Validating the Level of Personality Functioning Scale: We don't use multimethod research designs

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Abstract

Overreliance on mono-method approaches in research is an issue that compromises increases to measurement validity, confining the utility of our instruments (Bornstein, 2015a; Natoli, 2019). Multimethod approaches, however, often yield more comprehensive and precise data (Ganellen, 2007). Accordingly, multimethod research designs must be utilized when developing and refining measures of personality to make certain that these instruments are truly psychometrically sound. The Level of Personality Functioning Scale (LPFS; APA, 2013) was introduced in DSM-5 and offered to clinicians as a tool to assist in personality disorder diagnosis and to serve as a general tool for measuring personality functioning on a broad continuum. Since its introduction, myriad studies have evaluated the LPFS's psychometric properties. But at what frequency were mono-method research designs used in studies that purportedly contribute to, or document, this instrument's psychometric properties? This systematic review demonstrates the lack of multimethod research designs used to evaluate the LPFS's construct validity. Findings are discussed with regard to the need for multimethod research assessing the psychometric properties of the LPFS and other measures of personality; future directions for doing so are proposed and the unique opportunity offered by the LPFS to initiate a shift in the common practice of instrument validation is acknowledged.

Keywords: Level of Personality Functioning Scale; Instrument Validation; Research Methodology; Personality Assessment; Multimethod Assessment

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The consideration of severity is essential to any dimensional model of personality (Parker et al., 2002; Tyrer, 2005), and current research indicates that one of the most robust and important single predictors of personality pathology is generalized severity of functioning (Hopwood, Malone, Ansell, Sanislow, & Grilo, 2011). In line with this, the Personality and Personality Disorder Work Group proposed that personality pathology be characterized dimensionally by impairments in personality functioning along with the presence of pathological personality traits during the development of the *Diagnostic and Statistical Manual of Mental Disorders* – 5th Edition (DSM-5; APA, 2013). This conceptualization of personality became the basis for the Alternative Model for Personality Disorders (AMPD), which was presented in DSM-5 as a new approach aimed at addressing many of the issues of the DSM's categorical framework (Livesley, 2003; Rounsaville et al., 2002; Skodol, 2014; Widiger & Samuel, 2005).

In using the AMPD (APA, 2013), a personality disorder diagnosis can be assigned when an individual possesses a pattern of moderate or greater impairment in personality functioning (Criterion A) and one, or several, maladaptive traits (Criterion B). The assignment of specific maladaptive personality traits is based on personality trait theory (Krueger & Markon, 2013), and several trait measures have been developed over the years, including the Personality Inventory for DSM-5 (PID-5; Krueger, Derringer, Markon, Watson, & Skodol, 2012). In comparison, there were few instruments aimed at measuring the AMPD's conceptualization of personality functioning despite direct parallels between the AMPD and other established models of personality (Bender, Morey, & Skodol, 2011; Natoli, in press). As such, the Level of Personality Functioning Scale (LPFS; APA, 2013) was developed (Morey et al., 2011) and offered to

clinicians as a tool to help determine whether a patient meets Criterion A and to serve as a general tool for measuring personality functioning on a broad continuum from healthy functioning (i.e., no impairment) to extreme impairment (APA, 2013). Since its introduction, myriad studies have evaluated and documented the LPFS's psychometrics.

Rationale for Review

Research indicates that behavior cannot always be accurately predicted by the results of a single method of measurement (Fernández, 2013; McClelland, Koestner, & Weinberger, 1989; Nisbett & Wilson, 1977; von Hippel & Trivers, 2011). In fact, many studies show only small to moderate associations (typically in the $r = .20 - .30$ range) between scores derived from different methods of measuring analogous constructs (Meyer et al., 2001; Oltmanns & Turkheimer, 2009), indicating method-specific variability in our measurement of psychological constructs and suggesting one key benefit of multimethod assessment. That is, as Bornstein and Hopwood (2014, p. 10) noted, “Any time two tests that measure parallel constructs using different methodologies fulfill established criteria for reliability and validity, each test has the potential to add incremental validity – unique predictive value – to a test battery.” This unique benefit of multi-method assessment is the product of a broader range of psychological processes being engaged as individuals respond to the demands of different testing modalities, and is of great value to both clinical and research endeavors (Bornstein, 1998, 2015a, 2015b). In contrast, mono-method approaches can lead to flawed empirical and clinical conclusions based on biased or incomplete representations of the construct(s) being measured (see Huprich, Bornstein, & Schmitt, 2011; Mihura, 2012, for discussions).

Multimethod assessment yields more comprehensive and precise data than mono-method approaches (Ganellen, 2007; Meyer et al., 2001) and “reduces the likelihood of spurious results

due to idiosyncratic measurement characteristics of a single test” (Morris, Vaidyanathan, & Cuthbert, 2015, p. 379). The overreliance on mono-method assessment has a uniquely negative impact on the assessment of personality pathology (Natoli, 2019), which by definition involves limited or distorted insight and self-reflection (Klonsky, Oltmanns, & Turkheimer, 2002). And yet, the majority of knowledge guiding the treatment and study of personality pathology is based upon research designs that have relied exclusively on the use of a single method of measurement (Bornstein, 2003, 2011; Huprich & Bornstein, 2007). But at what frequency are single-method research designs used in the development of personality measures and in the succeeding studies that purportedly contribute to, or document, an instrument’s psychometric properties? Given these issues and the importance of the LPFS (APA, 2013) to research and clinical work, a systematic review of the research methodology used thus far to evaluate this instrument’s psychometric properties is essential. Findings from this systematic review can guide future research endeavors to safeguard against imperfect empirical conclusions regarding the LPFS’s psychometrics.

Review Aims

Despite the extensive theoretical foundation for the LPFS (APA, 2013; Bender, Morey, & Skodol, 2011), potential issues associated with an overreliance on mono-method research designs necessitate a systematic review of published studies that have contributed to, or documented, support for the construct and/or criterion-related validity of the LPFS. This systematic review has two primary aims: to a) investigate how frequently each method of measurement has been used as an outcome measure and b) determine the percentage of studies that have used a multimethod approach in the early years of evaluating the construct and/or criterion-related validity of the LPFS.

Method

Identification of Studies

This systematic review was completed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009). To obtain studies for inclusion, we searched the literature in May 2018 using five different databases (PsycINFO, ProQuest, ScienceDirect, Google Scholar, and EBSCOhost including MedLine) for published or accepted peer-reviewed articles with “Level of Personality Functioning Scale” appearing anywhere in the article’s text. Studies from the first available year to May 2018 were included. Additionally, reference lists of included studies were inspected to find studies that might have been missed in our original search. Four criteria for inclusion in this systematic review were used: 1) the study must have been published or accepted for publication in a peer-reviewed journal; 2) to avoid a collection of research associated with the measurement of personality functioning more broadly, the study must have used the LPFS included in DSM-5 (APA, 2013); 3) the study must have included one or more outcome measures; and 4) the study had to assess the relationship between the LPFS and one or more outcome measures in a way that could conceptually evidence the construct and/or criterion-related validity of the LPFS (e.g., a measure of functioning, a measure of psychopathology, symptoms of personality pathology or the presence versus absence of a personality disorder diagnosis).

Evaluation of the Research Design of Studies

The research designs of the studies included in this systematic review were evaluated following the process and definitions used by Robert F. Bornstein (2003). In his 2003 review of the research methods utilized by personality disorder investigators, Bornstein defined four methodological types of outcome measures used in personality disorder research: (a) *self-report*,

either questionnaire- or interview-based; (b) *secondhand / archival data*, which is generally obtained from a review of records or the accounts of knowledgeable informants; (c) *analogs / indirect measures*, which include data derived from physiological or implicit test responses; and (d) *directly observed behavior*, which can be either in laboratory or in vivo. Using these categories, the authors reviewed the included studies and classified outcome measures used in each statistical analysis in which the LPFS (APA, 2013) was included. The outcome measure classifications for each study were then reviewed to determine whether or not researchers used more than one methodology to measure analogous constructs or if researchers integrated the results of more than one type of methodology into a single outcome measure.

Results

Study Selection

The study selection process followed PRISMA guidelines and is illustrated with reasons for exclusion in Figure. 1 (Moher et al., 2009). The search produced 345 articles, with 16 studies meeting criteria for inclusion in this systematic review (see Table 1). The principle reasons for exclusion from the final review included measuring personality functioning impairment with an instrument other than the LPFS (APA, 2013), use of the LPFS as an outcome measure in a manner that does not provide information pertaining to the LPFS's validity (e.g., in evaluating the agreement between video ratings and interview ratings of the LPFS), and the absence of an outcome measure or statistical analysis of the relationship between the LPFS and an appropriate outcome measure (e.g., analysis of interrater reliability).

Study Characteristics

From this systematic search, 16 published studies reporting empirical data for measuring personality functioning using the LPFS (APA, 2013) and one or more outcome measures were

found (see Table 1). Of these 16 studies, ten studies (63%) included self-report data, seven (44%) included secondhand data, and one (6%) included directly observed behavior (daily self-report) measures. Only two of these studies (13%) used a multimethod research design to support their claims. Sample sizes of the studies varied from 22 to 337, with some studies using LPFS raters as the target sample (e.g., clinicians) and some studies using participants (i.e., those being rated) as the target sample. The same sample ($n = 109$) was used in two studies by Few and colleagues (Few, Lynam, Maples, MacKillop, & Miller, 2015; Few et al., 2013). The four studies by Morey et al. (Morey, Bender, & Skodol, 2013; Morey & Benson, 2016; Morey, Benson, & Skodol, 2016; and Morey & Skodol, 2013) each made use of the same sample ($n = 337$). Roche, Jacobson, and Pincus (2016) and Dowgwillo, Roche, and Pincus (2018) also utilized a single sample ($n = 248$) in their respective studies.

Discussion

Progress in research and clinical practice requires that we develop sophisticated strategies for quantifying the antecedents and correlates of different domains of functioning and mental illnesses. The LPFS (APA, 2013) was developed to improve our capacity to investigate and treat personality pathology. Since its introduction, an overwhelming majority of published studies contributing to, or documenting, the construct and/or criterion-related validity of the LPFS have used a single type of outcome measure methodology (predominantly self-report), with only two (13%) studies using multimethod research designs to assess this instrument's validity. This high frequency of the use of mono-method research designs would not be noteworthy if different methods of measuring analogous constructs yielded similar scores, but this is not the case. Rather, different methods measure slightly dissimilar variables because different psychological processes are engaged by individuals as they respond to method-specific test demands

(Bornstein, 2007). Similarly, different methods are susceptible to different sources of bias (Bornstein, 2015a; 2015b). For instance, results of self-report measures, which were used as the outcome measure in approximately two-thirds of the studies included in this systematic review, can be distorted by various self-presentation biases and implicit processes (Ganellen, 2007; Huprich, Bornstein, & Schmitt, 2011). The limitations of self-report measures, and other idiosyncratic limitations (e.g., a researcher's presence during certain performance-based measures can activate certain interpersonal schemas and influence test results; Bornstein, Mei Ng, Gallagher, Kloss, & Regier, 2005), are likely to be amplified in personality pathology research where the population of interest possesses distorted insight and self-reflection by definition.

Two studies included in this systematic review made use of multimethod measurement. Dereboy, Dereboy, & Eskin (2018) examined associations between LPFS (APA, 2013) ratings and personality disorder severity indicators (i.e., sum of SCID-II symptoms and sum of SCID-II personality disorder diagnoses). Dereboy et al. (2018) also evaluated the diagnostic efficiency of the LPFS (APA, 2013) using longitudinal, experts, all data (LEAD; Spitzer, 1983) diagnoses as benchmarks.

The second study included in this systematic review that made use of multimethod measurement, Zimmermann et al. (2014), investigated the association between LPFS ratings and various external criterion measures. Two self-report outcome measures (i.e., number of personality disorder diagnoses and presence versus absence of a personality disorder, both derived from the SCID-II) and one secondhand outcome measure (i.e., an expert-rated measure that was used to score a recorded clinical interview¹) related to personality functioning were used

¹ The secondhand data in Zimmermann et al. (2014) was derived from expert-ratings of Operationalized Psychodynamic Diagnosis (OPD) system interviews. Although, data derived from interviews can typically be

by Zimmermann et al. (2014) to assess the validity of the LPFS. Although there were significant positive associations between LPFS scores and each of these external criterion measures, there was a notably stronger association between LPFS scores and the secondhand outcome measure than between LPFS scores and either of the self-report outcome measures.

Idiosyncratic weaknesses in measurement methodology become exceptionally problematic when researchers cannot compensate for this error by integrating results obtained using diverse methods, a disheartening issue for studies examining an instrument's validity where the key objective is to evaluate how accurately the instrument is measuring what it purports to measure. Fortunately, this concerning practice in validity research can be easily remedied in a manner that will allow researchers to construct maximally useful measurement tools for research and clinical practice. The most overt adjustment that can be made to instrument validation research moving forward is to simply utilize multimethod research designs. In doing so, researchers should take advantage of pre-established, scientifically-informed models for integrating multimethod data, such as Bornstein's (2015b) process-focused framework, the transtheoretical model of personality (Blais & Hopwood, 2010; Blais & Smith, 2014), a personality-psychopathology trait hierarchy model, or an interpersonal situation model (see Blais & Hopwood, 2017, for discussions on using the transtheoretical model of personality, personality-psychopathology trait hierarchy model, and interpersonal situation model in assessment).

Requiring a considerable paradigm shift to remedy, the common practice of using mono-method research designs in psychometric research stands as a critical barrier to developing

viewed as self-reports by proxy, this source of information is better classified as secondhand rather than self-report given that the OPD interview approach is relatively unstructured and significantly different from the structured and semistructured interviews that are often "gold standard" for assessing personality disorders (e.g., SCID-II).

reliable and valid measures of personality. In turn, such a paradigm shift would facilitate the development of more focused and heuristic approaches to measuring the many dimensions and subtypes of personality, helping to resolve some significant, longstanding problems in research and clinical practice (e.g., limitations to diagnostic validity, disproportionate comorbidity, excessive heterogeneity among persons given identical personality disorder diagnoses, arbitrary diagnostic thresholds, and poor convergent and divergent validity of diagnostic criterion sets). Moreover, better informed treatment decisions and improved diagnosis would support notable reductions in health care costs (Institute of Medicine, 2013; Singh & Rajput, 2006) and help avoid substantial clinical problems (e.g., incidents of misunderstood/misclassified behavior, inaccurate diagnosis, ineffective or detrimental treatment decisions including incorrect pharmacological intervention). The LPFS (APA, 2013) offers a promising opportunity for initiating a shift toward regularly using multimethod research designs in psychometric research given the early stage of its development relative to other instruments with similar prominence in the field; researchers can set a precedent through the consistent use of multimethod research designs in future studies evaluating the psychometric properties of the LPFS.

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Figure 1. Flow of information from identification to inclusion of studies.

Table 1
Studies Contributing to, or Documenting, the Construct and/or Criterion-Related Validity of the Level of Personality Functioning Scale (LPFS)

Study	Use of the LPFS	Outcome Measure(s) and/or Construct(s)	Source of Information (Method)	Mono- or Multimethod
Dereboy, Dereboy, & Eskin (2018)	LPFS Turkish version completed at intake by intake clinician.	-Longitudinal, expert, all data (LEAD) diagnoses -Sum of personality disorder symptoms -Sum of personality disorder diagnoses	-Patient chart review (archival / secondhand) -Clinical interview with patient (self-report) -Interview with informant (secondhand) -SCID-II (self-report)	Multimethod
Dowgwillo, Roche, & Pincus (2018)	LPFS self-report was completed by students at baseline.	-Interpersonal implications using the interpersonal circumplex as a nomological net	-Inventory of Interpersonal Problems-Short Circumplex (self-report) -Interpersonal Sensitivities Circumplex (self-report)	Mono-method
Few, Lynam, Maples, MacKillop, & Miller (2015)	LPFS completed by interviewer following administration of the SCID-II.	-Aspects and traits of psychopathy, including interpersonal manipulation, callous affect, erratic life style, and antisocial behavior -Alcohol misuse -Drug use	-SCID-II (self-report) -Self-Report Psychopathy Scale III (self-report) -Revised NEO Personality Inventory (self-report) -Crime and Analogous Behavior Scale (self-report) -Alcohol Use Disorders Identification Test (self-report)	Mono-method
Few et al. (2013)	LPFS completed by interviewer following administration of the SCID-II.	-Emotional distress -Sum of personality disorder symptoms -Specific personality disorder diagnosis -Personality trait domains	-Brief Symptom Inventory (self-report) -SCID-II (self-report) -Personality Inventory for DSM-5 (self-report)	Mono-method
Kizilkurt, Gulec, Giynas, & Gulec (2018)	LPFS Turkish version completed by interviewer.	-Global functioning, including 11 subscales representing various areas of functioning -Global Assessment of Functioning score	-Bipolar Disorder Functioning Questionnaire (self-report) -SCID-I (self-report)	Mono-method

Morey (2017)	Participants rated perceived presence / absence of each LPFS descriptor in acquaintance.	-Perceived presence or absence of personality problems in threatened target person -Personality trait dimensions	-Rating of acquaintance using International Personality Item Pool (secondhand) -Identification of presence / absence of personality problems of acquaintance (secondhand)	Mono-method
Morey, Bender, & Skodol (2013)	Mental health clinicians provided LPFS ratings for one of their patients.	-Personality disorder diagnosis (from clinician) -Sum of personality disorder symptoms -Clinical judgments of psychosocial functioning, short-term risk, estimated prognosis, and optimal level of treatment intensity	-Clinician-reported diagnostic information (secondhand) -Clinician-reported clinical judgments (secondhand)	Mono-method
Morey & Benson (2016)	Mental health clinicians provided LPFS ratings for one of their patients.	-Clinical judgments of suitability of particular psychotherapeutic modalities, pharmacotherapeutic modalities, optimal treatment level, and long-term prognosis.	-Clinician-reported ratings and diagnostic information (secondhand) -Clinician-reported clinical judgments (secondhand)	Mono-method
Morey, Benson, & Skodol (2016)	Mental health clinicians provided LPFS ratings for one of their patients.	-Count of personality disorder diagnostic criteria	-Clinician-reported ratings and diagnostic information (secondhand)	Mono-method
Morey & Skodol (2013)	Mental health clinicians provided LPFS ratings for one of their patients.	-Count of personality disorder diagnostic criteria -Personality disorder diagnosis (from clinician)	-Clinician-reported ratings and diagnostic information (secondhand)	Mono-method
Preti et al. (2018)	LPFS completed by students after listening to an audiotaped semistructured interview.	-Seven dimensions of pathological personality functioning -Sum of personality disorder diagnoses	-SCID-II (self-report) -Structured Interview of Personality Organization (self-report)	Mono-method
Roche (2018)	LPFS self-report was completed by students at baseline and daily.	-Daily scores for five common systems of personality (self-functioning, emotions, thinking, awareness and regulation, and relationships) -Within-person mean of daily personality functioning	-Sixteen daily items capturing five common systems of personality (directly observed behavior) -Daily LPFS (directly observed behavior)	Mono-method

Roche, Jacobson, & Phillips (2018)	-Three research teams provided LPFS ratings of subjects' self-written psychological life history -LPFS self-report	-Pathological personality traits -Identity diffusion -Psychological defenses -Attachment styles -Interpersonal motives -Personality functioning	-PID-5-BR (self-report) -Inventory of Personality Organization (self-report) -Defensiveness Style Questionnaire (self-report) -Experiences in Close Relationships-Short Form (self-report) -Circumplex Scales of Interpersonal Values (self-report) -LPFS self-report of Criterion A (self-report)	Mono-method
Roche, Jacobson, & Pincus (2016)	LPFS self-report was completed by students at baseline.	-Pathological personality traits	-PID-5-BR (self-report)	Mono-method
Wygant et al. (2016)	LPFS completed by interviewer following administration of the DSM-5 ASPD Impairment Criteria Interview.	-Antisocial Personality Disorder	-SCID-II (self-report)	Mono-method
Zimmermann et al. (2014)	Clinically inexperienced raters provided LPFS ratings of clinical interview material.	-Presence of one of more personality disorder diagnoses -Sum of personality disorder diagnoses -Severity of personality dysfunction	-SCID-II (self-report) -Operationalized Psychodynamic Diagnosis system's Level of Structural Integration Axis (secondhand)	Multimethod

Note. Four types of outcome methods: *self-report*, either questionnaire- or interview-based; *secondhand / archival data*, typically obtained from records or knowledgeable informants; *analogs / indirect measures* (e.g., physiological or implicit test responses); and *directly observed behavior*, either in laboratory or in vivo (Bornstein, 2003). Although studies using self-report measures of the LPFS were excluded from this review, four studies (Dowgwillo, Roche, & Pincus, 2018; Roche, 2018; Roche, Jacobson, & Phillips, 2018; Roche, Jacobson, & Pincus, 2016) were included because their self-report measure of the LPFS used DSM-5 language verbatim. Although the secondhand data in Zimmermann et al. (2014) was ultimately derived from expert-ratings of Operationalized Psychodynamic Diagnosis (OPD) system interviews, this source of information is better classified as secondhand rather than self-report given that the OPD interview approach is relatively unstructured and significantly different from the structured and semistructured interview approaches that can be understood as self-report by proxy (e.g., SCID-II).