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Review

Prosociality in personality disorders: Status quo and research agenda

Johanna Hepp and Inga Niedtfeld

Abstract

Personality disorders (PDs) are characterized by interpersonal dysfunction and deficits in prosociality are theorized to contribute to this. We review studies linking categorical PDs to prosocial and antagonistic traits and highlight studies that assessed prosocial behavior in PDs via economic games. We structure our review based on the recently proposed affordance framework of prosocial behavior, summarizing the evidence for exploitation, reciprocity, temporal conflict, and dependence under uncertainty as situational affordances that allow the expression of personality in prosocial behavior. We conclude that some of the inconsistencies in the literature may be due to studies focusing on different situational affordances and the reliance on categorical PDs. We suggest a research agenda and a set of testable hypotheses based on maladaptive personality traits included in the newly implemented dimensional PD diagnoses in ICD-11 and DSM-5.

Addresses

Department of Psychosomatic Medicine and Psychotherapy, Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University, Germany

Corresponding author: Niedtfeld, Inga (inga.niedtfeld@zi-mannheim.de)

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Introduction

Personality disorders (PDs) are a group of mental disorders characterized by enduring maladaptive patterns of behavior, cognition, and inner experience that are exhibited across situations and deviate from cultural norms [1]. These patterns start to manifest in late childhood or early adolescence, are inflexible, and must be associated with significant distress or functional impairment to fulfill the general diagnostic criteria for PDs. Prosociality has been a focus of PD research because all PDs are characterized by interpersonal dysfunction [2], especially an inability to form and maintain positive relationships. It has been suggested that a lack of prosocial behavior (i.e. voluntary, intentional behavior that results in benefits for another [[3], p.92]) could contribute to this interpersonal dysfunction [4].

Previous evidence on PDs and prosocial traits

Past research has focused on categorical PD diagnoses, as incorporated in the current editions of the Diagnostic and Statistical Manual of Mental Disorders [DSM-5, [1]] and the International Statistical Classification of Diseases and Related Health Problems [ICD-10, [5]]. Studies broadly cluster into two groups, those demonstrating an association between PDs and prosocial traits and those assessing prosocial behavior using economic games. Studies assessing categorical PDs in relation to *prosocial traits* largely focused on the basic personality trait agreeableness from the five-factor model (FFM, 'Big Five'), which encompasses tendencies to be cooperative, trusting, sympathetic, and helpful toward others [6]. The FFM evidence has been summarized in two extensive meta-analyses, which revealed that antisocial (ASPD), narcissistic (NPD), paranoid (PPD), and borderline personality disorder (BPD) all show moderate negative correlations with FFM agreeableness [7,8]. Adding to this, recent studies in two large samples revealed that BPD is further associated with lower HEXACO agreeableness[1] [9–11], but not lower HEXACO honesty-humility. Following from the HEXACO trait definitions, this suggests intact tendencies for active cooperation or non-exploitation (average honesty-humility levels) but reduced reactive cooperation or non-retaliation (lower agreeableness levels) [9,10]. In addition, ASPD and NPD are conceptually linked to antagonistic (i.e. opposite to prosocial) personality traits [for an overview, see [12]], but different concepts of antagonistic traits are not well-aligned [13,14] and still largely underappreciated in clinical psychology [15,16].

[1] HEXACO Agreeableness is not identical with FFM Agreeableness, since the tendency to lose patience/become angry easily is captured by the Neuroticism dimension in the FFM, and by Agreeableness in the HEXACO model. In addition, some aspects of FFM Agreeableness (sincerity, modesty) are covered by HEXACO Honesty-Humility.

Previous evidence on PDs and prosocial behavior

The second group of studies assessed prosocial behavior using economic games in individuals with a categorical DSM-5 or ICD-10 PD diagnosis or self-reported PD features, particularly ASPD, BPD, and NPD. Economic games typically operationalize prosociality via amounts of money that participants either share with others or keep for themselves in different game scenarios [see [17] for a summary of all games referenced in this article]. The results of these studies are somewhat inconsistent. For instance, some studies found that BPD individuals share equal amounts of money with strangers as healthy individuals do [e.g. [18]], whereas other studies found they share significantly less [e.g. [19]], suggesting both intact and impaired prosociality at first glance. We propose that some of the inconsistencies in the PD prosociality literature are likely due to two main reasons, (i) variation in assessed constructs and games and (ii) reliance on categorical PDs.

We summarize an exemplary selection of studies using economic games to assess prosociality in PDs in Table 1. Importantly, we present the evidence structured according to the recently proposed *affordance framework of prosocial behavior* [17], which distinguishes different types of situational affordances implemented in economic games that capture prosocial behavior. The four situational affordances are the *possibility for exploitation* (i.e. having the power to enrich oneself at another's cost without having to fear negative consequences), the *possibility for reciprocity* (i.e. having the opportunity to react to or repay someone's previous behavior), *temporal conflict* (i.e. having to consider how one's action now will affect future outcomes), and *dependence under uncertainty* (i.e. having to make a decision without knowing how interaction partners will act or react). These situational affordances provide the basis for person characteristics to become expressed in behavior and should, therefore, be acknowledged [20].

As evident in Table 1, there is substantial variation in the economic games used and, thus, situational affordances that are covered in the PD literature. Aggregating the evidence for one PD across games [e.g. [21] for BPD] might obscure that individuals with the PD show prosociality deficits only in the presence of certain situational affordances and thereby lead to an apparent inconsistency in results. For instance, individuals with BPD (features) showed no tendencies to use the possibility for exploitation offered by the dictator game as they shared similar amounts to individuals without BPD [9,18]. At the same time, BPD participants showed a lower willingness to behave prosocially when the situation entailed dependence under uncertainty as they made smaller offers in the trust game [19,22,23] and cooperated less often than healthy control participants in the prisoner's dilemma [24]. In recent studies, individuals with ASPD (or psychopathy features modeled on the diagnostic criteria for ASPD) showed a tendency for exploitation when the situation afforded the possibility for exploitation, as evinced by lower dictator game giving [25,26], and a lower propensity for positive reciprocity, as indicated by lower back-transfers in the trust game [27] and more rejections in the ultimatum game [28]. Individuals with NPD or high in narcissism showed a lower capacity to show prosocial behavior in situations with temporal conflict in a multi-round common's dilemma [28] and a multi-round punishment game [29], but no alterations were found when the situation involved dependence under uncertainty in the prisoner's dilemma [25]. This clearly illustrates that PDs entail prosociality deficits only under specific situational affordances, underlining the necessity to consider situation affordances.

Maladaptive traits in dimensional models of PDs

In addition to the variation in games and their situational affordances, we propose that previous prosociality PD research is limited by its focus on PD categories. After a long scientific debate, there is now consensus that PD categories are problematic because they rely on arbitrary symptom counts and thresholds, resulting in substantial heterogeneity within PD categories and marked comorbidity between PDs [e.g. [30]]. In addition, several PDs share similar characteristics. For instance, the tendency to experience hostility is shared by NPD, BPD, ASPD, and PPD, and manipulativeness is shared by NPD and ASPD [31]. Recent developments in the diagnosis of PDs have thus shifted from a categorical to a dimensional approach that relies on *maladaptive traits* (focusing on clinically relevant trait expression), which have to be accompanied by impairments in interpersonal (i.e. empathy and intimacy) and self-related (i.e. identity and self-direction) functioning. The APA's DSM-5 describes an alternative model of PDs (AMPD) that relies on maladaptive traits. The WHO's ICD-11 will comprise a fully dimensional PD diagnosis which is based on a global PD severity score [32] and the specification of maladaptive traits.

The maladaptive trait concept is distinct from basic personality dimensions because the traits were designed with a clinical purpose in mind and capture only maladaptive variants of personality traits (e.g. different degrees of antagonism versus a continuum from antagonism to agreeableness). However, the maladaptive trait concept was heavily influenced by research on the association between PD categories and FFM traits [7,8]. Dimensional models for PDs comprise four maladaptive traits that strongly overlap between the DSM-5 and the ICD-11 approach. These are *negative affectivity* (the tendency to experience a broad range of negative emotions), *detachment* (the tendency to

Table 1

Selected findings on prosociality in categorical personality disorders, presented according to the framework of situational affordances for prosociality by Thielmann et al [20], and suggestions for relevant maladaptive personality disorder traits in ICD-11 and DSM-5 AMPD.

Situational Affordance	Which maladaptive traits should be relevant?		What do we know from categorical PD studies?		
	ICD-11	DSM-5 AMPD	Study and PD type	Game and role	Findings
Possibility for exploitation	**Dissociality**	**Antagonism** — trait facets Callousness, Manipulativeness	Hepp et al. (2020) [39] 26 BPD, 26 HC	Dictator game	BPD and HC did not differ in their DG extraction amount
			Thielmann et al. (2014) [9] BPD features in 559 participants	Dictator game	No significant association between BPD features and DG extraction amount
			Mayer et al. (2019) [26] 25 ASPD versus 24 HC	Dictator game	ASPD extract higher amounts in DG than HC
			Berg et al. (2013) [25] psychopathy and narcissism traits in 210 undergraduates	Dictator game	Psychopathy and narcissism traits were associated with higher DG extractions
			Nehrlich et al. (2019) [35] Agentic and communal narcissism in 688 students	Dictator game Ultimatum game: sender Charity donation	Agentic, but not communal narcissism was associated with higher DG extractions, more money kept for self in UG, and lower donations
			Böckler et al. (2017) [29] NPD features in 122 individuals	Dictator game	No significant association between NPD features and extraction amount
Possibility for reciprocity	**Dissociality**	**Antagonism** — trait facets Grandiosity (positive reciprocity) Hostility (negative reciprocity)	*King-Casas* et al. *(2008)* [40] *55 BPD versus 38 HC*	*Multi-round trust game: trustee*	*BPD transfer less money back to sender than HC*
			De Panfilis et al. (2019) [41] 41 BPD versus 41 HC	Multi- round ultimatum game: receiver	BPD accepted fewer offers than HC
			Polgár et al. (2014) [42] 47 BPD versus 43 HC	Multi-round ultimatum game: receiver	BPD accepted more offers than HC
			Thielmann et al. (2014) [9] BPD features in 559 participants	Multi-round ultimatum game: receiver	BPD features were associated with lower acceptance rates following break-down offers
			Mayer et al. (2019) [26] 25 ASPD versus 24 HC	Multi-round ultimatum game: receiver	ASPD did not differ from HC in acceptance rates
			Engelmann et al. *(2019)* [27] *Psychopathy traits in 182 individuals*	*Multi-round trust game: Trustee*	*Psychopathy features associated with lower back-transfer amounts*
			Berg et al. (2013) [25] psychopathy and narcissism traits in 210 undergraduates	Ultimatum game: receiver	Psychopathy and narcissism features were associated with lower acceptance rates for UG offer at 30% of total variable, but not other offers
			Böckler et al. (2017) [29] NPD features in 122 individuals		NPD features associated with higher punishment overall and with higher

				2nd party punishment game (ultimatum game variant): receiver	punishment of unfair offers in particular
Temporal conflict	**Disinhibition**	**Disinhibition** — trait facet Impulsivity	*King-Casas* et al. *(2008)* [40] *55 BPD versus 38 HC*	*Multi-round trust game: Trustee*	*BPD do not make coaxing offers to re-establish trust, whereas HC do*
			Roberts et al. *(2018)* [22] *BPD features in 284 undergraduates*	*Multi-round trust game: Trustor*	*High level of BPD features associated with smaller investments*
			Abramov et al. *(2020)* [23] *BPD features in 234 undergraduates*	*Multi-round trust game: Trustor*	*BPD features associated with smaller investments during first 5 rounds*
			Unoka et al. *(2009)* [19] *25 BPD, 25 HC, 25 DD*	*Multi-round trust game: Trustor*	*BPD made smaller investments than HC and DD*
			Mayer et al. *(2019)* [26] *25 ASPD versus 24 HC*	*Multi-round ultimatum game: sender*	*ASPD did not differ from HC in UG offers*
			Engelmann et al. *(2019)* [27] *Psychopathy traits in 182 individuals*	*Multi-round trust game: Trustee*	*Psychopathy features associated with lower back-transfer amounts*
			Campbell et al. (2005) [28] NPD features in 232 undergraduates	Multi-round commons dilemma	Higher NPD features associated with greater extractions in round 1 and faster depletion of the resource
			Böckler et al. (2017) [29] NPD features in 122 individuals, median split into 2 groups	2nd party punishment game (ultimatum game variant): sender	Higher NPD features associated with making lower offers
Dependence under uncertainty	**Negative affectivity** Mistrustfulness	**Detachment** — Trait facet Suspiciousness	*Roberts* et al. *(2018)* [22] *BPD features in 284 undergraduates*	*Multi-round trust game: Trustor*	*High level of BPD features associated with smaller investments*
			Abramov et al. *(2020)* [23] *BPD features in 234 undergraduates*	*Multi-round trust game: Trustor*	*BPD features associated with smaller investments during first 5 rounds*
			Unoka et al. *(2009)* [19] *25 BPD, 25 HC, 25 DD*	*Multi-round trust game: Trustor*	*BPD made smaller investments than HC and DD*
			Saunders et al. (2015) [24] 20 BPD, 20 BD, 20 HC	Multi-round prisoner's dilemma	BPD cooperate less frequently than HC or DD
			Engelmann et al. (2019) [27] Psychopathy traits in 182 individuals	Multi-round trust game: Trustor	Psychopathy traits associated with lower offers (at $p < .10$) when they do not have the option to punish the receiver. When a punishment option was given (detract money from receiver), psychopathy was associated with higher offers.
			Berg et al. (2013) [25] psychopathy and narcissism traits in 210 undergraduates	Multi-round prisoner's dilemma	Psychopathy traits associated with higher number of defections. Narcissism traits not significantly associated with number of defections
			Mokros et al. (2008) [43] 24 ASPD versus 24 HC	Multi-round prisoner's Dilemma	ASPD defected significantly more often than HC
			Mayer et al. *(2019)* [26] *25 ASPD versus 24 HC*	*Multi-round ultimatum game: sender*	*ASPD did not differ from HC in UG offers*

PD = personality disorder, BPD = borderline personality disorder, HC = healthy control participants, NPD = narcissistic personality disorder, ASPD = antisocial personality disorder, DD = depressive disorder, DG = dictator game, UG = ultimatum game. Some studies included more than one economic game and are therefore listed more than once. Moreover, some games covered more than one situational affordance and are therefore presented in both sections in italics.

maintain interpersonal and emotional distance), *ICD-11 dissociality/DSM-5 antagonism* (the tendency to disregard the rights and feelings of others), and *disinhibition* (the tendency to act rashly and without consideration of potential negative consequences). ICD-11 further comprises a fifth *anankastia* trait (the tendency to control behavior to ensure conformity to rigid standards), whereas the DSM-5 AMPD comprises *psychoticism* (the tendency for eccentricity, unusual beliefs and experiences, and perceptual dysregulation) as its fifth trait. Table S1 provides detailed descriptions for each maladaptive trait in the two systems. Importantly, with the exception of anankastia and psychoticism, the systems strongly overlap. Currently, DSM-5 maladaptive traits are predominantly assessed with the 220-item self-report inventory PID-5 [33] and ICD-11 maladaptive traits are assessed with the 60-item self-report measure PiCD [34].

It seems likely that the way previous results cluster (see Table 1) is driven by underlying communalities in maladaptive traits. For instance, studies found that ASPD or psychopathy was associated with lower dictator game giving [25,26], as were some forms of narcissism [35], but not BPD [9,18]. This aligns with recent findings that NPD and ASPD are the two PDs that are most strongly characterized by dissociality/antagonism, which comprises tendencies for exploitation. In contrast, BPD is only mildly associated with this dimension [36], or only some aspects of it, namely the trait facet hostility [37]. We suggest that prosociality research in PDs can benefit from adopting the perspective that each maladaptive trait drives prosociality deficits only in the presence of specific situational affordances [17], and this can be tested using economic games.

Research agenda linking maladaptive traits and prosociality via situational affordances

As a first set of testable hypotheses and suggestions for a research agenda, we propose the following associations between maladaptive traits/trait facets[2] and prosociality in the presence of different situational affordances. First, we predict that ICD-11 dissociality is associated with reduced prosocial behavior in situations that afford the exploitation of others. ICD-11 dissociality entails a pre-occupation with one's own needs and desires that is accompanied by an indifference to whether one's actions hurt others and a willingness to exploit them (see Table S1). Therefore, given the situational affordance for exploitation, dissociality should be negatively associated with prosocial behavior. Mirroring the trait description for dissociality, the DSM-5 AMPD comprises the antagonism facets callousness, deceitfulness, and manipulativeness (see Table S1), which also describe a disregard for others and tendencies to maximize own benefits. Thus, individuals high in these facets should also show low levels of prosocial behavior in situations where exploitation of others is possible. This prediction is in line with previous evidence on lower prosocial behavior in ASPD in the dictator game [25,26]. Thus, in a first step, correlations between dictator game giving and the aforementioned traits and facets [e.g. assessed via the PiCD or PID-5, [33,34]] could be established.

Second, we predict that higher ICD-11 dissociality and higher DSM-5 grandiosity (a facet of antagonism) will entail reduced prosocial behavior in situations where *positive* reciprocity is possible. Following from the trait descriptions (see Table S1), individuals high in ICD-11 dissociality should be concerned with their own needs and disregard others' needs. Those high in the DSM-5 facet grandiosity should further show an exaggerated sense of self-importance and the concomitant expectation of special treatment. Thus, they should not see the necessity to reciprocate prosocial behavior from others (because they demand and expect positive treatment) and, at the same time, focus strongly on their own profit. A suitable game to test positive reciprocity is the trust game, placing participants in the role of trustee [20]. We expect that participants with higher dissociality or grandiosity will send less money back to the trustor in the trust game, even when receiving fair or generous amounts from them. In addition to situations affording positive reciprocity, there are also those affording *negative* reciprocity, that is, a tendency to retaliate. For these situations, we predict that high levels of ICD-11 dissociality or DSM-5 hostility (an antagonism facet) entail reduced levels of prosocial behavior. This prediction is in line with previous findings on increased negative reciprocity in individuals with BPD, who are strongly characterized by hostility [38]. It could be tested by placing participants in the role of the responder in the ultimatum game [20] and assessing whether dissociality and hostility entail rejection of unfair offers.[3]

Third, we suggest individuals high in ICD-11 disinhibition and DSM-5 impulsivity (a facet of disinhibition) will show reduced prosociality in situations that constitute temporal conflict. This hypothesis is based on the trait descriptions detailing an inability to adequately plan and adapt current behavior to maximize later outcomes, augmented by an orientation toward immediate gratification. Suitable games to test this are essentially all multi-round games [20], but the clearest assessment may be provided by the commons dilemma in which

[2] Note that the AMPD in DSM-5 describes specific facets for each maladaptive trait, whereas the ICD-11 proposal (in its current state) does not comprise a facet structure. Wherever possible, we denote specific facets for DSM-5 AMPD while describing predictions at the maladaptive trait level for ICD-11. All facets are listed in the Supplemental Table S1.

[3] We note that the criterion for what constitutes an 'unfair' offer differed substantially in previous studies. In order to present a strong manipulation of 'unfairness', researchers could implement offers that constitute less than 10% of the possible maximum offer (as implemented in [29]).

participants have to inhibit selfish behavior in the early rounds of the game to retain the resource for the whole group in future rounds. Previous evidence that individuals with BPD and NPD (who are strongly characterized by impulsivity) show reduced prosocial behavior in situations with temporal conflict supports this hypothesis.

Fourth, we hypothesize that higher ICD-11 negative affectivity, due to its coverage of mistrustfulness, and the DSM-5 detachment facet suspiciousness will be associated with reduced prosocial behavior in situations where individuals have to depend on others under uncertainty. This can be assessed using games with simultaneous action, such as the prisoner's dilemma, or games in which the participant must act first without knowing how the other person will react, for instance having to put their 'trust' in them as trustor in the first round of the trust game [20]. We predict that individuals high in mistrustfulness/suspiciousness will defect more often in the prisoner's dilemma (because they expect others to defect, too) and will make smaller initial offers in the trust game (because they expect the trustee will send little money back to them). Findings that BPD individuals (who exhibit high levels of negative affectivity and suspiciousness [36,38]) show reduced prosocial behavior in situations characterized by dependence under uncertainty support this.

Conclusion

In sum, past research demonstrated that various PDs are characterized by prosociality deficits, but the exact nature of these deficits depends on situational affordances [see [17]]. Future research could benefit from focusing on maladaptive personality traits and assessing their association with prosocial behavior in economic games, while taking care to select games with different affordances to test the fit between maladaptive traits and situations. Ultimately, this could lead to a better understanding of how interpersonal dysfunction in PDs expresses, and it holds the promise of uncovering new therapeutic avenues that target situation-specific and trait-specific prosociality deficits.

Conflict of interest statement

Nothing declared.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.copsyc.2021.09.013.

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