



## UvA-DARE (Digital Academic Repository)

### Sex bias in classifying borderline and narcissistic personality disorder

Braamhorst, W.; Lobbestael, J.; Emons, W.H.M.; Arntz, A.; Witteman, C.L.M.; Bekker, M.H.J.

**DOI**

[10.1097/NMD.0000000000000371](https://doi.org/10.1097/NMD.0000000000000371)

**Publication date**

2015

**Document Version**

Final published version

**Published in**

Journal of Nervous and Mental Disease

**License**

Article 25fa Dutch Copyright Act

[Link to publication](#)

**Citation for published version (APA):**

Braamhorst, W., Lobbestael, J., Emons, W. H. M., Arntz, A., Witteman, C. L. M., & Bekker, M. H. J. (2015). Sex bias in classifying borderline and narcissistic personality disorder. *Journal of Nervous and Mental Disease*, 203(10), 804-808. <https://doi.org/10.1097/NMD.0000000000000371>

**General rights**

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

**Disclaimer/Complaints regulations**

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

## Sex Bias in Classifying Borderline and Narcissistic Personality Disorder

Wouter Braamhorst, MSc,\* Jill Lobbestael, PhD,† Wilco H.M. Emons, PhD,‡ Arnoud Arntz, PhD,†§  
Cilia L.M. Witteman, PhD,|| and Marrie H.J. Bekker, PhD‡

**Abstract:** This study investigated sex bias in the classification of borderline and narcissistic personality disorders. A sample of psychologists in training for a post-master degree ( $N = 180$ ) read brief case histories (male or female version) and made DSM classification. To differentiate sex bias due to sex stereotyping or to base rate variation, we used different case histories, respectively: (1) non-ambiguous case histories with enough criteria of either borderline or narcissistic personality disorder to meet the threshold for classification, and (2) an ambiguous case with subthreshold features of both borderline and narcissistic personality disorder. Results showed significant differences due to sex of the patient in the ambiguous condition. Thus, when the diagnosis is not straightforward, as in the case of mixed subthreshold features, sex bias is present and is influenced by base-rate variation. These findings emphasize the need for caution in classifying personality disorders, especially borderline or narcissistic traits.

**Key Words:** Sex bias, borderline personality disorder, narcissistic personality disorder, gender roles

(*J Nerv Ment Dis* 2015;203: 804–808)

The American Psychiatric Association (2000) defined sex in the DSM-IV-TR as a person's biological status as male, female, or uncertain, whereas gender role stands for attitudes, patterns of behavior, and personality attributes defined by the culture in which the person lives as stereotypically "masculine" or "feminine" social roles. In the DSM-5, the term "gender differences" is used in favor of the term "sex differences" because, more commonly, the differences between men and women are a result of both biological sex and individual self-representation (American Psychiatric Association, 2013).

Differences between men and women have also been found in personality traits (Feingold, 1992). A meta-analysis of sex differences on standardized tests of personality indicated that men and women differed in five of the nine Costa-McCrae traits. This was constant across age, years of data collection, educational levels, and nations (Feingold, 1994).

Sex differences also exist in personality disorders (PDs). Dependent, histrionic, and borderline PDs occur more often in female patients whereas antisocial, narcissistic, and obsessive-compulsive PDs occur more often in male patients (Anderson et al., 2001). The DSM IV-TR makes no statement regarding sex bias among the PDs, but it does suggest that six disorders (antisocial, narcissistic, obsessive-compulsive, paranoid, schizotypal, schizoid) are more prevalent in men, and three others (borderline, histrionic, dependent) occur more in women (Jane et al., 2007). The diagnosis schizoid PD (SPD) is more common in men (Fulton and Winokur, 1993), whereas borderline PD (BPD) is

more often diagnosed in women than in men (De Moor et al., 2009). A revised study using the data of over 40,000 individuals of the National Epidemiological Survey on Alcohol and Related Conditions resulted in a different sex distribution. Men were more likely to meet diagnostic criteria for a PD overall, as well as for schizoid, antisocial, and narcissistic PDs, whereas women were more likely to receive a diagnosis of paranoid, borderline, histrionic, avoidant, dependent, and obsessive-compulsive PD (Trull et al., 2010). A meta-analysis of 75 studies showed that 75% of those diagnosed with BPD in clinical samples are women (Widiger and Trull, 1993). The avoidant PD (AVPD) is the only PD that, at least to our knowledge, occurs as frequently in men as in women.

Independent of actual differences, sex bias may occur when diagnosing a PD. Sex bias means that differences seen between the sexes are not due to actual differences but to error of the practitioners (López, 1989). In clinical practice, gender stereotyping by practitioners can lead to sex bias (López, 1989). According to the DSM-5 (American Psychiatric Association, 2013), clinicians must be cautious not to over-diagnose or underdiagnose certain personality disorders in women and men due to social stereotypes about typical gender roles and behaviors. In the study of Warner (1978), sex bias was shown for all professional disciplines, including psychiatrists, and for therapists of both sexes and all levels of experience.

Sex bias has been found in classification of antisocial PD (ASPD) (Ford and Widiger 1989; Warner, 1978) and histrionic PD (HPD) (Adler et al., 1990; Ford and Widiger 1989; Warner, 1978), BPD (Adler et al., 1990; Becker and Lamb, 1994), dependent PD (DPD) (Adler et al., 1990), and narcissistic PD (NPD) (Adler et al., 1990). All these studies used case histories with identical clinical features based on DSM-III criteria which only differed in sex of patient.

Ford and Widiger (1989) differentiated two underlying mechanisms of sex bias: gender stereotyping and actual variations in base rates of PDs. There is a connection between these two: misdiagnosing based on sex bias will in the end lead to base rate differences and the absence of base rate variation will reduce the chance of sex bias. Ford and Widiger (1989) studied sex bias in cases of HPD and ASPD using three brief case histories (antisocial, histrionic, and ambiguous). Each case involved either a male, a female, or a patient with unspecified sex. The ambiguous case history described a patient with features of both ASPD and HPD but not enough DSM-III criteria for either disorder. The non-ambiguous cases included enough features for meeting the DSM-III criteria for ASPD or HPD. The mixed case was included to differentiate between sex bias due to base rate effects and gender stereotyping. Gender stereotyping is the cause of sex bias when differences are seen in diagnosis in similar cases that only differ in sex and that have enough criteria of a specific PD (non-ambiguous case). But when sex bias appears in a case with mixed subthreshold criteria (ambiguous case), base rate differences are more likely to be responsible (Ford and Widiger, 1989). In their research, Ford and Widiger (1989) found sex bias in non-ambiguous cases and therefore concluded that sex bias does not occur due to base rates differences but rather due to gender stereotyping.

In several studies, the sex of the clinicians did not influence their diagnosis on axis II (Hamilton et al., 1986; Teri, 1982; Warner, 1978).

\*Mental Health Institute Reinier van Arkel, †s-Hertogenbosch; ‡Maastricht University; †Tilburg University; §University of Amsterdam; and ||Radboud University Nijmegen, The Netherlands.

Send reprint requests to Wouter Braamhorst, MSc, Reinier van Arkel, P.O. Box 70058, 5201 DZ 's-Hertogenbosch, The Netherlands. E-mail: w.braamhorst@reiniervanarkel.nl.  
Copyright © 2015 Wolters Kluwer Health, Inc. All rights reserved.  
ISSN: 0022-3018/15/20310-0804  
DOI: 10.1097/NMD.0000000000000371

## The Present Study: Aims and Hypotheses

The present study aimed to replicate the Ford and Widiger (1989) study but focused on BPD and NPD instead of HPD and ASPD. BPD and NPD are often seen in mental health care but have not been studied before using ambiguous and non-ambiguous case histories. An interesting question is whether an ambiguous case with only sub-threshold criteria of BPD and NPD is more or less sensitive to sex bias than the cases with enough criteria to meet the threshold for classifying either BPD or NPD.

Thus, we examined whether sex bias occurs in the classification of BPD, NPD, and a subthreshold condition. We also included a case with AVPD. Because AVPD has no base rate variation for either sex, this case history functioned as a control condition.

Our central hypothesis was that there would be a sex bias in the classification of BPD and NPD. We had four PD-specific hypotheses: (1) In two identical BPD case histories, only differing in sex, with enough criteria to diagnose a BPD, psychologists would diagnose BPD significantly more often when the patient was female than when the patient was male. (2) In two identical NPD case histories, only differing in sex, with enough criteria to diagnose a NPD, psychologists would diagnose NPD significantly more often in case of a male patient than when the patient was female. (3) When the case history had mixed criteria of both BPD and NPD but not enough criteria to diagnose either (*i.e.*, “ambiguous” case), we expected, based on the findings of Ford and Widiger (1989), that there would be no significant effect of the patient’s sex on the diagnosis. (4) In two identical case histories, only differing in sex, with enough criteria to diagnose AVPD, psychologists would diagnose AVPD as often when the patient was male as when the patient was female.

## METHODS

### Design

This study was an experiment with a 4 (PD-type: BPD, NPD, mixed NPD/BPD features, AVPD) × 2 (sex of the patient: male or female) design. Of each PD type, there were two identical versions except for the sex of the patient. The dependent variable was the DSM-IV-TR classification by the psychologists. Participants were randomly assigned to one of the four conditions outlined in Table 1 and rated two cases.

### Participants and Procedure

Participants in this study were 180 psychologists. Because not all participants rated all cases, each of the hypotheses concerning the relationship between sex of the patient and clinical assessment was tested using 90 observations. The sample size was based on an a priori power analysis for the chi-square test ( $df = 1$ ) to test differences between independent proportions. The power analyses showed that for  $N = 90$ , the power to detect proportion differences of 0.30 or higher, found by Ford and Widiger (1989), with a two-tailed alpha of 0.05 exceeds 0.80.

Participants, all psychologists, attended a course in the mental health field at a post-doctoral training institute for psychologists in the South of the Netherlands, RINO Eindhoven. A few teachers were also included. They all worked in the mental health sector. Participants

were predominantly women (85.6%), as is representative for the population of psychologists that work in Dutch mental health care. Their age varied between 24 and 62 years (mean 33.45, SD 9.12). Participants differed widely in years of experience, from 0 years (one participant) to 35 years (mean 7.66, SD 6.95).

Participants were verbally informed about the purpose of the study at the start of their course and were invited for participation. They were told that the research concerned assessment of DSM diagnoses. Consenting participants read and classified two case histories during lunch break. Participants read the case histories and assessed them individually on all five DSM-IV-TR axes on a standard form. This form contained all the DSM diagnoses and participants could tick the appropriate box. With the PDs, they could choose between “full diagnosis” (*i.e.*, enough criteria to meet the threshold) and “Traits of” when there were in their opinion a few criteria present but not enough for classifying a PD (*i.e.*, subthreshold cases). This distinction could be made by ticking the appropriate box. It took on average half an hour to complete the task. Each group received a box of chocolates for their cooperation. When all data were collected, the participants were fully debriefed via the intranet site of the training institute.

### Materials

The brief case histories were written by the first and fifth author with approval of the other authors. The case histories fitted on one page (A4), contained DSM criteria of the specific personality disorders, and were inspired by real patients. They all had in common that there was a stable pattern of complaints beginning in early adulthood and presented in a variety of contexts.

The BPD case needed five of the nine criteria to meet the threshold for classification. We used the third, fifth, sixth, seventh, and eighth criterion, being, respectively, identity disturbance: marked and persistently unstable self-image or sense of self; recurrent suicidal behavior, gestures, or threats, or self-mutilating behavior; affective instability due to a marked reactivity of mood (*e.g.*, intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days); chronic feelings of emptiness; inappropriate, intense anger or difficulty controlling anger (*e.g.*, frequent displays of temper, constant anger, recurrent physical fights).

The NPD case also needed five of the nine criteria to meet the threshold for classification. This case consisted of the first, fourth, fifth, eighth, and ninth criterion, namely, has a grandiose sense of self-importance (*e.g.*, exaggerates achievements and talents, expects to be recognized as superior without commensurate achievements); requires excessive admiration; has a sense of entitlement (*i.e.*, unreasonable expectations of especially favorable treatment or automatic compliance with his or her expectations); is often envious of others or believes that others are envious of him or her; shows arrogant, haughty behaviors or attitudes.

The ambiguous case had mixed subthreshold criteria, three of BPD and three of NPD. BPD criteria in this mixed case were the third, sixth, and eighth (see above); NPD criteria were the fifth, eighth, and ninth (also see above).

The last AVPD case needed four of the seven criteria to meet the threshold for classification. This case contained the first, third, fourth, and sixth criterion. These were as follows: avoids occupational activities that involve significant interpersonal contact because of fears of criticism, disapproval, or rejection; shows restraint within intimate relationships because of the fear of being shamed or ridiculed; is preoccupied with being criticized or rejected in social situations; and views self as socially inept, personally unappealing, or inferior to others.

To assure that the case histories resembled realistic patient descriptions with recognizable criteria of the specific PDs, a pilot study was administered in which a team of professionals read the case histories and gave their feedback. They were asked which disorders they

**TABLE 1.** The Four Conditions Used in This Study ( $N = 180$ )

Group	Case 1	Case 2
Group A ( $N = 45$ )	BPD female	NPD male
Group B ( $N = 45$ )	BPD male	NPD female
Group C ( $N = 45$ )	BPD/NPD male	AVPD female
Group D ( $N = 45$ )	BPD/NPD female	AVPD male

would classify based on the case histories and whether the histories were a good representation of mental health patients with a PD. The case histories can be obtained from the first author upon request.

## Statistical Analyses

The data were analyzed using IBM SPSS Statistics 19.0. We used separate chi-square tests to examine whether there was an association between the sex of patient in the case history and the assessment of the DSM-IV-TR PD classification given by the participants. As secondary analysis, we added the PD-traits response option to the full PD option and analyzed this combined classification, again with chi-square tests.

## RESULTS

### Descriptive Results

Across all case histories, 57.78% of the participants ( $N = 104$ ) found enough criteria present to classify a diagnosis on axis I. This means that the other 42.22% ( $N = 76$ ) of the participants judged that an axis I diagnosis could not be justified based upon the information in the case history. With respect to axis II, 80% of the participants ( $N = 144$ ) classified a personality disorder or features of a personality disorder. On axis III, participants seldom found that enough criteria were present to make a DSM classification; only 3.33% ( $N = 6$ ) did. The opposite is the case with axis IV, where 91.67% of the participants ( $N = 165$ ) made a classification.

### Sex Bias

In the BPD case with enough criteria to diagnose this PD, 51.11% of the participants ( $N = 23$ ) detected the male case correctly, and the same percentage classified the female case correctly, which was obviously not significantly different,  $\chi^2(1; N = 90) = 0.000, p = 1.000$ .

When we included the BPD-traits response option, percentages of detection for the male case were 75.56% ( $N = 34$ ) and for the female case 82.22% ( $N = 37$ ). These percentages were not significantly different,  $\chi^2(1; N = 90) = 0.600, p = 0.438, \phi = -0.082$ .

In the case with enough NPD criteria to diagnose this PD, the male case received 42.22% ( $N = 19$ ) correct classification, whereas the female case got 40% ( $N = 18$ ) detection, not significantly different,  $\chi^2(1; N = 90) = 0.046, p = 0.830$ . Including the NPD-traits option resulted in 88.89% ( $N = 40$ ) detection for the male case and 77.78% ( $N = 35$ ) for the female case, also not significantly different,  $\chi^2(1; N = 90) = 2.000, p = 0.157, \phi = -0.149$ .

In the AVPD case with enough criteria to diagnose this PD, the male case got 22.22% ( $N = 10$ ) correct classification, whereas the female case received 35.56% ( $N = 16$ ) detection, not significantly different,  $\chi^2(1; N = 90) = 1.947, p = 0.163, \phi = -0.147$ . Including AVPD traits resulted in a classification of 57.78% ( $N = 26$ ) for the male case and 62.22% for the female case ( $N = 28$ ), not significantly different,  $\chi^2(1; N = 90) = 0.185, p = 0.667, \phi = -0.045$ .

However, for the ambiguous case with as many NPD as BPD criteria but not enough to diagnose either of these PDs, we did find a

**TABLE 2.** PD Diagnoses in the Ambiguous Case History (Male or Female) in Group C and D (Case 1) ( $N = 90$ )

Axis II Diagnosis	Male Case History ( $N = 45$ )	Female Case History ( $N = 45$ )
No axis II diagnosis	36 (80%)	28 (62.22%)
Only BPD	1 (2.22%)	12 (26.67%)
Only NPD	5 (11.11%)	5 (11.11%)
Both BPD and NPD	3 (6.67%)	0 (0%)

**TABLE 3.** PD Diagnoses Including Traits in the Ambiguous Case History (Male or Female) in Group C and D (Case 1) ( $N = 90$ )

Axis II Diagnosis	Male Case History ( $N = 45$ )	Female Case History ( $N = 45$ )
No axis II diagnosis	8 (17.78%)	9 (20%)
Only BPD including traits	3 (6.67%)	14 (31.11%)
Only NPD including traits	13 (28.89%)	6 (13.33%)
Both BPD and NPD including traits	21 (46.67%)	16 (35.56%)

significant difference in axis II diagnosis between the male and the female case,  $\chi^2(1; N = 90) = 13.308, p = 0.004, \phi = 0.385$ . In the answers of the participants in this mixed case, we first looked at four classification options: (1) classifying no axis II diagnosis, (2) only classifying BPD, (3) only classifying NPD, and (4) classifying both NPD and BPD. See Table 2 for percentages of these diagnoses per male or female case history in the ambiguous condition. Remarkable is that BPD diagnoses (without NPD) were made more often in the female case (26.67%,  $N = 12$ ) than in the male case (2.22%,  $N = 1$ ). With regard to NPD in this condition, the diagnosis was made equally often in the male and female case (11.11%,  $N = 5$ ). If we compare these findings, we see that BPD (2.22%,  $N = 1$ ) is less classified than NPD (11.11%,  $N = 5$ ) in the male case and vice versa for the female case where NPD (11.11%,  $N = 5$ ) is less classified than BPD (26.67%,  $N = 12$ ). This is an important effect of sex in both diagnoses. However, the dispersal of these results is not distributed evenly. Many participants did not make a diagnosis in their classification in this condition. In the male case, 80% ( $N = 36$ ) of the participants did not classify a diagnosis. In the female case, 62.22% ( $N = 28$ ) did not classify a psychiatric diagnosis. Therefore, we should be careful to assign significant importance to sex bias in this condition.

Analyzing the combined full PD and trait options again resulted in a significant difference in diagnosis for the sexes,  $\chi^2(1; N = 90) = 10.431, p = 0.015, \phi = 0.340$ . Including traits of BPD and/or traits of NPD resulted in a more even distribution of the findings (see Table 3). Only in 17.78% ( $N = 8$ ) no classification on axis II was made in the male case, comparable with the 20% ( $N = 9$ ) in the female case. The effect of sex is stronger now because in the male case 28.89% ( $N = 13$ ) of the time NPD or NPD traits were classified against 6.67% ( $N = 3$ ) BPD or BPD traits, whereas in the female case 13.33% ( $N = 6$ ) of the time NPD or NPD traits were classified versus 31.11% ( $N = 14$ ) BPD or BPD traits.

## DISCUSSION

The aim of the present study was to investigate if and to what extent sex bias plays a role during professional assessments of patients with a DSM classification. Our central hypothesis was that there would be a sex bias in the classification of BPD and NPD. This was partially confirmed; we did find a sex bias in the classification of cases with combined BPD and NPD subthreshold criteria, which means that sex of the patient in the case history influenced the judgment of the professional in classifying a DSM diagnosis.

However, we did not detect any sex effects in the NPD or BPD cases with enough criteria to meet the threshold. Participants detected BPD in the male case as often as in the female case. Including the response "traits of BPD" did not result in a significant difference between the male and female condition. The same nonsignificant results were found for the non-ambiguous NPD cases and the non-ambiguous AVPD cases. The absence of sex bias in the non-ambiguous AVPD case was as hypothesized. The findings in the other two non-ambiguous cases of BPD or NPD contradicted our hypotheses for PD classifications,

as no sex bias was found. This is in contrast to the findings by Ford and Widiger (1989), whose ambiguous case did not show signs of sex bias whereas the case histories with enough criteria for a specific PD—in their study ASPD and HPD—did reveal sex bias. The conclusion of Ford and Widiger (1989) was therefore that sex bias was not due to actual base rate variation but rather due to processes like gender stereotyping. With respect to the underlying mechanisms of sex bias, we conclude differently. The sex bias we observed is probably more due to base rate effects than to gender stereotyping because specifically our ambiguous case showed sex bias.

It is difficult to explain why two studies with a similar design found such different results, though at least four factors could be considered: (1) historical differences (in the late eighties there might still have been more gender bias than nowadays), (2) differences between the participants (American versus Dutch), (3) differences in administration (mailing of questionnaires versus groupwise), and (4) differences in the PD diagnoses used in the cases—it might be that ASPD and HPD have stronger sex biases associated with them than BPD and NPD.

Perhaps the most important conclusion of our study is that sex effects in classifying BPD or NPD predominantly rest on variation in disorder base rates for men and women, but that this effect only manifests itself in ambiguous situations. This teaches us to be cautious when determining a PD classification, particularly when there is ambiguity. There seems to be a vicious circle: sex bias leads to base rate variation between men and women, and base rate variation leads, as we have seen, to sex bias. Maximum objectivity is needed to diminish sex bias in classifying personality disorders as much as possible. This could partially be obtained by using semi-structured interviews in classifying a PD.

This research mainly focused on NPD and BPD, but with respect to AVPD, a few remarks have to be made. AVPD seemed to be gender neutral in our study, as its absence in literature about sex differences suggested as well. With respect to our case histories with criteria of a single PD, AVPD was detected least of the three cases. Note that in the male case, fewer than a quarter of the assessors detected the diagnosis correctly (which was not significantly different with the female case). We can speculate that many assessors see an AVPD as a style of coping rather than a distinct PD and/or avoidance as less pathological than cluster B characteristics. These remain speculations.

There are several limitations of the present study that we like to discuss. Data collection for example happened at a post-master educational setting, which possibly does not resemble everyday practice. Maybe the participants could pay more attention to making their DSM diagnoses in the current research setting than in everyday practice. There is often little time for a meeting and lots of patients who need to be discussed in mental health institutes. With this pressure of production and time, it is likely that a stronger sex effect would also occur in the non-ambiguous cases.

Furthermore, the professionals knew they participated in a scientific study. This knowledge could have facilitated extra attention to the task, resulting in a decreased chance of sex biases.

Another limitation has to do with our material. The non-ambiguous case histories we used might not have been realistic because such “pure” cases are rare in clinical practice. Most real patients do not solely display criteria from one axis II diagnosis. Epidemiological and clinical studies have shown extremely high rates of comorbidities among the disorders (Widiger and Trull, 2007). Thus, these comorbid cases are more realistic and might be one of the reasons for the massive use of the *not otherwise specified* (NOS) categories in PDs (Verheul and Widiger, 2004). An ambiguous case could therefore be more representative for patients in mental health. Thus, the finding that sex bias was only manifest under ambiguous conditions in our study is not reassuring, as ambiguity is usually the rule in clinical practice. However, we used only an ambiguous case with subthreshold

criteria of two PDs. Strictly speaking, this does not allow us to say much about ambiguous cases with mixed criteria of PDs which reach the threshold for classification. It seems plausible that sub-threshold findings can be generalized to threshold cases, but this remains speculation.

Furthermore, we used the DSM-IV-TR classification system just before DSM-5 was launched. There turned out to be no changes with respect to PDs in DSM-5 compared to DSM-IV-TR (American Psychiatric Association, 2013). The future will tell us whether a change to a dimensional system will be made, as has already been proposed for DSM-5. Whether or not a dimensional system differs from a categorical system in sex bias is an important topic for future empirical research.

In the present study, characteristics of the participants could have been added as covariates. For example, we could have included age, sex, years of experience, and type of post-doctoral psychology or psychotherapy training. Here, we encountered some practical restrictions. To include these variables, it would take many more participants than included in this study to reach the same level of power needed to test our hypotheses. We recommend including these variables in future research.

We focused on sex bias in psychologists, but research into sex bias is also relevant in other disciplines in the mental health field. Another recommendation for future research is to vary subthreshold and threshold cases on the one hand and ambiguous and non-ambiguous cases on the other hand, creating four conditions. Within these conditions, the number of criteria could be varied as well, which allows investigating how many criteria of a PD are needed to diminish the effects of sex bias.

We conclude that a sex bias plays a role in the classification of NPD and BPD when there is ambiguity. Whether this is only manifest in mixed subthreshold cases or also in other complex mixed cases is a topic for further research. Our findings emphasize the need for caution for sex-related effects in the classification of personality disorders, especially with BPD and NPD. Being as objective as possible, for example by using semi-structured clinical interviews, might help to reduce this bias.

## DISCLOSURES

*The authors declare no conflict of interest.*

## REFERENCES

- Adler DA, Drake RE, Teague GB (1990) Clinicians' practices in personality assessment: Does gender influence the use of DSM-III axis II? *Compr Psychiatry*. 31: 125–133.
- American Psychiatric Association (2000) *Diagnostic and statistical manual of mental disorders* (4th ed, text rev). Washington DC: Author.
- American Psychiatric Association (2013) *Diagnostic and statistical manual of mental disorders* (5th ed). Washington DC: Author.
- Anderson KG, Sankis LM, Widiger TA (2001) Pathology versus statistical infrequency: Potential sources of gender bias in personality disorder criteria. *J Nerv Ment Dis*. 189:661–668.
- Becker D, Lamb S (1994) Sex bias in the diagnosis of borderline personality disorder and posttraumatic stress disorder. *Prof Psychol: Res Pr*. 25:55–61.
- De Moor MHM, Distel MA, Trull TJ, Boomsma DI (2009) Assessment of borderline personality features in population samples: Is the Personality Assessment Inventory-Borderline Features scale measurement invariant across sex and age? *Psychol Assess*. 21:125–130.
- Feingold A (1992) Sex differences in variability in intellectual abilities: A new look at an old controversy. *Rev Educ Res*. 62:61–84.
- Feingold A (1994) Gender differences in personality: A meta-analysis. *Psychol Bull*. 116:429–456.

- Ford MR, Widiger TA (1989) Sex bias in the diagnosis of histrionic and antisocial personality disorders. *J Consult Clin Psychol*. 57:301–305.
- Fulton M, Winokur G (1993) A comparative study of paranoid and schizoid personality disorders. *Am J Psychiatry*. 150:1363–1367.
- Hamilton S, Rothbart M, Dawes RM (1986) Sex bias, diagnosis and DSM-III. *Sex Roles*. 15:269–274.
- Jane JS, Oltmans TF, South SC, Turkheimer E (2007) Gender bias in diagnostic criteria for personality disorders: An item response theory analysis. *J Abnorm Psychol*. 116:166–175.
- López SR (1989) Patient variable biases in clinical judgment: Conceptual overview and methodological considerations. *Psychol Bull*. 106:184–203.
- Teri L (1982) Effects of sex and sex-role style on clinical judgment. *Sex Roles*. 8:639–649.
- Trull TJ, Jahng S, Tomko RL, Wood PK, Sher KJ (2010) Revised NESARC personality disorder diagnosis: Gender, prevalence, and comorbidity with substance dependence disorders. *J Pers Disord*. 24:412–426.
- Verheul R, Widiger TA (2004) A meta-analysis of the prevalence and usage of the personality disorder not otherwise specified (PDNOS) diagnosis. *J Pers Disord*. 18:309–319.
- Warner R (1978) The diagnosis of antisocial and hysterical personality disorders. An example of sex bias. *J Nerv Ment Dis*. 166:839–845.
- Widiger TA, Trull TJ (1993) Borderline and narcissistic personality disorders. In Sutker P, Adam H, eds. *Comprehensive textbook of psychopathology* (2nd ed, pp 371–394). New York: Plenum Press.
- Widiger TA, Trull TJ (2007) Plate tectonics in the classification of personality disorder: Shifting to a dimensional model. *Am Psychol*. 62:71–83.