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Localizing gelotophobia, gelotophilia, and katagelasticism in domains and facets of maladaptive personality traits: A multi-study report using self- and informant ratings

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ABSTRACT

We extend the knowledge on dispositions toward ridicule and being laughed at (gelotophobia, gelotophilia, and katagelasticism) by testing their localization in a system of maladaptive personality traits. Across two studies, we used self-ratings (N_{total} = 1,438) and informant reports (N_{total} = 378 dyads). The differential associations for the dispositions fit well with expectations: Negative Affectivity, Detachment and Psychoticism characterize gelotophobia; gelotophilia relates to Disinhibition and low Detachment; and predominantly Antagonism characterizes katagelasticism. Facet-wise analyses (Study 2) allowed more fine-grained descriptions. Condition-based regression analyses showed that the laughter-related dispositions did not relate to discrepancies of self-informant views on maladaptive personality traits. Our findings contribute to understand the maladaptive personality traits of gelotophobes, gelotophiles, and katagelasticists.

1. Introduction

Although conventional wisdom suggests that people experience laughter universally as positive (e.g., "laughter is the best medicine"), there are those who do not experience laughter as joyful but as a threatening form of ridicule. Ruch and Proyer (2008a, 2009a) introduced three individual difference variables describing how people deal with ridicule and being laughed at: *gelotophobia* (Greek: *gelos* = laughter; fear of being laughed at), *gelotophilia* (joy in being laughed at), and *katagelasticism* (Greek: *katagelao* = laughing at; joy in laughing at others). Although early research (Ruch & Proyer, 2009b) called for studying the dispositions in relation to personality pathology over a decade ago, a thorough analysis is missing yet. This study narrows a gap in the literature by examining the associations between the three laughter-related dispositions and maladaptive personality traits (Krueger et al., 2012) using self- and informant ratings across a set of two studies and four samples.

1.1. Dispositions toward ridicule and being laughed at

While higher primates display laughter during play situations (i.e., "play face;" van Hooff, 1972), humans laugh for a variety of reasons, including laughing *at*. The latter seems to be a frequent phenomenon as 92% of participants from a random sample of adults recalled having been laughed at in the past 12 months (Proyer, Hempelmann et al., 2009). Usually, people can distinguish between friendly and hostile forms of laughter (Ruch, Altfreder et al., 2009; Szameitat et al., 2009), but some experience difficulties in perceiving the positive aspects of laughter. Those high in the fear of being laughed at (gelotophobes) experience laughter and smiling by others as ridicule that is directed at them, independently of its intention or direction (Ruch & Proyer, 2008a). They show an almost paranoid sensitivity to laughter (e.g., when passing a laughing stranger on the street) and avoid situations in which they could be the aim of laughter. While gelotophobia has been studied initially in clinical populations, early research has shown that it should be seen as an individual difference variable on a dimension from "no" to "extreme" expressions across the population (Ruch & Proyer, 2008b). Gelotophobia is distinct from theoretically related constructs

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such as social phobia and social anxiety, fear of negative evaluation, and paranoid ideation (e.g., Carretero-Dios et al., 2010; Edwards et al., 2010; Torres-Marín et al., 2021; Weiss et al., 2012).

Gelotophilia describes the joy in being laughed at. Those high in gelotophilia experience being laughed at as a sign of appreciation and seek or create situations in which others can laugh at them (Ruch & Proyer, 2009a): for example, by retelling and exaggerating personal and private experiences to make others laugh at them. The joy in being laughed at is not just the mere absence of gelotophobia but constitutes a distinct dimension. However, gelotophobia and gelotophilia are negatively related ($rs \approx -0.30$; e.g., Ruch & Proyer, 2009a).

Katagelasticists (those high in the joy in laughing at others) seek attributes in others to ridicule them and laugh at them—even when hurting other peoples' feelings. Since katagelasticists see laughter as part of life, they follow the eye-for-an-eye principle (i.e., others should fight back if they feel uncomfortable with being laughed at; Ruch & Proyer, 2009a). While katagelasticism is positively related to gelotophilia, it is unrelated to gelotophobia (e.g., Ruch & Proyer, 2009a).

The dispositions are robustly and differentially related to indicators of positive psychological functioning. For example, gelotophobia being negatively related to happiness, gelotophilia going along with greater happiness, and katagelasticism being unrelated to measures of happiness (e.g., Blasco-Belled et al., 2019). Individual differences in dealing with laughter play a role for many intra- and interpersonal experiences and across life domains. For example, analyses of couples showed robust partner similarity among traits and profiles of the dispositions, actor- and partner effects for important indicators such as relationship satisfaction, attachment styles, and jealousy (e.g., gelotophobia being related to low satisfaction in both partners, insecure attachment and high jealousy; gelotophilia being positively related to satisfaction in women and their partners, low attachment avoidance, and mixed findings for jealousy; and katagelasticism predicting disagreement in couples and higher jealousy), and gelotophobia accounting for single status (Brauer & Proyer, 2018, 2020a; Brauer et al., 2020, 2021; Ruch & Proyer, 2009a). Even at an early age ($\geq$ 6 years), the dispositions also predict roles in bullying-type situations: katagelasticism, assessed by self-, peer- and teacher ratings, relates to a greater probability of engaging in bullying whereas gelotophobia is associated with experiencing victimization (Proyer, Meier et al., 2013; Proyer, Neukom et al., 2012).

1.2. Localization of the laughter-related dispositions in systems of broad personality traits

Prior studies have localized the three dispositions in classifications of broad personality traits. In the Eysenckian PEN-system, gelotophobes can be described as introverted neurotics (*r*s between 0.46 and 0.48) and by greater expressions in more clinically oriented older variants of the Psychoticism scale (Ruch & Proyer, 2009b). These findings replicated well and were extended to gelotophilia (associations with Extraversion, Psychoticism, and, to a lesser degree, low Neuroticism) and katagelasticism (small associations with Psychoticism, Extraversion, and being lower in the Lie scale, $rs \leq 0.21$; Proyer & Ruch, 2010). Studies on the Big Five personality traits showed comparable findings for Extraversion and Neuroticism for the three dispositions. Gelotophobia showed negative correlations with Agreeableness, Conscientiousness, and Openness across studies, although less well replicated for the latter two traits; gelotophilia was unrelated to Agreeableness, Conscientiousness, and Openness; and katagelasticism showed robust correlations with low Agreeableness (sharing up to 25% variance; Ďurka & Ruch, 2015; Rawlings et al., 2010; Ruch et al., 2013; Torres-Marín et al., in press). For the HEXACO model, the associations with what is shared with the Big Five personality traits were comparable to what has been reported earlier, but Honesty-Humility was negatively related to gelotophobia and katagelasticism, while being unrelated to gelotophilia (Torres-Marín et al., 2019). This is also mirrored in an analysis of the association of the three dispositions in Peterson and Seligman's (2004) model of character strengths (i.e., morally positively valued traits), the Values-in-Action (VIA) classification: Gelotophobia relates to low self-ratings of virtuousness (particularly humor, bravery, forgiveness, and open-mindedness) whereas the inclusion of ratings by knowledgeable others indicated that gelotophobia rated their character strengths lower in comparison to peer reports. Gelotophilia was positively related to self- and peer-rated strengths (e.g., humor, love, bravery, zest, and creativity) and they perceived themselves as more virtuous than peers did. Katagelasticism was negatively related to strengths of kindness, fairness, and modesty in both self- and peer ratings, supporting the notion of their interpersonal abrasiveness, and self- and peer reports converged well (Proyer et al., 2014).

In summary, the three dispositions can be located reasonably well in frameworks of broad personality traits and morally positively valued traits. However, there is no systematic analysis of their association with personality pathology yet and we aim to narrow this gap.

1.3. Maladaptive personality traits

To address the lack of trait conceptions for personality disorders in the DSM-IV-TR (APA, 2000), Krueger and colleagues (2012) introduced the *maladaptive personality trait model*, which describes a hierarchical system comprising 25 lower-order traits that are clustered into five broader domains: *Negative Affectivity* (e.g., anxiousness, emotional lability), *Detachment* (e.g., anhedonia, depressiveness), *Antagonism* (e.g., attention seeking, callousness), *Disinhibition* (e.g., distractability, impulsivity), and *Psychoticism* (i.e., eccentricity, unusual beliefs and experiences). On the prime level of the model, the general factor "personality pathology" exists. Krueger and colleagues (2012) developed the *Personality Inventory for DSM-5* (PID-5), assessing the broad domains and its facets with either the 220-item full form or the 25-item brief form (PID-5-BF; domains only).

The five domains broadly resemble the Big Five traits; namely, Negative Affectivity being similar to Neuroticism, Detachment to Introversion, Antagonism to low Agreeableness, Disinhibition to low Conscientiousness, and Psychoticism to low Openness to experience (e.g., Al-Dajani et al., 2016). Thus, "normal" and pathological personality systems should not be seen as diametric opposites because both comprehensively describe internal experiences that are not exclusive to one or the other. Hence, it has been suggested that a comprehensive understanding of personality also involves knowledge of pathological expressions (for a discussion, see Fournier et al., 2022). Research on maladaptive traits has contributed to the knowledge in the field, as numerous studies have shown their incremental value to external criteria beyond the Big Five (e.g., Fowler et al., 2017) and the description of individual differences in clinical and non-clinical populations (e.g., Anderson et al., 2018; Bach et al., 2018). To extend the understanding of the personality of gelotophobes, gelotophiles, and katagelasticists, we aimed at expanding prior knowledge on the localization of the laughter-related dispositions in systems of the PEN-, Five-Factor-Model, HEXACO, and VIA model by studying the associations between the three laughter-related dispositions and maladaptive parts of personality.

Initial studies using mostly clinical samples examined the overlap between the laughter-related dispositions and maladaptive and clinically relevant phenomena. Forabosco and colleagues (2009) examined gelotophobia in samples of psychiatric inpatients and controls without symptoms. Patients diagnosed with a personality- or schizophrenic disorder showed the highest expressions in gelotophobia in comparison to controls and patients with other diagnoses (Hedges' *g*s $\leq$ 0.88), including those with anxiety disorder, indicating that gelotophobia is not redundant with what is understood as anxiety disorder. Similarly, Weiss and colleagues (2012) found that there were gelotophobes among those with DSM-IV-TR paranoid and/or schizotypical personality disorders, but findings must be interpreted cautiously as the sample size was small ($n = 36$). Also, Papousek et al. (2016) found a higher

occurrence of Cluster A personality disorder diagnoses (paranoid, schizotypical, schizoid) among high scorers in gelotophobia. Furthermore, Brück et al. (2018) compared gelotophobia expressions in participants diagnosed with borderline personality disorder and in controls (n = 30 each) and found elevated expressions in the clinical group. Havranek et al. (2017) regressed gelotophobia on several psychiatric diagnoses and found that social anxiety disorder and avoidant personality disorder were the best predictors among psychiatric patients and controls. In accordance with the other findings discussed, patients showed elevated expressions in gelotophobia in comparison to controls. Gelotophobia has also received interest in research on autism spectrum disorder (ASD), showing elevated expressions in clinical groups in comparison to non-clinical control groups, which has contributed to understanding the interpersonal experiences of ASD patients (e.g., Samson et al., 2011; for an overview and discussion, see Greenan et al., 2018). Finally, research on psychopathy and the Dark Triad traits (and its extension to sadism) supported the notion that the dispositions overlap with maladaptive personality traits in non-clinical samples (Proyer, Flisch et al., 2012; Torres-Marín et al., 2019, 2022). Gelotophobia relates to manipulativeness/impulsivity, Machiavellianism and low expressions in superficial charm/grandiosity and narcissism; gelotophilia is characterized by inclinations to narcissism and superficial charm; and katagelasticism is related to psychopathy, Machiavellianism, and callous and unemotional, antisocial, and manipulative behaviors. Taken together, dealing with ridicule and being laughed at, primarily studied for gelotophobia, goes along with expressions in maladaptive personality traits and psychopathological phenomena. We argue that studying the relationships between laughter-related dispositions and maladaptive personality traits extends the understanding of the dispositions and their cognitive, affective, and behavioral characteristics.

1.4. Aims of our study

Across two studies we used the DSM-5 (APA, 2013) Section III alternative model of personality disorders as a theoretical framework and classification of maladaptive personality traits (Krueger et al., 2012). Since the PID-5 system is invariant across clinical and non-clinical populations (Bach et al., 2018), we examined the relationships in non-clinical samples to learn more about the localization of the dispositions in the classification of maladaptive traits. In short, we tested the association of these maladaptive traits (domains = Study 1, facets = Study 2) with the three dispositions towards ridicule and being laughed at. In each study we used both self-ratings and ratings provided by informants. The latter has several merits. They provide incremental information to self-reports (e.g., Campbell & Fiske, 1959; Kenny, 2020; Luan et al., 2019) and the aggregation of self- and informant ratings allows a good approximation of the true expressions of personality traits by reducing method variance and psychological biases such as social desirability (Hofstee, 1994). There is robust evidence that knowledgeable others accurately perceive both the laughter-related dispositions (self-other agreement [SOA] correlations $\geq$ 0.40; e.g., Brauer & Proyer, 2021) and the maladaptive traits (SOA: $r \geq 0.45$; for an overview, see Oltmanns & Oltmanns, 2021). Moreover, we tested whether the dispositions relate to discrepancies in self- and other perceptions of maladaptive personality traits.

2. Study 1

In Study 1, we provide initial knowledge on the localization of gelotophobia, gelotophilia, and katagelasticism in the five superordinate domains of maladaptive personality traits (Krueger et al., 2012) using data from two independently collected samples. In addition, we collected informant ratings by knowledgeable others in Sample 2 to aggregate findings across sources of information (i.e., self- and informant ratings) to derive more precise estimates of the associations (cf. Hofstee, 1994) and to examine whether the laughter-related dispositions relate to discrepancies between self- and informant views of the maladaptive personality traits.

For gelotophobia, we expected to find positive associations with Psychoticism (as in Ruch & Proyer, 2009b) and considering that Psychoticism might share overlap with gelotophobes' disproportionate negative responses to being laughed at and an almost paranoid sensitivity to anticipated ridicule. Furthermore, gelotophobes' affective experiences are characterized by Neuroticism, weak emotional regulation, alexithymia, and low satisfaction across domains. Studies testing the emotional expressions with the Facial Action Coding System (Ekman et al., 2002) found gelotophobes to display a low frequency of positive emotions but frequent negative emotions (e.g., Ruch et al., 2015). Hence, we expected positive associations with Negative Affectivity (i.e., frequent experiences of negative emotionality). We also expected a negative relationship with Detachment (i.e., avoidance of interpersonal experiences) because gelotophobes are characterized by inclinations to social inhibition, loneliness, and insecure attachment styles (e.g., Brauer et al., 2020). For gelotophilia we expected to find negative associations with Negative Affectivity based on the knowledge that joy in being laughed at goes along with experiencing positive emotions (e.g., indicators of satisfaction; low neuroticism), and to find negative associations with Detachment, based on gelotophiles' inclination to being extraverted and socially assertive. Finally, we expected positive associations between katagelasticism and Antagonism, as katagelasticists show tendencies toward psychopathic traits, social aversiveness, Machiavellianism, and low agreeableness (Navarro-Carrillo et al., 2021; Proyer, Flisch et al., 2012; Torres-Marín et al., 2019).

We based our expectations for the self-informant discrepancies in the pathological traits on prior findings on the study of discrepancies between the dispositions in relation to character strengths (Proyer et al., 2014). There, gelotophobes estimated their strengths lower than knowledgeable others perceived them and gelotophiles perceived themselves as more virtuous in comparison to knowledgeable others' perceptions. Katagelasticism did not relate to discrepancies between self- and other-rated strengths. Considering gelotophobes' inclinations to negative self-perceptions (e.g., Brauer & Proyer, 2020b; Ruch & Proyer, 2008a, 2009b), we expected discrepancies in self-informant ratings; namely, that gelotophobes perceive their maladaptive traits to be more pronounced than perceived by informants. Furthermore, gelotophiles tend to overstate their positively valued traits (Proyer et al., 2014) and might maintain their positive self-views by downplaying maladaptive traits; thus, we expected that gelotophilia relates to a discrepancy in which informant ratings of maladaptive traits exceed self-ratings. Finally, katagelasticists view their positive traits congruently to others and thus we expected that they view maladaptive aspects of their personality similarly in comparison to views from knowledgeable others.

2.1. Method

2.1.1. Participants

Sample 1 consisted of N = 463 participants (36.5% men; 63.5% women) aged 18 to 81 years (M = 29.1, SD = 12.8, median = 25.0). The majority (57.5%) were students or working professionals (33.0%), with the remaining participants in vocational training (3.9%), retired (2.8%) or unemployed (2.8%). Educational status was high, as 50.1% held a high school diploma that allowed them to attend university, 32.8% held a university degree, 8% reported to have completed vocational training, 6.3% completed high school, and the remaining participants (2.8%) indicated "other."

Sample 2 comprised 213 dyads consisting of targets (37.1% men and 62.9% women) who provided self-ratings and knowledgeable others who provided informant ratings (47.9% men and 51.2% women; 0.9% did not indicate their gender). The mean ages were 28.6 years (SD = 10.1, median = 25; [18, 63]) for the targets and 30.6 years (SD = 11.6, median = 27, [18, 72]) for the informants. The dyads knew each other

between 3 months and 41 years ($M = 9.0$ years, $SD = 9.0$, median = 5.2). The informants were romantic partners (44.6%), friends (39.4%), parents (6.6%), other family members (3.8%), work colleagues (3.8%), or siblings (1.9%). The degree of acquaintanceship was assessed using a 10-point Likert-type scale (1 = *not at all*; 10 = *very strongly*) and dyads knew each other well ($M = 9.3$, $SD = 0.8$, [7, 10]). Educational status in targets/observers was high: 45.5/43.1% held a university degree, 42.7/36.2% held a high school diploma allowing them to attend university, 8.5/11.7% completed vocational training, 2.8/7.9% completed high school, and 0.5/0.9% indicated "other." Most targets and observers were students (61.0% and 47.4%) or working professionals (33.8% and 44.1%), while the remaining targets/observers were in vocational training (2.8/3.3%), unemployed (0.9/2.3%), retired (0.0/1.4%), or indicated "other" (1.4/1.4%; e.g., voluntary social services).

We computed the statistical power using G*Power 3.1 (Faul et al., 2009; type = sensitivity, test: biserial correlation) assuming 80% power, 5% type I error rate, and two-tailed tests. The samples allowed the detection of small to medium effect sizes ($\rho \geq 0.13$ and 0.17 in Samples 1 and 2). This allows us to detect the typical effect sizes reported in the field ($rs \approx 0.21$; Fraley & Vazire, 2014).

2.1.2. Instruments

The *PhoPhiKat-45* (Ruch & Proyer, 2009a; openly available https://doi.org/10.23668/psycharchives.439) is the standard instrument for assessing the three dispositions toward ridicule and being laughed at. Each disposition is assessed with 15 items each and participants give responses on a 4-point Likert-type scale (1 = *strongly disagree*, 4 = *strongly agree*). Sample items are "When they laugh in my presence I get suspicious" (gelotophobia), "When I am with other people, I enjoy making jokes at my own expense to make the others laugh" (gelotophilia), and "I enjoy exposing others and I am happy when they get laughed at" (katagelasticism). Reliability ($\alpha \geq 0.84$; retest correlations ≥ 0.73 up to 6 months; Ruch & Proyer, 2009a) and validity (e.g., robust 3-factor structure, SOA at different degrees of acquaintanceship, inter-rater agreement, and correlations in the expected range with external variables; e.g., Brauer & Proyer, 2021; Ruch & Proyer, 2009a) have been tested extensively. Informants in Sample 2 completed the informant rating form with the items formulated in the third person (e.g., "When he/she is with other people, he/she enjoys making jokes at his/her own expense to make the others laugh").

The *Personality Inventory for DSM-5 Brief Form* (PID-5-BF; Krueger et al., 2012; German version by Zimmermann et al., 2014) assesses five broad domains of maladaptive personality traits with five items each. Sample items are "People would describe me as reckless" (*Disinhibition*), "My thoughts often don't make sense to others" (*Psychoticism*), "I get emotional easily, often for very little reason" (*Negative Affect*), "I often feel like nothing I do really matters" (*Detachment*), and "It is easy for me to take advantage over others" (*Antagonism*). Participants respond on a 4-point Likert-type scale (1 = *very false or often false*; 4 = *very true or often true*). There is robust evidence supporting the reliability and validity of the PID-5-BF, for example, the internal consistencies are satisfying ($\alpha/\omega s \geq 0.68/0.80$) and confirmatory factor analyses show excellent model fit, good convergence with the full 220-item PID-5, and associations with external criteria (e.g., Anderson et al., 2018; see also Al-Dajani et al., 2016). The informants in Sample 2 completed the informant version of the PID-5-BF in the third person (e.g., "He/she worries about almost everything"). Markon and colleagues (2013) report satisfying psychometric properties of the PID-5 informant rating form (e.g., IRT analyses, replication of the 5-factor structure, good SOA in domains, facets, and profiles, and localization in the NEO-PI-R). The instrument is openly available (bit.ly/33StqrR).

2.1.3. Procedure

We provided participants of both samples with a link to the online questionnaire through advertisements on campus and online (e.g., the websites of *Psychology Today* or the *German Center for Psychological Documentation*). The studies were each advertised as "study on personality" and did not indicate that we studied traits that are of interest in the clinical field. Inclusion criteria were being at least 16 years of age and speaking German. The study was completed online via *SoSci Survey* (https://www.soscisurvey.de) and completion took approximately 25 to 30 min. When recruiting Sample 2, we added to the advertisement and inclusion criteria that we are seeking participants who would take part in the study along with a knowledgeable other who would provide ratings on the target person's personality to study whether people agree with others on their personality. Participants sent an email to the investigators with their own and the acquaintances' email address. For each self-informant dyad, we sent an email including a dyad code and the link to the self-report to the target persons and independently an email to the acquaintance including the link to the informant rating form of the online questionnaire and the dyad code. Both targets and acquaintances were asked to complete the questionnaire independently from each other. We used the standard dyadic design (Kenny et al., 2006) by collecting unidirectional ratings within each dyad (i.e., each target provided self-ratings and each informant provided only informant ratings on the target's personality but not vice versa). There was no financial compensation, but psychology students could earn course credit and participants of Sample 1 could enter a lottery for one of three 10€ online vouchers for an online retailer. Data collection was stopped after a preset time criterion; namely, after four months (Sample 1) and six months (Sample 2).

2.1.4. Data analysis

2.1.4.1. Testing associations between the laughter-related dispositions and PID-5. We tested the relationships between the dispositions toward ridicule and being laughed at and the PID-5 domains by correlation- and regression analyses using self-ratings (Samples 1 and 2) and ratings by knowledgeable others (Sample 2; see 2.1.4.2). First, we used correlation analyses to examine the associations between the dispositions and PID-5 domains. Taking the comparatively large sample size into account, small effect sizes reach statistical significance. We report *p*-values for transparency but are interested in robust effects ($r \geq 0.20$; Fraley & Vazire, 2014; Gignac & Szodorai, 2016) that demonstrate stability by replicating across samples instead of interpreting effects that are statistically significant at $p < .05$. To examine the replicability of the correlations, we followed Brandt et al.'s (2014) recommendation to investigate the direction and confidence interval (CI) of the effect. Therefore, we computed bootstrapped ($k = 5{,}000$ samples) 95% CIs for the correlation coefficients and assumed the replication of an effect when the correlation coefficient from Sample 2 falls within the 95% CI of Sample 1 along with being in the same direction.

Secondly, we computed regression analyses to predict[1] each disposition by the PID-5 domain as well as models to predict each PID-5 domain by the three dispositions (method = ENTER; controlled for age and gender in Step 1) to provide the determination coefficient R^2 because we were interested in the variance overlap between the dispositions and domains. The determination coefficient gives an estimate of the variance overlap between the maladaptive personality traits and each laughter-related disposition (displayed in the columns of Table 2) and the amount of variance overlap between each maladaptive trait and the three dispositions (displayed in the rows of Table 2).

Thirdly, we computed stepwise regression analyses to estimate the relative contribution of the PID-5 domains in predicting each disposition and interpreted Cohen's (1988) regression effect size Δf^2 for each step and predictor (i.e., change in R^2 divided by R^2 for the full model; coefficients $\geq 0.02/0.15/0.35$ indicate small/medium/large effects). This allows us to evaluate the regression effects independently from

[1] Note that we use the term "predict" in its statistical sense. We cannot make causal conclusions on the basis of the cross-sectional nature of our data.

statistical significance and sample size. In Step 1, age and gender entered the model (method = ENTER) to control for the effects of demographics and consecutive steps included the PID-5 domain scores (method = STEPWISE). While the stepwise approach has the merit to allow for computing the effect sizes for each predictor, it is also feasible to compute a single regression model that includes all predictors. We provide the findings of these models in ESM A for transparency. The interpretation did not change with the method used for the regression analyses.

2.1.4.2. Analyzing informant ratings and discrepancies between self- and informant ratings. In Sample 2, we also considered the informant ratings. First, we computed the trait-level self-other agreement for the PhoPhiKat-45 and PID-5-BF by correlating the self- and informant mean scores for each of the scales. Secondly, to derive comparatively accurate estimates of the "true" expressions of the target's laughter-related dispositions and their maladaptive personality traits, we averaged the self- and informant scale scores for each of the three dispositions (PhoPhiKat-45) and each of the PID-5-BF domains (Hofstee, 1994). Based on these aggregated scores, we computed the correlations among the three dispositions and the PID domains. Considering that these correlations are less affected by self-report biases and method variance, these allow for a more precise estimate of the associations than solely relying on self-report data (Campbell & Fiske, 1959; Hofstee, 1994).

Finally, we used the self- and informant data from Sample 2 to examine whether the dispositions relate to discrepancies in self- and informant perceptions of the target's maladaptive personality traits. To overcome the limitations of traditional approaches to incongruence analyses (e.g., difference scores confound main effects with discrepancy effects), we computed condition-based regression analyses (CRA) that allow disentangling main effects of self- and informant reports (i.e., direct associations between predictors and outcomes) from discrepancy effects (i.e., associations between discrepancies and outcomes; Humberg et al., 2018ab). In this study, we examined whether discrepancies of self- and informant ratings of the PID-5 domains relate to individual differences in the three dispositions[2]. In CRA, we computed the regression equation z (laughter-related disposition) = c_1 (self-rating PID-5) + c_2 (informant rating PID-5) + ε. As described in Humberg et al. (2018ab), the CRA indicates a discrepancy between self- and informant ratings in relation to z if and only if the condition $c_1 > 0$ *and* $c_2 < 0$ is met (i.e., self-ratings higher than informant ratings; alternatively, $c_1 < 0$ *and* $c_2 > 0$ indicate that informant ratings exceed self-ratings). Humberg et al. introduced a single parameter test that examines whether the conditions for the existence of a discrepancy effect are met: The parameter *abs* is defined as abs:= $|c_1 - c_2| - |c_1 + c_2|$ and indicates a discrepancy effect when *abs* is greater than zero[3]. We computed CRAs for each laughter-related disposition and the five PID domains in CRAN R using Rosseel's (2012) *lavaan* package and accordingly tested whether *abs* exceeded zero statistically significantly.

All data, syntaxes, and materials are openly available in the Open Science Framework (osf.io/eq3vd/).

2.2. Results

2.2.1. Preliminary analyses

Table 1 gives the descriptive statistics of the PhoPhiKat-45. The internal consistencies (α ≥ 0.87), means, and *SD*s were comparable to prior findings from German-speaking samples (e.g., Brauer & Proyer, 2021). The PID-5 scores showed similar distributions and internal

[2] We used the average of the self- and informant ratings on each of the dispositions as approximately accurate estimates of the targets' expressions in gelotophobia, gelotophilia, and katagelasticism.

[3] For details and mathematical proofs see Humberg et al. (2018ab) and their OSF materials (osf.io/e8p5r).

Table 1
Descriptive Statistics, Internal Consistencies, Correlations of Self-ratings with Age and Gender, and Self-Other Agreement (r), and Cohen's d.

	Sample 1 (N = 463)					Sample 2 (N = 213 dyads)											
	Self-ratings					Self-ratings					Informant ratings						
	α	*M*	*SD*	Age	Gender	α	*M*	*SD*	Age	Gender	α	*M*	*SD*	*d*	*r*	95% CI
PhoPhiKat-45																
Gelotophobia	0.89	1.93	0.55	−0.20***	−0.07	0.88	1.93	0.52	−0.20**	−0.20**	0.90	1.81	0.55	−0.23	0.49	[0.38, 0.60]
Gelotophilia	0.89	2.30	0.56	−0.11*	0.10*	0.86	2.41	0.48	−0.08	0.16*	0.88	2.35	0.54	−0.12	0.49	[0.37, 0.60]
Katagelasticism	0.87	1.99	0.49	−0.11*	0.26***	0.87	2.02	0.48	−0.19**	0.18**	0.87	2.00	0.51	−0.04	0.54	[0.43, 0.64]
PID-5 BF																
Neg. Affectivity	0.68	2.20	0.60	−0.23***	−0.18***	0.61	2.21	0.56	−0.15*	−0.34***	0.71	2.14	0.62	−0.12	0.45	[0.32, 0.56]
Detachment	0.74	1.64	0.57	−0.04	0.11*	0.59	1.68	0.46	−0.06	0.06	0.61	1.68	0.49	0.00	0.46	[0.34, 0.56]
Antagonism	0.70	1.47	0.45	−0.06	0.20***	0.71	1.50	0.46	0.00	0.24***	0.80	1.43	0.52	−0.14	0.46	[0.33, 0.58]
Disinhibition	0.74	1.78	0.55	−0.17***	0.06	0.68	1.75	0.50	−0.02	0.19**	0.70	1.68	0.51	−0.14	0.50	[0.39, 0.60]
Psychoticism	0.81	1.79	0.64	−0.19***	0.07	0.73	1.79	0.57	−0.11	0.06	0.75	1.68	0.55	−0.20	0.36	[0.23, 0.47]
Total	0.88	1.78	0.41	−0.20***	0.06	0.81	1.79	0.33	−0.11	0.05	0.86	1.72	0.38	−0.30	0.45	[0.34, 0.54]

Note. Cohen's *d* gives the effect size for mean differences of self- and informant ratings. Gender is coded 1 = women, 2 = men. All self-other agreement correlations statistically significant ($p < .001$). *$p < .05$. **$p < .01$. ***$p < .001$. Two-tailed. 95% CI = Bootstrapped (k = 5,000 samples) 95% confidence intervals of self-other agreement correlations *r*.

Table 2
Study 1: Correlations Between Dispositions Toward Ridicule and Being Laughed at and PID-5-BF Domains and Variance Overlap (R^2) of Samples 1 and 2.

	Sample 1 (N = 463)				Sample 2 (N = 213)			
	Gelotophobia	Gelotophilia	Katagelasticism	R^2	Gelotophobia	Gelotophilia	Katagelasticism	R^2
Negative affectivity	0.57*** [0.51, 0.63]	−0.07 [−0.16, 0.03]	0.16*** [0.07, 0.23]	0.31	0.44***(NR) [0.31, 0.56]	−0.17**(NR) [−0.30, −0.03]	−0.04(NR) [−0.19, 0.12]	0.17
Detachment	0.56*** [0.50, 0.63]	−0.15** [−0.24, −0.06]	0.20*** [0.10, 0.29]	0.33	0.56*** [0.47, 0.65]	−0.15* [−0.29, >0.00]	0.10 [−0.05, 0.24]	0.31
Antagonism	0.24*** [0.15, 0.33]	0.08 [−0.02, 0.18]	0.40*** [0.32, 0.47]	0.19	0.09(NR) [−0.03, 0.22]	0.19**(NR) [0.07, 0.31]	0.43*** [0.31, 0.55]	0.17
Disinhibition	0.26*** [0.16, 0.35]	0.20*** [0.11, 0.29]	0.34*** [0.26, 0.43]	0.18	0.10(NR) [−0.05, 0.24]	0.23** [0.09, 0.36]	0.22**(NR) [0.09, 0.34]	0.08
Psychoticism	0.49*** [0.42, 0.56]	0.05 [−0.05, 0.14]	0.24*** [0.15, 0.33]	0.27	0.32***(NR) [0.19, 0.45]	0.01 [−0.10, 0.13]	0.20** [0.04, 0.34]	0.13
Total	0.60*** [0.54, 0.66]	0.02 [−0.08, 0.12]	0.36*** [0.28, 0.44]	0.42	0.46***(NR) [0.33, 0.57]	0.03 [−0.10, 0.17]	0.26***(NR) [0.12, 0.40]	0.25
R^2	0.46	0.10	0.19		0.36	0.13	0.21	

Note. Bootstrapped (k = 5,000 samples) 95% confidence interval (CI) in brackets. R^2 = Coefficient of determination (total score of PID-5 not included; controlled for age and gender). *p <.05. **p <.01. ***p <.001. Two-tailed. NR = Not replicated; correlation coefficient is not included in the CI of Sample 1.

consistencies ($0.59 \leq \alpha \leq 0.88$; Table 1) as non-clinical German-speaking samples (Zimmermann et al., 2014).

As in prior studies (e.g., Ruch & Proyer, 2009a), men showed greater expressions in katagelasticism than women (Samples 1 and 2: Hedges' g = 0.55 and 0.37; Table 1). Furthermore, there were small gender effects in Sample 2, as women were higher in gelotophobia (g = 0.41) and lower in gelotophilia (g = 0.34) than men. In the PID-5, men were higher in Antagonism (Sample 1/2: g = 0.42/0.50) and Disinhibition (Sample 2: g = 0.40) whereas women were higher in Negative Affectivity (Sample 1/2: g = 0.34/0.74). Numerically small associations with age existed for Negative Affectivity (Samples 1 and 2), Disinhibition, and Psychoticism (Sample 1; rs between −0.23 and −0.15).

In Sample 2, we found robust SOA for the three dispositions (rs ≥ 0.49) and the PID-5 domains (rs ≥ 0.45; Table 1), comparable to prior findings (Brauer & Proyer, 2021; Oltmanns & Oltmanns, 2021). The mean differences between self- and informant ratings were of small size for both the laughter-related dispositions and maladaptive traits ($|d$s$|$ ≤ 0.30; Table 1).

2.2.2. *Associations between dealing with ridicule and being laughed at and maladaptive personality traits*

Gelotophobia. As expected, gelotophobia related positively to Negative Affectivity, Detachment, and Psychoticism[4] (rs ≥ 0.32) in self-reports across samples (Table 2) and in the aggregated self- and informant ratings (see "Study 1" of Table 3 for findings using the aggregated ratings). Positive relationships with Antagonism and Disinhibition existed in Sample 1 (r = 0.24 and 0.26, respectively; p < .001) but were not replicated in the data of Sample 2 (rs ≤ |0.10|). Overall, gelotophobia shared 46 and 36% variance with the maladaptive traits in Sample 1 and 2, indicating overlap but no redundancy.

When testing the contribution of the PID-5 domains to gelotophobia in regression analyses, Negative Affectivity (Sample 1/2: ΔR^2 = 0.32/0.05, Δf^2 = 0.50/0.08) and Detachment (Sample 1/2: ΔR^2 = 0.14/0.30, Δf^2 = 0.27/0.47) were potent predictors, with small to large effects in both samples.

Gelotophilia. As expected, joy in being laughed at was positively related to greater Disinhibition in the self-ratings of Samples 1 and 2 (r = 0.20 and 0.23, p ≤ 0.001; Table 2) as well as the aggregated ratings (Table 3). Against expectations, the correlations between Negative Affectivity and gelotophilia were of small size and did not replicate across samples (rs between −0.07 and −0.17). The remaining associations in the self-report data were of small size (r ≤ 0.19) and did not replicate across samples, except for a small association with Detachment across samples (rs = −0.15, ps ≤ .029). Correlations with Antagonism varied across samples but showed a small positive association in the aggregated self- and other ratings (r = 0.20; Table 3). Overall, gelotophilia shared between 10 and 13% variance with the maladaptive traits in Samples 1 and 2.

Regression analyses of the self-ratings showed that Disinhibition (Sample 1/2: Δf^2 = 0.04/0.05; ΔR^2 = 0.04/0.05), low Detachment (Δf^2 = 0.06/0.02; ΔR^2 = 0.05/0.02), low Negative Affectivity (Δf^2 = 0.01/0.07; R^2 = 0.01/0.06), and higher Antagonism (only Sample 2; Δf^2 = 0.02; ΔR^2 = 0.02) contributed to explain gelotophilia beyond age and gender. The maladaptive traits showed only small effects in explaining joy in being laughed at.

Katagelasticism. In line with expectations, joy in laughing at others was substantially correlated with Antagonism (rs = 0.40 and 0.43, ps < .001). Also, Disinhibition[5], and Psychoticism (r ≥ 0.20, p ≤ .003) showed positive associations. This pattern was also found in the aggregated ratings (see Table 3). Katagelasticism shared 19 and 21% of the variance with the maladaptive traits in Samples 1 and 2.

Regression analyses have shown that Antagonism was a robust predictor of katagelasticism (Sample 1/2: Δf^2 = 0.19/0.23; ΔR^2 = 0.15/0.17). The remaining maladaptive domains contributed with small effect sizes to the prediction of katagelasticism: In Sample 1 only Disinhibition entered the model as a predictor (Δf^2 = 0.05; ΔR^2 = 0.04) whereas Negative Affectivity (Δf^2 = 0.03, ΔR^2 = 0.02) and Psychoticism (Δf^2 = 0.04; ΔR^2 = 0.03) entered the model in Sample 2. For the aggregated ratings (Sample 2), only Antagonism (Δf^2 = 0.39, ΔR^2 = 0.26) was predictive of katagelasticism.

2.2.3. *Self–Informant discrepancies in maladaptive personality traits*

The results from the CRAs to examine whether the dispositions relate to systematic discrepancies in self- and informant reports of maladaptive personality traits are displayed in ESM B. No positive *abs* parameter was statistically significant (all ≤ 0.14, ps ≥ .237). Hence, there is no evidence that the dispositions relate to incongruencies between self- and informant perceptions of maladaptive personality traits.

2.3. *Discussion*

This was the first study to localize three dispositions toward ridicule and being laughed at within the broad domains of personality

[4] Coefficients observed in Sample 2 were not included in CIs of Sample 1, but correlations were robustly positive across samples (all rs ≥ 0.32).

[5] The coefficients were in the same direction in both samples (r = 0.34 and 0.22, ps ≤ 0.001) but the coefficient of Sample 2 was not included in the CI of the correlation observed in Sample 1.

Table 3
Correlations Between Self- and Informant Aggregated Ratings in the Laughter-Related Dispositions and PID-5 Domains in Studies 1 and 2. Mini Meta-Analysis Informs About the Average Correlations Between PhoPhiKat-45 and PID-5-BF Across Studies 1 and 2.

	Study 1 (N = 213 Dyads)			Study 2 (N = 165 Dyads)			*Mini Meta-Analysis Study 1 & 2* (N = 378 Dyads)		
PID-5	Gelotophobia	Gelotophilia	Katagelasticism	Gelotophobia	Gelotophilia	Katagelasticism	Gelotophobia	Gelotophilia	Katagelasticism
Negative Affectivity	0.51*** [0.39, 0.61]	−0.14* [−0.28, −0.01]	0.13 [−0.02, 0.26]	0.52*** [0.39, 0.63]	−0.21** [−0.37, −0.05]	0.02 [−0.14, 0.17]	0.51	−0.17	0.08
Detachment	0.62*** [0.53, 0.70]	−0.15* [−0.30, 0.01]	0.18** [0.06, 0.31]	0.61*** [0.51, 0.70]	−0.28*** [−0.42, −0.13]	0.08 [0.26, 0.55]	0.62	−0.21	0.14
Antagonism	0.12 [−0.00, 0.25]	0.20** [0.07, 0.33]	0.53*** [0.43, 0.63]	0.00 [−0.16, 0.17]	0.24** [0.10, 0.40]	0.55*** [0.43, 0.66]	0.07	0.22	0.54
Disinhibition	0.05 [−0.10, 0.19]	0.30*** [0.18, 0.42]	0.32*** [0.19, 0.45]	0.01 [−0.17, 0.19]	0.34*** [0.20, 0.47]	0.29*** [0.14, 0.43]	0.03	0.32	0.31
Psychoticism	0.35*** [0.19, 0.49]	−0.01 [−0.14, 0.11]	0.16* [0.02, 0.30]	0.24** [0.07, 0.39]	0.22**$^{(NR)}$ [0.07, 0.37]	0.33***$^{(NR)}$ [0.19, 0.46]	0.30	0.09	0.24
Total	0.47*** [0.35, 0.59]	0.05 [−0.09, 0.19]	0.37*** [0.25, 0.49]	0.40*** [0.27, 0.51]	0.11 [−0.03, 0.27]	0.41*** [0.28, 0.54]	0.44	0.08	0.39

Note. Bootstrapped (k = 5,000 samples) 95% confidence interval (CI) in brackets. *p <.05. **p <.01. ***p <.001. Two-tailed. NR = Not replicated; correlation coefficient is not included in the CI of Study 1. When adding education as a control variable the findings did not change (all changes $r \leq 0.01$).

pathology. Overall, our expectations were widely met, gelotophobia robustly related to Negative Affectivity, Detachment, and Psychoticism; gelotophilia was characterized by inclinations to Disinhibition and low Detachment; and katagelasticism related primarily to Antagonism. This is in line with findings on the relations between the dispositions and the PID-5 equivalents of non-pathological personality traits (PEN-model, Big Five, HEXACO; e.g., Rawlings et al., 2010; Ruch et al., 2013; Torres-Marín et al., 2019). However, there were mixed findings on the relation between gelotophilia and Negative Affectivity that should be further clarified in independent samples. Finally, we did not find evidence to support the notion that the laughter-related dispositions relate to discrepancies of self- and other views of maladaptive personality traits.

Further discussion and interpretation warrant replication and extension of the findings since this was the first study on the relations between dealing with laughter and maladaptive personality traits. The broad nature of the domains describing maladaptive traits restricts conclusions on more specific patterns of behaviors, thoughts, and emotions, and requires further investigation on the facet level. This was the main ambition behind Study 2.

3. Study 2

We extended the investigation to the 25 narrow maladaptive personality traits covered in the PID-5. We tested the hypotheses derived for Study 1 and considered the domains that were predictive for the dispositions in the previous study: For gelotophobia, we expected to find positive associations with the domains of Negative Affectivity, Detachment, and Psychoticism. Gelotophobes are characterized by insecurity in their close relationships, as they show increased expressions of attachment anxiety, inclinations to jealousy (i.e., feeling a real or imagined threat to their relationship), and social anxiousness (e.g., Brauer et al., 2020, 2021; Ruch et al., 2014). Hence, we expected to find positive associations with the facets Emotional Lability, Anxiousness, and Separation Insecurity of the Negative Affectivity domain, and with Withdrawal and Intimacy Avoidance (Detachment). Gelotophobes show altered reactions to signs of laughter in comparison to non-gelotophobes (e.g., Ruch et al., 2014; Wu et al., 2016) and we expected that this would be reflected through higher inclinations to the facets Unusual Beliefs and Perceptual Dysregulation of the Psychoticism domain. Finally, we expected positive associations with the facets of Suspiciousness and Depressiveness (not assigned to a domain) since gelotophobia goes along with greater depressiveness (Brauer & Proyer, 2020b) and paranoid sensitivity towards signs of laughter and perceived threats to relationships (e.g., Brauer et al., 2021; Ruch & Proyer, 2008ab).

For gelotophilia, we expected negative associations with Separation Insecurity and Intimacy Avoidance as gelotophiles are characterized by secure attachment styles (i.e., low avoidance and anxiety; Brauer et al., 2020). Similarly, gelotophiles' interpersonal styles aim at earning laughter by others, which requires approaching others and seeking attention, thus we expect negative relations to the facets of Withdrawal and Attention Seeking. For the Disinhibition domain, we examined the associations with facets in an exploratory manner.

Katagelasticism has shown associations with manipulative and callous behaviors, as well as inclinations to psychopathic and Dark Triad personality traits (Proyer, Flisch et al., 2012; Torres-Marín et al., 2019). Thus, we expected associations with the Antagonism facets Manipulativeness and Deceitfulness. Finally, we expected relations to Attention Seeking, Callousness and Hostility, based on katagelasticists' joy in exposing the weaknesses of others to ridicule them and prior findings on their inclinations to callous behaviors, as well as inclinations to deliberate and malicious provocations of others (Navarro-Carrillo et al., 2021; Proyer, Flisch et al., 2012).

As in Study 1, we collected data from two independent samples to examine the replicability and stability of findings, as well as ratings by knowledgeable others. In addition, we aggregated the findings based on the self-informant ratings across Study 1 and 2 in a mini meta-analysis (Goh et al., 2016) to estimate the correlations between the laughter-related dispositions and PID-5 domains. This allowed us to summarize the findings across studies and derive more accurate estimates of the studied associations by aggregating data across studies and sources of information (i.e., self- and informant views), thus, allowing us to place a greater emphasis on the results' reliability and replicability rather than relying on individual coefficients from single samples. Finally, we again examined whether the laughter-related dispositions are associated with discrepancies in self- and informant views of targets' maladaptive personality traits by using CRA (Humberg et al., 2018ab).

3.1. Method

3.1.1. Participants and procedure

Sample 3 comprised N = 597 participants aged 17 to 75 years (M = 26.5, SD = 9.8, median = 23.0), with the majority being women (79.6%; 19.3% men) and seven participants indicating "other." Educational status was high, as about half of the participants (55.8%) held a high school diploma qualifying them to attend university, 29.1% held a university degree (i.e., bachelor's, master's, or doctorate), 8.2%

completed vocational training, 2.9% completed high school, three participants stated "other," and one participant had no educational qualifications. When participating, 74.1% were students, 19.4% were working professionals across a broad range of occupations, 2.2% were retired, 2.0% were engaging in voluntary social services, 1.7% were seeking employment, and four participants were in vocational training. Data collection was stopped after 3 months.

Sample 4 consisted of 165 self-informant dyads, of which those who provided self-ratings were aged 18 to 71 years (M = 22.0, SD = 6.2, median = 21.0). One participant did not indicate their gender and 78.2% identified as women (21.2% men). Educational status was high, with 86.7% holding a high school diploma to attend university, 9.1% holding a university degree, 3.6% having completed vocational training, and one participant indicating "other." The majority (95.7%) were students, along with three working professionals, two retirees, one seeking employment, and one in voluntary service. The informants were M = 28.1 (SD = 13.5, median = 22.0) years of age and 60.0% identified as women (38.8% men; two participants did not indicate their gender). The dyads were acquaintances/friends (41.2%), romantic partners (32.7%), parent–child (17.0%), siblings (6.1%), family members (2.4%), and work colleagues (0.6%). The self-informant dyads knew each other for a mean of 9.5 years (SD = 9.3, median = 6.1). Using the same 10-point scale as in Study 1, dyads reported a high level of acquaintance (M = 9.2, SD = 1.1, [5, 10]). Data collection lasted 6 months.

Power computations (G*Power; Faul et al., 2009; type = sensitivity) for biserial correlations showed that our data allowed detecting small to medium effect sizes ($\rho \geq 0.11$ and 0.21 in Samples 3 and 4) with 80% power, 5% type I error rate, and two-tailed tests of statistical significance. Hence, both samples allowed detecting the average effect sizes in the field (Fraley & Vazire, 2014).

As in Study 1, we advertised the studies at two distinct time points online and on campus. Data collection was started about one year after finishing the data collection of Study 1. We used the same advertisement strategy and inclusion criteria for recruiting participants and dyads as described in Study 1. There was no financial compensation for participation, but psychology students could earn course credit. Completing the self-ratings took about 50 to 60 min while the informants completed the PhoPhiKat-45 and PID-5-BF in the third-person form in 10–15 min. There is no overlap of participants between Study 1 and Study 2.

3.1.2. Instruments

As in Study 1, we assessed the three laughter-related dispositions using the PhoPhiKat-45 (Ruch & Proyer, 2009a). Again, self-ratings were obtained by using the standard form and the informant form with items presented in the third person were completed by informants.

To assess the maladaptive personality traits, including their 25 facets, we used the 220-item PID-5 by Krueger and colleagues (2012; German-language adaptation by Zimmermann et al., 2014). Each facet consists of 4 to 14 items and 15 of the 25 facets are assigned to a higher-order domain, whereas ten facets load on more than one factor and should be interpreted independently from the higher-order factors. Overall, Krueger et al. (2012) and Zimmermann et al. (2014) provide robust evidence for the reliability (αs = 0.73–0.95), factorial structure, and convergent and discriminant validity. Bach et al. (2018) have shown strong measurement invariance between clinical and non-clinical samples. The instrument is the standard instrument to assess maladaptive personality and is openly available (bit.ly/33StqrR). Informants in Sample 4 completed the PID-5-BF, as in Study 1.

3.1.3. Data analysis

We computed correlation and regression analyses to examine the associations between the PID-5 domains (and facets) and gelotophobia, gelotophilia, and katagelasticism analogously to Study 1. Again, we computed bootstrapped (k = 5,000 samples) 95% CIs to evaluate the replicability across samples. As in Study 1, we used the data of the self- and informant ratings (Sample 4) to aggregate their scores of the PhoPhiKat-45 and PID-5 to reduce biases (Hofstee, 1994).

We evaluated the replicability of the findings *across studies* on basis of the 95% CIs by comparing the correlations based on the aggregated self-informant ratings of Sample 2 (Study 1) and Sample 4 of the present study (Brandt et al., 2014). In addition, we computed a mini *meta*-analysis (Goh et al., 2016) of the correlations that were computed on basis of the aggregated self-informant reports (Samples 2 and 4). We computed the mini *meta*-analysis by transforming the correlations observed in each study with Fisher's r-to-z transformation, then weighted the coefficients with the respective sample size, and finally converted the averaged coefficient back to a Pearson correlation with Fisher's z-to-r transformation. The formulas and individual steps for the computation of the meta-analyses are provided in the OSF.

In accordance with Study 1, we computed CRAs (Humberg et al., 2018ab) to examine whether self-informant discrepancies of maladaptive personality traits are associated with the three dispositions by using the self- and informant data of Sample 4.

3.2. Results

3.2.1. Preliminary analyses

Table 4 gives the descriptive statistics and SOA correlations for the PhoPhiKat-45 and PID-5 domain scores (all means, SDs, and αs for the facets provided in the ESM C). The internal consistencies of all measures were satisfying for research purposes in both samples, with $\alpha \geq 0.88$ (self-ratings) and ≥ 0.87 (informant ratings) for the PhoPhiKat-45 and ≥ 0.69 (self-ratings) and ≥ 0.62 (informant ratings) in the PID-5. The correlations with age ($rs \leq |0.26|$) and gender ($rs \leq |0.37|$) were of small to medium size and comparable to Study 1.

When testing the SOA in Sample 4 (see Table 4), the coefficients were robust for the dispositions ($rs \geq 0.49$) and in line with Oltmanns and Oltmanns (2021) for the PID-5 ($0.30 \leq r \leq 0.47$, all $p \leq 0.001$). Mean differences between self- and informant ratings were small for gelotophobia (d = -0.32) and negligible for gelotophilia and katagelasticism ($d \leq 0.05$).[6]

3.2.2. Domain-level associations and mini meta-analysis across studies

Gelotophobia. As in Study 1, we found positive and replicable associations with Negative Affectivity, Detachment, and Psychoticism ($rs \geq 0.32$) across samples (Table 5) and sources of information (see "Study 2" in Table 3), whereas Antagonism was unrelated ($rs \leq 0.03$) and Disinhibition showed again mixed findings across samples (r = 0.22 in Sample 3 and r = 0.07 in Sample 4). In line with Study 1, regression analyses showed that Detachment (Sample 3/4: $\Delta R^2 = 0.39/0.44$, $\Delta f^2 = 0.67/0.88$) and Negative Affectivity (Sample 3/4: $\Delta R^2 = 0.12/0.08$, $\Delta f^2 = 0.27/0.20$) were robust predictors of gelotophobia. Antagonism entered the model with only a negligible effect (Sample 3/4: $\Delta R^2 = 0.01/0.02$, $\Delta f^2 = 0.02/0.04$; all $p \leq .001$). When finally aggregating the findings across samples and information sources (i.e., self- and informant reports) in a mini meta-analysis, gelotophobia showed robust relations to the higher-order traits of Negative Affectivity, Detachment, and Psychoticism (see Table 3, "Mini Meta-Analysis").

Gelotophilia. In accordance with Study 1, we found associations with low Negative Affectivity and low Detachment ($r \geq |0.23|$, $ps < .001$), as well as a minor effect size for higher Antagonism ($rs \geq 0.17$, $ps \leq .015$). Regression analyses showed that gelotophilia was predicted well by low Detachment (Sample 3/4: $\Delta R^2 = 0.18/0.13$, $\Delta f^2 = 0.22/0.11$) and Psychoticism (Sample 3/4: $\Delta R^2 = 0.08/0.15$, $\Delta f^2 = 0.11/0.23$) in both samples. Additionally, Antagonism ($\Delta R^2 = 0.03$, $\Delta f^2 = 0.04$), low Negative Affectivity ($\Delta R^2 = 0.01$, $\Delta f^2 = 0.02$), and Disinhibition ($\Delta R^2 = 0.01$, $\Delta f^2 = 0.02$) contributed with minor effects in Sample 3 whereas

[6] We omitted the comparison of mean differences for the PID-5 domains because the number of items used to compute the means is not equal across the PID-5 full- and brief forms, which limits the comparability.

Table 4
Descriptive Statistics, Internal Consistencies, Correlations of Self-ratings with Age and Gender, and Self-Other Agreement (r; Sample 4) in Study 2.

	Sample 3 (N = 597)						Sample 4 (N = 165 Dyads)											
	Self-ratings						Self-ratings						Informant ratings					
	α	M	SD	Age	Gender		α	M	SD	Age	Gender		α	M	SD		r	95% CI
PhoPhiKat-45																		
Gelotophobia	0.91	2.06	0.60	−0.14**	0.11**		0.89	2.06	0.57	−0.20**	0.17*		0.88	1.89	0.53		0.53	[0.41, 0.64]
Gelotophilia	0.89	2.35	0.57	−0.07	−0.15**		0.91	2.40	0.57	0.14	−0.21**		0.88	2.38	0.54		0.57	[0.45, 0.67]
Katagelasticism	0.88	1.90	0.50	−0.12**	−0.27**		0.88	1.97	0.52	0.09	−0.28**		0.87	1.99	0.54		0.49	[0.35, 0.61]
PID-5																		
Neg. Affectivity	0.93	2.14	0.55	−0.23**	0.22**		0.92	2.23	0.54	−0.26**	0.32**		0.62	2.22	0.55		0.39	[0.25, 0.51]
Detachment	0.94	1.78	0.53	−0.02	−0.01		0.93	1.70	0.48	−0.15	−0.04		0.63	1.72	0.50		0.47	[0.34, 0.60]
Antagonism	0.90	1.75	0.44	−0.12**	−0.24**		0.90	1.78	0.43	−0.04	−0.26**		0.74	1.43	0.47		0.32	[0.16, 0.48]
Disinhibition	0.90	1.82	0.45	−0.11**	−0.02		0.91	1.84	0.47	−0.08	−0.02		0.67	1.67	0.48		0.54	[0.43, 0.63]
Psychoticism	0.95	1.77	0.51	−0.10*	−0.04		0.95	1.80	0.52	−0.15*	−0.07		0.70	1.86	0.56		0.30	[0.17, 0.44]
Total	0.97	1.91	0.31	−0.16***	−0.03		0.97	1.92	0.30	−0.17*	−0.02		0.82	1.78	0.34		0.32	[0.18, 0.45]

Note. Gender is coded 1 = women, 2 = men. Informants completed the brief version of the PID-5. All self-other agreement correlations statistically significant (p <.001). *p <.05. **p <.01. ***p <.001. Two-tailed. 95% CI = Bootstrapped (k = 5,000 samples) 95% confidence intervals of self-other agreement correlations r.

low Negative Affectivity ($\Delta R^2 = 0.04$, $\Delta f^2 = 0.07$) entered the model in Sample 4. Thus, the findings from Study 1 replicated partially when using the full PID-5 instrument. The aggregation across studies in the mini meta-analysis showed that gelotophilia is characterized by inclinations to Disinhibition, Antagonism, and to lower Detachment (see Table 3, "Mini Meta-Analysis").

Katagelasticism. In line with Study 1, katagelasticism related positively to Antagonism, Disinhibition, and Psychoticism[7] across samples ($rs \geq 0.20$) and the regression analyses showed comparable findings to Study 1: Antagonism was the best predictor of katagelasticism across samples (Sample 3/4: $\Delta R^2 = 0.18/0.13$, $\Delta f^2 = 0.25/0.17$). However, Disinhibition ($\Delta R^2 = 0.01$, $\Delta f^2 = 0.02$) and low Negative Affectivity ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.03$) showed effects of minor size in Sample 3. The mini *meta*-analysis (Table 3) showed that katagelasticism is characterized by positive association with Antagonism, Disinhibition, and Psychoticism ($rs \geq 0.24$) across samples and sources of information.

3.2.3. *Extending the Study of associations between laughter-related dispositions and maladaptive personality traits to facets of the PID-5*

In addition to the study of the broad PID-5 domains, we examined the associations with the PID-5 facets. Here, we report findings from the regression analyses predicting each disposition by age and gender in Step 1 (method = ENTER) and the facets in the following steps (method = STEPWISE). The bivariate correlations between the dispositions and the 25 PID-5 facets are displayed and discussed in more detail in ESM D.

Gelotophobia. Anxiousness ($\Delta R^2 = 0.39$, $\Delta f^2 = 0.66$), Withdrawal ($\Delta R^2 = 0.11$, $\Delta f^2 = 0.23$), Submissiveness ($\Delta R^2 = 0.05$, $\Delta f^2 = 0.11$), Separation Insecurity ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.06$), and low Manipulativeness ($\Delta R^2 = 0.01$, $\Delta f^2 = 0.03$) were robust predictors of gelotophobia in Sample 3[8]. Similarly, in Sample 4 we found Withdrawal ($\Delta R^2 = 0.41$, $\Delta f^2 = 0.77$), Anxiousness ($\Delta R^2 = 0.11$, $\Delta f^2 = 0.26$), Submissiveness ($\Delta R^2 = 0.04$, $\Delta f^2 = 0.10$), Separation Insecurity ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.04$), low Callousness ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.04$), and Intimacy Avoidance ($\Delta R^2 = 0.01$, $\Delta f^2 = 0.04$) as predictors.

Gelotophilia. For joy in laughing at others, Attention Seeking ($\Delta R^2 = 0.19$, $\Delta f^2 = 0.24$), low Withdrawal ($\Delta R^2 = 0.11$, $\Delta f^2 = 0.17$), low Separation Insecurity ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.03$), and Eccentricity ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.02$) were robust predictors in Sample 3.[9] In Sample 4, we found a similar pattern, as Attention Seeking ($\Delta R^2 = 0.32$, $\Delta f^2 = 0.52$) and low Withdrawal ($\Delta R^2 = 0.08$, $\Delta f^2 = 0.14$) were the main predictors, followed by low Hostility ($\Delta R^2 = 0.03$, $\Delta f^2 = 0.05$), Eccentricity ($\Delta R^2 = 0.04$, $\Delta f^2 = 0.09$), low Separation Insecurity ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.04$), and Impulsivity ($\Delta R^2 = 0.02$, $\Delta f^2 = 0.03$).

Katagelasticism. We found that Callousness (Sample 3/4: $\Delta R^2 = 0.21/0.26$, $\Delta f^2 = 0.30/0.39$), Attention Seeking (Sample 3/4: $\Delta R^2 = 0.07/0.07$, $\Delta f^2 = 0.11/0.11$), Hostility (Sample 3/4: $\Delta R^2 = 0.03/0.07$, $\Delta f^2 = 0.04/0.04$), and low Withdrawal (only Sample 3; $\Delta R^2 = 0.03$, $\Delta f^2 = 0.05$) and Grandiosity (only Sample 4; $\Delta R^2 = 0.02$, $\Delta f^2 = 0.04$) were

[7] Technically, the CI for the correlation between katagelasticism and psychoticism differed ($r = 0.20$ in Sample 3 and 0.31 in Sample 4), but the finding is in accordance with those from Samples 1 and 2 in the size and the direction of the effect.

[8] Further predictors reached statistical significance (p <.05) and entered the model in Sample 3 (i.e., Distractability, low Risk Taking, Depressiveness, Suspiciousness, Unusual Beliefs and Experiences, and Eccentricity). As their contribution was negligible (R^2 < 1%), we have not discussed these here. See the OSF for the full coefficients.

[9] Further predictors reached statistical significance (p < .05) and entered the model in Sample 3 (i.e., Impulsivity, Hostility, Manipulativeness, low Intimacy Avoidance and low Callousness). As their contribution was negligible (R^2 < 1%) we have not discussed these here. See OSF for the full coefficients.

Table 5
Study 2: Correlations Between Dispositions Toward Ridicule and Being Laughed at and PID-5 Domains and Facets, and Variance Overlap (R^2).

	Sample 3 (N = 597)				Sample 4 (N = 165)			
	Gelotophobia	Gelotophilia	Katagelasticism	R^2	Gelotophobia	Gelotophilia	Katagelasticism	R^2
Negative affectivity	0.62***	−0.23***	−0.02	0.35	0.59***	−0.27***	0.01	0.30
	[0.57, 0.67]	[−0.31, −0.14]	[−0.10, 0.06]		[0.48, 0.68]	[−0.42, −0.11]	[−0.13, 0.15]	
Detachment	0.63***	−0.42***	−0.01	0.43	0.69***	−0.37***	0.06	0.48
	[0.58, 0.69]	[−0.49, −0.36]	[−0.09, 0.07]		[0.59, 0.76]	[−0.50, −0.22]	[−0.10, 0.23]	
Antagonism	0.07	0.17***	0.44***	0.19	0.03	0.19*	0.38***	0.14
	[<0.00, 0.15]	[0.09, 0.25]	[0.37, 0.51]		[−0.13, 0.20]	[0.04, 0.34]	[0.25, 0.51]	
Disinhibition	0.22***	0.11*	0.28***	0.15	0.07$^{(NR)}$	0.24**^{NR}	0.25**	0.11
	[0.14, 0.31]	[0.02, 0.19]	[0.20, 0.34]		[−0.10, 0.24]	[0.08, 0.40]	[0.12, 0.39]	
Psychoticism	0.32***	0.05	0.20***	0.16	0.33***	0.17*$^{(NR)}$	0.31***$^{(NR)}$	0.27
	[0.24, 0.39]	[−0.04, 0.14]	[0.12, 0.27]		[0.18, 0.46]	[<0.00, 0.32]	[0.18, 0.45]	
Total	0.53***	−0.10*	0.27***	0.37	0.46***$^{(NR)}$	0.02$^{(NR)}$	0.35***$^{(NR)}$	0.37
	[0.47, 0.58]	[−0.19, −0.01]	[0.20, 0.34]		[0.33, 0.57]	[−0.16, 0.19]	[0.21, 0.47]	
R^2	0.53	0.29	0.21		0.54	0.33	0.15	

Note. Bootstrapped (k = 5,000 samples) 95% confidence interval (CI) in brackets. R^2 = Coefficient of determination (total score of PID-5 not included; controlled for age and gender). *p <.05. **p <.01. ***p <.001. Two-tailed. NR = Not replicated; correlation coefficient is not included in the CI of Sample 3.

robust predictors of katagelasticism.[10]

3.2.4. *Discrepancies between self- and informant ratings in maladaptive traits*

As in Study 1, we did not find evidence for the notion that self- and other views of maladaptive personality traits relate to gelotophobia, gelotophilia, and katagelasticism (all positive *abs* parameters ≤ 0.15, *ps* ≥ .312; see ESM B for all coefficients).

3.3. *Discussion*

The main ambition behind Study 2 was the extension of the study of maladaptive personality traits to their fine-grained facets. Our findings on associations between the laughter-related dispositions and the PID-5 domains were widely in line with Study 1, considering that correlation coefficients would differ based on the differences in the instruments used (i.e., brief vs. full form of the PID-5). Using the full PID-5 instrument allowed for a more comprehensive assessment of the domains by additionally investigating associations with facets, which contributed to understanding the localization of the three dispositions within the system of maladaptive personality traits (see General Discussion). Further, the use of informant ratings allowed us to aggregate the findings across information sources (i.e., self- and informant reports; Hofstee, 1994) in Sample 4 and comparing them with findings from Study 1. This contributed to clarify which associations were replicable and stable across data sets. We supplemented this approach by computing a mini meta-analysis (Goh et al., 2016) that allowed to estimate the studied associations across independent samples. In line with Study 1 and against our expectations, we found no evidence for the notion that the dispositions relate to discrepancies between self- and informant views of maladaptive traits. A limitation of Study 2 is that the design was not fully parallel, as informant ratings were obtained with the brief version of the PID-5 while self-reports were collected with the full version. While we have adjusted the item number for the discrepancy analyses, it would be desirable to examine the correlations and discrepancies by using the informant ratings at the facet level in future studies, as this might reveal that discrepancies in self-other views exist for more narrow behaviors on the facet-level.

[10] Further predictors reached statistical significance (p < .05) and entered the model in Sample 3 (i.e., Emotional Lability, Manipulativeness, Rigid Perfectionism, Intimacy Avoidance, and Restricted Affectivity). Since their contribution was negligible (R^2 < 1%) we have not discussed them here. See OSF for the full coefficients.

4. General discussion

Our findings narrow a gap in the literature by localizing three dispositions toward ridicule and being laughed at in the DSM-5 (APA, 2013) alternative system of personality pathology (Krueger et al., 2012). This extends prior research that has localized the three dispositions in standard models of personality (e.g., Ruch & Proyer, 2009a; Torres-Marín et al., 2019) and a model of desirable personality traits (i.e., strengths and virtues; Proyer et al., 2014). Hence, the study of maladaptive traits completes the study of the full range of associations across a dimension from personality pathology to standard models and to morally positively valued traits. Implementing informant ratings allowed us to aggregate findings across sources of information and derive findings that are less affected by methodological and psychological biases prevalent in self-reports (e.g., Campbell & Fiske, 1959; Hofstee, 1994; Kenny, 2020).

Taking the findings across studies and data sources (self- and informant ratings) together, gelotophobia was characterized by Negative Affectivity, Detachment, and Psychoticism. This aligns well with prior findings on the Big Five equivalents of the PID-5, showing gelotophobes' inclinations to Neuroticism and Introversion and the Eysenckian Psychoticism domain (e.g., Ruch & Proyer, 2009a; Ruch et al., 2013; Torres-Marín et al., in press). Examination of narrow facets (Study 2; regression analyses) showed that the combination of Anxiousness, Withdrawal, Submissiveness, low Manipulativeness, and Separation Insecurity was robustly associated with gelotophobia. Overall, this highlights that gelotophobia is characterized by maladaptive traits in both intra- and interpersonal life domains. The findings reflect the current knowledge of gelotophobes' inclinations to frequently experiencing negative emotions and low satisfaction, depressive attributional styles, suspiciousness toward others (e.g., jealousy), loneliness, and insecure attachment styles (e.g., Brauer & Proyer, 2018, 2020a; Brauer et al., 2021; Ruch et al., 2014). Also, considering the robust overlap with the PID-5 traits (medium-to-large effect sizes) might contribute to understanding why gelotophobia goes along with clinically relevant symptoms and psychiatric disorders (e.g., Brück et al., 2018; Forabosco et al., 2009; Torres-Marín et al., 2021; Weiss et al., 2012) but also behaviors and issues in everyday life that are detrimental to well-being (e.g., staying single due to withdrawal and social insecurities, experiencing low satisfaction and purpose, and negatively toned emotional experiences in social and professional life; e.g., Blasco-Belled et al., 2019; Brauer & Proyer, 2020ab; Proyer et al., 2014; Ruch et al., 2015). However, in contrast to prior studies showing inclinations to paranoid ideation (Torres-Marín et al., 2021), gelotophobia was comparatively weakly related to Psychoticism and its facets that assess unusual beliefs and suspiciousness. This might be indicative of the specificity regarding laughter-related contexts. Against expectations, gelotophobia did not relate to

discrepancies in self-informant views of maladaptive traits. This is contrary to findings on gelotophobes' estimating their expressions in positively valued traits (character strengths; Proyer et al., 2014) and abilities (e.g., when discounting their humor production abilities; Ruch, Beermann et al., 2009) as lower than others perceive them. Future research might consider whether gelotophobes' perceptional biases relate to the valence of the trait under investigation (Kenny, 2020), as it is surprising that gelotophobes perceive their maladaptive traits congruently to how they are viewed by others while discrepancies exist in their perceptions of positively valued traits and abilities. This line of research could contribute to clarify whether gelotophobes tend to discount their positive characteristics while perceiving negative parts of their personality more realistically (in the sense of a better fit with how others perceive them). In addition, the study of *meta*-perceptions (i.e., how gelotophobes think they are viewed by others) could contribute to understand how gelotophobes perceive themselves and accordingly behave in social situations (e.g., Carlson et al., 2016).

Gelotophilia did go along with low Detachment and higher expressions in Disinhibition. For the latter, we found that this was mainly linked to the Impulsivity facet. The facet-level analysis has shown that Attention Seeking, low Withdrawal, Eccentricity, and low Separation Insecurity were also robustly associated with joy in being laughed at. This is in line with expectations and prior research showing, for example, a robust positive association between gelotophilia and extraversion (e.g., actively seeking and engaging in social situations), experiencing happiness, and being securely attached in relationships (e.g., Blasco-Belled et al., 2019; Brauer et al., 2020; Ruch et al., 2013). While we found mixed findings for Negative Affectivity when using the brief form of the PID-5 (Study 1), we found the expected negative associations with gelotophilia when using the full PID-5 in Study 2. This is in line with the literature showing gelotophiles to be characterized by emotional stability (e.g., Ďurka & Ruch, 2015; Ruch et al., 2013). In comparison with gelotophobia, the overlap between gelotophilia and the PID-5 was noticeably smaller. The findings highlight again that gelotophobia and gelotophilia are not just mere opposites of the same dimension. Examination of self-informant discrepancies has shown that gelotophiles' perceptions in maladaptive traits do not diverge from those of knowledgeable others. Hence, while gelotophiles tend to perceive their character strengths higher in comparison to knowledgeable others' perceptions (Proyer et al., 2014), there is no evidence for a discrepancy between self- and informant ratings in pathological traits. As mentioned before, future research could investigate the self-perceptions of gelotophiles under the lens of potential positivity biases (Kenny, 2020). In short, gelotophilia may be a positive and psychologically healthy way of dealing with adverse life circumstances and potential threats to one's self-image and, generally, not taking oneself too seriously. Taking the cross-sectional nature of the data into account, the opposite might also be true: that people who show low expressions in maladaptive personality traits might be more inclined to laugh at themselves.

As expected, katagelasticism was characterized by Antagonism and the analysis of narrow facets showed that Callousness, Attention Seeking, and Hostility were robust predictors. This corroborates prior findings showing that katagelasticism is characterized by low experiences of guilt, and high levels of psychopathic personality traits, active interpersonal styles, and hostile behaviors such as bullying, showing behaviors that may instigate disagreements in romantic relationships or "online trolling" (e.g., Brauer & Proyer, 2018; Navarro-Carrillo et al., 2021; Proyer, Flisch et al., 2012; Proyer, Meier et al., 2013; Torres-Marín et al., 2019). Considering the role of katagelasticism in interpersonal contexts, for example, in relationships as well as in classrooms (e.g., Brauer & Proyer, 2018; Proyer, Meier et al., 2013), where katagelasticists' behavior (e.g., aiming at eliciting laughter at others' cost) is perceived as hurtful and antagonistic by others, the knowledge of their maladaptive traits contributes to identify behaviors, feelings, and convictions that might contribute to their interpersonal problems. An implication of the findings might be that increasing awareness of one's katagelasticism in therapeutic settings (e.g., individual or couple therapy) could contribute to identifying a potential source of conflict. While one might argue that katagelasticists could be characterized by "blind spots" (e.g., by perceiving their antagonistic behaviors as being less pronounced in comparison to how others see them), we did not find evidence that katagelasticism is related to discrepancies in self-other views of their maladaptive traits. Carlson et al. (2016) showed that inaccurate *meta*-perceptions contribute to interpersonal problems and future studies might extend this line of research. While we only considered the discrepancy between self- and informant ratings, it might be fruitful to collect data on how katagelasticists think they are perceived by others. Investigating meta-perceptions could further clarify the role of intra- and interpersonal perceptions of katagelasticism for interpersonal conflict observed in couples and classrooms (e.g., Brauer & Proyer, 2018; Proyer, Neukom et al., 2012).

Taken together, localizing the dispositions in the system of maladaptive personality traits by using self- and informant ratings has advanced our understanding of their intra- and interpersonal experiences and behaviors. However, it would be interesting to examine the associations with the PID-5 after controlling for shared variance with standard models of personality (e.g., Big Five, HEXACO) and positively valued traits (e.g., VIA model; Peterson & Seligman, 2004). We can only speculate about the amount of shared variance with traits that are on other positions on a continuum from pathology to virtuousness. Likewise, controlling for personality pathology might help in better understanding the other associations as well. Hence, a follow-up study should test all associations in a single design, again using multiple methods such as self- and informant ratings or behavioral data (e.g., the 36-item PhoPhiKat-Behavior Record for daily assessments; Brauer & Proyer, 2020c). Also, it may be of interest to further study humor and laughter in relation to personality pathology to test if certain types of humor (e.g., wit and fun vs. sarcasm and cynicism) are more prevalent in high scorers of any of the maladaptive traits.

In line with suggestions to include a variety of models covering personality for a comprehensive understanding of individual differences, Fournier et al. (2022) extended this call to also include underlying neurobiological perspectives to understand "observable patterns of signs, symptoms, and response dispositions" (p. 65) that might share common ground with personality traits. We argue that our study is a step in the direction of comprehensively understanding the personality of gelotophobes, gelotophiles and katagelasticists but that further work in the field of physiological and biological markers is needed. Initial studies showing gelotophobes' unique reactions to laughter concerning white-matter structural connectivity, neural correlates, changes in heart rate and EEG trajectories (Chan, 2016; Papousek et al., 2014, 2016; Wu et al., 2016) provide fruitful starting points for a comprehensive understanding of the dispositions, as proposed by Fournier and colleagues. Also, we hope that our findings contribute to inform future research on the dispositions in the clinical field (e.g., Brück et al., 2018; Greenan et al., 2018).

Limitations and future directions. First, expressions in the PID-5 facets and domains were at the low end of the dimensions, which is characteristic of non-clinical samples as studied here. Further investigation in extreme groups (e.g., high scorers in gelotophobia) and clinical samples are desirable to examine the invariance with our findings. Secondly, generalizability is limited because we only tested German-speaking participants. Also, the samples were imbalanced concerning gender and compriseded more women than men. Cultural differences in the dispositions or maladaptive personality traits might account for variability in findings in other countries (e.g., Proyer et al., 2009). Thirdly, we did not collect information on participants' clinical histories, and we have no knowledge on the proportion of participants that might present symptoms of personality disorders and mental health issues. Also, we did not have data on participants who have quit the online studies because we only downloaded complete data sets and cannot exclude the

possibility that there was systematic dropout in relation to demographic variables. Fourthly, our data are of cross-sectional nature, and we cannot address causality. Longitudinal studies could examine the co-development of the dispositions and maladaptive traits over time. Fifthly, we only collected informant ratings by one knowledgeable other per target. Increasing the number of raters would enhance the reliability of informant ratings (Kenny, 2020). Finally, future research should extend the study of psychopathology regarding the laughter-related dispositions by testing criterion A of personality disorders (i.e., deficits in the self and interpersonal domain; APA, 2013) and the *Hierarchical Taxonomy of Psychopathology* (Kotov et al., 2017). While we aimed at studying associations with maladaptive traits to learn more about the personality of gelotophobes, gelotophiles, and katagelasticists, testing psychopathological symptoms and syndromes beyond personality disorders would extend the knowledge on their inclinations to, and distinctions from, clinically relevant phenomena.

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Open data

All research data are available in the Open Science Framework under https://osf.io/eq3vd/.

Open materials

All materials of this study are openly available and links with permanent identifiers are linked in the manuscript.

Author contribution

Study conceptualization: KB and RP; Data collection: KB and RP; Data preparation: KB and RS; Data analysis: KB and RS; Report writing: KB, RS, and RP.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

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