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# The General Factor of Psychopathology

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## Abstract

An important advance in understanding and defining mental disorders has been the development of empirical approaches to mapping dimensions of dysfunction and their interrelatedness. Such empirical approaches have consistently observed intercorrelations among the many forms of psychopathology, leading to the identification of a general factor of psychopathology (the p factor). In this article, we review empirical support for p, including evidence for the stability and criterion validity of p. Further, we discuss the strong relationship between p and both the general factor of personality and the general factor of personality disorder, substantive interpretations of p, and the potential clinical utility of p. We posit that proposed substantive interpretations of p do not explain the full range of symptomatology typically included in p. The most plausible explanation is that p represents an index of impairment that has the potential to inform the duration and intensity of a client's mental health treatment.

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## 1. INTRODUCTION

This article provides a critical review of the literature on the general factor of psychopathology (the p factor) (Caspi et al. 2014, Lahey et al. 2012), including empirical support for the p factor, evaluation of different interpretations of p, and discussion of its potential clinical utility. We have four primary aims for this review: First, we define and discuss evidence for the p factor. We highlight research on the existence of p, discuss findings regarding the criterion validity and stability of p, and discuss the relationship between p and the general factor of personality (GFP) and the general factor of personality disorder (g-PD). Second, we discuss current proposed explanations for the p factor. Researchers have proposed several competing hypotheses regarding the underlying dimensions that may account for p: nonspecific causal factors (Lahey et al. 2017), dispositional negative affectivity (Tackett et al. 2013), impulsive responsivity to emotion (Carver et al. 2017), thought dysfunction (Caspi & Moffitt 2018), and impairment (Oltmanns et al. 2018, Widiger & Oltmanns 2017). These hypotheses vary in the degree to which p is given substantive meaning. Third, we turn to the possible clinical utility of the p factor. It may be useful to assess p in addition to assessing the specific disorder for which a person presents for treatment, and assessment of p may have important implications for treatment modality and prognosis. Fourth, we conclude by reviewing outstanding research questions in this area.

## 2. EVIDENCE FOR THE p FACTOR

Evidence for the p factor has emerged in part because of an increasing reliance on empirical methods for understanding the dimensional structure of psychopathology. Historically, the definition

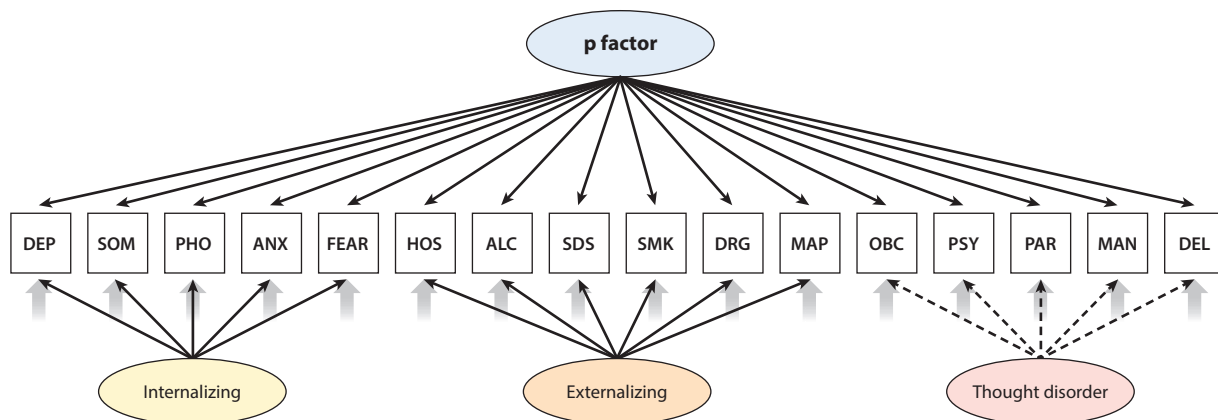
of mental disorders has been influenced by considerations other than empirical data concerning the nature, dimensions, and interrelatedness of problem behaviors or symptoms (Kotov et al. 2017). A central example of this history is the traditional use of distinct categorical conditions as reflected in versions of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM). This approach proved to have a number of limitations (for a thorough discussion of this topic, see Kotov et al. 2017). First, traditional systems defined mental disorders as categories. This approach is at odds with a vast body of empirical work providing compelling evidence that psychological dysfunction exists along continua (Kotov et al. 2017, Widiger & Samuel 2005, Wright et al. 2013). Second, traditional categorical diagnoses tend to have low reliability, whereas dimensional assessments do not (Kotov et al. 2017). Third, many traditional diagnoses are remarkably heterogeneous, such that two individuals can have the same diagnosis with few or no symptoms in common (Widiger & Trull 2007), thus rendering the meaning of the diagnosis unclear. Fourth, comorbidity among supposedly distinct categorical diagnoses is the norm rather than the exception (Hasin & Kilcoyne 2012, Kessler et al. 2005). Fifth, in the absence of clear empirical evidence for the existence of categories of mental dysfunction [such evidence does not exist for any DSM disorder (Kotov et al. 2017, Kupfer et al. 2002)], category cutoff points that determine who does and who does not receive treatment lack validity and thus may have a negative impact on public health.

Many of the limitations of this rational approach to nosology can be addressed by using empirical, quantitative methods to understand the dimensional structure of psychological dysfunction. Achenbach (1966) first extracted higher-order “internalizing” and “externalizing” factors from indicators of mental disorder in adolescents. A central aspect of this work was the observation of substantial covariance among symptoms within what was labeled internalizing and within what was labeled externalizing. The internalizing dimension was primarily defined by anxiety and depression affecting primarily the individual patient, and the externalizing dimension by aggressive and delinquent behavior affecting other people in the patient’s life. These higher-order factors of psychopathology were then examined across 10 mental disorders and adapted to fit their manifestation in adults, with internalizing largely similar to how the dimension is defined for adolescents and externalizing including antisocial behavior and substance use problems (Krueger 1999). These studies suggested that co-occurring psychopathology may in part result from symptomatology common to both internalizing and externalizing processes.

Although the terms internalizing and externalizing may be read to imply separate, or even opposite, processes, empirical studies consistently demonstrate that internalizing and externalizing factors have been found to be highly correlated (Conway et al. 2019, du Pont et al. 2018). Correlation coefficients for the two were  $r = 0.51$  in adults (Krueger 1999),  $r = 0.72$  in adolescents (Cosgrove et al. 2011), and  $r = 0.66$  in children (Lahey et al. 2004). Clearly, the two dimensions share a significant amount of variance. Individuals elevated on the internalizing dimension tend also to be elevated on the externalizing dimension, and vice versa. This empirical finding set the stage for the investigation of an even broader factor of psychopathology, now known as the *p* factor.

## 2.1. Structural and Criterion Validity of the *p* Factor

Noting the shared variance between internalizing and externalizing factors, Lahey et al. (2012) tested the empirical viability of one general factor of psychopathology. They used a bifactor model to examine general and unique factors of psychopathology (**Figure 1**). All indicators of psychopathology loaded on the general bifactor, and the general bifactor model fit the data somewhat better than a correlated-factors model—that is, a model specifying internalizing and externalizing dimensions that are correlated with each other. Crucially, the general bifactor predicted external criteria. The bifactor model also allowed for specific internalizing and externalizing factors



**Figure 1**

Bifactor model of the general factor of psychopathology (the p factor), using indicators from Oltmanns et al. (2018). Dashed lines indicate that thought disorder indicators often load only on the p factor in bifactor models. The upward gray arrows indicate residual variance not explained by either factor. Abbreviations: ALC, alcohol problems; ANX, anxiety; DEL, delusions; DEP, depression; DRG, drug abuse; FEAR, fears; HOS, hostility; MAN, mania; MAP, antisocial personality features; OBC, obsessive-compulsive behavior; PAR, paranoia; PHO, phobias; PSY, psychoticism; SDS, substance dependence; SMK, smoking and nicotine dependence; SOM, somatic complaints.

independent of the general factor: Both of those factors also displayed unique, criterion-related validity associations. This study provided initial support for a general psychopathology factor while also indicating the additional value of looking at specific dimensions.

Caspi et al. (2014) examined the higher-order factor structure of psychopathology using data collected across 20 years spanning adolescence to middle age. Indicators of substance use and conduct disorder/antisocial behavior defined an externalizing factor; indicators of depression, anxiety, and fear defined an internalizing factor; and indicators of obsessive-compulsive disorder (OCD), mania, and schizophrenia defined a “thought disorder” factor. The bifactor model displayed better fit to the data than did one-factor or correlated three-factor models. Thought disorder variables in the bifactor model loaded strongly onto p despite also having their own specific factor. Additional analyses revealed that model fit was best when the specific thought disorder factor was removed and individual thought disorder symptoms were allowed to load directly onto the p factor. This was interpreted as an indication that thought disorder symptoms are a primary indicator of p. In criterion-related validity analyses, the p factor predicted more than 20 self-report, behavioral, and brain measures of life impairment over and above the internalizing and externalizing factors. The final revised model has served as the basis for many subsequent investigations of the p factor.

Several studies have replicated the finding that a bifactor model specifying a general factor, along with specific internalizing and externalizing factors, performs best in studies of children (Waldman et al. 2016, Sallis et al. 2019), adolescents (Castellanos-Ryan et al. 2016, Laceulle et al. 2015), and adults (Caspi et al. 2014, Lahey et al. 2012). However, support has also been found for variants of this model. For example, Stochl et al. (2015) found support for a bifactor model with a general factor, a psychotic experiences-specific factor, and a composite depression/anxiety-specific factor. Internalizing is sometimes split into separate fear and distress factors (Greene & Eaton 2017, Lahey et al. 2012, Martel et al. 2017). Other first-order factors have also been extracted with good fit, such as eating pathology, somatization, and attention-deficit/hyperactivity disorder (ADHD). Many p factor studies do not include indicators of thought disorder or psychotic/obsessive-compulsive symptoms (Caspi et al. 2014) and instead focus on modeling

internalizing (e.g., depression, anxiety) and externalizing (e.g., substance abuse, antisocial behavior). However, when measures of thought disorder are included in the statistical modeling of *p*, they tend to display the largest loadings on *p* (Caspi et al. 2014, Oltmanns et al. 2018).

The majority of studies investigating the structure of psychopathology in adults use categorical diagnoses, which have important limitations, as discussed previously (Kotov et al. 2017). In light of these limitations, Lahey et al. (2017) constructed models based on dimensions of psychopathology—rather than discrete disorders—and tested the boundaries of the *p* factor through a series of factor analyses. They used self-reported symptom counts for 14 dimensions of psychopathology in their model, given that symptoms of psychopathology are related to distress and impairment regardless of whether a diagnostic threshold is met (Copeland et al. 2015, Fergusson et al. 2005, Roberts et al. 2015). Confirmatory factor analyses found that a bifactor model fit the data well. Model tests with and without symptoms common to multiple psychiatric disorders yielded essentially identical results, suggesting that *p* is not an artifact caused by symptoms that are common to multiple disorders (Lahey et al. 2017). Further, Lahey et al. (2017) conducted a series of analyses in which each first-order dimension of psychopathology was removed from the best-fitting model. Each of the 14 tested models fit the data well, suggesting that no first-order dimension was critical to the identification of *p*. These results provide evidence for the robustness of *p* and also support the use of dimensions of psychopathology over categorical diagnoses.

Many other studies support the criterion validity of *p*. Longitudinally, a general factor of psychopathology (assessed in children, whether via parent report or using multiple informants) predicted adverse mental health outcomes later in adolescence above other latent factors included in the model (Pettersson et al. 2018, Sallis et al. 2019). Negative outcomes predicted include psychiatric diagnoses, court convictions, poor academic performance, criminal behavior, and affective symptoms later in life above and beyond specific internalizing and externalizing factors. The *p* factor has also been associated with suicide attempts, nonsuicidal self-injury, and drinking (Conway et al. 2019, Riley et al. 2019); impulsivity and hopelessness (Castellanos-Ryan et al. 2016); lower executive functioning (Martel et al. 2017); and reduced fetal growth (Pettersson et al. 2019). These results, together with other results outlined above (e.g., Caspi et al. 2014, Lahey et al. 2012), provide compelling evidence for the criterion validity of *p* and suggest that the *p* factor may have a significant impact on life outcomes.

## 2.2. Genetic Basis of the *p* Factor

Studies increasingly suggest that the *p* factor has, in part, a genetic basis (Lahey et al. 2017, Neumann et al. 2016). Lahey et al. (2017) summarized several genetic studies on the *p* factor using both independent and common pathways modeling. Independent pathways studies examine genetic influences on specific forms of psychopathology and have demonstrated that “genetic influences tend to be robustly shared across multiple dimensions of psychopathology” (Lahey et al. 2017, p. 156). Indeed, a general genetic factor influencing all dimensions of psychopathology was identified in four of these studies (Lahey et al. 2011; Pettersson et al. 2013, 2016; Spatola et al. 2007). Variations in symptom profiles were also a function of environmental contributors (Lahey et al. 2011). Common pathways studies, which assume that genetic influences on specific psychopathology operate through meaningful higher-order factors, have found that much of the overlap between internalizing and externalizing factors is due to common genetic influences (Cosgrove et al. 2011, Lahey et al. 2017, Wolf et al. 2010). Lahey et al. (2017) found the estimated heritability of the *p* factor to be  $h^2 = 0.43$  in a large sample of adolescents. There is strong evidence tying genetic influences to variability in overall psychopathology.

### 2.3. Stability of the p Factor over Time

Studies have shown that p factor scores are strikingly stable over time in childhood, adolescence, and adulthood. In one study, over eight intervals from age 2 to 14, stability coefficients ranged from 0.52 to 0.76 (McElroy et al. 2018). In another study that also used eight intervals, in this case from age 10 to 16, coefficients ranged from 0.65 to 0.76 (Riley et al. 2019). Stability in adolescents over a period of 18 months to 2 years ranged from 0.73 to 0.86 (Castellanos-Ryan et al. 2016, Snyder et al. 2017); among adults across a 3- to 4-year interval, a stability coefficient of 0.65 was reported (Greene & Eaton 2017). Thus, in aggregate, individual differences in p appear to be stable over time. The consistency of the stability estimates across studies is particularly noteworthy because p values are estimated based on different measures of specific psychopathology in each study.

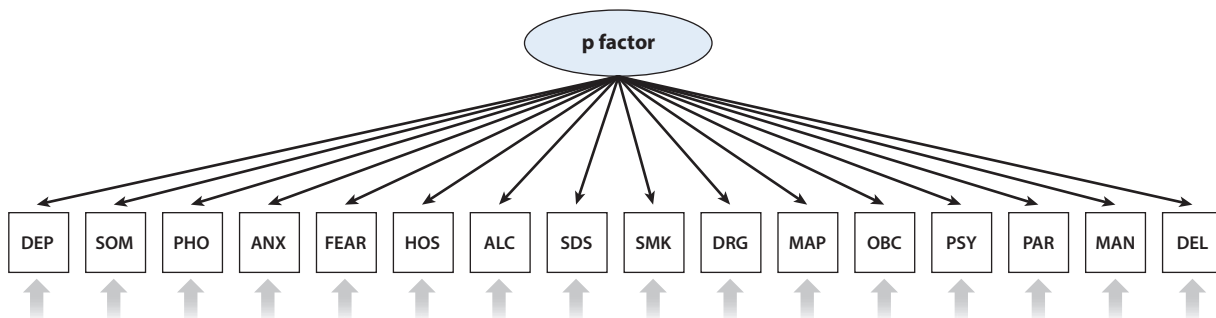
It should be noted that Murray et al. (2016) found much lower stability estimates across eight waves from childhood to adolescence (values ranged from 0.10 to 0.33). There are important differences between the approach taken by Murray and colleagues and those taken in the other studies. Murray et al. did not calculate p using a confirmatory bifactor model; rather, they used an exploratory approach that did not constrain cross-loadings to zero and that required symptom loadings on p to be the same across time. Complicating interpretation of these findings, Murray and colleagues used a single, 39-item measure to reflect p.

It seems quite possible that p is generally stable over time but that specific symptom expressions of impairment vary across assessment occasions. It is well documented that individuals vary in their experiences of distress over time: Depression and anxiety symptoms increase and decrease, as do rates of substance use, delinquent behavior, and most disorders (Brook et al. 2013, Evans et al. 2016, Flory et al. 2004, Keel et al. 2007, Xiang & Cheng 2019). Indeed, one noteworthy thing about the finding of stable p is that despite variations in individual symptom expression over time, individuals seem to have relatively stable levels of overall psychopathology. Recognizing this reality is important both theoretically, as one considers underlying causes of psychopathology (Lahey et al. 2011), and clinically. As we discuss in Section 8, treatment of a specific symptom or disorder is likely to vary markedly if the client is low or high in p.

It is also important to recognize that despite high stability coefficients, p is far from perfectly stable over time. We presume that there are three broad sources of whatever instability is present. The first is measurement: Stable p estimates depend on the reliability, validity, and stability of the symptom measures that are expressions of p. Given the inevitability of imperfect measurement across multiple measures in each p study, one could not reasonably expect stability estimates near unity even if p were perfectly stable.

The second source of instability is substantive. Perhaps as a function of variations in life stress that join with a given person's diathesis, individuals vary in the degree to which they experience impairing symptoms. For example, when someone whose main form of pathology is an eating disorder has a significant negative life experience that results in a symptom spike, that person may be more likely to have elevated anxiety, panic, depression, and/or interpersonal problems as well. If so, a symptom spike in one area could lead to a higher estimate of p for that person than would be the case when the person was experiencing lower levels of stress and, hence, fewer symptoms.

We suggest that the third source of instability involves variation in access to, and nature of, treatment. We know that there is significant variability in the quality of mental health services available for many reasons, including as a function of the race of the prospective client (Dep. Health Hum. Serv. 2001). For example, clinicians tend to be unaware of, or insensitive to, cultural differences in behaviors that may or may not be symptoms of dysfunction (López & Guarnaccia 2005, Moleiro 2018, Whaley 1997). As a result of these and other processes, it is likely that, both between people and within a person over time, there is variation in access to, and the quality



**Figure 2**

Single-factor model of the general factor of psychopathology (the p factor), using indicators from Oltmanns et al. (2018). Abbreviations: ALC, alcohol problems; ANX, anxiety; DEL, delusions; DEP, depression; DRG, drug abuse; FEAR, fears; HOS, hostility; MAN, mania; MAP, antisocial personality features; OBC, obsessive-compulsive behavior; PAR, paranoia; PHO, phobias; PSY, psychoticism; SDS, substance dependence; SMK, smoking and nicotine dependence; SOM, somatic complaints.

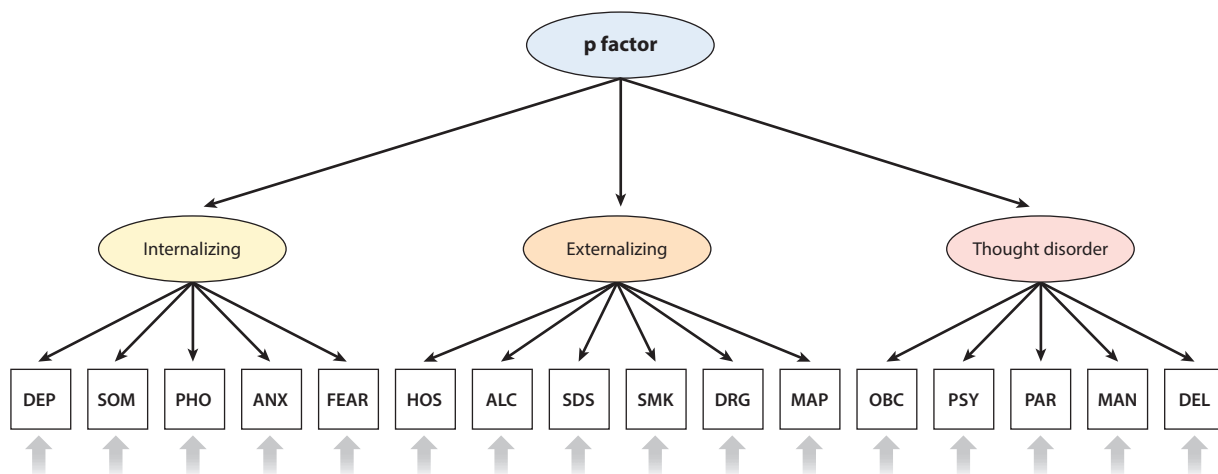
of, treatment. This variation may be another reason why people's symptom levels, and hence p estimates, differ at different times.

One possible theoretical frame for understanding the stability of p is that each person has a core level of p. As a function of variations in life circumstances, stressors, and treatment resources available, at any one time a person's level of p will fall somewhere in a bandwidth around the person's core level of p. Those who experience greater fluctuations in life stress and those who experience greater variation in access to quality mental health treatment may experience greater fluctuations in momentary p: The bandwidth around their core p will be greater. Those with consistent access to quality mental health care and who experience less fluctuation in life stress may have less variability in momentary p: Their p bandwidth will be smaller. The value of such a theoretical frame has yet to be determined.

## 2.4. Statistical Modeling of the p Factor: Implications

Researchers have used different statistical approaches to modeling p, including bifactor models (**Figure 1**), single-factor (unidimensional) models (**Figure 2**), and, to a lesser extent, higher-order factor models (**Figure 3**) (Castellanos-Ryan et al. 2016, Conway et al. 2019, Martel et al. 2017, Waldman et al. 2016). An important question is whether the substantive meaning of p, as well as the substantive meaning of lower-level factors, such as internalizing and externalizing, differs as a function of how those factors are defined. In bifactor models, p is extracted from all indicators (i.e., variables) in the model, and typically, orthogonal internalizing and externalizing factors are also extracted. In single-factor models, one factor explains the shared variance among all the indicators of psychopathology; it is the only factor extracted, and it is conceptualized as p. In the higher-order factor model, p is extracted above first-order factors, such as internalizing and externalizing. This means that the variance in p comes from the overlap between internalizing and externalizing: p reflects the variance that the two factors share. Conway et al. (2019) provided enlightening information about the differences between higher-order and bifactor models of p in a large data set of students who had sought treatment for mental health ( $N = 25,002$ ). Two versions of the p factor—one derived by bifactor and one by higher-order modeling—correlated  $r = 0.97$ , indicating that the p factor is the same when using higher-order or bifactor methods to extract it. The two versions of p demonstrated very similar levels of criterion validity coefficients with suicide attempts, nonsuicidal self-injury, and alcohol use (Conway et al. 2019).





**Figure 3**

Higher-order model of the general factor of psychopathology (the p factor), using indicators from Oltmanns et al. (2018).

Abbreviations: ALC, alcohol problems; ANX, anxiety; DEL, delusions; DEP, depression; DRG, drug abuse; FEAR, fears; HOS, hostility; MAN, mania; MAP, antisocial personality features; OBC, obsessive-compulsive behavior; PAR, paranoia; PHO, phobias; PSY, psychoticism; SDS, substance dependence; SMK, smoking and nicotine dependence; SOM, somatic complaints.

In contrast, the meaning of internalizing and externalizing factors appears to differ substantially as a function of method of factor extraction. It is important to appreciate that in bifactor models, the internalizing and externalizing factors include none of the variance that is shared across all disorders; the two factors are independent of p. When so modeled, they are often negatively correlated (Caspi et al. 2014, Laceulle et al. 2015, Neumann et al. 2016, Tackett et al. 2013). In all likelihood, the high positive correlations between internalizing and externalizing factors found when p is not extracted reflect the reality that both factors include variance shared across all disorders. When such variance is removed, what is left to be modeled as internalizing and externalizing is necessarily substantively different.

Researchers are just beginning to investigate the substantive meaning of internalizing and externalizing with p removed. It may essentially reflect different forms of expression of distress (inward or outward), independent of overall distress level, but that is just one possibility to be investigated through construct validity studies. Conway et al. (2019) found the specific internalizing and externalizing factors difficult to model and could draw no confident conclusions about them.

### **3. THE p FACTOR COMPARED WITH THE GENERAL FACTOR OF PERSONALITY AND THE GENERAL FACTOR OF PERSONALITY DISORDER**

In addition to the p factor, a general factor of personality (GFP) and a general factor of personality disorder (g-PD) have been identified. However, these literatures have been largely separate from one another, and the relations between general factors across these domains have been unclear. Digman (1997) extracted higher-order factors from the five-factor model (FFM) of personality, which he named alpha and beta [later called stability and plasticity (DeYoung et al. 2002)]. The higher-order alpha/stability factor captures variance shared among agreeableness, conscientiousness, and neuroticism (the last with a negative loading), while the higher-order beta/plasticity factor captures variance shared among extraversion and openness. Musek (2007) noted consistent



correlations between the domains of the FFM as well as between alpha and beta and extracted a GFP over and above alpha and beta across three independent samples. Models including a GFP displayed satisfactory confirmatory fit indices and exploratory factor structure across the samples and across most popular measures and models of personality (Rushton & Irwing 2011).

There is significant debate within the personality literature about whether the GFP is composed of variance that is substantive or nonsubstantive (Irwing 2013, Revelle & Wilt 2013). This makes sense, especially given the difficulty of conceptualizing all five factors of personality as one—that is, what could be the meaning of one factor of personality that combines all five factors? However, some authors do offer substantive conceptualizations of the GFP. For example, Musek (2007, p. 1228) interpreted the GFP as “positive versus negative aspects of personality.” One of the most prominent substantive interpretations of the GFP is as an individual differences continuum of social effectiveness (van der Linden et al. 2016).

Within the literature on the GFP, several areas of investigation suggest that the GFP is not meaningful. First, the saturation of the general factor is significantly reduced when it is modeled with multimethod assessments (Davies et al. 2015). Second, the GFP correlates  $r = 0.86$  with a factor of items reflecting evaluation [positive loadings on happy, cooperative, and rational; negative loadings on sluggish, manic, and grim (Pettersson et al. 2012)]. Third, the GFP is reduced when evaluative content is removed from the items assessing it (Bäckström et al. 2009). Fourth, items with opposite meanings appear to load in the same direction on the general factor (Pettersson et al. 2012).

However, there are reasons why the above findings may not speak to the meaningfulness of the GFP. First, it would make sense that the variance in the GFP would be reduced with multimethod assessments because self–other agreement on personality is typically moderate (Connelly & Ones 2010), and indeed most of the variance in same-method assessments of personality is unique. Second, Pettersson and colleagues’ (2012) measure of evaluation does appear to reflect traits associated with a dimension of successful versus unsuccessful functioning. Thus, the measure of evaluation may have meaning with respect to broad adjustment/impairment. This possibility is developed further in Section 6. Indeed, measures of social desirability typically contain more substantive personality traits than evaluation bias (McCrae & Costa 1983, Kurtz et al. 2008). Third, there is an alternative explanation for why items with opposite meanings would load in the same direction. We present that explanation in Section 6.

More fundamentally, there is an enormous body of evidence documenting the concurrent and predictive validity of personality traits in numerous domains of functioning, including physical health, psychological health, mortality, marital outcomes, interpersonal functioning, educational and occupational attainment, life happiness, engagement in substance abuse, and psychopathology (Costa & McCrae 1996, Ozer & Benet-Martínez 2006, Roberts et al. 2007). It thus seems implausible that the core variation reflected by such measures is simply socially desirable reporting. In short, the GFP reflects shared variance among many traits, each of which has been shown to have substantive meaning. The meaning of the GFP itself is not yet clear, but it may involve a general dimension of successful versus unsuccessful functioning.

A g-PD has also been extracted from measures of DSM-IV personality disorder and DSM-5 alternative model of personality disorder maladaptive personality traits (Jahng et al. 2011, Oltmanns et al. 2018, Sharp et al. 2015, Wright et al. 2016). Loadings on the g-PD are often composed of borderline, avoidant, and dependent personality disorder traits but have varied from study to study. Interpretations of the g-PD have been substantive: It has been interpreted as interpersonal dysfunction (Jahng et al. 2011), borderline personality disorder, and self–other deficits typical of criterion A of the alternative model of personality disorder (Sharp et al. 2015, Wright et al. 2016). For example, one study at the symptom level found that borderline personality disorder defined

the g-PD and that there were no specific factors; these findings led to the potential conclusion that the g-PD might be defined by borderline personality disorder (Sharp et al. 2015). There have been no studies of the g-PD that put forward nonsubstantive interpretations (i.e., that the variance in the g-PD is artifactual).

Oltmanns et al. (2018) noted that the literatures on the p factor, the GFP, and the g-PD are largely separate from one another. They measured all three general factors together in one self-report data set and found high correlations among them (p correlated  $r = 0.92$  with the g-PD and  $r = -0.70$  with the GFP, and the g-PD and GFP correlated  $r = -0.90$ ). In a second data set containing multimethod assessment of personality and personality disorder, the GFP and g-PD correlated  $r = -0.82$ . The correlations of p and the g-PD with the GFP were negative because more positive (or desirable) traits loaded positively and more negative (or undesirable) traits loaded negatively on the GFP, whereas positive loadings on p and the g-PD reflected higher levels of dysfunction. The correlations among the three general factors were quite high, providing evidence that whatever explains the GFP and g-PD may also explain the p factor. These findings certainly argue against the likelihood that explanations for the p factor, the GFP, and the g-PD are markedly different.

#### **4. CAUSAL INFLUENCES FOR PSYCHOPATHOLOGY**

The recognition of a general factor for psychopathology, as well as for personality and personality disorder, suggests the possibility of a common cause or causes that contribute to multiple forms of dysfunction. The finding of heritability for p supports this inference strongly. Lahey et al. (2017) have argued that global risks for general dysfunction combine with disorder-specific risks to account for the emergence of psychopathology.

#### **5. SUBSTANTIVE INTERPRETATIONS OF THE p FACTOR**

In this section, we outline four different substantive interpretations of the p factor from the literature. In Section 6, we provide a critical evaluation of each.

##### **5.1. Dispositional Negative Emotionality**

One proposed hypothesis is that p reflects dispositional negative emotionality (Lahey et al. 2017, Tackett et al. 2013). Tackett et al. (2013), in a large cross-sectional study of adolescent twins, found support for a bifactor model with a general bifactor (p) and specific internalizing and externalizing factors. Analyses showed that dispositional negative emotionality correlated more strongly with the p factor than with specific internalizing or externalizing factors.

The negative emotionality hypothesis is based on the spectrum model of the relationship between personality and psychopathology, which suggests a shared etiology between personality and psychopathology (Widiger & Smith 2008). The tendency to experience negative affect and distress is a stable and robust personality disposition (Watson & Clark 1984), and dispositional negative emotionality is implicated in a large portion of psychiatric disorders (Lahey 2009, Meijer et al. 2011). Research has also shown that, across samples and cultures, negative emotionality is one of the primary factors extracted from individual difference measures of personality (John et al. 2008, Lahey 2009, Markon et al. 2005). Further, studies suggest that negative emotionality shares a significant amount of genetic influence with other forms of psychopathology (Mikolajewski et al. 2013, Ormel et al. 2005). Taken together, this body of research suggests that severity of psychopathology may reflect an individual's tendency toward dispositional negative emotionality regardless of diagnosis.

## 5.2. Impulsive Responsivity to Emotion

Another proposed hypothesis posits that *p* reflects impulsive responsivity to emotion (Carver et al. 2017). Research suggests that deficits on behavioral measures of response inhibition are related to both internalizing and externalizing disorders (Smith et al. 2013, Wright et al. 2014). Deficits in response inhibition have also been observed in thought disorders such as OCD, bipolar disorder, and schizophrenia (Abramovitch et al. 2013, Bora et al. 2009, Mesholam-Gately et al. 2009). One meta-analysis revealed that deficits in response inhibition observed in individuals with thought disorders were as large as or larger than deficits associated with internalizing or externalizing psychopathology (Wright et al. 2014). This finding is particularly notable because thought disorders tend to load highest on *p* (Caspi et al. 2014, Oltmanns et al. 2018).

Beyond broad behavioral disinhibition, a substantial body of evidence suggests that emotion-based impulsive action is related to various forms of psychopathology (Carver et al. 2008, Cyders & Smith 2008b, Smith & Cyders 2016). Several studies support a strong positive association between self-report measures of emotion-based impulsive actions and both internalizing and externalizing psychopathology (Berg et al. 2015, Carver et al. 2013, Cyders & Smith 2008a, Cyders et al. 2009, Fischer et al. 2008, Johnson et al. 2013, Pearson et al. 2015, Peterson et al. 2018, Riley et al. 2015, Settles et al. 2010, Smith et al. 2013, Zapolski et al. 2009). Research also indicates preliminary support for associations between emotion-based impulsive actions and bipolar disorder (Muhtadie et al. 2014), schizophrenia (Hoptman et al. 2014), and OCD (Cougale et al. 2012). Tendencies toward impulsive action are included in criteria for multiple DSM disorders. While *p* has been linked to negative emotionality and deficits in response inhibition separately, the hypothesis that *p* reflects emotion-based impulsivity has not been tested empirically.

## 5.3. Low Cognitive Functioning

A third substantive interpretation is that high levels of *p* reflect low cognitive or intellectual functioning. Studies have shown that higher levels of *p* are associated with worse performance on tests of executive functioning. Specifically, individuals with higher levels of *p* perform worse on tests of attention, concentration, processing speed, and visual-motor coordination compared with those with lower levels of *p* (Martel et al. 2017). Additionally, studies that found a relationship between cognitive functioning and *p* showed that the deficits in cognitive functioning observed in individuals with high levels of *p* were present before the onset of most psychiatric disorders (Caspi & Moffitt 2018). This finding suggests a causal pathway from cognitive functioning deficits to development of psychiatric disorders. Caspi & Moffitt (2018) also noted that deficits in cognitive functioning may underlie *p* given that low cognitive ability has been shown as a marker for neuroanatomical abnormalities. Neuroanatomical abnormalities, in turn, have been shown to increase vulnerability to psychiatric disorders. Further, low cognitive ability reduces mental health literacy and is related to increased exposure and vulnerability to life stressors (Alnaes et al. 2018, Koenen et al. 2009). Thus, individuals with low cognitive functioning may be more likely to experience significant distress over their lifetime but less likely, on average, to seek professional help when needed.

## 5.4. Thought Dysfunction

Lastly, Caspi & Moffitt (2018) suggest that *p* may reflect disordered thought processes common to almost all psychiatric disorders. They suggest that individuals with high levels of *p* may experience psychotic thought processes regardless of their diagnoses. In this context, psychotic thought processes are not limited to delusions and hallucinations. Rather, they may entail problems such

as irrational fears, intrusive thoughts, and reexperiencing of trauma. This hypothesis suggests that psychotic disorders reflect the highest levels of *p*, consistent with prior evidence suggesting that thought disorder symptoms load highest on *p* compared with internalizing or externalizing symptoms.

## 6. LIMITATIONS OF SUBSTANTIVE INTERPRETATIONS OF THE *p* FACTOR

The *p* factor has been shown consistently to emerge from data measuring broad arrays of psychopathology. Several hypotheses have been put forward to ascribe substantive meaning to the shared variance across forms of psychopathology. What do different symptoms of psychopathology—for example, substance abuse, OCD, depression, hallucinations and delusions, and personality disorder—have in common?

Each of the four main substantive hypotheses outlined in the prior section focuses on a specific component of maladaptive functioning: negative affectivity, impulsive reactivity to emotion, low cognitive functioning, and thought dysfunction. Convincing studies have indicated that the *p* factor overlaps with these dispositions and impairments (Caspi & Moffitt 2018, Lahey et al. 2017, Smith & Cyders 2016, Tackett et al. 2013).

A potential problem with these interpretations arises, though, when thinking more specifically about the variables that load together on *p*. It is unclear how these four substantive interpretations of *p* explain the variance for all of the variables loading on *p*. Consider these examples: If negative affectivity cannot explain a hallucination item that loads on *p*, such as “I see things that other people do not see,” it is not clear how it could be the core of *p*. If impulsive responsivity to emotion cannot explain an anhedonia item such as “I do not feel pleasure,” which loads on the *p* factor, it may not be the core of *p*. If low cognition or thought dysfunction cannot explain an ADHD hyperactivity item that loads on the *p* factor, such as “I talk excessively,” neither component may be the core of *p*.

## 7. IMPAIRMENT

An alternative to specific, substantive interpretations of *p* is that *p* is simply an index of overall impairment that is nonspecific and secondary to the variables that load on the *p* factor (Oltmanns et al. 2018, Widiger & Oltmanns 2017). Unlike current substantive interpretations of *p*, the impairment interpretation is fully consistent with the existing literature on *p*. First, it is consistent with the typical order of variable loadings on the *p* factor: Indicators of psychosis and mania—which cause the most impairment in a person’s life—typically load highest, followed by more common internalizing and externalizing mental disorder symptoms, which cause relatively less impairment (Lahey et al. 2017). Variables with less associated life impairment have lower loadings on the *p* factor, and indeed, the *p* factor negatively predicts desirable outcomes (Caspi et al. 2014). Second, the impairment interpretation is consistent with the wide range of outcomes that have been correlated with the *p* factor. The *p* factor has been associated with almost every undesirable outcome studied to date: cognitive deficits, childhood abuse, court convictions, poor academic achievement, antisocial behaviors, and so on (Caspi et al. 2014, Martel et al. 2017, Pettersson et al. 2013, Sallis et al. 2019).

Third, the impairment interpretation explains the higher-order factors as well as symptoms and traits at the item level. It is clearer how an interpretation of impairment would explain each of the examples from above (“I do not feel pleasure,” “I see things that other people do not see,” and “I talk excessively”) as well as classic impulsive responsivity to emotion, negative affectivity,

and thought dysfunction items (e.g., “I am quick to respond with anger,” “I often feel depressed,” and “My thoughts are alien to me,” respectively). Endorsement of any of these items would cause impairment in a person’s life. Conceptualizing the *p* factor as impairment also accounts for why items loading positively on *p* may have different and at times opposite meanings (e.g., sluggish, manic). That is, being sluggish or being manic can each result in the failure to complete tasks effectively, yet for opposite reasons. Further, the impairment hypothesis is common to all three domains (the *p* factor, the GFP, and the *g*-PD) and can be used to interpret the GFP and the *g*-PD. High scores on *p* associate strongly with high scores on overall personality dysfunction. High scores on *p* also associate strongly with low scores on a factor reflecting the evaluative content in personality measures. Concerning the latter, traits associated with health will be evaluated more positively, and traits that cause impairment will be evaluated more negatively. The positive-versus-negative aspect of personality interpretation of the GFP is similar to the evaluative hypothesis (Musek 2007). It is not completely a substantive interpretation, and it aligns well with the impairment hypothesis. Traits that cause more impairment will be more negative aspects, and traits that cause less impairment or promote health will be more positive aspects. In sum, the interpretation of the *p* factor as a continuum from low impairment to high impairment appears to account for loadings on the *p* factor as well as the *p* factor’s association with the GFP and *g*-PD.

The substantive interpretations of the GFP and the *g*-PD have limitations similar to those of substantive interpretations of *p*: They do not appear able to explain loadings at the item level. For example, if social effectiveness explained the GFP, it is unclear how it would explain the impulsiveness item “I have trouble controlling my food cravings.” If borderline personality disorder explained the *g*-PD, it is unclear how it would explain the schizoid item “I am not interested in sex.” If interpersonal dysfunction explained the *g*-PD, it is unclear how it would explain the schizotypal personality disorder item “I am a very superstitious person.” In contrast, the impairment interpretation again explains what all of these items may share: They all would be associated with impairment in a person’s life. Just as is true with *p*, the impairment interpretation does not have the shortcomings experienced by substantive interpretations of the GFP and *g*-PD.

It is perhaps also noteworthy that *p* as impairment is parallel to interpretations of *g*, the general factor of intelligence. If one considers the classic Wechsler model of intellectual functioning, there is substantive meaning to lower-level scores, such as on a measure of vocabulary, and substantive meaning to clusters of such scores, such as verbal functioning. *g* reflects the variance shared across several substantive domains: verbal, spatial, working memory, processing speed, fluid reasoning. Its classic interpretation by Wechsler (1944, p. 3) is “the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.” Such a definition is abstract and does not connote a specific, substantive cognitive process. In the same way, *p* as impairment is abstract and does not connote a specific, substantive psychological process.

Given the consistently replicated finding that *p* accounts for substantial variance in psychopathology, an important question is whether consideration of *p* has clinical utility. We next turn to this question.

## 8. THE CLINICAL UTILITY OF THE *p* FACTOR

If *p* is best understood as reflecting a specific substantive domain of functioning, such as negative emotionality, impulsive responses to emotion, or disordered thought, then *p* is likely to have very direct, clear clinical utility. Interventions designed to address the substantive domain would be expected to influence overall dysfunction and thus should be a focus of clinical science. Indeed, because of a recent focus on transdiagnostic interventions, such efforts are well underway. For example, a focus on treating elevations in neuroticism may reduce multiple specific expressions

of subjective distress (Sauer-Zavala et al. 2017). Similarly, efforts to treat the personality trait of urgency [the disposition to act rashly when emotional (Cyders & Smith 2008b)], which is thought to underlie impulsive responsiveness to emotion, are in development (Weiss et al. 2015). Transdiagnostic interventions like these are likely to be very useful.

An important question is whether *p* has clinical utility if it is not understood to have substantive meaning. We argue that *p*, understood as an index of overall impairment, is likely to have a great deal of clinical utility. We next present the rationale for this claim.

To understand the clinical utility of *p* as an index of overall impairment, we argue that the presence of *p* must be understood along with other findings that support focusing on lower-level, homogeneous constructs (McGrath 2005, Smith et al. 2003, Smith & McCarthy 1995, Strauss & Smith 2009). For instance, two facets of neuroticism measured by the Revised NEO Personality Inventory (NEO PI-R)—angry hostility and self-consciousness—share just 14% of their variance. One person could be high in angry hostility and low in self-consciousness, and another could be low in angry hostility and high in self-consciousness. Those two individuals could have exactly the same score on neuroticism as measured by the NEO PI-R, even though they related to the world in very different ways. Indeed, the two lower-level traits have importantly different correlates. For example, the consensus view of psychopathy, based on both expert ratings and measurement, involves being unusually high in angry hostility and unusually low in self-consciousness (Lynam & Widiger 2007). From this perspective, it makes sense to develop theories that relate angry hostility to other constructs, or self-consciousness to other constructs, and tests of such theories would be coherent. However, a theory relating overall neuroticism to other constructs must be imprecise and unclear because of the substantial unrelated variance of the lower-level variables. For example, if neuroticism correlates with another measure, one does not know which of the two traits accounts for the covariation or even whether the same traits account for the covariation for each member of the sample.

Extending this logic further, the use of a *p* score obtained as a summation of scores on several, separable traits has both value and limitations. On the one hand, it can provide an index of someone's overall level of impairment, which we know to be a relatively stable part of that person's experience. On the other hand, it cannot provide a precise description of the nature and form of the person's impairment. Because *p* accounts for substantial variance in impairment, clinical scientists should want to know a client's level of *p*. However, because the specific variance for lower-level constructs can also be substantial, clinical scientists should want to understand a person's levels of specific forms of impairment as well.

There are times when appreciating differences in specific clinical constructs is crucial. Within affective disorders, anhedonia can be treated using behavioral interventions that are exposure based (Chambless & Ollendick 2001, Dimidjian et al. 2006). High levels of negative affect often benefit from interventions focusing on changes in cognition (e.g., cognitive behavioral therapy) (Chambless & Ollendick 2001). Because both anhedonia and elevated negative affect can characterize depression, the recognition that clients can have different levels of the two constructs can result in different treatment approaches even within a single disorder. Recognition of the presence of *p* does not diminish the value of focusing on lower-level, specific forms of dysfunction.

### **8.1. *p* Assessment for Treatment Planning and Establishing Treatment Goals**

If *p* is understood to be an index of overall impairment, knowing a client's level of *p* is crucial for developing effective treatment plans, determining treatment goals, funding the necessary duration of treatment, and relieving distress secondary to the client's impairment. A client presenting for

treatment who has a high level of *p* can be expected to report distress across multiple symptoms associated with multiple disorders. This distress may manifest as psychiatric comorbidity from the DSM perspective, which is quite common (Ulfvebrand et al. 2015). In terms of outcomes, psychiatric comorbidity is thought to increase disorder severity, contribute to a chronic course of illness, and be associated with less successful treatment (Blinder et al. 2006, Milos et al. 2013). By contrast, a person presenting for treatment with a low level of *p* is likely to have fewer problems (and thus a more positive prognosis) and require treatment of shorter duration. We illustrate these considerations using two clinical case examples.

**8.1.1. Patient A.** Patient A is a 20-year-old cisgender female college student of normal weight presenting with symptoms of bulimia nervosa (BN). She reported binge eating two to three times per week and using compensatory behaviors (self-induced vomiting and fasting for 8 hours or more) daily. She denied any current or past symptoms of depression, anxiety, or problem substance use. She denied ever being underweight and stated that her eating disorder had begun about 6 months before. Patient A admitted to having interpersonal issues related to her disordered eating including feeling afraid to eat out at restaurants with her friends out of fear of consuming more than her daily calorie limit. However, she reported no distress unrelated to her eating disorder and had excellent grades and a strong social support network. Given these reports, Patient A's therapist recommended the first-line treatment for BN—enhanced cognitive behavioral therapy (CBT-E) (Fairburn et al. 2009)—and petitioned for 20 outpatient treatment sessions from the patient's insurance company.

**8.1.2. Patient B.** Patient B is also a 20-year-old cisgender female college student of normal weight presenting with symptoms of BN. She reported binge eating and compensatory behaviors at a similar frequency as Patient A; these behaviors had begun about 6 months before. Patient B also reported fear of overconsumption and discomfort around eating with others. However, she reported a history of anorexia nervosa (AN) and had been fluctuating between average weight and underweight for the past 5 years. Unlike Patient A, Patient B also reported daily nonsuicidal self-harm behaviors, which sometimes required medical attention. She reported depression symptoms concurrent with her disordered eating. She also reported frequent thoughts of suicide and had survived a suicide attempt 8 months before. She reported often feeling numb, and she sometimes engaged in self-harm behavior in response to that feeling. She recently had been told she was not on track to finish the prerequisites for her nursing major on time, and she was on the cusp of losing her college scholarship because of a drop in her grade point average over the past year. She reported a spike in her suicidal thoughts in response to the news that she might lose her scholarship. Given Patient B's mental health history, the variety of current symptoms reported, and her multifaceted distress, her initial assessment therapist recommended that she begin an intensive outpatient program with a treatment team of multidisciplinary providers.

Patients A and B both presented to treatment with eating concerns. When asked only about their disordered eating symptoms, they appeared quite similar. However, upon further questioning, their clinician discovered that their mental health histories and current distress differentiated their presentations. In our view, Patient A is an example of an individual with a low level of *p*. Her pathology is specific and somewhat isolated. Her eating disorder is uncomplicated by the presence of multiple symptoms of other disorders and a long history of psychological difficulty. Her distress is impairing and stems predominantly from her eating disorder (i.e., fear of eating out with friends, feeling restricted in the foods she is comfortable eating, etc.), but she is still able to succeed in school and maintain her relationships. Given this straightforward presentation and the effectiveness of CBT-E, her prognosis is good.



Patient B is an example of an individual with a high level of *p*. Her history demonstrates that she has struggled with her mental health for many years. Her eating disorder is more complex given her history of being underweight and meeting criteria for AN, which has the highest mortality rate of any mental illness (Arcelus et al. 2011). Her distress extends beyond her eating disorder and affects multiple other aspects of her functioning—academic, relational, financial, and physical. Given these symptoms and her associated distress, it is unlikely that one treatment approach, or treatment from a single health care discipline, could adequately address her needs. Patient B's intensive outpatient treatment plan will likely include treatments provided by several different providers (e.g., psychologist, dietitian, psychiatrist), extend beyond treatment for BN, and involve a longer course of treatment than that recommended for Patient A.

The above examples illustrate that individuals with different levels of *p* are likely to need different treatment plans. It is also possible, even likely, that the idea of successful treatment would look different for individuals with different levels of *p*. For example, by the end of the 20-session CBT-E treatment course, Patient A might no longer be experiencing any significant symptoms of BN, might have the skills to identify and cope with relapses in bulimic behaviors, and might never need to come back to treatment. This form of treatment success seems reasonable and attainable.

In contrast, complete symptom reduction across all forms of distress may not be a realistic treatment goal for a client with a high level of *p*, such as Patient B. Instead, it may be helpful to conceptualize treatment success differently from full symptom reduction. Perhaps measured improvements in quality of life might be more realistic (Engel et al. 2009). For instance, Patient B might experience improved ability to (a) monitor her symptoms over time, (b) use and engage a system of supportive resources, and (c) use a wide variety of skills, perhaps including skills to manage negative affect and/or disrupt impulsive responses to emotion. Should those improvements occur, she would likely experience a notable increase in her quality of life, even absent successful treatment of all her symptoms. Variation in levels of *p* can help define treatment success in realistic ways that make success attainable.

A valid assessment of *p* provides necessary and compelling information to those who fund mental health treatment, whether insurance providers, the person suffering from impairment, the family of the sufferer, or mental health agencies that set session limits for treatment. Although Patients A and B presented with the same disorder, also reporting patients' levels of *p* indicates that Patient A can reasonably be expected to receive effective treatment within 20 sessions but that Patient B is likely to need ongoing intervention from multiple providers to produce necessary benefits. Those who fund treatment could thus have realistic, reasonable expectations for treatment duration and plan accordingly.

Conducting a valid assessment of *p* and sharing the results of that assessment in a therapeutic way with clients may help alleviate distress secondary to the disorder, or distress about the distress. Clients with high levels of *p* are likely to have experienced multiple forms of distress over a lengthy period and may well have found prior treatment to be difficult or unsuccessful. They may be self-critical and pessimistic about treatment. Hearing that they have a high propensity for impairment that is due to genetic and environmental influences outside of their control can provide them a frame for understanding their daily experience. Just as learning that one has diabetes makes it possible for that person to collaborate in pursuing the goal of symptom management, learning that one is high in *p* may make it easier for a client to collaborate in pursuing treatment goals designed to improve quality of life. If both the therapist and the client understand that the goal of treatment is not complete alleviation of all symptoms—but, rather, to develop a set of skills to manage dysfunctional propensities—they are more likely to collaborate in the pursuit of realistic treatment targets and to appreciate the success they achieve.

## 8.2. How to Assess p?

In ways both formal and informal, many clinicians assess a wide range of symptoms that give some indication of a client's level of p. They gather extensive background information; ask detailed, pointed questions about distress related to the presenting problem; and inquire about other psychiatric symptoms. It may well be that the provision of clinical services would be advanced through the use of validated measures of p. There are obvious challenges to representing the wide range of symptoms that reflect p in a brief, clinical services–friendly measure. The SCL-90 or its 53-item short form, the Brief Symptom Inventory (Derogatis 1975), covers a broad range but may not represent externalizing dysfunction or thought disorder sufficiently.

In considering the best way to measure p, we offer three considerations. The first, as mentioned above, is comprehensiveness, particularly with respect to the inclusion of symptoms of psychosis. We highlight symptoms of psychosis because they are often not included. The second is severity. It is clear that symptoms and dysfunction can vary in their degree of severity (Zimmerman et al. 2018), and considering severity when developing a new measure of p is likely to prove useful.

Third, to the degree that a consensus emerges that p measures impairment, it may make the most sense to develop measures that directly assess functioning or impaired functioning. Validated measures of impairment in functioning, across multiple domains of functioning, may provide particularly useful information for clinicians as well as a clear basis for decisions regarding payment for therapeutic services. Ultimately, the hope is that interventions will improve life functioning; in a real sense, symptom alleviation is best understood as a means to that end. Should clinicians document impaired life functioning, the basis for funding treatment is clear. Ro & Clark (2009) addressed the measurement of impaired functioning in interesting ways. Clinicians, clients, and insurance companies would rightfully view scores from standardized measures of p, or scores from standardized measures of impaired functioning, with greater confidence than ad hoc measures that vary from clinic to clinic and study to study.

## 9. FUTURE DIRECTIONS

Although in one way it speaks to the validity of the p concept that p emerges consistently across studies that use different sets of symptoms/disorders in factor analyses, an important first step is to use the same protocol to measure p across studies. A common protocol that included all domains of dysfunction, including thought disorder, would (a) facilitate comparisons across studies, (b) shed further light on symptoms that are more or less central to p, and (c) facilitate the investigation of the substantive meaning of internalizing and externalizing factors with p removed.

Second, it is important to replicate the finding that p, the GFP, and the g-PD correlate so highly as to suggest, perhaps even require, a common explanation for the three broad factors (Oltmanns et al. 2018). With respect to p, the impairment hypothesis at present appears to be the only hypothesis fully consistent with existing empirical data. If p, the GFP, and the g-PD are so highly correlated that they are virtually alternative forms of each other, then variation in impairment or the personality disposition to impairment would seem to be the most parsimonious interpretation of the g-PD and GFP. Replicating this finding is important because it could pave the way to new investigations of the causal framework for adaptive or maladaptive human functioning. Important avenues for clinical science may be to investigate causes for overall impairment along with causes for specific expressions of impairment.

Related to the above concerns, the high correlation between p, the g-PD, and the GFP speaks directly to (a) the need for continuum models of adaptive/maladaptive functioning and (b) the necessity of integrating basic science (e.g., personality theory) and clinical science. This need for a fuller integration of basic and clinical science becomes clearer when one shifts from the

categorical DSM framework for understanding dysfunction to empirically based models that highlight a continuum of functioning. The empirical focus provided by clinical science strongly supports (a) a continuum between adaptive and maladaptive functioning, (b) a common dimension of impairment, and (c) specific expressions of impairment that require clinical attention. As is true in the study of intelligence, there is value in operating at both broad and specific levels.

Third, does measuring *p* help clarify prognostic issues and help guide treatment, as we have suggested? Does it facilitate the development of effective treatment plans, clarify treatment goals, create accurate expectations for the funding necessary given likely treatment duration, and relieve distress secondary to one's impairment? Assessing *p* in clinical practice may advance the public health; this possibility merits careful empirical investigation. Related to this issue, can researchers develop a simple, clinician-friendly means of measuring *p*?

Fourth, we consider it a high research priority to investigate the degree to which variability in the stress to which one is exposed and variability in access to good mental health care influence two things: (a) variability in *p* and (b) point estimates of *p*. Concerning variability in *p*, low socioeconomic status and nonwhite status are associated with variable access to quality mental health care and heightened variation in exposure to life stressors. As a result, are estimates of *p* more variable for such individuals? Concerning point estimates of *p*, cultural norms that differ from traditional Western norms can be misconstrued to reflect pathology. To what degree does variation in race-based cultural experiences, gender identity, sexual preference, and other dimensions compromise the accurate assessment of *p*? Is *p* overestimated in nontraditional groups? Is it underestimated in traditional, white, middle- and upper-class groups? In what ways do these dimensions matter for the development of effective treatments? For the benefit of public health, it is essential to understand the presence and nature of effects on mental health associated with membership in both traditionally marginalized and traditionally favored groups.

Fifth, it may be useful to develop measures of functioning and impaired functioning so that clinicians can measure impairment directly rather than infer high rates of impairment from elevations in many different symptom domains. Ultimately, the target of clinical interventions is to improve life functioning. Valid measures of life functioning that are not dependent on valid measurement of each and every symptom domain will prove useful to clinicians. Perhaps even more important, they will provide a clear basis for decisions to fund psychological interventions.

Recognition of parallel broad factors in the domains of psychopathology, personality, and personality disorders that are stable and predictive of important outcomes represents an important advance in clinical science. Most fundamentally, the further grounding of psychopathology research in empirical methods of defining and describing dysfunction is likely to open up important new avenues of inquiry in the coming years. Advances based on recognizing continua of functioning at the overall level, as well as at the lower level of specific symptoms, promise to clarify our understanding of causality and risk and also are likely to facilitate important advances in treatment. The future of psychopathology research seems brighter than ever before.

## SUMMARY POINTS

1. Empirical approaches to mapping dimensions of psychological dysfunction have consistently observed intercorrelations among the many forms of psychopathology, leading to the identification of a general factor of psychopathology (the *p* factor).
2. Studies suggest that *p* is heritable and stable and that *p* measured in childhood predicts adverse mental health outcomes later in life.

3. The p factor has been shown to correlate highly with the general factor of personality (GFP) and the general factor of personality disorder (g-PD).
4. Several substantive explanations of p have been proposed, yet none adequately explains the full spectrum of psychological dysfunction typically included in p.
5. The most plausible explanation is that p represents an index of nonspecific impairment (secondary to variables loading on p) that has the potential to inform the duration and intensity of mental health treatment.

## DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

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This potential substantive explanation of p suggests that p reflects impulsive responsivity to emotion.

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An early investigation of p, on which many subsequent studies are based.

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A review of potential substantive interpretations of p, including thought dysfunction and low cognitive functioning.

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The first investigation of the empirical viability of a general factor of psychopathology.

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An investigation of the relationship between p and general factors of personality and personality disorders.

An investigation of adverse mental health outcomes associated with high levels of p in childhood.

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This potential substantive explanation of p suggests that p reflects negative emotionality.

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