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THE ROLE OF METAPERCEPTION IN PERSONALITY DISORDERS: DO PEOPLE WITH PERSONALITY PROBLEMS KNOW HOW OTHERS EXPERIENCE THEIR PERSONALITY?

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Abstract

Do people with personality problems have insight into how others experience them? In a large community sample of adults ($N = 641$), the authors examined whether people with personality disorder (PD) symptoms were aware of how a close acquaintance (i.e., a romantic partner, family member, or friend) perceived them by measuring participants' metaperceptions and self-perceptions as well as their acquaintance's impression of them on Five-Factor Model traits. Compared to people with fewer PD symptoms, people with more PD symptoms tended to be less accurate and tended to overestimate the negativity of the impressions they made on their acquaintance, especially for the traits of extraversion, agreeableness, and conscientiousness. Interestingly, these individuals did not necessarily assume that their acquaintance perceived them as they perceived themselves; instead, poor insight was likely due to their inability to detect or utilize information other than their self-perceptions. Implications for the conceptualization, measurement, and treatment of PDs are discussed.

Self-knowledge of personality is defined as the awareness of one's patterns of thinking, feeling, and behaving as well as knowledge of how other people experience these patterns (Carlson, 2013; Vazire & Carlson, 2010, 2011). One of the hallmarks of personality disorders (PDs) is poor self-knowledge, specifically a distorted sense of the self and a poor understanding of the self in relation to other people (Livesley, 2011; Morey et al., 2011). Indeed, people with personality problems experience themselves differently than other people experience them (Achenbach, Krukowski, Dumenci, & Ivanova, 2005; Clifton, Oltmanns, & Turkheimer, 2004; Clifton, Turkheimer, & Oltmanns, 2005; Fiedler, Oltmanns, & Turkheimer, 2004; Mosterman & Hendriks, 2011), and for some attributes, they see themselves in less accurate ways than do their close acquaintances (e.g., agreeableness; Carlson, Vazire, & Oltmanns, 2013).

Research has established that people with personality problems tend to hold inaccurate self-perceptions, but surprisingly little research has tested the assumption that these individuals have a poor understanding of how other people experience them (Bender, Morey, & Skodol, 2011; Skodol, 2012). To address this critical gap, the current research tests whether,

compared to people with fewer symptoms, people with more symptoms on five of the most researched and empirically supported PDs (i.e., borderline, avoidant, obsessive-compulsive, schizotypal, and antisocial PDs; Skodol, 2012) are less aware of how a close acquaintance perceives their personality. We take a dimensional approach in our conceptualization and measurement of personality pathology, such that PDs represent the extent to which people exhibit more or fewer symptoms rather than whether people meet or exceed an arbitrary diagnostic threshold for a particular type of PD (Widiger & Mullins-Sweatt, 2010). The following sections outline how we conceptualize and measure whether people with PD symptoms have insight into how they are seen by others.

THE ACCURACY OF METAPERCEPTIONS

Does my boss think I am competent? Does my partner think I am trustworthy? Implicitly or explicitly, people form *metaperceptions*, or beliefs about how other people perceive them. Metaperceptions powerfully shape how people feel about themselves and inform decisions such as how to behave as well as who to befriend, who to form professional alliances with, and who to pursue as a romantic partner (Elfenbein, Eisenkraft, & Ding, 2009; Leary, 2005; Murray, Holmes, MacDonald, & Ellsworth, 1998; Pfeifer et al., 2009; Schlenker & Weigold, 1992). Thus, metaperceptions provide an implicit map that people use to navigate their social worlds.

Given the fundamental role metaperceptions play in everyday life, a major question is whether they are accurate. For brevity, we use the term *insight* to refer to the degree to which a metaperceiver (e.g., Meg) knows how a judge (e.g., Jon) perceives her personality. Most people have some insight into how they are seen on core personality traits (e.g., Big Five) in a variety of social contexts, ranging from zero acquaintance situations whereby metaperceivers never meet the person judging them (e.g., social media; Stopfer, Egloff, Nestler, & Back, 2014) to close acquaintances (e.g., friends, family; Carlson & Furr, 2009). Insight tends to be stronger for observable traits (e.g., extraversion) than for less observable (e.g., neuroticism) or more evaluative traits (e.g., arrogance), but overall, people understand how others experience them (Carlson & Kenny, 2012; Kenny & DePaulo, 1993).

Unlike the typical person, people with PD symptoms are believed to have a poor understanding of themselves in relation to other people; thus, we predict that these individuals have poor insight. To test this prediction, we measure the degree to which people with more PD symptoms have less insight for the Five-Factor Model (FFM) traits, which represent core features of normal and pathological personality (Samuel & Widiger, 2008, 2010). Our main prediction is that these individuals will be less aware of how other people perceive them, but we suspect that deficits might depend on the nature of the PD symptoms. Research that compared the predictive validity of self-reported FFM traits to those of informant-reported FFM traits found that informant reports of FFM traits were better predictors of externalizing and antagonistic PD symptoms (e.g., antisocial PD) than were self-reports (i.e., self-knowledge was poor), whereas self-reported FFM traits were better predictors of internalizing symptoms (e.g., avoidant PDs) than were informant reports (i.e., self-knowledge was strong; Carlson et al., 2013). If the mechanisms underlying self-knowledge of one's identity are the same as those involved in understanding one's effect on

other people, insight will be especially poor for antisocial and borderline PDs, especially strong for avoidant and obsessive-compulsive PDs, but not especially weak or strong for schizotypal PD. However, if these mechanisms are distinct, a different pattern may be observed for insight than for self-knowledge of personality.

PROCESS OF METAPERCEPTION: HOW DO PEOPLE FORM ACCURATE METAPERCEPTIONS?

Our primary goal is to determine whether people with personality problems have poor insight, but our secondary goal is to understand why these individuals fail to understand how others perceive them. To do so, we explore one potential source of information they might use when forming metaperceptions. Intuitively, insight requires the ability to decipher complex social cues such as nonverbal feedback, but despite this intuition, the primary source of information that facilitates insight is often self-perception (Kenny, 1994; Kenny & DePaulo, 1993). For example, rather than deciphering Jon's nonverbal cues, Meg considers how she behaves or how she perceives her own personality to infer how Jon perceives her. To the extent that Meg is aware of her actual behavior or sees herself as Jon does, her metaperception will likely be accurate. Self-perception is an especially valid source of information when self–other agreement is strong, which may explain why insight is particularly strong for observable traits (Carlson & Kenny, 2012). Given the role that self-perception plays in insight, people with PD symptoms may lack insight because other people see them differently from how they see themselves (Mosterman & Hendriks, 2011).

To better understand why individuals with personality problems lack insight, we explore the extent to which these individuals rely on their self-perceptions to infer how others see them and the extent to which this strategy facilitates or hinders their insight. On the one hand, people with personality problems may assume that others see them as they see themselves more so than others really do, a tendency that is often referred to as the *illusion of transparency* (Gilovich, Savitsky, & Medvec, 1998). Although this illusion can hinder insight, it might be adaptive given that the subjective sense that others share one's self-views fosters identity coherence, the desire to form relationships with others, and relationship quality (Kwang & Swann, 2010). Thus, people with PD symptoms may lack insight because they are unable to disentangle their own reality from other people's realities, but at the same time, they might feel understood. On the other hand, people with PD symptoms may recognize that others see them differently from how they see themselves, but they fail to detect or properly utilize information independent from their self-perception that would help them infer how they are seen (e.g., feedback). Thus, in addition to measuring the extent to which people with PD symptoms know how others see them, we also index the relationship between their self-perceptions and metaperceptions. This relationship will reveal whether people with PD symptoms subjectively feel (mis)understood and whether they assume they are seen more or less similarly to how they see themselves.

Measuring the relationship between self-perceptions and metaperceptions will shed some light on the subjective experience of people with personality pathology, but it will not necessarily indicate whether self-perceptions are the source of poor insight. To test directly whether people with PD symptoms have poor insight because they erroneously use their

self-perceptions, we measure the relationship between their metaperceptions and the impressions they make, controlling for their self-perceptions. The unique relationship between metaperceptions and actual impressions controlling for self-perceptions is *meta-insight*, which indicates the degree to which metaperceptions deviate from self-perceptions in valid ways (Carlson, Vazire, & Furr, 2011; Gallrein, Carlson, Holstein, & Leising, 2013). Akin to a mediation model, if the relationship between metaperceptions and others' impressions disappears when controlling for self-perceptions, then metaperceptions are largely based on self-perception. If, however, the relationship between metaperceptions and impressions remains when controlling for self-perceptions, then people based their metaperceptions on valid information other than their self-perception. For most people, self-other agreement is imperfect and tends to be especially weak in early acquaintanceship and for evaluative or hard-to-observe traits (e.g., intelligent, arrogant; Kenny, 2004; Oltmanns & Turkheimer, 2009), which means that in many situations, people must use information other than self-perceptions to infer how others see them. Indeed, recent work suggests that typical persons are able to make valid distinctions between how they see themselves and how others perceive them in a host of social contexts and for a wide range of traits, including pathological traits from the *DSM-IV* (e.g., narcissism; Carlson et al., 2011; Gallrein et al., 2013; Oltmanns, Gleason, Klonsky, & Turkheimer, 2005). Thus, people realize how others see them differently from how they see themselves in everyday life.

In the context of personality pathology, meta-insight can shed some light on why people with personality problems lack insight by identifying the role self-perception plays in their metaperceptions. Overall, we predict that PD symptoms are associated with poor insight, or a weak relationship between metaperceptions and the actual impressions they make. Evidence that this relationship disappears when controlling for self-perceptions will suggest that people with PD symptoms lack insight because they base their metaperceptions largely on self-perceptions (i.e., they assume they are seen as they see themselves). Evidence that this relationship remains when controlling for self-perceptions suggests that people with PD symptoms lack insight because they use invalid information other than their self-perceptions to infer how they are seen.

RESEARCH OVERVIEW

In a large, representative community sample of adults, we assessed five of the most researched PDs in the *DSM-5* using a composite of self-ratings, a close acquaintance's ratings, and a clinician's ratings of PD symptoms. This approach assumes that each perspective has strengths and weaknesses and that no single perspective is the best indicator of pathology (Bucholz et al., 2006; Pilkonis, Heape, Ruddy, & Serrao, 1991). We also measured participants' metaperceptions and self-perceptions as well as a close informant's impressions of the participant for the FFM traits. Our analyses are based on the belief that personality pathology reflects extreme variants of normal personality and that FFM perceptions capture core features of PD symptoms (Bagby, Sellhorn, Costa, & Widiger, 2008; Samuel & Widiger, 2008, 2010). Finally, insight was measured for a close acquaintance known for, on average, more than 30 years.

Similar to other forms of social judgment (e.g., self–other agreement), the relationship between metaperceptions and impressions can be measured in at least two ways: (a) as *meta-accuracy*, which is the correlation between metaperceptions and impressions (e.g., people who tend to think they are seen as funnier are seen as being funnier), or (b) as *metaperception bias*, which is the directional or mean-level difference between metaperceptions and impressions (e.g., people overestimate how funny others think they are). Correlational accuracy and mean-level bias are statistically independent (Fletcher & Kerr, 2010). For example, relative to people who think they are seen as less kind, individuals who think they are seen as kinder may actually be seen as kinder (i.e., people are meta-accurate), but at the same time, everyone might systematically overestimate how kind they are seen (i.e., people are positively biased). Indeed, a meta-analysis showed that the typical person is accurate but also slightly positively biased (Carlson & Kenny, 2012). This pattern may be explained by the fact that people are generally motivated to be *accurate* to make the world a predictable place but are also motivated to be positively *biased* to feel secure about themselves or their relationships (Gagne & Lydon, 2004). Therefore, we index accuracy (i.e., meta-accuracy) and mean-level bias (i.e., metaperception bias) when measuring the relationships between metaperceptions and impressions as well as when controlling for self-perceptions (i.e., meta-insight and meta-insight bias).

METHODS

PARTICIPANTS

Participants ($N = 641$; 43% male) were a subset of older adults ages 55 to 65 ($M = 59.70$, $SD = 2.74$) from the St. Louis Personality and Aging Network (SPAN) study. They were paid \$60 for their participation in the baseline assessment. The subsample used for the current analyses was demographically representative of the St. Louis community (72% Caucasian, 26% African American, 1% Latino, 1% other). Participants were asked to bring someone to the lab who knew them well enough to provide an accurate description of their personality, preferably someone who lived with them, or the person who knew them best. Informants included romantic partners (51%), family members (26%), a close friend (22%), and coworkers or neighbors (1%). Acquaintanceship was generally more than 30 years ($M = 34.23$; $SD = 15.21$).

MEASURES

At baseline, participants completed the Semi-Structured Interview for *DSM-IV* Personality (SIDP-IV; Pfohl, Blum, & Zimmerman, 1997), a semistructured clinical interview that measures symptoms of the 10 PDs. SIDP scores were averaged to create dimensional scales (mean $\alpha = .67$). Approximately 9.5% of participants met criteria for at least one PD, and among these participants, 80% met criteria for one PD, 17% met criteria for two PDs, and 3% met criteria for three PDs. Participants and their informants described pathological aspects of the participant's personality using the Multisource Assessment of Personality Pathology (MAPP; Okada & Oltmanns, 2009), which is a 79-item scale based on features of the 10 PDs. Ratings were made using a scale from 0 ("I am [He/She is] never like this (0% of the time)") to 4 ("I am [He/She is] always like this (100% of the time)") (mean $\alpha = .68$ self-perceptions; $\alpha = .74$ impressions). Our criterion measure for each of the five PDs was a

composite of standardized SIDP-IV scores, MAPP self-reports, and MAPP informant reports (mean $\alpha = .78$).

Self-perceptions, metaperceptions, and impressions of the FFM traits were completed at the fifth follow-up, or 2.5 years after baseline. Self-perceptions and informant reports were completed on the NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992), which is a 240-item measure of the FFM. Metaperceptions were measured on a 30-item subset of the NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 2009). The metaperception measure instructed participants to imagine how their informant would describe them. Items on all three reports were rated on a 5-point Likert scale (*strongly disagree* to *strongly agree*). Analyses were based on the 30 items that appeared on all reports, which included six items per factor. Internal consistency reliabilities were acceptable (mean $\alpha = .68$ self-perceptions; $\alpha = .69$ metaperceptions; $\alpha = .75$ impressions).

ANALYSES

For each PD, insight for the FFM traits was modeled separately in moderated multiple regression models using West and Kenny's (2011) Truth and Bias Model. In the most basic form of the model, *judgments* (metaperceptions) are regressed on the *truth* (impressions), and both variables are centered on the mean of the truth variable. Meta-accuracy is the slope coefficient, or the *truth force* in the model. Metaperception bias is the intercept coefficient and represents the degree to which metaperceptions are attracted toward a particular end of the scale (i.e., more positive or negative than impressions). Moderators index whether meta-accuracy or metaperception bias depends on the level of other factors, such as PD scores, but moderators are centered on their own means. Thus, in Model 1, metaperceptions of a given FFM trait were regressed on impressions of that trait, PD scores of a single PD, and the interaction between impressions and PD scores. The degree to which PD scores moderate *meta-accuracy* is represented by the slope of the interaction term, and the degree to which scores moderate *metaperception bias* is represented by the main effect of the PD score.

The Truth and Bias Model can also include a *bias force*, which is a variable such as self-perceptions that might push or pull judgments toward or away from the truth. The bias variable is also centered on the mean of the truth variable. Thus, Model 2 is the same as Model 1, but it includes self-perceptions of the given FFM trait (centered on the mean of impressions) and the interaction term between self-perceptions and the given PD score. Thus, Model 2 measures whether PD scores moderate the relationship between metaperceptions and impressions, controlling for self-perceptions (i.e., meta-insight and meta-insight bias). The degree to which meta-insight is moderated by PD scores is represented by the slope of the interaction term between impressions and PD scores, and the degree to which meta-insight bias is moderated by PD scores is represented by the main effect of the PD score.

Model 3 was designed to explore the extent to which people with PD symptoms feel (mis)understood; that is, whether they believe they are seen as they see themselves. Metaperceptions of a given FFM were regressed on self-perceptions, PD scores, and the interaction between self-perceptions and PD scores. Metaperceptions and self-perceptions

were centered on the mean of self-perceptions for a given FFM trait, whereas PD scores were centered on their own means. The degree to which PD scores moderate *self-meta agreement* (i.e., feeling more understood) is represented by the slope of the interaction term, and the degree to which scores moderate *self-meta bias* is represented by the main effect of the PD score. This model is independent from Models 1 and 2 in that it reveals the subjective experience of people with PD symptoms rather than whether self-perceptions explain poor insight.

RESULTS

Table 1 shows the relationships among metaperceptions, impressions, and self-perceptions for the entire sample before PD scores were entered as moderators. As shown, meta-accuracy was significant for all traits, weakest for agreeableness ($r = .38, p < .001$), and strongest for extraversion ($r = .59, p < .001$). With the exception of openness, meta-insight was significant for all FFM traits but was descriptively weaker than meta-accuracy, which is not surprising given the strong correlations between self-perceptions and metaperceptions. Thus, self-perceptions facilitated meta-accuracy, but people used additional, valid sources of information to infer how their acquaintance perceived them. With respect to metaperception bias, people tended to be positively biased about how they were seen on neuroticism ($B = -.18, p < .001$) and agreeableness ($B = .12, p < .001$) but negatively biased about how they were seen on extraversion ($B = -.09, p < .001$), openness ($B = -.05, p = .01$), and conscientiousness ($B = -.09, p < .001$). Going further, meta-insight bias was significant and negative for all FFM traits, such that the information contained in metaperceptions that was independent of self-report tended to be more negative than a close acquaintance's perceptions.

Next, we report whether PD symptoms moderated meta-accuracy and metaperception bias (i.e., do people with PD symptoms know how they are seen?), meta-insight and meta-insight bias (i.e., can people with PD symptoms make valid distinctions between their self-views and how others see them?), and self-meta agreement and self-meta bias (i.e., do people with PD symptoms feel understood?). We report simple slopes for PD scores that are two standard deviations above (i.e., High PD) and below (i.e., Low PD) the mean, which are significant ($p < .05$) unless otherwise indicated.

BORDERLINE PD (BPD)

As shown in Table 2, compared to people with fewer BPD symptoms, people with more BPD symptoms tended to be less aware of how a close acquaintance perceived them on extraversion (meta-accuracy: $\beta = -.15, p < .001$; High PD: $B = .35, t = 6.52$; Low PD: $B = .81, t = 14.90$), agreeableness ($\beta = -.11, p = .01$; High PD: $B = .15, t = 2.80$; Low PD: $B = .38, t = 6.94$), and conscientiousness ($\beta = -.14, p = .001$; High PD: $B = .27, t = 5.17$; Low PD: $B = .52, t = 9.26$). These individuals' meta-insight also tended to be weaker for extraversion ($\beta = -.06, p = .03$; High PD: $B = .18, t = 3.52$; Low PD: $B = .36, t = 6.43$) and conscientiousness ($\beta = -.10, p = .01$; High PD: $B = .12, t = 2.40$; Low PD: $B = .30, t = 5.37$), suggesting that their relatively poor meta-accuracy for these traits was driven somewhat by information independent from their self-perceptions. However, meta-insight

for agreeableness was not significant ($\beta = -.02, p = .60$), suggesting that self-perception may partly explain the relatively poor meta-accuracy for this trait. Going further, people with more BPD symptoms tended to believe they were seen less similarly to how they saw themselves on extraversion (self-meta agreement: $\beta = -.05, p = .05$; High PD: $B = .79, t = 14.75$; Low PD: $B = .97, t = 17.41$), agreeableness ($\beta = -.06, p = .05$; High PD: $B = .57, t = 7.34$; Low PD: $B = .85, t = 11.16$) and conscientiousness, ($\beta = -.07, p = .03$; High PD: $B = .62, t = 11.52$; Low PD: $B = .85, t = 15.23$). In sum, people with BPD symptoms felt more misunderstood and were actually less aware of how they were seen on the same attributes.

Table 2 shows effects for metaperception bias, or the extent to which people with BPD symptoms tended to overestimate or underestimate how they were seen by a close acquaintance. Compared to people with fewer BPD symptoms, people with more BPD symptoms tended to think they were seen as more neurotic as well as less extraverted, agreeable, and conscientious than they were actually seen (metaperception bias: neurotic $\beta = .29, p = .001$; extraverted $\beta = -.12, p = .001$; agreeable $\beta = -.20, p < .001$; conscientious $\beta = -.12, p = .01$). Yet this negativity bias was not observed for meta-insight bias (i.e., effects were not significant), suggesting that these individuals' self-perceptions may have explained the negativity bias of metaperceptions. Interestingly, in addition to having a negativity bias about how they were actually seen, these individuals also tended to believe they were seen more negatively than how they saw themselves on neuroticism (self-meta bias: $\beta = .11, p = .007$), agreeableness ($\beta = -.13, p < .001$), and conscientiousness ($\beta = -.07, p = .03$), suggesting that people with more BPD symptoms felt less understood on communal traits.

AVOIDANT PD (AVPD)

There were no significant effects for meta-accuracy or meta-insight, suggesting that people with more AVPD symptoms were not more or less aware of how they were seen or how their informant saw them differently from how they saw themselves. Yet these individuals tended to believe they were seen less similarly to how they saw themselves on neuroticism ($\beta = -.09, p = .01$; High PD: $B = .54, t = 9.13$; Low PD: $B = .74, t = 12.85$) and extraversion ($\beta = -.07, p = .02$; High PD: $B = .74, t = 15.54$; Low PD: $B = .96, t = 16.64$). Thus, they did tend to feel misunderstood, but their subjective experience did not seem to affect insight.

With respect to metaperception bias, compared to people with fewer AVPD symptoms, people with more AVPD symptoms thought they were seen as more neurotic as well as less extraverted, open, and conscientious than they were actually seen (neurotic $\beta = .38, p < .001$; extraverted $\beta = -.23, p < .001$; open $\beta = -.11, p = .003$; conscientious $\beta = -.14, p = .001$). Thus, these individuals tended to overestimate the negativity of the impression they made on their close acquaintance for all but one FFM trait. A similar meta-insight negativity bias was observed for neuroticism ($\beta = .12, p = .002$) and openness ($\beta = -.06, p = .02$), suggesting that the negativity bias was not entirely due to self-perception. However, meta-insight bias was not significant for extraversion ($\beta = -.05, p = .11$) or conscientiousness ($\beta = -.01, p = .86$), suggesting that self-perception may have explained some of the negativity bias for these attributes. Interestingly, compared to people with fewer AVPD symptoms, people with more AVPD symptoms tended to believe that their informant perceived them more negatively than how they saw themselves for all FFM traits except for conscientiousness (neurotic: $\beta = .$

22, $p < .001$; extraverted: $\beta = -.12$, $p < .001$; open: $\beta = -.07$, $p = .007$; agreeable: $\beta = -.08$, $p = .01$; conscientious: $\beta = -.03$, $p = .38$). Thus, these individuals felt misunderstood, in that they believed a close acquaintance saw them in relatively negative ways.

OBSESSIVE-COMPULSIVE PD (OCPD)

As shown in Table 2, compared to people with fewer OCPD symptoms, people with more OCPD symptoms tended to be more aware that they were viewed as being higher on neuroticism (meta-accuracy: $\beta = .11$, $p = .002$; High PD: $B = .54$, $t = 9.05$; Low PD: $B = .19$, $t = 3.06$) and also tended to have unique insight into how they were seen differently from how they saw themselves on this trait (meta-insight: $\beta = .07$, $p = .02$; High PD: $B = .28$, $t = 4.57$; Low PD: $B = .05$, $t = .73$, $p = .71$). Thus, these individuals' stronger meta-accuracy was not entirely driven by their assumption that they were seen as they saw themselves, but rather by their ability to utilize additional cues to form metaperceptions. Although there were no additional effects for meta-accuracy, effects for meta-insight suggest that, compared to people with fewer OCPD symptoms, people with more OCPD symptoms also tended to be more aware of how a close acquaintance perceived their openness ($\beta = .09$, $p = .01$; High PD: $B = .21$, $t = 3.22$; Low PD: $B = -.13$, $t = -1.90$, $p = .06$) and agreeableness ($\beta = .06$, $p = .05$; High PD: $B = .21$, $t = 3.16$; Low PD: $B = .03$, $t = .71$, $p = .48$) differently from how they experienced themselves on these traits. Thus, the information in metaperceptions that did not overlap with self-perceptions tended to be more valid for these attributes. However, meta-insight for people with more OCPD symptoms tended to be weaker for conscientiousness ($\beta = -.09$, $p = .002$; High PD: $B = .06$, $t = 1.13$, $p = .26$; Low PD: $B = .34$, $t = 6.12$), suggesting that the ways in which their metaperceptions deviated from self-perceptions were less valid.

Results for metaperception bias suggest that, for all five FFM traits, compared to people with fewer OCPD symptoms, people with more OCPD symptoms tended to believe they were seen in more negative ways than they were actually seen (metaperception bias: neuroticism: $\beta = .16$, $p < .001$; extraversion: $\beta = -.15$, $p < .001$; openness: $\beta = -.08$, $p = .01$; agreeableness: $\beta = -.18$, $p < .001$; conscientiousness: $\beta = -.08$, $p = .02$). Furthermore, the same effects were observed for meta-insight bias for all FFM traits except for neuroticism (neuroticism: $\beta = .05$, $p = .17$; extraversion: $\beta = -.07$, $p = .01$; openness: $\beta = -.06$, $p = .02$; agreeableness: $\beta = -.07$, $p = .04$; conscientiousness: $\beta = -.07$, $p = .01$), suggesting that the negativity bias was not entirely driven by self-perception, but rather by information other than self-perception. Interestingly, for all FFM traits, compared to people with fewer OCPD symptoms, people with more OCPD symptoms also tended to believe that their informant perceived them more negatively than how they saw themselves (neurotic: $\beta = .09$, $p = .001$; extraverted: $\beta = -.11$, $p < .001$; open: $\beta = -.06$, $p = .008$; agreeable: $\beta = -.11$, $p = .001$; conscientious: $\beta = -.09$, $p = .002$). Taken together with results for metaperception bias, people with OCPD symptoms felt misunderstood and misunderstood social reality by assuming they were seen in relatively negative ways.

SCHIZOTYPAL PD (STPD)

Compared to people with fewer STPD symptoms, people with more STPD symptoms tended to be less aware of how their informant perceived them on extraversion (meta-accuracy: $\beta =$

-.09, $p < .01$; High PD: $B = .39$, $t = 6.38$; Low PD: $B = .72$, $t = 11.01$) and conscientiousness ($\beta = -.11$, $p = .001$; High PD: $B = .28$, $t = 6.35$; Low PD: $B = .51$, $t = 9.84$). Meta-insight was significant for conscientiousness ($\beta = -.12$, $p = .001$; High PD: $B = .07$, $t = 1.55$, $p = .12$; Low PD: $B = .34$, $t = 6.63$) and marginally significant for extraversion ($\beta = -.05$, $p = .098$; High PD: $B = .18$, $t = 4.09$; Low PD: $B = .34$, $t = 6.63$), suggesting that the ways in which these individuals' metaperceptions deviated from their self-perceptions tended to be less valid. People with more STPD symptoms also tended to believe that their informant saw them less similarly to how they saw themselves on extraversion (self-meta agreement: $\beta = -.05$, $p = .05$; High PD: $B = .76$, $t = 14.35$; Low PD: $B = .95$, $t = 17.71$) and openness ($\beta = -.06$, $p = .02$; High PD: $B = .70$, $t = 13.22$; Low PD: $B = .94$, $t = 17.24$), suggesting that they felt more misunderstood for core features of their pathology.

With respect to metaperception bias, compared to people with fewer STPD symptoms, people with more STPD symptoms thought they were seen as higher on neuroticism as well as lower on extraversion, agreeableness, and conscientiousness than they were actually seen (neurotic $\beta = .20$, $p < .001$; extraverted $\beta = -.20$, $p < .001$; agreeable $\beta = -.20$, $p < .001$; conscientious $\beta = -.11$, $p = .01$). Thus, these individuals tended to overestimate the negativity of the impression they made on their close acquaintance for all but one of the FFM traits. Effects for meta-insight bias suggest that the negativity bias for extraversion ($\beta = -.07$, $p = .01$) was driven by information other than self-perception. However, the nonsignificant meta-insight bias effects for neuroticism ($\beta = .03$, $p = .42$), agreeableness ($\beta = -.06$, $p = .14$), and conscientiousness ($\beta = -.05$, $p = .11$) suggest that the negativity bias may have been largely due to self-perception. Interestingly, with the exception of openness, people with more STPD symptoms tended to believe they were seen more negatively than how they saw themselves on the same traits that showed a negative metaperception bias (neurotic: $\beta = .11$, $p = .001$; extraverted: $\beta = -.10$, $p < .001$; open: $\beta = -.03$, $p = .29$; agreeable: $\beta = -.13$, $p < .001$; conscientious: $\beta = -.08$, $p = .01$). Put another way, people with more STPD symptoms felt misunderstood and misunderstood social reality on similar attributes by assuming they were seen in relatively negative ways.

ANTISOCIAL (ASPD)

As shown in Table 2, compared to people with fewer ASPD symptoms, people with more ASPD symptoms tended to be less aware of how their informant perceived them on extraversion ($\beta = -.08$, $p = .02$; High PD: $B = .47$, $t = 11.91$; Low PD: $B = .73$, $t = 15.34$) and conscientiousness ($\beta = -.11$, $p = .001$; High PD: $B = .28$, $t = 6.99$; Low PD: $B = .54$, $t = 11.25$). Meta-insight was also significant for conscientiousness (meta-insight: $\beta = -.08$, $p = .01$; High PD: $B = .12$, $t = 4.77$; Low PD: $B = .32$, $t = 8.61$) and marginally significant for extraversion ($\beta = -.05$, $p = .10$; High PD: $B = .20$, $t = 4.97$; Low PD: $B = .35$, $t = 7.38$), suggesting that poor meta-accuracy may have been due to the fact that these individuals used information beyond their self-perceptions that was less valid. These individuals also tended to believe they were seen less similarly to how they saw themselves on conscientiousness (self-meta agreement: $\beta = -.07$, $p = .02$; High PD: $B = .61$, $t = 9.14$; Low PD: $B = .87$, $t = 11.71$), suggesting that they felt misunderstood and misperceived social reality on a core feature of their pathology.

With respect to metaperception bias, compared to people with fewer ASPD symptoms, people with more ASPD symptoms tended to believe that they were seen more negatively than how they were actually seen on agreeableness ($\beta = -.20, p < .001$), and the same negativity bias was observed for meta-insight bias ($\beta = -.07, p = .05$), suggesting that information other than self-perception explained the bias. Interestingly, these individuals believed they were seen less positively than how they saw themselves on openness ($\beta = -.07, p = .003$), agreeableness ($\beta = -.14, p < .001$), and conscientiousness ($\beta = -.07, p = .03$), meaning that they felt misunderstood.

DISCUSSION

The current study is the first to systematically test the assumption that people with personality pathology lack insight into how other people perceive them. In a large, representative sample of adults, we found that compared to people with fewer PD symptoms, people with more PD symptoms tended to be less aware of how a close acquaintance perceived their personality on the FFM traits. With respect to meta-accuracy, the most robust deficits across the five PDs were for extraversion (e.g., cheerful, social) and conscientiousness (e.g., dependable, reliable). The effect for extraversion is surprising, given that it is the most observable and least evaluative FFM trait, it tends to show the strongest levels of self–other agreement and meta-accuracy, and it tends to be accurately perceived by the self and others (Vazire, 2010). With respect to conscientiousness, taken together with past work on self- and other-knowledge asymmetries (Carlson et al., 2013), people with PD symptoms have a poor understanding of themselves as well as how others experience them. With respect to the PDs, in line with our broad prediction that insight might show the same deficits as self-perceptions (e.g., Carlson et al., 2013), meta-accuracy was especially strong for OCPD and especially weak for BPD. However, in contrast to this prediction, meta-accuracy was not especially strong for APD, it was not especially weak for ASPD, and STPD showed deficits for two traits rather than no effects. Thus, for people with PD symptoms, the mechanisms underlying self-knowledge of one's identity may be different than the mechanisms underlying the ability to understand one's effect on other people.

With respect to metaperception bias, all but one PD (ASPD) was associated with a negativity bias for four or all five FFM traits, suggesting that people with the PD symptoms we measured tended to think they were seen more negatively than how they were actually seen by a close acquaintance. This effect was especially robust for agreeableness (e.g., thoughtful, considerate) in that it was observed for all five PDs. One possibility for a general negativity bias is that PDs are often comorbid with other forms of psychopathology, such as depression and anxiety, which tend to show a negativity bias as well. For example, people with more social anxiety symptoms tend to assume others see them more negatively than others really do (Christensen, Stein, & Means-Christensen, 2003). Another possibility is that people with PD symptoms have more interpersonal conflict and consequently make negative impressions on people in their everyday lives. Our observation of a negativity bias might reflect the fact that they realize others see them negatively, but they fail to adequately adjust the negativity of their metaperceptions across relationships, including their closest acquaintances.

The current study was also the first to explore the role that self-perceptions play in poor insight. Our findings suggested that for traits that tended to show poor meta-accuracy, people with more PD symptoms tended to have weaker meta-insight, meaning that they were less able to understand how their close acquaintance perceived them differently from how they saw themselves. This effect was especially robust for conscientiousness. People with more PD symptoms also tended to have a negative meta-insight bias, which means that self-perception was not the sole explanation for negatively biased metaperceptions. Thus, people with more PD symptoms tended to be less accurate about how their acquaintance perceived them, but not necessarily because they were unable to disentangle their self-perceptions from how others might view them. Indeed, our main focus was on insight, but we also observed that people with more PD symptoms tend to have a weaker relationship between their self-perceptions and metaperceptions and tend to believe they are seen more negatively than how they see themselves (i.e., they felt misunderstood). Taken together with findings for meta-insight, this suggests that people with PD symptoms did not rely entirely on their self-perceptions to form metaperceptions, but the information they did use tended to lead them astray.

Some patterns of insight generalized across all five PDs, but there were also notable patterns for specific PDs. For example, BPD showed the most extensive meta-accuracy deficits (extraversion, agreeableness, and conscientiousness) and a robust, negative metaperception bias for all traits but openness, suggesting that individuals with more symptoms of BPD were especially unaware of how a close other perceived them. Unlike the other PDs, there were no effects for meta-insight bias, suggesting that the metaperception bias was largely explained by self-perception. In contrast, AVPD and OCPD showed no deficits in meta-accuracy or meta-insight. In fact, OCPD had stronger meta-insight for neuroticism, openness, and agreeableness, suggesting that individuals with more OCPD symptoms are especially attuned to the impressions they made. Yet, both PDs were associated with a negative metaperception bias for all (OCPD) or four (AVPD) FFM traits, meaning that they overestimated how negatively their close acquaintance perceived them. Going further, unlike the other PDs, meta-insight bias for OCPD was significant for all FFM traits except for neuroticism, suggesting that their negative metaperception bias was explained by something other than self-perception. Finally, ASPD showed poor meta-accuracy and meta-insight for conscientiousness and a negative metaperception bias and meta-insight bias for agreeableness. This pattern suggests that people with more ASPD symptoms were less aware of how the defining features of their pathology were experienced by others. With the exception of agreeableness, unlike the other PDs, these individuals were not negatively biased about how they were seen.

Our main focus was on the relationship between metaperceptions and actual impressions, but the current findings also suggest that individuals with personality pathology tend to feel more misunderstood by close others, in this case spouses, family members, and friends whom they had typically known for over 30 years. The fact that people with more PD symptoms are less likely to feel understood may explain some of their identity disturbances as well as the negative interpersonal outcomes associated with PDs (Hopwood et al., 2011; Hopwood, Wright, Ansell, & Pincus, 2013). For most people, feeling understood fosters identity coherence and relationship quality (Kwang & Swann, 2010; Murray et al., 1998),

whereas a negative self-meta bias, at least for one's romantic partner, can eventually lead to poor relationship quality (Lemay & Dudley, 2009; Lemay & Neal, 2013). Put another way, independent of actually understanding how other people perceive the self, past work suggests that a general belief that another person sees the worst in us can have profound impacts on our self-concept and on our relationship quality. We did not test whether the quality of relationships of people with PD symptoms were lower because they felt misunderstood, but future research might explore whether people with PD symptoms have a general expectation that others misunderstand them and see the worst in them as well as whether this expectation leads to a self-fulfilling prophecy.

The current findings may have important implications for assessment and treatment. With respect to assessment, relying exclusively on a client's perception of relationships may be misleading. PD scores predicted negatively biased metaperceptions, which suggests that people with personality problems tend to erroneously report that a close acquaintance sees the worst in them. That said, metaperceptions might be a valuable tool in assessment in that one indicator of pathology might be a client who assumes that others see the person more negatively than how the individual sees himself or herself. With respect to treatment, our findings suggest that one goal of treatment for people with PD symptoms might be to reduce the discrepancies between clients' self-perceptions and their metaperceptions as well as between their metaperceptions and others' impressions. Going further, reducing the discrepancy between metaperceptions and others' impressions might be one avenue to improve the accuracy of self-perceptions (Vazire & Carlson, 2011). Indeed, one avenue for doing so may be through the client-therapist relationship. Independent of insight, reducing the discrepancy between self-perceptions and metaperceptions might foster well-being and relationship quality for people with PD symptoms. Future research is needed to determine whether reductions in these discrepancies have positive effects on symptoms.

LIMITATIONS

The current study has several limitations that we believe can be addressed with future research. First, our findings are based on metaperceptions for a single informant known, on average, for over 30 years, but the same pattern of results may not be observed for different types of informants, particularly informants with less positive perceptions of the target (Leising, Erbs, & Fritz, 2010). On the one hand, our approach provided a strong test of whether people with personality problems lack insight, given that poor insight for a close acquaintance is likely accompanied by greater deficits in insight for less close acquaintances (e.g., coworkers). On the other hand, this approach may also explain why our effects were somewhat weak. For example, the simple slopes for meta-accuracy for people two standard deviations above the mean on a given PD score were positive or near zero rather than negative. This leaves us to conclude that individuals with personality problems were not completely deluded about the impressions they made. However, insight is likely substantially weaker for other types of acquaintances (e.g., new friends). Going further, people with PD symptoms might actually underestimate the negativity of impressions they make in different contexts. Thus, future research that assesses insight across different judges (e.g., among multiple friends), among different social contexts (e.g., friends and coworkers), or over time may reveal more extreme deficits in insight than we observed.

Second, we assessed insight for FFM traits rather than for more evaluative (e.g., intelligent) or pathological (e.g., arrogant) traits, which may also have reduced the size of our effects. Our approach was based on the assumption that PDs represent extreme or maladaptive variants of normal personality traits and that impressions of FFM traits map onto PD symptoms. However, assessing insight for impressions that are more extreme in their evaluative tone (e.g., arrogance, impulsivity) may reveal more substantial deficits in insight. Future research that explores self-, other-, and meta-perception agreement among these more evaluative traits will test the external validity of the current findings.

Third, we did not explicitly measure how people with personality problems formed their metaperceptions. We controlled for self-perceptions, which allowed us to explore self-perception as a source of information in metaperception, but it is unclear what other sources of information may have been improperly used or simply not detected. One possibility is that close acquaintances hide their true feelings to avoid conflict (Kenny & DePaulo, 1993). Thus, research that explores how much information is actually available to people with personality problems may reveal whether deficits in insight are due to a lack of available cues (e.g., feedback) or to the individual's poor detection and utilization of cues. Another possibility is that people with PD symptoms have a harsh working model of personality traits. Personality pathology is associated with perceiving other people in negative ways (Wood, Harms, & Vazire, 2010), and perhaps these individuals assume other people share their harsh views.

Finally, we assume that insight is adaptive or a hallmark of adjustment, but this assumption is an empirically unanswered question. On the one hand, knowing exactly how others perceive the self, even when the information is negative, allows a person to make better predictions about the social world and to take corrective action when the impressions are negative. People also like individuals more who are aware of and acknowledge their flaws (Ward & Brenner, 2006). On the other hand, insight into the fact that others perceive the self in negative ways may make it difficult to feel close to people and might cause more conflict than it avoids. Future research is needed to identify if and when it is adaptive to know how others perceive the self, especially for people with personality pathology.

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TABLE 1
Relationships Among Metaperceptions, Impressions, and Self-Perceptions of the Five-Factor Model (FFM) Traits

	Model 1		Model 2		Model 3	
	Meta-Accuracy <i>r</i>	Metaperception Bias <i>B</i>	Meta-Insight β	Meta-Insight Bias <i>B</i>	Self-Meta Agreement <i>r</i>	Self-Meta Bias <i>B</i>
Neurotic	.50*	-.18*	.21*	.10*	.72*	.26*
Extraverted	.59*	-.08*	.26*	-.09*	.79*	-.09*
Open	.54*	-.05*	.05	-.12*	.81*	-.13*
Agreeable	.38*	.12*	.16*	-.05*	.63*	-.13*
Conscientious	.47*	-.09*	.23*	-.10*	.70*	-.10*

Note. $N = 641$. The dependent variable in each model was the metaperception of the FFM trait. Independent variables were: Model 1 = impressions and self-perceptions, Model 2 = impressions and self-perceptions, Model 3 = self-perceptions. Meta-accuracy *r* was between metaperceptions and impressions. Metaperception bias *B* was the intercept, or mean-level difference between metaperceptions and impressions. Meta-insight β was the relationship between metaperceptions and impressions, controlling for self-perceptions. Meta-insight bias *B* was the intercept, or mean-level difference between metaperceptions and impressions, controlling for self-perceptions. Self-meta agreement *r* was between self-perceptions and metaperceptions. Self-meta bias *B* was the intercept, or mean-level difference between metaperceptions and self-perceptions.

*
 $p < .01$.

TABLE 2

Personality Disorder (PD) Symptoms as Moderators of Accuracy and Directional Bias Among Metaperceptions, Impressions, and Self-Perceptions of Five-Factor Model Traits

	Accuracy			Directional Bias		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Meta-Accuracy	Meta-Insight	Self-Meta Agreement	Metaperception Bias	Meta-Insight Bias	Self-Meta Bias
Borderline	β	β	β	β	β	β
Neurotic	-.03 *	.04	-.03	.29 *	-.01	.11 *
Extraverted	-.15 *	-.06 *	-.05 *	-.12 *	-.01	-.03
Open	.00	.02	-.03	-.01	-.02	-.04
Agreeable	-.11 *	-.02	-.06 *	-.20 *	-.06	-.13 *
Conscientious	-.14 *	-.10 *	-.07 *	-.12 *	-.03	-.07 *
Avoidant						
Neurotic	-.05	.00	-.09 *	.38 *	.12 *	.22 *
Extraverted	-.06	.01	-.07 *	-.23 *	-.05	-.12 *
Open	-.04	.00	-.04	-.11 *	-.06 *	-.07 *
Agreeable	-.05	-.03	-.02	-.07	-.07	-.08 *
Conscientious	-.06	-.05	.00	-.14 *	-.01	-.03
Obsessive Compulsive						
Neurotic	.11 *	.07 *	.00	.16 *	.05	.09 *
Extraverted	-.02	-.01	-.04	-.15 *	-.07 *	-.11 *
Open	.04	.09 *	-.04	-.08 *	-.06 *	-.06 *
Agreeable	.06	.06 *	.00	-.18 *	-.07 *	-.11 *
Conscientious	-.06	-.09 *	-.01	-.08 *	-.07 *	-.08 *
Schizotypal						
Neurotic	.02	.05	-.04	.20 *	.03	.11 *
Extraverted	-.09 *	-.05	-.05 *	-.20 *	-.07 *	-.10 *
Open	-.03	.00	-.06 *	-.02	-.02	-.03

	Accuracy			Directional Bias		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	Meta-Accuracy	Meta-Insight	Self-Meta Agreement	Metaperception Bias	Meta-Insight Bias	Self-Meta Bias
Agreeable	-.08	.00	-.06	-.20*	-.06	-.13*
Conscientious	-.11*	-.12*	-.03	-.11*	-.05	-.08*
Antisocial						
Neurotic	.05	.05	.01	.04	-.06	-.01
Extraverted	-.08*	-.05	-.02	-.03	.01	-.02
Open	.07	.04	.02	.02	-.06*	-.07*
Agreeable	-.05	.02	-.04	-.20*	-.07*	-.14*
Conscientious	-.11*	-.08*	-.07*	-.07	-.01	-.07*

Note. $N = 641$. β s represents the degree to which PD symptoms moderated: *meta-accuracy*, the correlation between metaperceptions and impressions (Model 1); *meta-insight*, the relationship between metaperceptions and impressions, controlling for self-perceptions (Model 2); *self-meta agreement*, the relationship between self-perceptions and metaperceptions (Model 3); *metaperception bias*, the mean-level difference between metaperceptions and impressions (Model 1); *meta-insight bias*, the mean-level difference between metaperceptions and impressions, controlling for self-perceptions (Model 2); *self-meta bias*, the mean-level difference between metaperceptions and self-perceptions (Model 3).

* $p < .05$.