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PERSONALITY DISORDERS (C SCHMAHL, SECTION EDITOR)

Narcissistic Personality Disorder: An Integrative Review of Recent Empirical Data and Current Definitions

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Abstract Although concepts of pathological narcissism are as old as psychology and psychiatry itself, only a small number of clinical studies are based on the criteria for narcissistic personality disorder (NPD), as defined in the Diagnostic and Statistical Manuals of Mental Disorders (DSM). As a result, NPD appears to be one of the most controversially discussed nosological entities in psychiatry. Whereas the majority of empirical studies used self or other ratings of NPD criteria to address issues of reliability and validity of the diagnostic category (i.e., internal consistency, factor structure, discriminant validity), only recent research has applied experimental designs to investigate specific features of NPD (e.g., self-esteem, empathy, shame). The aim of this review is to summarize available empirical data on NPD and relate these findings to current definitions of NPD (according to the DSM-5, [1]). In order to do so, this review follows the five steps to establishing diagnostic validity proposed by Robins and Guze [2], i.e., (1) clinical description, (2) laboratory studies, (3) delimitation from other disorders, (4) family studies, and (5) follow up studies. Finally, this review suggests pathways for future research that may assist further nosological evaluation of NPD and contribute to the overall goal, the improvement of treatment for patients.

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Introduction

Most empirical studies on narcissistic personality disorder (NPD) psychometrically evaluated the diagnostic criteria as defined in editions of the Diagnostic and Statistical Manuals of Mental Disorders (DSM). As a result, controversial discussions on the validity of the NPD construct in preparation for the DSM-5 [1] lacked a key component: laboratory studies. Only very recent research has begun to bridge that gap by applying experimental designs to investigate specific features of NPD (e.g., self-esteem, empathy, shame). The aim of this review is to incorporate those recent findings into the discussion on the validity of NPD. In order to do so, this review follows the five steps for establishing diagnostic validity proposed by Robins and Guze [2], i.e., (1) clinical description, (2) laboratory studies, (3) delimitation from other disorders, (4) family studies, and (5) follow up studies. Furthermore, empirical data are evaluated in relation to the two current definitions of NPD in the DSM-5 (in Sects. II and III). Finally, directions for future research are proposed and implications for treatment are discussed.

Clinical Descriptions

Development of NPD as DSM Category

Pathological narcissism was first described by Ellis [3] and further elaborated by psychoanalysts (e.g., [4-6]). Despite its longstanding tradition in psychiatric literature, NPD was not introduced as a psychiatric disorder until the 3rd edition of the DSM in 1980 [7]. Diagnostic criteria in DSM-III were based

on psychoanalytic literature and expert consensus without prior empirical evaluation [8]. In DSM-III-R [9], the polythetic criteria set replaced the mixed polythetic-monothethic model applied in DSM-III. Throughout the revision of NPD criteria for DSM-IV [10], overt grandiose themes were emphasized (see [11]). Additionally, clinically significant distress or impairment in functioning caused by personality disorder symptoms was added as one of the general personality disorder criteria in DSM-IV. The current DSM-5 [1] retained the DSM-IV general personality disorder criteria and the criteria set for NPD in Sect. II. Moreover, DSM-5 proposed an alternative research model for personality disorders in Sect. III. According to Sect. III in DSM-5, NPD is characterized by specific impairments in personality functioning (with characteristic difficulties in areas of identity, self-direction, empathy and intimacy) and pathological personality traits (i.e., grandiosity and attention seeking). Although the new definition of NPD in Sect. III of the DSM-5 is well grounded in clinical descriptive literature of pathological narcissism, it is not backed up by empirical research.

Internal Consistency

A number of DSM-based studies assessed internal consistency of the NPD criteria set. In summary, DSM-III and DSM-III-R NPD criteria showed rather low to moderate internal consistency (Cronbach's alpha from .38 to .69; see [11]), whereas the DSM-IV NPD criteria set reached higher internal consistency with acceptable values (Cronbach's alpha from .63 to .88; see [11, 12•]). In sum, NPD (DSM-IV and DSM-5, Sect. II) is characterized by acceptable internal consistency that is comparable to other personality disorders.

Typological and Dimensional Structure

Further studies provide conflicting evidence for the factorial structure of NPD. Different studies found evidence for a *one-factor* structure [12•, 13, 14], *two-factor* structure [15] or *three-factor* structure [16] for DSM-IV NPD criteria.

Up to now, only one study assessed the factor structure of a broader spectrum of symptoms based on concepts of pathological narcissism [17]. This study found a more differentiated three-factor structure of NPD (labeled grandiose/malignant, fragile, and high-functioning/exhibitionistic). The authors argue that DSM-IV criteria for NPD are too narrow and underemphasize central aspects of the construct.

Furthermore, one study used taxometric analyses to analyze whether the latent distribution of the DSM-IV NPD features is discrete or dimensional [15]. Results revealed a latent discontinuity in the distribution of the DSM-IV NPD criteria, indicating a typological model of NPD, rather than a dimensional construct [15].

In summary, current analysis of the factor structure of DSM-IV NPD are not coherent, but suggest that the criteria set that has also been adopted in DSM-5 Sect. II only covers part of the clinical concept of pathological narcissism.

Prevalence Rates

Recent studies provide varying prevalence rates of NPD, mainly depending on sample selection. Prevalence of NPD according to DSM-III-R or DSM-IV ranges between 0.0 % and 1.0 % in population-based samples [18-24]. Higher prevalence rates have been reported in psychiatric populations, ranging from 0.8 to 5.8 %, with higher rates in outpatient settings relative to inpatient or day clinic facilities [12•, 25-27].

In addition to sample selection, race, ethnicity, and gender seem to account for variability in prevalence rates. First, NPD rates are higher among African-American men and women and Hispanic women compared to Asian or Pacific Islanders, Native American and Caucasians in a U.S. population-based sample [22]. Second, most (but not all) clinical studies found higher prevalence rates among males e.g., [12•, 15, 28]. This finding is consistent with population-based data reporting higher rates of NPD in men (i.e., 1.2 %) than in women (i.e., 0.7 %) [24].

Laboratory Studies

Self-esteem

Early psychoanalytic theories developed a self-regulatory model of pathological narcissism that has been further elaborated by theoreticians from social psychology e.g., [29], clinical psychology and psychiatry e.g., [30, 31]. The NPD description in Sect. III of the DSM-5 acknowledges this model and proposes, for example, that NPD patients rely excessively upon others for self-esteem regulation and emotion regulation mirrors fluctuations in self-esteem [1].

Based on the assumptions of the self-regulatory model, the frequently cited "mask model" [32] proposes that trait narcissism is characterized by fragile self-esteem. Fragile self-esteem is characterized by low implicit (i.e., automatic, not necessarily conscious, overlearned) self-esteem and grandiose high explicit (i.e., reflected, conscious) self-esteem compared to nonclinical controls. In order to prevent low implicit self-esteem from becoming more explicit, narcissistic patients may engage in defensive behavior.

Until now, only a few studies analyzed self-esteem in NPD patients. Pincus et al. [33] found that pathological narcissism (assessed with the Pathological Narcissism Inventory, PNI) negatively correlated with explicit self-esteem in patients with mixed psychiatric disorders. Vater et al. [34••] found that NPD

patients scored lower on explicit self-esteem than nonclinical controls, but higher than patients with borderline personality disorder. No significant differences emerged on implicit self-esteem compared to nonclinical controls. Thus, this study contradicts assumptions of unconscious feelings of insecurity in patients with NPD. However, those studies did not analyze short-term or long-term fluctuations in self-esteem that are described in Sect. III of the DSM-5. Thus, future studies should analyze fluctuations in self-esteem with regard to the proposed self-regulatory deficit in NPD.

Empathy

Lack of empathy is characteristic of NPD in the DSM-5 (Sect. II as a diagnostic criterion, Sect. III as a specific impairment in personality functioning). Ritter et al. [35••] compared NPD patients (N=57), non-clinical controls (N=53), and patients with borderline personality disorder (N=27). This study was based on the multidimensional model of empathy [36, 37] and distinguished between cognitive and emotional empathy. Cognitive empathy [38] refers to the ability to take another person's perspective, and overlaps with the constructs of "Theory of Mind" [39] and "mentalizing" [40]. Emotional empathy [41, 42] refers to the emotional response to another person's emotional state. Both facets of empathy were assessed with the Interpersonal Reactivity Index (IRI, self-report questionnaire) [36], the Multifaceted Empathy Test (MET) [43], and the Movie for the Assessment of Social Cognition (MASC) [44]. Although self-report data ('empathic concern' - subscale of the IRI) suggested no group differences, the more ecologically valid MET task revealed that NPD patients had low emotional empathy scores relative to both control groups. With regard to cognitive empathy, self-report data ('perspective taking' - subscale of the IRI) revealed significant impairment in patients with NPD. On the more ecologically valid MET task, no deficit in cognitive empathy in NPD patients could be detected. Although the assessment of cognitive empathy by means of the sensitive MASC task revealed impairments in NPD patients, those impairments could be explained by cases with comorbid borderline personality disorder. Furthermore, in the NPD sample, the self-report measure of cognitive empathy (IRI subscale 'perspective taking') was negatively correlated with the criterion 'lack of empathy' as measured by the SCID-II interview, indicating that the DSM-IV mainly assesses the subjectively perceived deficit in cognitive empathy. Additionally, the wording for the 'perspective taking' subscale items of the IRI and the SCID-II 'lack of empathy' item seem to indicate that the deficit in cognitive empathy is best characterized as motivational. However, these data suggest that "lack of empathy" in NPD goes beyond the motivational deficit described in Sect. II in DSM-5. With regard to Sect. III of the DSM-5, these data contradict the assumption that NPD patients are not able to recognize the feelings and needs of others. Instead, the ability to identify feelings, thoughts and intentions of others (i.e., cognitive empathy) is preserved, whereas the emotional response to another person's emotional state (i.e., emotional empathy) is restricted.

Notably, a study by Marissen et al. [45••] was unable to replicate the findings on self-reported empathy (IRI) in outpatients with NPD (N=20) compared to outpatients with cluster C personality disorders (N=20) and nonclinical controls (N=20). Differences between the two studies might account for this contradiction, such as a lower sample size, higher mean age, primarily outpatient status, low comorbidity, or inclusion of only males in the Marissen et al. study. In addition, the authors performed a facial emotion recognition task with pictures from the facial affect series including fear, anger, disgust, happiness, sadness, and neutral expressions. Results revealed that NPD patients were less accurate in facial emotion recognition than both control groups. Analyses of facial emotion expression for individual emotions revealed that differences were due to impaired recognition of fear and disgust in NPD. With regard to Sect. II of the DSM-5, these data suggest that NPD patients have impaired ability to recognize specific emotions (fear and disgust) in others. Thus, these results partially contradict the results of Ritter et al. [35••] and might be explained by the emotional specificity (i.e., only fear and disgust) of this finding, which was not analyzed in the Ritter et al. study. In sum, the NPD criterion lack of empathy which is defined differently in Sects. II and III of the DSM-5 requires further empirical exploration.

Empathy-related Structural Brain Differences

Following the behavioral finding of impaired emotional empathy in NPD [35••], Schulze et al. [46••] conducted a structural brain imaging study with 17 patients with NPD (DSM-IV) and 17 nonclinical controls. Based on a meta-analysis of studies of empathy in nonclinical samples [47], functional brain imaging data in nonclinical individuals with narcissistic traits [48], and structural brain data from adolescents with conduct disorder [49], the anterior insular cortex was identified as crucial for emotional empathy and defined as a region of interest. Results revealed smaller gray matter (GM) volume in the left anterior insula in patients with NPD than non-clinical controls. Moreover, complementary whole-brain analyses yielded smaller GM volume in additional fronto-paralimbic brain regions comprising the rostral and median cingulate cortex, as well as the dorsolateral and medial parts of the prefrontal cortex [46••]. In sum, the results of Schulze et al. [46••] argue for specific structural alterations in empathy-related brain regions in NPD patients corresponding to deficits in emotional empathy ability as defined in DSM-5 (Sect. III).

Shame

Following psychoanalytic theories, marked feelings of shame was included as a feature of NPD in the DSM-III. Due to revisions in the DSM-IV, feelings of shame were removed from the main criteria set and listed as one of associated features of NPD. However, clinical conceptualizations of pathological narcissism continued to consider shame as a prominent feature of narcissistic vulnerability e.g., [30, 31, 50]. According to these theories, individuals with pathological narcissism try to avoid or reduce intense feelings of shame and engage in a variety of typical intrapersonal and interpersonal strategies (e.g., aggression, fantasies, perfectionism, diverting attention away from oneself, e.g., [51•]). Furthermore, theoretical conceptualizations assume that NPD patients specifically exhibit high levels of implicit shame compared to nonclinical controls, whereas increased explicit shame might be a more general feature of psychopathology e.g., [52] for discussion see [53••].

Previous research using a small mixed clinical sample (N= 26, 24 % NPD) showed a moderately positive correlation between explicit shame, measured with the Experience of Shame Scale [54], and pathological narcissism, measured with the Pathological Narcissism Inventory (PNI, [33]). Another more recent study by Ritter et al. [53••] examined shame in NPD patients without comorbid borderline personality disorder (N=28), patients with borderline personality disorder without comorbid NPD (N=31), and non-clinical controls (N=34). Explicit shame was assessed with self-report inventories (Experiential Shame Scale, ESS, [55]; Test of Self-Conscious Affects version 3, TOSCA-3, [56], while implicit shame was assessed with a modified version of the Implicit Association Task with anxiety as reference category for shame (IAT, [57]). Results revealed that explicit state shame (ESS) and explicit shame-proneness (TOSCA-3) were significantly higher in NPD patients than nonclinical controls, but significantly lower than borderline patients. Most importantly, the IAT revealed that NPD patients carried the highest levels of implicit shame-self associations (relative to anxiety-self associations) compared to both control groups. This study indicates that explicit shame and shame proneness are present in, but not specific to, NPD. Moreover, the interpretation of between-group differences in implicit shame is more challenging: On the one hand, high implicit shame might be specific to NPD. Thus, patients might be characterized by unconscious feelings of shame that they try to avoid by employing defensive behavioral strategies. On the other hand, elevated implicit shame might be less specific to NPD, as the finding can also be explained by strong anxiety-self association counterbalancing strong shame-self associations in borderline personality disorder. Although conclusions from this study must be confirmed by future research, these findings suggest that explicit and implicit shame are relevant features of NPD. Whereas sustained feelings of shame were adopted as an associated feature of NPD in DSM-5 Sect. II, shame is not mentioned in the Sect. III definition of NPD. Further studies need to re-evaluate the specificity of high implicit shame in NPD and test short-term as well as long-term stability of implicit and explicit shame.

Delimitation from Other Disorders

Discriminant Validity

Similar to most personality disorders, NPD has high comorbidity rates with other psychiatric disorders in clinical and nonclinical samples e.g., [22]. Perhaps most extensively studied is the degree to which DSM criteria can be used to distinguish NPD from other personality disorders. Based on DSM-III-R criteria, Morey [58] found that NPD is one of eight personality disorders with more than 50 % overlap with at least one other personality disorder. Furthermore, most NPD criteria loaded on a common factor with antisocial personality disorder [59]. As a consequence of such data, DSM-IV criteria sets were also selected to increase specificity. Early empirical studies indicated that this goal had been achieved. Blais et al. [60] found increased specificity of the DSM-IV NPD diagnosis (compared to DSM-III), with no significant intercorrelation between NPD and other cluster B personality disorders. However, a different picture emerged in item-level analysis. Blais and Norman [61] found moderate correlations of NPD diagnosis with six items of histrionic personality disorder, four items of antisocial personality disorder and three items of paranoid personality disorder. Another study by Gunderson and Ronningstam [62] indicates that only items related to grandiosity discriminated between NPD and patients with antisocial personality disorder. Furthermore, the criterion lack of empathy was even more prevalent in antisocial personality disorder than in NPD. A further study by Holdwick et al. [63] found six out of nine NPD criteria differentiated NPD from borderline patients and six out of nine differentiated NPD from patients with antisocial personality disorder. Another study revealed that NPD criteria (similar to criteria for schizotypal and dependent personality disorder) are as highly correlated with criteria for other personality disorders as they are with each other, casting further doubt on the specificity of the NPD criteria set [64]. However, a follow up study with a larger sample size by Grilo et al. [65] found that NPD criteria correlated better with each other than with those of other personality disorders. Karterud et al. [12•] assessed SCID-II criteria in a large sample of personality disorder patients from day clinics and found that NPD criteria has a low to moderate correlation with NPD diagnosis and borderline personality disorder has the highest number of significant correlations with NPD criteria. In sum, discriminant validity of DSM-IV NPD seems to be limited, yet is quite similar to the

discriminant validity of other personality disorders. Furthermore, the definition of NPD seems to be more valid on a construct level than on a criterion level.

Family Studies

A clinical study with twins found a heritability rate of 79 % for NPD according to DSM-III-R [66]. Compared to other personality disorders, this rate was among the highest. A nonclinical twin study applying DSM-IV criteria found much lower heritability rates for personality disorders (20-41 %), including NPD (25 %) [67]. A recent nonclinical twin study used data from self-report questionnaires *and* the structured interview for DSM-IV personality disorders [68••]. Results indicate a heritability of 71 % for NPD, which was the highest among the cluster B personality disorders. Another study used a DSM-IV based parent report for personality disorders in a sample of child twins (mean age 9 years) [69]. This study revealed a heritability rate of the NPD criteria set of 66 % (50-81 % for all personality disorders). In sum, empirical data provide strong evidence for the heritability of NPD, although the specific degree of heritability appears to be inconsistent.

Follow-Up Study

Cross population studies showed that NPD (DSM-IV) is inversely associated with age [22]. Some follow-up studies examined the temporal stability of NPD criteria over time in the general population. However, most individuals included in those studies did not meet the full criteria for NPD (for an overview see [70••]). Ball and colleagues investigated the stability of DSM-III-R NPD items assessed by self- and informant questionnaire in patients with substance dependence [71]. This study indicates a moderately high stability (r=.48) between baseline and follow-up after one year. Using individual growth trajectories, Lenzenweger et al. [72] found that the temporal stability of personality disorder features (according to DSM-III-R) varies considerably, as individuals showed trajectories that are stable, increasing, and decreasing. However, remission rates for narcissistic features were comparable to those of other personality disorders (r=.39). Samuel and colleagues [73] found evidence that narcissistic criteria exhibit a moderate degree of temporal stability according to the DSM-IV (Kappa κ=.36) across two years. Finally, Hopwood et al. [74] found rather low temporal stability for DSM-IV NPD criteria (r=.24) in patients with mixed diagnoses across ten years.

Presently, only two studies have assessed the temporal stability of NPD diagnosis. Ronningstam et al. [75] assessed three-year stability of NPD using the LEAD diagnostic standard (i.e., longitudinal, expert, all data; [76]). Diagnostic criteria according to DSM-III-R and DSM-IV were applied using the Diagnostic Interview for Narcissism [77]. According to this study, 50 % of NPD patients still met full criteria for this DSM diagnosis at a three-year follow-up. However, the sample size in this study was rather small. Thus, a recent study by Vater et al., [70••] recruited 96 patients with a diagnosis of NPD according to DSM-IV at baseline. Forty patients participated in the follow-up assessment after two years. The results indicate a moderate remission rate of 53 % for NPD as a categorical diagnosis. However, individual NPD criteria differed in their prevalence and temporal stability, similar to findings for other personality disorders e.g., [78]. Furthermore, the results of Vater et al. [70••] indicate that narcissism as a pathological personality trait (assessed with the Dimensional Assessment of Personality Pathology; DAPP-BQ [79]) did not show significant modification over two years. In sum, these results suggest that NPD, like other personality disorders, has moderate stability over time on the criterion-level, a fact that has not yet been recognized in DSM-5 descriptions of the disorder.

Methodological Limitations

First, many of the cited studies were not designed specifically for NPD research. Thus, clinical cohorts had other primary diagnoses (e.g., other personality disorders, [80•, 90]) and epidemiological studies often did not account for general personality disorder criteria e.g., [22]. Even in research with a focus on NPD, most studies utilized mixed samples with low number of NPD cases e.g., [12•, 13]. Conclusions from these samples, which primarily consisted of sub-threshold cases with NPD-traits, might be restricted as taxometric analyses do not confirm dimensionality of the NPD construct [15]. Furthermore, assessment of NPD criteria is often critical as retrospective chart reviews or clinicians' retrospective criteria recall is used e.g., [59, 81]). Spitzer [76] proposed longitudinal patient observation, expert interviewers and the inclusion of multiple data sources to assess diagnostic criteria (LEAD standard), a procedure that was rarely adhered to in the aforementioned NPD studies, and if so, it was mostly only utilized on a diagnosis level, not on a criterion level. Furthermore, studies using group comparison designs are limited by comorbid psychiatric disorders and sub-threshold psychopathology. In sum, the existing studies carry several methodological limitations restricting the ability to evaluate the validity of the NPD (DSM-IV) criteria set.

Conclusions, Future Research and Treatment Implications

To date, most empirical studies investigating NPD assessed the validity and reliability of the DSM criteria set. As a consequence, almost all nosological discourse preceding

DSM-5 is based on these findings e.g., [82]. However, NPD criteria and associated features have not been the subject of systematic empirical evaluation using experimental designs. As a result, DSM criteria might only partially cover the specific features of the disorder. This shortcoming is perhaps best highlighted by the criterion 'lack of empathy'. Research investigating empathy in NPD patients has shown that deficits in this area are more complex and fine-grained than the current DSM-5 descriptions and are not captured by assessment instruments (e.g., SCID-II interview) [35••].

The inclusion of NPD in DSM-5 provides the opportunity to advance NPD research, especially as experimental psychology and neuroscience are now providing useful methodological tools. However, future NPD research must overcome several challenges. The debate over retaining NPD in the DSM-5 concluded with including the disorder twice. This decision introduced a further layer of complexity, especially with respect to sample selection. DSM-5 Sect. II adopts the DSM-IV criteria set, which captures a restricted picture of pathological narcissism by overemphasizing overt grandiose themes [11]. The NPD definition in Sect. III of the DSM-5 purports to acknowledge grandiose and vulnerable features, overtly and covertly expressed [83]. The Sect. III definition is well grounded in the clinical literature of pathological narcissism, but lacks empirical evaluation. Moreover, DSM-5 Sect. III acknowledges an underlying self-regulatory model that is primarily derived from under-evaluated clinical theories e.g., [29], as well as empirical studies relying on nonclinical samples and the Narcissistic Personality Inventory [84]. However, the Narcissistic Personality Inventory has been found to be invalid in NPD patients [85•] and initial attempts to empirically evaluate aspects of the self-regulatory model have been discouraging [34••]. Furthermore, the self-regulatory model assumes that fluctuations in affect and self-esteem are present in NPD. In the future, longitudinal studies should assess short- and long-term fluctuation of grandiose and vulnerable features of NPD (e.g., self-esteem, grandiosity, envy, shame, rage).

In order to investigate these features of NPD, future studies should adhere to a specific standard. First, the assessment of NPD is important: A diagnosis of NPD should be based on diagnostic interview and informant report, accounting for the strong discrepancy between self and informant ratings of NPD criteria [86, 87••]. Further, quality criterion-level evaluation should be conducted using the LEAD standard [76], which calls for longitudinal assessment, expert interview and inclusion of all available data. Additionally, sample selection issues should be taken into consideration. Patient recruitment methodology must acknowledge that NPD patients are more prevalent in private practice than psychiatric hospitals and day clinics [88], which presents a sample recruitment challenge. Furthermore, NPD cases in psychiatric hospitals will present with higher comorbidity rates relative to other settings, such as community-based samples [22, 89]. Finally, future studies should use evaluated experimental designs, larger samples with NPD patients meeting full criteria and include both clinical and non-clinical control groups.

The major aim of defining diagnostic entities is to inform treatment prognosis. Predictive validity of the DSM-IV NPD criteria has been shown to be non-informative for long-term outcome under treatment-as-usual conditions [80•, 90]. Furthermore, to date, an evidence-based intervention designed specifically for NPD patients is not available. Randomized intervention studies including only NPD cases do not exist and studies assessing outcome of specific psychotherapeutic e.g., [91] or pharmacological e.g., [92, 93] interventions for personality disorders are non-informative with regard to included NPD cases (mainly due to low number of cases). Nevertheless, the NPD construct has already shown some predictive validity with respect to psychotherapeutic outcome, as trait narcissism has been associated with higher treatment drop out [94]. Thus, the future challenge on one hand is to evaluate extant specific interventions for NPD, and on the other hand, utilize accumulating knowledge of NPD to inform the further development of these interventions, which would ultimately provide empirical support for the utility of the NPD construct.

In summary, most of the extant empirical NPD research psychometrically evaluated DSM criteria assessed by self-report or clinical interview. Only very recent empirical studies apply methods from experimental psychology and neuroscience to evaluate NPD. Given the challenges presented by the two different NPD constructs in DSM-5, future research should continue to evaluate specific features of the disorder despite general psychopathology, especially with regard to the establishment of treatment strategies.

Compliance with Ethics Guidelines

Conflict of Interest Stefan Roepke and Aline Vater declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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