51 participants (As/ASD,  $n = 22$ ; Sd,  $n = 29$ ) were included in the statistical analyses. When controlling for age, gender, years of education, mental problems before the age of 16, and special needs school attendance, there was a clear difference in presence/absence of self-disorders between the 2 groups, with significantly higher levels in the Sd group. Further, there was an overlap in SCAN-rated symptoms between the 2 groups. **Conclusion:** Our results indicate a significant difference between As/ASD and Sd at the level of the basic self, which, in turn, indicates that an exploration of anomalous self-experience is a valuable supplement in the clinical differentiation between As/ASD and Sd.

**Key words:** psychopathology/schizophrenia spectrum disorder/autism spectrum disorder

### Introduction

Over the past decades, clarification of the conceptual relationship between autism spectrum disorder (ASD) and the schizophrenia spectrum has been called for from various clinical and scientific perspectives.<sup>1–5</sup> So far, however, the suggested solutions are quite diverse or even mutually contradictory, as the 2 spectra are described either as one and the same, clearly distinct, or anything in between. The issue, therefore, needs further attention.

### Unclear Diagnostic Demarcation

In clinical practice, ASD and schizophrenia spectrum disorder are understood as 2 separate spectra<sup>6,7</sup> and recommended interventions and treatments differ accordingly.<sup>8,9</sup> However, young adult patients, who are later diagnosed within either of the 2 spectra, often present with similar social difficulties,<sup>10</sup> and cognitive deficits<sup>11</sup> as well as a superficially similar life history. This clinical overlap complicates the diagnostic differentiation<sup>12</sup> and increases the risk of misdiagnosis between the 2 spectra,<sup>13,14</sup> which has unfortunate implications for both research and clinical practice, as current operational diagnostic classifications (usually) lie at the basis of both.<sup>15</sup>

### Diverging Scientific Approaches

Schizotypal disorder (Sd, schizotype) was first described by Rado<sup>16</sup> as a form of subclinical schizophrenia.<sup>17</sup> Accordingly, Sd is still described as a nonpsychotic disorder within the schizophrenia spectrum in the International Classification of Diseases and Health Related Problems (ICD-10)<sup>7</sup> (table 1).

**Table 1.** ICD-10 Descriptions of Schizotypal Disorder, Asperger Syndrome, and Childhood Autism<sup>18</sup>

F21 Schizotypal Disorder	F84.5 Asperger Syndrome
A disorder characterized by eccentric behavior and anomalies of thinking and affect which resemble those seen in schizophrenia, though no definite and characteristic schizophrenic anomalies occur at any stage. The symptoms may include a cold or inappropriate affect; anhedonia; odd or eccentric behavior; a tendency to social withdrawal; paranoid or bizarre ideas not amounting to true delusions; obsessive ruminations; thought disorder and perceptual disturbances; occasional transient quasi-psychotic episodes with intense illusions, auditory or other hallucinations, and delusion-like ideas, usually occurring without external provocation. There is no definite onset and evolution and course are usually those of a personality disorder.	A disorder of uncertain nosological validity, characterized by the same type of qualitative abnormalities of reciprocal social interaction that typify autism, together with a restricted, stereotyped, repetitive repertoire of interests and activities. It differs from autism primarily in the fact that there is no general delay or retardation in language or in cognitive development. This disorder is often associated with marked clumsiness. There is a strong tendency for the abnormalities to persist into adolescence and adult life. Psychotic episodes occasionally occur in early adult life.
	F84.0 Childhood autism
	A type of pervasive developmental disorder that is defined by: (a) the presence of abnormal or impaired development that is manifest before the age of 3 years, and (b) the characteristic type of abnormal functioning in all the 3 areas of psychopathology: reciprocal social interaction, communication, and restricted, stereotyped, repetitive behavior. In addition to these specific diagnostic features, a range of other nonspecific problems are common, such as phobias, sleeping and eating disturbances, temper tantrums, and (self-directed) aggression.

The current conceptualization of the schizophrenia spectrum has roots within the tradition of descriptive psychopathology,<sup>19</sup> and the terms autism and schizophrenia were both coined by Bleuler from within this approach.<sup>20</sup> Descriptive psychopathology aims at describing subjective symptoms and expressive signs<sup>19</sup> and Bleuler's autism concept, consequently, included an array of such clinical manifestations, often coarsely summarized as a detachment from the outer world combined with predominance of inner life.<sup>20–22</sup> Bleuler established that autism was a fundamental (constitutive) aspect of the schizophrenia spectrum; a conception which became dominating in subsequent decades.<sup>15,20</sup> However, with the shift to a dominating operational approach, the autism concept disappeared from the mainstream conceptualization of the schizophrenia spectrum.<sup>15,23</sup>

Kanner<sup>24</sup> and Asperger<sup>25</sup> similarly used a descriptive psychopathological approach in their pioneering conceptualizations of ASD. To characterize their observations of a withdrawal from our common world, they both used the *term* autism. However, they both claimed to describe a subset of symptoms which differed from the conceptualization of (childhood) schizophrenia.<sup>24,25</sup> Subsequent advances in ASD research and clinical practice have mainly been anchored within neuropsychology and cognitive neuroscience<sup>26</sup> with predominant focus on observed behavior and cognitive mechanisms, a focus which also characterizes the current conceptualization of ASD (table 1).<sup>7,26,27</sup> This epistemological difference in the current understanding of the 2 spectra further complicates the clinical differentiation between the 2, as a comparison between their current diagnostic criteria, in effect, is a comparison of conceptual apples and oranges. A description of the 2 spectra from

within the same epistemological framework would, therefore, be beneficial for the differential diagnostic process.

#### *Different Subjective Experiences?*

When reading the original texts, it becomes clear that there is a qualitative difference between Bleuler's autism concept, and the concepts later described by Kanner and Asperger.<sup>20,24,25</sup> While both the descriptions of Bleuler and of Kanner and Asperger included an affection of the self-world relation, there were discrepancies in the way these changes were constituted; Bleuler described that the inherent significance of reality is lost in schizophrenia.<sup>28,20</sup> This breach in reality-contact allows for the constitution of an alternate autistic (private) world, which the patient experiences as equally significant.<sup>20</sup> According to Bleuler, it is the unstable oscillation between the preponderance of one of these 2 alternate, yet coexisting, worlds that characterizes the self-world relation in schizophrenia.<sup>20</sup> Kanner and Asperger, on the other hand, described a static (rigid) manner of being in ASD which is stably present over time and in all aspects of life.<sup>24,25</sup>

It has previously been claimed that Bleuler's autism account lacked precision, due to the lack of description of subjective experiential aspects.<sup>15,22,29</sup> This caveat is further extended with the current mainstream operational approach, as it has been claimed that an (over)reliance on operational diagnostic criteria (amongst other things) does not incorporate fundamental and discriminating aspects in the experiential domain.<sup>15,23,30,31</sup> In accordance with this critique, there has been a revival of the phenomenological psychopathological tradition because this tradition offers concepts and methods for the exploration of (variations in) subjective experience.<sup>22,32</sup>

Within phenomenological psychiatry, the core experiential aspects of the schizophrenia spectrum (schizophrenic autism) are described as disturbances in self-awareness, intersubjectivity, and intentionality.<sup>22</sup> Parnas and Sass are among the leading advocates for this approach with their formulation of the self-disorder concept.<sup>33</sup>

The self-disorder concept was formulated on the basis of accounts from patients with beginning schizophrenia, and represent trait-like changes at the basic level of self-awareness, including a pervasively diminished or unstable sense of core (or basic) self,<sup>15,34</sup> ie, it is the form and structure of the very basic mode of existence that is changed.<sup>22</sup> These changes can be examined, together with the patient, by exploring the form and structure of experiential domains such as thoughts, time, presence, and self-awareness. However, the experiences are often not explicit or articulated enough to be spontaneously reported; rather, they represent a tilt or shift in the pre-reflective background of awareness,<sup>34</sup> which is why an appropriate conceptual and methodological approach is needed.<sup>34,35</sup> Influenced by classical phenomenological literature and Huber's basis symptoms,<sup>36</sup> Parnas et al. have developed the Examination of Anomalous Self-Experience (EASE) scale as a check-list for such clinical exploration of self-disorders.<sup>34</sup> There are now several clinical empirical EASE studies with findings of an accumulation of self-disorders within the schizophrenia spectrum,<sup>37</sup> compared to bipolar psychosis,<sup>38</sup> affective disorders,<sup>39</sup> borderline personality disorder,<sup>40</sup> and other mental disorders.<sup>41</sup> Furthermore, the level of self-disorders seems to be comparable in Sd and schizophrenia, in accordance with the notion of a schizophrenia spectrum.<sup>39,41,42</sup>

In contrast, recent phenomenological accounts suggest that the basic self is intact in ASD, ie, suggesting that there is a fundamental difference in the form and structure of subjectivity between ASD and the schizophrenia spectrum.<sup>43,44</sup> However, to our knowledge, these indications are not yet clinically explored. Therefore, the present study aimed to explore potential differences in subjective experience between the 2 spectra, and the potential discriminative value of the self-disorder concept, by exploring the presence/absence of self-disorder in As/ASD compared to in Sd. We hypothesized that, as in other non-schizophrenia spectrum disorders, there would be a lower level of self-disorder in As/ASD, compared to in Sd.

## Methods

### *Inclusion and Exclusion Criteria*

Young adult participants, between 18 and 30 years of age diagnosed with either ICD-10 Asperger syndrome (As) (or ASD with normal IQ and without language difficulties) or ICD-10 Sd were recruited from specialized clinical units.<sup>7</sup> To ensure inclusion of 2 well-demarcated groups, participants currently diagnosed with both an As/ASD

diagnosis and a schizophrenia spectrum diagnosis were not eligible for inclusion. Due to the focus on demanding phenomenological interviews, the following inclusion and exclusion criteria were carefully chosen to ensure a well-functioning sample: All participants were to be in a stable phase, without concomitant psychotic symptoms (except for micro-psychotic episodes), substance abuse, or organic brain disorder. Further, all participants were to be fluent in Danish and have a reported cognitive function within the normal range (IQ > 70 for As/ASD participants) or a minimum of 9 completed years of school attendance (for Sd participants). School attendance was used as a proxy for a cognitive function within the normal range in Sd, where IQ is not routinely measured in diagnostic assessments. Lastly, accessible pre-study clinical reports were required for diagnostic re-assessments (see below). Informed consent was obtained upon inclusion, and forensic subjects were not included. The study was approved by the Danish National Board of Health (sagsnr. 3-3013-1564/1/) and the Danish Data Protection Agency (j.nr.: 2012-58-0004).

### *Inclusion of Well-Demarcated Groups*

To ensure further the inclusion of 2 well-demarcated groups, in spite of the unclear differential diagnostic demarcations between Sd and As/ASD,<sup>12</sup> we took the following precautions.

1. *Recruitment from specialized units:* Participants with As/ASD were recruited from Center for Autism, a Danish nonprofit organization with clinical services for people diagnosed with ASD. Participants with Sd were recruited from a community treatment program for first-episode psychotic illness and Sd (OPUS-teams)<sup>45</sup> in the Mental Health Services in the Capital Region of Denmark. Thus, all participants were recruited from specialized units with diagnostic expertise in their respective field.
2. *Expert diagnostic re-assessment:* To control for potential differences in diagnostic cultures in the respective specialized units,<sup>46</sup> diagnostic evaluations from pre-study clinical reports were reassessed for all participants, according to ICD-10 diagnostic criteria, by 2 independent experienced Senior Consultants who both are internationally renowned experts in their respective fields (ASD expert: LN, schizophrenia spectrum expert: PH). Only data from participants with a concordant inclusion diagnosis, ASD expert diagnosis, and schizophrenia spectrum expert diagnosis, were included in the statistical analyses.

### *Measures*

The absence/presence of self-disorder was explored in a semi-structured interview with 3 mutually intertwined parts.

1. A detailed social history: To provide trajectory and context, a detailed social history was obtained. Further, this important first part allowed for the interviews to be conducted conversationally, according to the principles of a phenomenological interview.<sup>42,47</sup>
2. EASE<sup>34</sup>: The EASE scale was used to explore the presence/absence of self-disorders.<sup>34</sup> EASE is observer-rated and consists of 57 main items, thematically divided into 5 domains: (1) cognition and stream of consciousness, (2) self-awareness and presence, (3) bodily experiences, (4) demarcation/transitivity, and (5) existential reorientation.<sup>34</sup> All items were rated on a 5-point Likert scale and, according to convention, subsequently dichotomized by coding “not present” and “questionably present” as “not present,” and “mild,” “moderate,” and “severe” as “present,” to yield comparable results with previous EASE research.<sup>37,39,48</sup> In accordance with the conceptual principles of the scale, the interviews were conducted in a semi-structured manner and a mutually interactive exploration<sup>34</sup> was encouraged throughout. Negative as well as positive answers were asked to be substantiated and contextualized, to capture the essential qualities of the participants’ experiences (for further detail, please refer to the EASE manual<sup>34</sup>). In previous studies, the scale has proven to have high internal consistency and good inter-rater reliability.<sup>49</sup>
3. Schedules for Clinical Assessment in Neuropsychiatry (SCAN).<sup>50</sup> A thorough lifetime ever psychopathological assessment was made with SCAN.<sup>50</sup> SCAN was developed with the purpose to assess, measure, and classify psychopathology and behavior in adults. The manual is to be used in a semi-structured manner, each symptom is to be assessed in its own right, and assessments are rated within designated time-periods (“present state” and “lifetime before” were used in the present study). Further, each symptom-section has a summary item, which assesses the overall impact on daily life by the symptoms described in that section. In the present article, this item (“interference with activities”) was used as a proxy for the overall clinical significance of the reported symptoms.

The participants were interviewed in 1 or several sessions (mean duration per participant = 4 h), and all but 4 interviews were video-taped. All interviews were conducted by the first author (M.N.), an MD in specialist psychiatric training with substantial clinical experience and formal certification for research purposes in the use of both SCAN and EASE. In accordance with the recommendations for the use of the EASE scale in research,<sup>48</sup> MN was further trained and supervised by PH, who is a coauthor of the original EASE publication. To ensure assessment reproducibility, inter-rater reliability of the EASE ratings was regularly tested, with Kappa values varying from 0.8 to 0.9 in Sd (unadjusted agreement >

89%) to 0.3–0.6 in As/ASD (unadjusted agreement > 84%). The lower Kappa values in As/ASD, despite the high unadjusted agreement, are consistent with the low frequency of self-disorder in As/ASD, as Kappa is known to be unreliable for rare findings (the Kappa paradox).<sup>51,52</sup>

### Data Processing and Statistical Analyses

*The EASE Scale.* There was one missing EASE item in one participant in the As/ASD group. To strain the hypothesis of a lower total score in the As/ASD group, this sole missing value was imputed as present. Students *T*-test was used to compare means of the EASE total score in the 2 groups, and Mann-Whitney *U* test was used in the 5 domains.<sup>39</sup> The distribution of EASE total scores were symmetrical in both groups (skewness between  $-0.5$  and  $0.5$ ) with a somewhat flat (platykurtic) distribution in the As/ASD group (kurtosis =  $-1.001$ ). Cronbach’s alpha was 0.93 for EASE total score and above 0.7 for EASE Domain 1, 2, and 5 (table 2), indicating good internal consistency, in accordance with previous findings.<sup>39</sup>

A linear regression model (GLM) was used to estimate the effect of diagnostic group on total EASE score, together with additional predictors with potential effects on diagnostic grouping and/or EASE total score (table 3). Residuals were normally distributed. All analyses were done in IBM SPSS statistics 22.0.

*SCAN-Rated Symptoms and Social History.* The SCAN-item “special needs school attendance” was collapsed into one categorical variable (no attendance/attendance). Ratings from each SCAN symptom-section were also dichotomized (not present/present). Descriptive statistics were illustrated as means and frequencies, and there were a few missing values in “mental problems before age 16,” “years of education,” and “special needs school attendance” (table 4). These missing values were imputed with mean imputation for use in the GLM (table 3). Data were normally distributed (judged by visual inspection and One-Sample Kolmogorov-Smirnov Test). Students *T*-test was used to compare means of continuous variables, and Fisher’s exact test was used to explore categorical variables.

## Results

### Sample

A total of 51 participants (As/ASD,  $n = 22$ ; Sd,  $n = 29$ ) were included in the statistical analyses. The full sample included 59 participants but, as anticipated, 6 participants were excluded from the statistical analyses in this study, due to a lack of consensus between the inclusion diagnosis and the expert diagnostic re-assessments (Sd,  $n = 2$ ; As/ASD,  $n = 4$ ). The remaining 2 were excluded due to undetected failure to meet the inclusion criteria on other accounts. The interviews did not identify further diagnostic discrepancies.

### The EASE Scale

Table 2 summarizes descriptive statistics and comparison of means for EASE total score and the 5 domain scores. We found a highly significant between-group difference in EASE total score ( $t = 12.73$ ,  $df = 44.95$ ,  $P = 0.7 \times 10^{-16}$ , 95% CI = 15.05 to 20.71), as well as in all 5 domains, with higher EASE total scores in the Sd group than in the As/ASD group. Further, as shown in table 3, an Sd diagnosis was the only predictor with a significant effect on EASE total score, when analyzed in a general linear model. The model had an  $R^2$  of .76.

### SCAN-Rated Symptoms and Social History

Clinically relevant aspects of the social history are summarized in table 5. There were no significant differences between the 2 groups with respect to age, “years of education,” or gender distribution. There were, however, significant differences in “special needs school attendance,” with higher rates of special needs schooling in As/ASD than in Sd, and near significant differences in “presence of mental problems before age 16,” albeit with high rates in both groups in the latter.

Table 5 summarizes the assessment of clinically significant present state symptomatology, based on the SCAN item “interference with activities.” We found significantly higher rates in the Sd group, compared to the As/ASD group in several symptom sections. This pattern was similar for both periods (“lifetime before” is not shown), although several of the assessments were far from zero in the As/ASD group. Notably, there were no between-group differences in the symptom sections “panic, anxiety, and phobias” and “negative symptoms,” which both

had a clinically significant impact on everyday activities for over two-thirds of the participants in both samples.

### Discussion

In accordance with our main hypothesis, we found highly significant differences in EASE total scores between the Sd and the As/ASD groups, with overall higher EASE total and domain scores in Sd than in As/ASD. An Sd diagnosis was also the only predictor with a significant effect on EASE total score, explaining 76% of the variance in the model. These findings further affirm the selective aggregation of self-disorder within the schizophrenia spectrum<sup>37</sup> and indicate a fundamental difference between the 2 spectra at the level of basic self. Our findings were comparable with previous EASE research, with Sd EASE total scores in the higher end of previously found schizophrenia spectrum scores (from 16.9 to 25.3) and As/ASD EASE total scores within mid-range of non-schizophrenia spectrum scores (from 4.1 to 11.5).<sup>37,40</sup> Furthermore, our findings are consistent with the above-described qualitative difference between Bleuler’s autism concept and the concepts later described by Kanner and Asperger.

The 2 groups were comparable in terms of age, gender, “years of education” and the presence of “mental problems before age 16.” However, the groups differed on “special needs school attendance,” with significantly higher rates in As/ASD than in Sd. This difference can be considered in line with standard assumptions on trajectorial differences between the 2 spectra, but it could also be (partly) due to structural factors in the educational system (instead of an absence of need for special

**Table 2.** EASE Total and Domain Scores in Asperger Syndrome/ASD vs Schizotypal Disorder<sup>34</sup>

	Number of Items	Cronbach’s Alpha <sup>a</sup>	Schizotypal Disorder ( $n = 29$ )		Asperger Syndrome/ASD ( $n = 22$ )		<i>P</i> -value
			Range	Mean $\pm$ SD (Median)	Range	Mean $\pm$ SD (Median)	
EASE total score	57	0.93	15–39	25.24 $\pm$ 6.42 (25)	2–14	7.36 $\pm$ 3.49 (7)	<b>&lt;.001</b> <sup>b,c</sup>
EASE Domain 1 Cognition and stream of consciousness	17	0.77	4–15	9.72 $\pm$ 2.63 (10)	1–8	4.36 $\pm$ 1.84 (4)	<b>&lt;.001</b> <sup>d</sup>
EASE Domain 2 Self-awareness and presence	18	0.86	5–14	9.03 $\pm$ 2.28 (9)	0–5	2.05 $\pm$ 1.50 (2)	<b>&lt;.001</b> <sup>d</sup>
EASE domain 3 Bodily experiences	9	0.66	0–5	2.24 $\pm$ 1.64 (2)	0–1	0.27 $\pm$ 0.46 (0)	<b>&lt;.001</b> <sup>d</sup>
EASE Domain 4 Demarcation/transitivity	5	0.29	0–3	0.97 $\pm$ 0.87 (1)	0–1	0.23 $\pm$ 0.43 (0)	<b>.001</b> <sup>d</sup>
EASE Domain 5 Existential reorientation	8	0.75	0–8	3.28 $\pm$ 1.87 (3)	0–2	0.45 $\pm$ 0.74 (0)	<b>&lt;.001</b> <sup>d</sup>

Note: EASE, examination of anomalous self-experiences; ASD, autism spectrum disorder.

<sup>a</sup>One item in domain 3 and one in domain 4 are not included in Cronbach’s alpha due to zero variance.

<sup>b</sup>Independent samples *t*-test.

<sup>c</sup>Equal variances not assumed.

<sup>d</sup>Mann-Whitney *U* test, significant differences in bold.

**Table 3.** General Linear Model: Effect of Predictors on EASE Total Score<sup>34</sup>

	<i>B</i>	95% CI	SE	<i>t</i>	<i>P</i> -value
Intercept	4.73	-8.98 to 18.43	6.78	0.70	.5
Expert panel diagnosis (Sd)	<b>25.00</b>	<b>11.95 to 38.06</b>	<b>6.45</b>	<b>3.88</b>	<b>&lt;.001</b>
Age	-0.13	-0.81 to 0.58	0.35	-0.36	.7
Gender (male)	1.32	-5.48 to 8.12	3.36	0.39	.7
Years of education	0.32	-0.54 to 1.19	0.43	0.76	.5
Special needs school attendance (no)	-9.01	-24.60 to 6.58	7.71	-1.17	.3
Mental problems before age 16 (no)	7.90	-12.47 to 28.26	10.07	0.78	.4

Note: EASE, examination of anomalous self-experiences; Sd, schizotypal disorder, reference categories. "Asperger syndrome/autism spectrum disorder" as reference category for "Expert panel diagnosis," "Female" as reference category for gender, "yes" as reference category for "special needs school attendance," "yes" as reference category for "mental problems before age 16," significant differences in bold.

**Table 4.** SCAN-Rated Sample Characteristics<sup>50</sup>

	Total Sample ( <i>n</i> = 51)	Schizotypal Disorder ( <i>n</i> = 29)	Asperger Syndrome/ ASD ( <i>n</i> = 22)	Statistics
Gender, male/total (%)	32/51 (63%)	15/29 (52%)	17/22 (77%)	<i>P</i> = .08 <sup>b</sup>
Age (y), mean ± SD	23.2 ± 3.18	23.2 ± 2.46	23.1 ± 3.99	<i>P</i> = .8 <sup>c,d</sup>
Mental problems before age 16, yes/total (valid %)	38/47 (81%)	19/27 (70%)	19/20 (95%)	<i>P</i> = .06 <sup>b</sup>
Years of education, mean ± SD (median)	13.7 ± 2.63 (13.0) <sup>a</sup>	13.7 ± 2.69 (13.0) <sup>a</sup>	13.7 ± 2.61 (13.0) <sup>a</sup>	<i>P</i> = 1 <sup>d</sup>
Special needs school attendance, yes/total (valid %)	21/48 (44%)	5/27 (19%)	16/21 (76%)	<b><i>P</i> &lt; .001<sup>b</sup></b>

Note: ASD, autism spectrum disorder; SCAN, Schedules for Clinical Assessment in Neuropsychiatry, Sd, schizotypal disorder.

<sup>a</sup>*n* = 48 in total sample, *n* = 29 in Sd and *n* = 19 in As/ASD in "years of education."

<sup>b</sup>Fishers exact test, Exact Sig. 2-sided.

<sup>c</sup>Equal variances not assumed.

<sup>d</sup>Students *T*-test, significant differences in bold.

needs schooling in the Sd group [or vice versa]). Either way, the difference did not significantly affect the EASE total score in the GLM.

A large proportion of both groups reported having had mental problems before the age of 16. This predictor was used, as it is a predefined SCAN-item<sup>50</sup> and, therefore, was systematically noted. Even though it rightfully can be argued that age 16 is a late time point to explore, these findings somewhat contradict a clear-cut separation of As/ASD and Sd by a difference in time-of-onset, which often is used clinically as a significant marker.<sup>1</sup> Rather, the participants in the Sd group reported that their anomalous subjective experiences had been present for a very long time, or for as long as they could remember (although age-of-debut was not systematically noted before age 16). This clinical impression is consistent with the notion of self-disorders as trait-like experiences, often present for a long time (years) before Sd or schizophrenia is diagnosed.<sup>53,54</sup>

The SCAN-rated clinically relevant psychopathology showed an anticipated overlap in the 2 groups. General sections like "worrying and tension," "affected thinking, concentration, energy and interests," and "depressed mood" were significantly higher in the Sd group, albeit far from zero in the As/ASD group. Notably, the sections "panic, anxiety and phobias" and "negative symptoms"

were equally high in both groups. These findings seem to be indicative of a predominance of symptoms rated in SCAN which can be understood within "normal psychology" in the As/ASD group (such as depressed mood, anxiety, and affected concentration), compared to the presence of more typical schizophrenia spectrum psychopathology (such as perceptual disorders and [as if] experiences of disorder of thought) as well as "normal psychological symptoms" in the Sd group. This overlap in both negative and "normal psychological" symptoms is in line with this article's main argument, ie, that the lack of focus on subjective experience in current diagnostic criteria (on which SCAN is based) precisely overlooks potential discriminative differences, as well as potentially different underlying factors (such as self-disorders), which leads to an apparent overlap in isolated symptoms on the (superficial) operational level,<sup>30,44</sup> in spite of a clinical, qualitative difference. Our findings are, therefore, also in line with the previously claimed caveats of the criteriological approach.<sup>23,31,46,55</sup> The significant between-group differences in the presence of "perceptual disorders" and "(as if) experiences of disorder of thought and replacement of will" were to be expected, due to the conceptually close relation between self-disorder and canonical schizophrenia spectrum psychopathology.<sup>37,41</sup> The

**Table 5.** Present State Symptoms Assessed With the SCAN-Item “Interference With Activities”<sup>50</sup>

Present State <sup>a</sup>	Schizotypal Disorder, Yes/Total (%)	Asperger Syndrome/ASD, Yes/Total (%)	P-value <sup>b</sup>
Worrying and tension	<b>28/29 (97%)</b>	<b>15/22 (68%)</b>	<b>P = .02</b>
Depressed mood	<b>20/29 (69%)</b>	<b>5/22 (23%)</b>	<b>P = .002</b>
Perceptual disorders (other than hallucinations)	<b>15/29 (52%)</b>	<b>0/22 (0%)</b>	<b>P &lt; .001</b>
(As if) experiences of disorder of thought and replacement of will <sup>c</sup>	<b>18/29 (62%)</b>	<b>0/22 (0%)</b>	<b>P &lt; .001</b>
Sleep disturbances	<b>19/29 (66%)</b>	<b>0/22 (0%)</b>	<b>P &lt; .001</b>
Affected thinking, concentration, energy and interests	<b>26/29 (90%)</b>	<b>8/22 (36%)</b>	<b>P &lt; .001</b>
Obsessional symptoms	<b>9/29 (31%)</b>	<b>1/22 (5%)</b>	<b>P = .03</b>
Panic, anxiety and phobias	24/29 (83%)	15/22 (68%)	P = .3
Expansive mood and ideation	3/29 (10%)	2/22 (9%)	P = 1
Hallucinations (including micro-hallucinations) <sup>c</sup>	2/29 (7%)	0/22 (0%)	P = .5
Delusions (including delusion-like ideas) <sup>c</sup>	4/29 (14%)	2/22 (9%)	P = .7
Eating disorders	1/29 (3%)	0/22 (0%)	P = 1
Negative symptoms	24/29 (83%)	18/22 (82%)	P = 1

Note: SCAN = Schedules for Clinical Assessment in Neuropsychiatry, ASD = autism spectrum disorder.

<sup>a</sup>The listed categories follow the symptom-chapters in SCAN.

<sup>b</sup>Fisher's exact test, Exact Sign. 2-sided.

<sup>c</sup>Specifications in parenthesis were added by the authors to specify what were included in the ratings in the present study, significant differences in bold.

difference in sleep disturbances was not fully explored or explained.

### Strengths and Limitations

The study's internal validity was potentially affected, due to the lack of diagnostic blinding of the assessments, which yields a risk of a systematic bias. However, as it has previously been argued,<sup>48</sup> this was a consequence of an explicit focus on both a thorough lifetime social and clinical exploration and the use of phenomenologically informed concepts and methods, as a true diagnostic blinding is virtually impossible when the requirements for a phenomenological interview are honored.<sup>48</sup> At this initial stage of the characterization of subjective experience and the basic self in As/ASD<sup>56,57</sup> the gain in construct validity by an in-depth clinical and phenomenological exploration is, in our opinion, an imperative priority.<sup>23,44,48</sup> Moreover, the high inter-rater reliability is in favor of reliable results. The already diagnosed, well-demarcated groups were an essential starting point for a “proof-of-concept” exploration of differences between the 2 spectra on a previously unexplored parameter. Further, to ensure optimal conditions for the phenomenologically informed interviews, a well-functioning sample was deliberately included. The latter was presumably further enhanced by selection bias, as the level of function most likely influences the possible participant's inclination to consent to this type of study. In summary, the already diagnosed, well-demarcated and well-functioning groups were chosen to support the conceptual and methodological nature of the interviews and can, therefore, be considered as methodological strengths. However, these same factors also limit the generalisability of the results, as does the cross-sectional study design.

### Conclusions and Perspectives

Despite the above-mentioned limitations, it seems fair to conclude that our findings indicate crucial differences between As/ASD and Sd at the level of the basic self. A clinical exploration of self-disorders; therefore; seems to be a valuable supplement in the demanding clinical differentiation between As/ASD and Sd in young adults. Furthermore, based on our initial findings, it is likely that a broader exploration of the being-in-the-world in ASD (ie, including clinical explorations of intersubjectivity and intentionality) would shed even further light on both similarities and differences between the 2 spectra.<sup>58,59</sup>

### Funding

This work was supported by Mental Health Centre Ballerup, a part of the Mental Health Services in the Capital Region of Denmark; Sofiefonden and the Capital Region of Denmark.

### Acknowledgments

Logistical support was given by Mental Health Centre Ballerup. Thank you to Senior Consultant Lennart Jansson for invaluable discussions on the wider topic of this article. P.H. has received honoraria from Lundbeck and Otsuka for lectures on psychopathology, no other coauthors declare any potential conflict of interest.

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