To Know Personality Is to Measure it. Introducing a Dutch Brief Form of the Multidimensional Personality Questionnaire.
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Introducing a Dutch brief form of the Multidimensional Personality Questionnaire

The Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982; Tellegen & Waller, 2008) is a comprehensive hierarchical measure of normal personality variation. The instrument comprises 11 primary traits that coalesce into 3 higher-order constructs. Positive Emotionality (PEM) is composed of Wellbeing (WB), Social Potency (SP), Achievement (AC) and Social Closeness (SC); Negative Emotionality (NEM) consists of Stress Reaction (SR), Aggression (AG) and Alienation (AL); Constraint (CON) is the higher-order construct for Control (CO), Harm Avoidance (HA), and Traditionalism (TR). Absorption (AB) cannot be satisfyingly allocated to any of the three higher-order factors, and consequently has a ‘status aparte’. The instrument has evolved over many cycles of what Cattell has called an Inductive-Hypothetico-Deductive (IHD; Cattell, 2014) procedure resulting in the current instrument. Established theories about personality together with empirical observations led to hypotheses about the domain of personality; existing items were selected and new items were constructed; factor analytic procedures were applied, and the outcome of these procedures informed a subsequent round of hypotheses; the questionnaire was adapted, and so on and so forth.

The MPQ scales have demonstrated good reliability in a variety of samples as well as theoretically predicted correlations with other instruments (Tellegen & Waller, 2008). Moreover, the scale scores have been shown to predict behavior (Kamp, 1986), to distinguish between different forms of psychopathology (see for example McGue et al., 1999, 1997; Miller et al., 2003) and to predict clinical variables better than most other personality scales (Grucza & Goldberg, 2007). Because of these favorable properties of the MPQ it seemed like a meaningful endeavor to develop a form of the instrument suitable for Dutch speakers.

The aims of this thesis are twofold: (1) developing and validating a Dutch brief form of the MPQ (MPQ-BF-NL), and (2) contributing to our knowledge about individual differences in personality. Both aims were simultaneously achieved by using the newly developed MPQ-BF-NL for inquiries into cross-cultural differences in personality, personality in general and clinical samples, personality and its associations with brain structure.

Development and measurement properties of the MPQ-BF-NL

Development and basic validation

Chapter 2 describes the development of the MPQ-BF-NL and provides basic validation data on the resulting instrument. Representative samples from the Netherlands and the U.S., and a Dutch student sample were used for development, cross- and external validation, respectively. Our strategy for item selection replicated the development of the U.S. brief form (MPQ-BF; Patrick et al., 2002). Because items were selected on the basis of their statistical functioning in the Dutch representative sample, the selection of items is not identical to the U.S. MPQ-BF. 135 of the original 276 items were retained by selecting 12 items for each of the primary trait scales (plus 3 items to provide estimation of response inconsistency indices).

For all primary trait scales except Wellbeing and Stress Reaction, 12 items were selected that had high corrected total scale correlations and high loadings on the relevant component derived from a Principal Components Analysis (PCA) on all items of the full length version. At the same time, we ensured coverage of the full domain of each of the constructs by selecting items from all facets that the constructs encompassed. The short forms of Wellbeing (11 items) and Stress Reaction (14
items) developed by Tellegen (1982) were adapted to also total 12 items each. The main consideration for item selection and substitution for these scales constituted minimizing their inter-correlation. To compute higher-order trait scores for the MPQ-BF-NL, sum scores of the standardized full length relevant primary trait scales were predicted from all the Dutch brief scales excepting Absorption. Unstandardized regression weights were used to develop a weighted sum score.

Internal consistencies of the MPQ-BF-NL were generally good, and comparable to the U.S. brief version. Also, correlations with the U.S. full length scales were high, and the higher-order structure largely converged with the structure of the original MPQ. Convergent and divergent patterns with scales from other measurement instruments were consistent with prediction, with Positive Emotionality relating to social and activating behavior, Negative Emotionality relating to anxiety and Constraint to reversed impulsivity and externalizing behaviors.

**Measurement invariance across cultures, general and clinical samples, and gender types**

Chapters 3, 4, and part of chapter 7 are concerned with measurement invariance of the MPQ-BF-NL across U.S. and Dutch samples (chapter 3), across general and clinical samples (chapter 4), and across gender types (chapter 7). The examination of measurement invariance is important when one intends to use an instrument with people from different populations (e.g. cultures; general/patient populations), because it informs about whether the same constructs are measured in the same way in the different populations. Also, it is only possible to validly compare trait standings of people from different populations when adequate measurement invariance is established. Furthermore, if one wants to generalize research results based on data from a specific sample to other samples (e.g. knowledge on personality gathered by the original MPQ on U.S. data), measurement invariance should hold across these samples. Lack of measurement invariance is apparent through item bias or Differential Item Functioning (DIF) across populations.

The different explorations into measurement invariance of the MPQ-BF-NL showed that when each scale was evaluated separately, least bias (in 4% of the items) was present in the instrument when different gender types were compared. Somewhat more bias existed in the measurement of the constructs for general as compared to clinical samples (in 10% of items). Most bias was evident for comparisons between U.S. and Dutch populations (in 19% of items). The majority of DIF was observed in thresholds (i.e. difficulty parameters). The extent to which DIF was present does not warrant against raw scale score comparisons between males and females, or between individuals from general versus clinical samples. Raw scale score comparisons between people from the U.S. versus the Netherlands should be made with more caution.

**Contributions to the understanding of personality**

The chapters that are mainly concerned with the development and measurement properties of the MPQ-BF-NL (chapters 2, 3, 4 and part of chapter 7) do not only inform about the validity of inferences made from scores obtained with the instrument, but they also add more generally to the understanding of personality. Together with the more fundamentally oriented studies described in chapters 5 and 6 the following theoretical matters were attended to: (a) personality differences across different populations (chapters 3, 4 and part of chapter 7); (b) the common structure of normal and pathological personality (chapters 4 and 5); (c) the realist basis of personality (chapters 3, 4, 6 and part of chapter 7).

**Personality differences across different populations**

Because we were able to correct for DIF in the determination of scale scores (see chapters 3, 4 and part of chapter 7) we were able to provide bias free comparisons in personality trait standings between the different samples. The most pronounced differences were observed between the general and clinical samples with the clinical sample being particularly
characterized by on the one hand very low Wellbeing and Traditionalism scores, and on the other hand very high Stress Reaction and Alienation scores. Differences between males and females and between the U.S. and the Netherlands were less pronounced but still notable. Women generally scored higher on Social Closeness and Stress Reaction than did men, while generally scoring lower on Social Potency, Achievement, and Aggression. This same pattern could be detected in the group differences between the U.S. and the general Dutch samples, suggesting that the U.S. society, relative to the Dutch, fosters more community and less agency.

The common structure of normal and pathological personality
A growing body of research suggests that the same general dimensions can describe normal and pathological personality. In order for the conjecture of a common structure of normal and pathological personality to hold, one should show that the structure of normal personality also applies in clinical settings. When it does not, personality in clinical populations may be distorted in a sense that it differs qualitatively from normal personality. Chapter 4 contributes to the extant evidence for the common structure of general and pathological personality by revealing strict invariance across a general and a clinical sample for the MPQ-BF-NL as an omnibus personality test. Very modest DIF was present on a more fine-grained level (in 10% of the items when the scales were evaluated separately). We speculate that the DIF that was present (mainly in difficulty parameters) might be explained by the larger setbacks and greater challenges that are experienced in the life of individuals from the clinical sample than individuals from the general sample (rather than referring to qualitative differences in personality structure).

Reflecting the recognition that normal and pathological personality can be described by the same dimensions, the alternative (Section III) model for personality disorders of the DSM-5 (American Psychiatric Association, 2013) describes personality pathology by five dimensional constructs that loosely resemble the five-factor models or ‘Big Five’. Within each of the traits a number of trait-facets is distinguished and the various categorical DSM-IV PDs can be described by different constellations of specific trait-facet scores. The specific constellations, or profiles, were rationally derived for use in the alternative model for personality disorders. A disadvantage of this rational derivation is that the profiles may not describe how scores actually systematically co-occur. In chapter 5 we show that personality pathology profiles could also be empirically derived. Moreover, we show that their derivation is not only useful for the description of personality pathology, but that their formulation also adds to the evidence of the common structure of general and pathological personality. We distinguished different personality profiles within a general and a clinical sample using multivariate normal mixture modeling. The personality profiles from the clinical sample could be traced back to a subset of the general population that was characterized by extreme scores on primary emotional risk markers for psychopathology, Wellbeing and Stress Reaction. The profiles reflected internalizing and externalizing personality styles and had a low base rate in the general population sample. The group of people adhering to these profiles in the general population had markedly more adaptive mean scores on the various MPQ-BF-NL scales than people from the clinical sample: quantitative differences distinguished general from pathological functioning within qualitatively the same profiles.

In sum, we added to the evidence for the common structure of normal and pathological personality by establishing strict invariance across a general and a clinical sample for the full multidimensional model. At the same time our results provided opportunity for speculation about specific pathological influences on personality expression. Our work on the empirical derivation of personality pathology profiles may also point to novel ways one might empirically derive hybrid dimensional-categorical conceptualizations of personality and personality pathology as exemplified in section III of DSM-5.
The realist basis of personality

The model underlying the MPQ departs from a realist trait perspective, which entails that common traits can be good approximations of individual traits that exist independently of their definition in the form of psychobiological structures. For this realist trait assumption to hold, the traits should apply universally: they should be able to describe individual differences occurring in all sorts of groups of people, regardless of their gender and cultural background (among other characteristics).

In chapters 2, 3 and 7 we show that the MPQ-BF-NL primary trait scales pertain to both sexes and to people from the U.S. and from the Netherlands (i.e. configural invariance was established). This means that the trait constructs showed validity across the samples employed by us. However, the specific structure of the scales varied somewhat across samples (i.e. strict invariance was not established for all scales). In the case of the comparison between the U.S. and the Netherlands, this variation could generally be explained by subtle linguistic or cultural differences. For the comparison between gender types, the variation could generally be explained by the existence of heterotypic instability: the expression of the trait depends on gender type, regardless of specific trait level.

Universality of the measured constructs is a necessary but not sufficient condition for the realist assumption to hold. Even when the traits refer to universally shared concepts, they may still refer to social constructions, or folk-psychological concepts that result from shared processes in person perception (Block, 1995; Tellegen, 1991b, 1993). These concepts may well lack a psychobiological basis. Numerous studies have shown structural brain-personality associations, suggesting a direct basis of personality in brain structure. However, results are heterogeneous and inconsistent with single traits reported to be associated with many different brain structures bearing many different functions and specific associations being rarely replicated. In chapter 6 we hypothesized that many of the reported associations may be chance findings. We put this hypothesis to the test by searching for Gray and White Matter associations of the MPQ-BF-NL primary trait scales. Cutting a large Dutch representative young adult sample in an exploratory sample and a cross-validation sample, we obtained associations in the first subsample that we tested in the second subsample. A multitude of associations emerged from our exploratory analyses, but none of these were replicated in the cross-validation sample. Consequently, a robust direct link between the MPQ-BF-NL scores and brain anatomy indices could not be established, suggesting that many of the reported personality-brain associations also are not robust. We still deem it plausible that a great deal of individual differences in personality can be attributed to differences in brain structure and functioning. We speculate that instead of being the direct result of specific brain characteristics and processes personality is better conceptualized as an emergent construct that results from complex interactions between these characteristics and processes. This conjecture is of course in need of further testing. Recently developed techniques for dynamic causal modeling could be employed for future investigations into this (Friston et al., 2003).

In short, we showed that the constructs measured by the MPQ-BF-NL are universal to the extent that they generalize across gender types and across U.S. and Dutch populations. In so doing, we were also able to formulate hypotheses about cultural and linguistic influences on expressions of personality. A direct link between personality and brain anatomy was not found, implying that if personality would be rooted in brain functioning, this would derive from a more complex relation between the two.
Conclusion

The MPQ-BF-NL is a broadband personality inventory that provides the Dutch-Flemish language area with an instrument that has favorable characteristics for use in both research and clinical practice. In developing and validating the MPQ-BF-NL, we simultaneously added to the knowledge base of personality by gaining insight into its cross-cultural differences, its psychopathological manifestations, and its neurobiological basis.