Psychological Assessment
2002, Vol. 14, No. 2, 150–163

1040-3590/02/$5.00 DOI: 10.1037//1040-3590.14.2.150

Development and Validation of a Brief Form of the Multidimensional Personality Questionnaire

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The Multidimensional Personality Questionnaire (MPQ; A. Tellegen, 1982, in press) provides for a comprehensive analysis of personality at both the lower order trait and broader structural levels. Its higher order dimensions of Positive Emotionality, Negative Emotionality, and Constraint embody affect and temperament constructs, which have been conceptualized in psychobiological terms. The MPQ thus holds considerable potential as a structural framework for investigating personality across varying levels of analysis, and this potential would be enhanced by the availability of an abbreviated version. This article describes efforts to develop and validate a brief (155-item) form, the MPQ–BF. Success was evidenced by uniformly high correlations between the brief- and full-form trait scales and consistency of higher order structures. The MPQ–BF is recommended as a tool for investigating the genetic, neurobiological, and psychological substrates of personality.

A central issue in personality research concerns the latent structure of personality traits and their links to psychological and biological systems. Tellegen's (1982, in press) model of personality, embodied in the Multidimensional Personality Questionnaire (MPQ), is notable in this regard. The MPQ provides for a fine-grained analysis of personality by measuring a range of discrete trait dispositions at the lower order level. Additionally, it has a higher order dimensional structure that maps onto constructs of emotion and temperament, which have direct psychobiological referents. The instrument thus has great potential to inform our understanding of the structure of personality, its genetic, neurobiological, and psychological underpinnings, and its relationship to psychopathology—but its utility in research would be enhanced by the availability of a brief form. We begin by describing the content of the MPQ and the conceptual platform it offers for investigating personality across varying levels of analysis. We then present a case for the utility of an abbreviated version and describe our efforts to develop and validate a brief form for use in research-screening studies.

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This study was supported by Grants MH48657, MH52384, and MH65137 from the National Institute of Mental Health and by funds from the Hathaway endowment at the University of Minnesota. We are grateful to Kristin Zempolich for her assistance with data analyses and to Robert Krueger and Ed Bernat for their scholarly comments on this article.

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Traits Assessed by the MPQ

Since weathering the challenge to their existence posed by Mischel's (1968) influential critique, trait conceptualizations have reemerged as a dominant force in the science of personality. To a notable degree, this resurgence has paralleled and been fueled by salient advances in the discipline of psychology as a whole, including (a) behavior genetic studies affirming the heritability of trait dispositions assessed by personality inventories (cf. Plomin & Caspi, 1999) and identifying biological markers of vulnerability to behavior disorder (e.g., Iacono, 1998; Polich, Pollock, & Bloom, 1994); (b) longitudinal developmental studies affirming the reality of stable, influential dispositions to act and react (e.g., Buss & Plomin, 1984; Caspi & Silva, 1995; Kagan, 1994; Rothbart, Derryberry, & Posner, 1994; Thomas & Chess, 1977); (c) human and animal neuroscience research linking broad behavioral tendencies to structural and biochemical systems in the brain (e.g., Coccaro & Siever, 1991; Depue & Collins, 1999; Gray, 1987; Sutton & Davidson, 1997); (d) progress in conceptualization and measurement of emotion and in understanding the role of affective dispositions in normal personality and psychopathology (e.g., Davidson, 2000; Lang, Bradley, Cuthbert, & Patrick, 1993; Tellegen, 1985; Watson, 2000); and (e) the substantiation of links between basic dimensions of personality and psychopathologic conditions, including clinical syndromes as well as disorders of personality (Clark, Vorhies, Watson, & McEwen, 1994; Krueger, McGue, & Iacono, 2001; Trull & Sher, 1994). Accordingly, the study of personality traits is now seen as a coordinated enterprise spanning varying levels of analysis and diverse methodological and measurement strategies.

A key issue in this regard is how traits assessed by self-report personality inventories are linked to phenomena at other levels.

This is essentially an issue of structure; that is, how do personality traits map onto underlying biological systems and psychological processes, or conversely, how are biopsychological influences manifested at the personality level? From this viewpoint, a potentially valuable structural model is offered by the MPQ, which consists of 276 items in its current form (Tellegen, in press; original 300-item version, Tellegen, 1982). The MPQ includes 11 primary trait scales that coalesce around three orthogonal higher order factors: Positive Emotionality (PEM), Negative Emotionality (NEM), and Constraint (CON). The PEM and NEM dimensions are explicitly temperamental in nature. They incorporate dispositions toward positive and negative emotions, respectively, and thus are linked conceptually to the mood–emotion level of analysis and to brain motive systems underlying appetitive–approach and defensive–withdrawal behaviors (Derryberry & Reed, 1994; Lang, 1995; Sutton & Davidson, 1997; Tellegen, 1985; Watson, Wiese, Vaidya, & Tellegen, 1999). CON encompasses traits related to the construct of (reversed) impulsivity and behavioral restraint, which has also been conceptualized in neurobiological terms. For example, Zuckerman (1991) characterized a personality dimension that he called *impulsive unsocialized sensation seeking* in terms of low brain arousal and reduced conditionability.

The MPQ was developed through an exploratory and internal-structural approach to construct development and test construction (Tellegen & Waller, in press). The goal was to develop relatively pure indices of trait dispositions encompassing and extending the range of constructs evident within the extant literature on normal personality. Two of the MPQ primary trait scales (Wellbeing and Stress Reaction) represent direct counterparts to positive and negative emotional dispositions, respectively (Tellegen, 1985; Watson & Tellegen, 1985). The MPQ also includes scales reflecting interpersonal manifestations of positive and negative temperament, that is, agency (Achievement, Social Potency) and communion (Social Closeness), as facets of PEM, and confrontation (Aggression) and estrangement (Alienation), as facets of NEM.[1] The higher order CON dimension is marked by three trait scales: Control (impulsivity reversed); Harm Avoidance (akin to sensation seeking, reversed); and Traditionalism (reflecting conventionality vs. rebellious nonconformity). A final scale, Absorption, taps a trait domain that is distinct from the PEM, NEM, and CON dimensions, that is, the propensity for imaginative and self-involving experiences (Tellegen, 1981, 1992; Tellegen & Atkinson, 1974). Although substantially correlated with the Big Five Openness dimension, unlike Openness, Absorption is not confounded with such attributes as liberalism–traditionalism (Glisky, Tataryn, Tobias, Kihlstrom, & McConkey, 1991). The MPQ thus provides coverage of a range of psychometrically pure traits encompassing the domains of temperament, interpersonal and imaginative style, and behavioral regulation.

Also contained within the MPQ item set are scales that can be used to assess the validity of test protocols. Two of these are consistency indices derived from pairs of items included within the primary trait scales. The Variable Response Inconsistency (VRIN) scale consists of item pairs in which members are similar in content and keyed in the same direction, so that nonmatching answers (i.e., "true" for one, "false" for the other) reflect inconsistency of response. The True Response Inconsistency (TRIN) scale comprises pairs of items that are similar in content if scored in opposite directions, so that an imbalance of "true" or "false" answers across item pairs is indicative of inconsistency; "yea-saying" or "nay-saying," respectively. The VRIN and TRIN scales are valuable because they address the basic issue of whether the respondent attended sufficiently to the content of the items to answer them in a consistent fashion. The MPQ also contains a 14-item index of social desirability, the Unlikely Virtues (UNVIR) scale.

Personality Across Levels of Analysis: Empirical Support for the MPQ Temperament Model

The realist perspective on personality (Allport, 1937; Eysenck, 1967; Tellegen & Waller, in press) conceives of traits as psychobiological structures underlying extended but distinct families of dispositions. Dispositions can be defined as "if-*S*-then-*R*" tendencies, which in the case of trait-related dispositions are tendencies to behave under trait-relevant circumstances, S, in trait-expressive ways, R (Tellegen, 1991). These propensities to respond in trait-consistent ways reflect stable variations in cognitive, affective, and perceptual processing that in turn arise from individual differences in neural representations and the functioning of brain systems. Inherent in this conceptualization is the idea that linkages exist across neurobiological, psychological, and behavioral levels.

The iterative, exploratory strategy that was used to develop the MPQ yielded a set of traits with a higher order structure that is psychobiologically meaningful—one in which motivation occupies a central role. The higher order MPQ dimensions of PEM and NEM reflect, at a psychological level, variations in susceptibility to positive and negative emotional states and, at a neurobiological level, brain systems that have evolved to promote survival by mobilizing appetitive approach and defensive withdrawal behaviors (Tellegen, 1985; Watson, 2000; Watson et al., 1999). Supporting this view are studies showing that the PEM and NEM trait dimensions are correlated in a clear convergent–discriminant pattern with the two primary dimensions of mood—positive affect or positive activation (PA) and negative affect or negative activation (NA; Tellegen, 1985; Tellegen & Waller, in press; Watson, 2000; see also Almagor & Ehrlich, 1990)—and that these same broad affect dimensions characterize the structure of physiological reactions to motivationally relevant stimuli (Cacioppo & Berntson, 1994; Lang, 1995; Witvliet & Vrana, 1995). Dispositions toward positive and negative emotion are also recognized as core axes of temperament in theories of child development (e.g., Buss & Plomin, 1975, 1984; Rothbart, 1991).

The higher order MPQ dimension of CON, encompassing tendencies toward behavioral restraint versus impulsiveness and venturesomeness, has also been characterized in functional, psychobiological terms. Tellegen (1985) related this personality dimension to Gray's (1987) behavioral inhibition system, a brain regulatory system inferred from psychopharmacological and neuropsychological studies with animals. The dimension of behavioral restraint versus impulsivity is also featured prominently in developmental theories of temperament (Buss & Plomin, 1975; Kagan, 1994; Rothbart, 1991).

[1] In fact, an alternate four-factor solution has been reported for the MPQ, in which PEM separates into agentic and communal subfactors (Tellegen, in press; Tellegen & Waller, in press).

Behavior genetic studies have revealed substantial heritabilities for the various traits and factors assessed by the MPQ. Using data from samples of monozygotic and dizygotic twins reared together and apart, Tellegen et al. (1988) reported significant genetic variance components for all MPQ primary traits (range = .39–.55), as well as for the three higher order MPQ factors (range = .40–.58). Moreover, Krueger (2000) reported exquisite correspondence between the phenotypic, three-factor structure of the MPQ and the structure that emerged when genetic variance components for each primary trait scale were extracted and factor analyzed. Correlations between phenotypic PEM, NEM, and CON factor scores and scores on the corresponding genotypic factors were .97, .96, and .98, respectively. Krueger concluded that "the observed, phenotypic structure of personality [as assessed by the MPQ] corresponds closely with the underlying, etiological structure of personality."

Substantial evidence also exists for relationships between MPQ personality variables and indices of overt behavior. Harkness, Tellegen, and Waller (1995) examined correspondences between MPQ trait scores for 232 student participants assessed through self-report and through observer ratings collected from informants who knew the participants well. Correlations were significant for all trait scales, with magnitudes averaging .43 (range = .20–.58; disattenuating for unreliability of measurement, coefficients ranged from .30 to .74). Relatedly, Kamp (1986; as cited in Tellegen & Waller, in press) examined, in college students, correlations between MPQ trait and factor scores and specific behaviors assessed using a biographical inventory. Substantial relationships were found between MPQ scores and frequencies of acts in various categories, including leadership (with Social Potency), destructive behaviors (with Aggression), social activities (with Positive Emotionality), and use of alcohol and drugs (with Constraint).

In addition, there is a growing literature on the relationship of MPQ traits to psychopathology and maladjustment. Tellegen (1985) proposed that anxiety and depression are differentiable in terms of their relations to NEM and (low) PEM (see also Clark & Watson, 1991, and Gjerde, Block, & Block, 1988). DiLalla (1989) investigated relationships between the MPQ and a range of diagnostic syndromes and found the MPQ to be particularly discriminating of antisocial and other personality disorders. In this study, antisocial personality was associated in particular with high NEM and to a lesser degree with low CON. Krueger et al. (1994) reported within a large epidemiological sample that rates of delinquent behavior, assessed through informant reports and police records as well as by self-report, were predicted to a significant degree by traits subsumed under the NEM and CON dimensions of the MPQ (relationships were positive and negative, respectively).

Relatedly, Patrick (1995), Patrick, Zempolich, and Levenston (1997), and Verona, Patrick, and Joiner (2001) have examined relationships between the MPQ and facets of psychopathy, as defined by Hare's (1991) Psychopathy Checklist—Revised (PCL–R). Factor 1 of the PCL–R, reflecting the interpersonal–emotional features of psychopathy (e.g., glibness and grandiosity; absence of remorse, empathy, or strong emotion), is associated with high Social Potency and low Stress Reaction. PCL–R Factor 2, reflecting the antisocial deviance features of psychopathy (e.g., delinquency, aggression, impulsivity, and irresponsibility), is most reliably associated with high scores on NEM-related traits and low scores on CON-related traits.

Particularly intriguing are recent findings linking the structure of adult psychopathology to the structure of personality as defined by the MPQ. Using data from the National Comorbidity Survey (Kessler et al., 1994), Krueger (1999) factor analyzed patterns of comorbidity among mental disorders defined within the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; *DSM–III–R*; American Psychiatric Association, 1987) and reported evidence for two broad dimensions of psychopathology: an *internalizing* dimension, encompassing anxiety and mood disorders, and an *externalizing* dimension, encompassing alcohol and drug dependence and antisocial personality disorder. Subsequently, Krueger, McGue, and Iacono (2001) demonstrated that the first (internalizing) dimension was correlated positively with MPQ NEM (see also Lilienfeld, 1997) and, among women, inversely with PEM, whereas the second (externalizing) dimension was correlated negatively with MPQ–CON (see also Iacono, Carlson, Taylor, Elkins, & McGue, 1999). These findings are in accordance with a growing body of data indicating that extreme temperament is associated with heightened risk for psychopathology (Clark & Watson, 1999; Depue & Lenzenweger, 2001), and they serve to highlight the clinical relevance of the MPQ.

A growing body of data also supports the validity of the MPQ—in particular, traits associated with the PEM dimension—for predicting adjustment and positive adaptive behavior. The core affective trait underlying the MPQ PEM factor is well-being, a construct that has been studied extensively in relation to health and adjustment (Diener, 2000; Oishi, 2000; Seligman, 1991). High scores on the PEM dimension are related to positive adjustment in situations requiring resiliency and high endurance (i.e., participation in a North Pole expedition; Leon, Kanfer, Hoffman, & Dupre, 1991; Leon, McNally, & Ben-Porath, 1989). Krueger, Hicks, and McGue (2001) demonstrated that prosocial, helping behavior was related selectively to scores on the MPQ PEM dimension, whereas antisocial behavior (replicating earlier findings; see above) was related to the NEM and CON dimensions of the MPQ.

The Need for an MPQ Brief Form

These various findings highlight the usefulness of the MPQ as a structural framework for investigating personality processes across different levels of analysis. The circumscribed aim of this article is to report on the development of an abbreviated, research-screening form of the MPQ. A brief form is desirable for several reasons. It would increase the feasibility of including the MPQ in large-sample research investigations (e.g., epidemiological studies, twin registry studies, longitudinal projects, cross-cultural investigations of personality, or cross-sectional studies on health or aging) involving administration of multiple measures. Research of this kind is important for tying personality to genetic, developmental, and clinical phenomena (cf. Iacono et al., 1999; Krueger et al., 1994; Tellegen & Waller, in press). A brief form also would enhance opportunities for inclusion of the MPQ as a broadband index of personality in single-session laboratory studies designed to explore individual differences in psychological processing and physiological (including brain) function. Additionally, a brief form would facilitate ongoing research on relationships between the MPQ primary traits and other self-report personality constructs and between the MPQ factors and other structural models of personality, including the Big Five (Church, 1994; Church & Burke,

1994; Tellegen & Waller, in press; Waller, Lilienfeld, Tellegen, & Lykken, 1991).

Notable pitfalls exist in the development of abbreviated assessment instruments (cf. Levy, 1968; Smith, McCarthy, & Anderson, 2000). Chief among these are reductions in reliability and changes in content coverage and factor structure that can arise through the elimination of constituent items. To avoid these pitfalls, the brief form of the MPQ was developed with several aims in mind. A central objective was to develop abbreviated trait scales that correlated maximally with the full-form scales and showed high internal consistency. At the same time, item analyses of the MPQ have revealed the existence of distinct content clusters within each primary trait scale (Tellegen & Waller, in press). To preserve content coverage in the brief scales, we adopted an item selection strategy that maximized item–total correlations while balancing content representation. Another key aim was to maintain the higher order factor structure of the full MPQ and the unique loadings of individual trait scales on the PEM, NEM, and CON factors. A final goal was to retain a sufficient number of item pairs from the two main validity scales (VRIN and TRIN) to permit identification of invalid protocols.

Accommodating these varying aims required us to balance several different criteria in selecting subsets of items for the abbreviated scales. This article describes the criteria and selection procedures that were used and the properties of the final item set from the standpoint of the above-noted aims. We also present data comparing predictive relationships between the MPQ scales and other personality measures for the full and brief forms of the instrument.

Method

Overview

The original version of the MPQ (Tellegen, 1982) consisted of 300 items. The current version comprises 276 items, reflecting deletion of the 14-item Associative Slips scale—an index of item comprehension—and 10 primary scale items found to be less indispensable; in the MPQ, primary trait scales range from 19 to 34 items in length. The MPQ brief form (MPQ–BF), which includes 155 items (see Table 1), was developed to mirror as closely as possible the MPQ. The MPQ–BF consists of 11 primary scales with 12 items each (132 items total), the 14-item UNVIR scale, and 9 additional primary scale items retained to fill out VRIN and TRIN validity pairs. Because UNVIR is a stand-alone scale that is not used to determine protocol validity, the MPQ–BF could be further shortened (to 141 items) by omitting UNVIR.

Description of Samples

Three mixed-gender community samples were obtained from the Minnesota Twin Registry for the development and validation of the MPQ–BF. The development sample, used for initial item selection, consisted of 1,639 participants (717 men and 922 women) with a mean age of 37.7 years (SD = 9.8 years, range = 20–59 years). An independent cross-validation sample, consisting of 558 participants (258 men and 300 women) with a mean age of 42.4 years (SD = 13.2, range = 18–70 years), was used to assess performance of the abbreviated MPQ–BF scales and to evaluate the underlying factor structure of this measure. The MPQ normative sample (Tellegen, in press), which included 1,350 participants (675 men and 675 women) with a mean age of 40.3 years (SD = 12.2, range = 18–70), served as the reference sample for deriving standard (T) scores and establishing invalidity criteria for the MPQ–BF. The normative sample comprised a subset of participants from the development and cross-validation samples.

Finally, relations between the MPQ primary trait scales and other personality inventories were compared for the 155- and 276-item forms, using data from two other independent samples. One of these was a sample of 340 introductory psychology students (93 men and 247 women) from Florida State University; results for this sample have not previously been reported. These individuals participated in a single session in which the full MPQ was administered along with the following other personality measures: Emotionality–Activity–Sociability Temperament Survey (EAS; Buss & Plomin, 1984); Buss and Plomin (1975) Impulsivity scale; Manifest Anxiety Scale (MAS; Taylor, 1953); Fear Survey Schedule III (FSS; Arrindell, Emmelkamp, & van der Ende, 1984); Emotional Empathy Scale (EE; Mehrabian & Epstein, 1972); Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988); Sensation Seeking Scale (SSS; Zuckerman, 1979); Socialization Scale (So; Gough, 1957); and Questionnaire on Mental Imagery (QMI; Sheehan, 1967).

The above-noted measures were collected because they assess, in varying ways, constructs falling within the scope of the MPQ: emotionality and temperament, interpersonal style, and disinhibition–constraint. EAS Activity and Sociability, which reflect agency and communion, respectively, were expected to correlate with MPQ subscales linked to PEM. The following measures were expected to align with NEM-related traits: The Emotionality subscales of the EAS, the MAS, and the FSS. The FSS, which covers fear-related stimuli and situations, was expected to correlate also with the Harm Avoidance facet of MPQ CON. The SSS and the Buss–Plomin Impulsivity scale were expected to correlate principally with constituent scales of MPQ CON. The NPI and So scales were included as indicants of psychopathy (cf. Hare, 1991), which has been shown to relate systematically to the MPQ (Patrick, 1995; Verona, Patrick & Joiner, 2001). Specific predictions were that (a) narcissistic personality, as assessed by the NPI, which reflects the interpersonal–emotional component of psychopathy (Hart & Hare, 1989), would relate to Social Potency (+) and Stress Reaction (−), and (b) socialization, as assessed by the So scale, which reflects the antisocial deviance component of psychopathy (Harpur, Hare, & Hakstian, 1989), would correlate positively with NEM- and negatively with CON-related trait scales of the MPQ.

The other independent sample consisted of 232 undergraduate students (109 men and 123 women) from the University of Minnesota who completed the original 300-item version of the MPQ and were also rated by knowledgeable observers (mother, father, and peer) on the trait dimensions assessed by the MPQ. Findings for this sample were previously reported by Harkness et al. (1995).

Primary Trait Scales

Initial item selection. Seventeen participants were excluded from the development sample because their MPQ protocols were deemed invalid due to extreme VRIN and TRIN scores (for cutoff criteria, see *Validity Scales* section below). MPQ–BF item selection was performed using data for the 1,622 participants who produced valid profiles. These 1,622 participants were divided into four gender–age groups: (a) men ≤ 40 years (n = 330), (b) women ≤ 40 years (n = 628), (c) men > 40 years (n = 377), and (d) women > 40 years (n = 287). For each primary trait scale, separate analyses were performed within each of these four study groups. This strategy was used to ensure that the items selected for the brief form scales performed similarly across genders and age ranges.

For all primary trait scales, excluding Wellbeing and Stress Reaction (see below), the initial pool of candidate items consisted of all items contributing to the full form of the scale in the MPQ. Three item selection parameters were used to extract the reduced item set for the abbreviated primary trait scales. These parameters were calculated within each of the four study groups, and then a mean score for each parameter was computed across the four groups. The three parameters were (a) corrected item–total correlations for each scale item, (b) within-group rankings for these same

Table 1
Items Included in the MPQ–BF, With Corresponding Item Numbers for the MPQ and the MPQ–300, by Primary Trait Scale and Item Content Cluster Within Scale

Scale	MPQ–BF	MPQ	MPQ–300
Wellbeing			
Does fun things	1, 50, 121	32, 61, 205	34, 69, 224
Has a happy disposition	26, 97, *31*, *104*	42, 176, *110*, *144*	46, 194, *122*, *159*
Has interesting experiences	38, 62, 85, 109, 133	51, 120, 167, 191, 235	56, 134, 184, 209, 256
Optimistic, hopeful	74, 144	153, 272	170, 296
Social Potency			
Enjoys visibility, dominance	15, 63, 98, 122, *117*	23, 43, 135, 170, *33*	25, 47, 150, 218, *35*
Likes to be in charge	51, 134, *45*	1, 199, *148*	1, 187, *163*
Persuasive	2, 75, 110, 145	83, 93, 213, 236	94, 105, 233, 257
Strong, a leader	39, 87	115, 255	129, 278
Achievement			
Ambitious	3, 64, 111	163, 178, 194	180, 196, 213
Enjoys effort	76, 146	50, 122	55, 136
Likes challenging tasks	123	111	124
Perfectionistic	16	271	294
Persistent	27, 88, 135	10, 87, 204	10, 98, 223
Works hard	52, 99	71, 98	80, 110
Social Closeness			
Sociable	5, 28, 65, 89, 112, 136	4, 67, 101, 152, 216, 241	4, 75, 113, 168, 236, 263
Values close relationships	77	137	152
Warm, affectionate	40, 100, 148	55, 88, 202	60, 99, 221
Welcomes support	17, 124	29, 41	31, 45
Stress Reaction			
Easily upset	6, 90	36, 193	38, 212
Has unaccountable mood changes	18, 78, 125	84, 117, 269	95, 131, 292
Nervous, tense	29, 101, 149, *10*	44, 158, 248, *139*	48, 175, 270, *154*
Prone to feel guilty	113	171	188
Sensitive, vulnerable	53, *60*, *132*	258, *203*, *14*	281, *222*, *15*
Worry-prone, anxious	41, 137	3, 214	3, 234
Alienation			
Feels betrayed, deceived	54, 126	218, 230	238, 250
Feels exploited	30, 91, 138, *73*	52, 66, 260, *187*	57, 74, 283, *205*
Feels mistreated	7, 66	27, 119	29, 133
Believes others wish him/her to fail	19, 102	246, 274	268, 298
Sees self as target of false rumors	42, 114	132, 161	147, 178
Feels unlucky	150	91	103
Aggression			
Enjoys distressing others	31, 103, 151	86, 100, 143	97, 112, 158
Enjoys observing violence	55, 115	155, 212	172, 232
Physically violent	8, 67, 127	72, 184, 270	82, 202, 293
Vengeful, vindictive	20, 79, 139	20, 113, 239	22, 127, 261
Victimizes others for own gain	43	59	66
Control			
Cautious, careful	21, 68, 128	92, 103, 209	104, 115, 228
Plans ahead	33, 92, 152	57, 70, 219	64, 78, 239
Reflective	9, 80, *86*	47, 136, *38*	51, 151, *41*
Sensible, rational, organized	56, 140	79, 147	90, 162
Tries to anticipate events	44, 116	24, 251	26, 274
Harm Avoidance			
Avoids risks of injury	57, 105	94, 206	106, 225
Dislikes dangerous emergencies	34, 81, 141	107, 166, 267	119, 183, 290
Dislikes disaster areas	22, 69, 129	31, 125, 237	33, 139, 259
Dislikes risky adventures	11, 46, 93, 153	69, 134, 145, 154	77, 149, 160, 171
Traditionalism			
Advocates high moral standards	35, 82, 142	9, 56, 151	9, 63, 167
Condemns selfishness	106	181	199
Endorses religion	12, 70	233, 78	253, 89
Endorses strict child rearing	23, 154	240, 262	262, 285
Has positive regard for parents	58	210	230
Opposes permissiveness	47, 118	89, 252	100, 275
Values propriety	94	160	177

Table 1 (*continued*)

Scale	MPQ–BF	MPQ	MPQ–300
Absorption			
Can imagine vividly	59	197	216
Can relive the past	119	149	164
Engrossed in own thoughts	48, 107	53, 141	58, 156
Has "cross-modal" experiences	95	215	235
Episodes of altered awareness	155	123	137
Episodes of expanded awareness	71, 130	108, 249	120, 271
Responsive to evocative stimuli	13	273	297
Responsive to involving stimuli	24, 83	189, 238	207, 260
Thinks in images	36	257	280
Unlikely Virtues	4, 14, 25, 37, 49, 61, 72, 84, 96, 108, 120, 131, 143, 147	242, 6, 26, 46, 62, 80, 102, 121, 142, 162, 183, 200, 221, 263	264, 6, 28, 50, 70, 91, 114, 135, 157, 179, 201, 219, 241, 286

Note. Descriptors listed beneath each scale name are content cluster labels assigned by Tellegen and Waller (in press). Items listed in plain text make up the 12-item primary trait scales; italicized items ($n = 9$) were retained to increase the number of Variable Response Inconsistency (VRIN) and True Response Inconsistency (TRIN) item pairs. MPQ–BF = Brief Form of the Multidimensional Personality Questionnaire; MPQ = current 276-item version; MPQ–300 = original 300-item version.

item–total correlations (used to reduce the potential impact of outlying values in computing averages across study groups), and (c) ranked item loadings in a pattern matrix derived from a principal-components analysis of the scale items. For each primary trait scale, the 12 items with the highest mean score for all three item parameters were retained. Discrepancies among indicators were resolved in favor of the mean item–total correlation.[2]

Wellbeing and Stress Reaction scales. Prior investigations of the higher order factor structure of the MPQ have used 11- and 14-item versions of the Wellbeing and Stress Reaction scales, respectively, that were essentially uncorrelated (Tellegen, 1982, in press) rather than the full-form scales, which are somewhat (inversely) correlated. The 12-item scales developed for the MPQ–BF were adapted from these 11- and 14-item versions, so that they could be used directly in factor analyses. An item was added to the 11-item Wellbeing scale that improved content cluster representation (see the next section). Two items were dropped from the 14-item Stress Reaction scale, and 1 other item was replaced with a substitute, so that each content cluster would be represented (see the next section). These additions and deletions were based on the item parameters described above, with consideration also given to minimizing the correlation between the 12-item Wellbeing and Stress Reaction scales.

Content cluster representation. After completion of this initial item selection phase, the representation of content clusters constituting each trait scale was examined in the newly reduced item sets. Item substitutions were made to ensure adequate coverage of content clusters within each scale, that is, representation of items from all clusters identified by Tellegen and Waller (in press), in proportions approximating those of the full-form scales. To correct problems with underrepresentation, the lowest ranked items (applying the above criteria) from the best represented clusters were replaced with the highest ranked items from the least represented clusters.[3] The final MPQ–BF item set is listed in Table 1. (An appendix, listing item parameter values for each of these final items, is available from the authors on request.)

Broad Trait Factors

Higher order factor analyses of the MPQ have yielded three or alternatively four factors (Tellegen, in press; Tellegen & Waller, in press). The more general three-factor solution includes PEM, NEM, and CON. In the four-factor solution, PEM bifurcates into Agentic Positive Emotionality (PEM–AG) and Communal Positive Emotionality (PEM–CO), with PEM occupying the intermediate vector between these two factors. In the current 276-item form of the MPQ (Tellegen, in press), Agentic Negative Emotionality (NEM–AG) and Alienated Negative Emotionality (NEM–AL) were rationally developed as counterparts to the PEM–AG and PEM–CO dimensions. We computed *broad trait* scores for these seven higher order constructs (PEM, NEM, CON, PEM–AG, PEM–CO, NEM–AG, and NEM–AL) from a weighted sum of the primary trait scales.

Formulas for computing broad trait scores for the MPQ–BF were derived using a regression strategy. Specifically, within the development sample, regression analyses were performed using scores on the MPQ–BF primary trait scales (excluding Absorption; cf. Tellegen, in press) to predict scores on each of the full MPQ broad trait factors. The beta coefficients and constants from these regression analyses served as the parameters for computing broad trait scores for the MPQ–BF.[4] The stability of these parameters was assessed by examining relationships between broad trait

[2] In two instances, an item that met these overall criteria showed markedly discrepant ranks across the four study groups and therefore was replaced with the next highest ranked item.

[3] After completing the above steps, we performed a principal-components analysis (with varimax rotation) of the 11 abbreviated primary content scales, separately for each of the four study groups in the development sample. A clear three-factor structure was found in each group, with factor loadings for the primary content scales generally matching those for the MPQ. However, our preliminary 12-item Control scale, in addition to its expected loading on the higher order CON factor, loaded excessively (i.e., negatively) on the NEM factor in all four study groups and excessively on the PEM factor in one group. To improve the purity of Control as a marker of CON, 5 item substitutions were made on the basis of two criteria: (a) the extent to which an item correlated uniquely with the CON factor across groups and (b) the mean item–total correlation for the item. Items that were weakest in these respects were replaced with items that were most optimal; substitutions were made within content clusters to preserve cluster representation. This strategy yielded a short Control scale that correlated very highly with the full version (see Table 3) and showed the expected primary loading on the CON super factor (see Table 4).

[4] Before we performed these regressions, we randomly divided the development sample into two subsamples. Calculation of the regression weights in each subsample allowed an assessment of the stability of these coefficients. In no instance did the regression weights obtained from the analyses in the subsamples differ by greater than 0.11 from the final coefficients obtained from the full development sample.

scores estimated in this fashion and actual broad trait scores for the full MPQ in an independent, cross-validation sample.

Validity Scales

Response inconsistency indices. As noted earlier, the VRIN and TRIN scales of the MPQ provide for detection of invalid response patterns. The VRIN scale is composed of 39 content-matched, same-keyed item pairs; VRIN scores increase as item pairs are answered in opposite directions (i.e., high scores indicate response inconsistency). The TRIN scale comprises 28 content-matched, opposite-keyed item pairs; TRIN scores in the midrange reflect consistency in responding, whereas very low or very high scores reflect inconsistency (i.e., stereotypic true or false responding).

The item pairs constituting the VRIN and TRIN indices are drawn from the primary trait scales of the MPQ; thus, retention of 12 items per primary trait scale for the MPQ–BF resulted in a fair representation of the full MPQ VRIN and TRIN item pairs. An additional 9 primary scale items were included in the MPQ–BF to increase the number of validity index item pairs and to enhance trait scale representation within the TRIN and VRIN indices. Thus, the final MPQ–BF item pool contains 21 of 39 item pairs from the MPQ VRIN index and 16 of 28 item pairs from the MPQ TRIN index.

For both the MPQ and the MPQ–BF, protocols were deemed invalid if any of the following three criteria were met: (a) Overall response pattern is excessively inconsistent with respect to item pair content (i.e., score on VRIN is 3 standard deviations above the mean VRIN score); (b) response pattern is excessively polarized toward responding either true or false irrespective of item content (i.e., score on TRIN is greater than ± 3.21 standard deviations from the mean TRIN score); or (c) response pattern is both inconsistent and polarized in direction (i.e., score is 2 standard deviations above the mean for VRIN and ± 2.28 standard deviations from the mean for TRIN).[5] The above criteria were translated into discrete numeric cutoffs for both the MPQ and the MPQ–BF, using distributions of scores within the overall normative sample ($n = 1{,}350$). The normative sample was used because this is the referent sample for the MPQ (Tellegen, in press).

Unlikely Virtues. As noted earlier, the 14-item UNVIR scale was included in the MPQ–BF because it provides a useful stand-alone index of social desirability that can be retained or omitted at the discretion of the user without loss of other information. More specifically, the UNVIR scale provides an index of the tendency to claim uncommon virtuousness or deny uncommon frailties. Scales such as the UNVIR have been interpreted as tapping a form of *impression management* or *other deception*, as opposed to *self-deception* (Paulhus, 1984).

Standard Scores for MPQ–BF Scales

Normalized standard (*T*) scores were computed for the primary trait, broad trait, and validity scales of the MPQ–BF to facilitate comparison between an individual's scale scores and scores from an overall mixed-gender community reference group.[6] For each MPQ–BF scale, cumulative probability (i.e., percentile) distributions were formed using scores from the MPQ normative sample ($n = 1{,}350$). Normalized *T* scores were derived directly from these cumulative probability distributions to ensure that the *T* scores were percentile comparable across scales, regardless of the overall shape of the distribution of scores for that scale.[7]

Results

As reported above, selection of reduced item sets for primary trait scales and derivation of computational formulas for broad trait factor scores for the MPQ–BF were completed within the development sample. The 549 participants who produced valid MPQ profiles in the independent cross-validation sample were used to examine the performance of this new abbreviated measure relative to the full-length MPQ. Nine participants were excluded from the cross-validation sample because they produced invalid MPQ–BF or MPQ profiles. To evaluate the performance of the new MPQ–BF, three aspects of overall instrument function were assessed. Cronbach's alpha coefficients were calculated to compare the internal consistency reliability of the two measures. Correlations between matching MPQ–BF and MPQ primary trait and broad trait scales were computed to provide an estimate of the reproducibility of the full-length MPQ scales from their abbreviated MPQ–BF counterparts. Finally, the factor structure of the MPQ–BF was examined and compared with the structure of the 276-item MPQ. Normative descriptive statistics for the MPQ–BF scales are also reported.

Reliability of the MPQ–BF Primary Trait Scales

Cronbach's alpha was computed as an index of internal consistency for each of the MPQ–BF and MPQ primary trait scales in the cross-validation sample. Alpha coefficients for the 12-item MPQ–BF primary trait scales ranged from .75 to .84, whereas alphas for the MPQ scales ranged from .81 to .91 (see Table 2). The somewhat lower reliabilities for the MPQ–BF scales are quite likely attributable to the reduced number of items on each scale. To confirm this empirically, we used the Spearman–Brown formula (Anastasi, 1988, p. 121) to compute what the reliabilities would be for these scales if prorated to full length. These reliability estimates ranged from .83 to .91 and in most cases (i.e., for 10 of 11 scales) exceeded actual reliabilities for the full MPQ scales. This indicates that the criteria used to select items for the brief scales effectively optimized internal consistency while preserving content coverage.

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[5] For TRIN, two-tailed cutoffs were specified for Criterion b (± 3.21 *SD*s) and Criterion c (± 2.28 *SD*s) because, within a normal distribution of scores, these cutoffs reject the same percentage of cases as the corresponding one-tailed cutoffs specified for VRIN (i.e., 3 *SD*s for Criterion a and 2 *SD*s for Criterion b).

[6] Normalized *T* scores were derived directly from the cumulative probability (i.e., percentile) distribution for each scale within the normative sample. Specifically, normalized *T* scores were calculated to reflect the relative percentile position within a normal distribution associated with each raw score. For example, a raw score at the 84th percentile is assigned a *T* score of 60 (1 *SD* above the mean), a raw score at the 50th percentile is assigned a *T* score of 50, and a raw score at the 16th percentile is assigned a *T* score of 40. With normalized standard scores, in contrast to linear standard scores, the correspondence between *T* scores and percentile standings in the normative sample remains constant regardless of the shape of the raw score distribution for a particular scale.

[7] The cumulative probability (*CP*) calculated for each raw score was obtained using a formula that takes into account that observed score, X_0, although calculated as an integer, actually represents the real-number interval $X \pm 1/2$, where X equals X_0. The value of X, which coincides with the interval midpoint, is treated as most representative of the values within that interval. The approximate cumulative probability corresponding to the value of X is computed as follows: $CP(X) = CP(X_0 - 1) + P(X_0)/2 = [CP(X_0 - 1) + CP(X_0)]/2$, where $P(X_0)/2$ is half the proportion of cases receiving observed score X_0. For example, the cumulative probability associated with the real-number raw score of 5 is calculated as the average of the cumulative probability of the observed raw score of 4 and the cumulative probability of the observed raw score of 5.

Relations Between MPQ–BF and MPQ Scales

We examined the relationship between MPQ–BF and MPQ primary trait scales by computing Pearson product–moment correlations between corresponding scales for the two forms. The magnitude of these relationships was uniformly high, ranging from a relative low of .92 between MPQ–BF and MPQ forms of Absorption to a high of .96 for both Social Potency and Alienation (see Table 3).[8] Similar analyses were performed to examine the relationship between MPQ–BF and MPQ broad trait factor scores. In keeping with results for the primary trait scales, correlations were very high, ranging from .94 for Constraint to .98 for Negative Emotionality (see Table 3).

Higher Order Factor Structure of the MPQ–BF

The higher order factor structure of the MPQ–BF was examined through principal-components analysis (PCA).[9] Only participants with valid MPQ profiles were included in these analyses. Three-factor solutions for the MPQ–BF and MPQ were derived and compared in the cross-validation sample (n = 549).[10] Parallel analyses were performed within the much larger development sample (n = 1,622) to obtain optimally stable estimates of factor loadings. Table 4 contains factor loadings from the PCAs of the MPQ–BF and MPQ in the cross-validation and development samples.

Within the cross-validation sample, the three-factor solution accounted for 49.4% and 50.7% of the variance in primary trait scale scores for the MPQ–BF and the MPQ, respectively. For the MPQ–BF, expected primary loadings of Wellbeing, Social Potency, Achievement, and Social Closeness on PEM (cf. Tellegen & Waller, in press) were all above .40. Similarly, primary loadings of Stress Reaction, Alienation, and Aggression on NEM and primary loadings of Control, Harm Avoidance, and Traditionalism on CON all exceeded .40. Absorption loaded moderately on both PEM and NEM, as expected. Secondary negative loadings of Social Potency on CON and Control on NEM were consistent with prior work (Tellegen & Waller, in press) but somewhat larger. For the full MPQ, the PCA yielded similar size loadings for these trait scales,

Table 2
Internal Consistency Estimates (Cronbach's α) for MPQ–BF and MPQ Primary Trait Scales in Cross-Validation Sample (n = 549)

Scale	MPQ–BF	MPQ
Wellbeing	.81	.88
Social Potency	.80	.91
Achievement	.80	.83
Social Closeness	.82	.86
Stress Reaction	.84	.90
Alienation	.82	.86
Aggression	.75	.81
Control	.74	.83
Harm Avoidance	.76	.86
Traditionalism	.78	.83
Absorption	.76	.88

Note. MPQ–BF = Brief Form of the Multidimensional Personality Questionnaire; MPQ = current version.

Table 3
Pearson Correlations Between MPQ–BF and MPQ Scales in Cross-Validation Sample (n = 549)

Scale	*r*
Primary trait	
Wellbeing	.93
Social Potency	.96
Achievement	.95
Social Closeness	.95
Stress Reaction	.96
Alienation	.96
Aggression	.95
Control	.93
Harm Avoidance	.93
Traditionalism	.93
Absorption	.92
Broad trait	
PEM	.97
NEM	.98
CON	.94
PEM–AG	.97
PEM–CO	.97
NEM–AG	.96
NEM–AL	.96

Note. MPQ–BF = Brief Form of the Multidimensional Personality Questionnaire; MPQ = current version; PEM = Positive Emotionality; NEM = Negative Emotionality; CON = Constraint; PEM–AG = Agentic Positive Emotionality; PEM–CO = Communal Positive Emotionality; NEM–AG = Agentic Negative Emotionality; NEM–AL = Alienated Negative Emotionality.

[8] Two issues that need to be considered in gauging the true magnitude of these observed relationships are (a) inflation due to correlated measurement error (i.e., because the MPQ–BF was extracted as a subset of the full MPQ) and (b) attenuation associated with the imperfect reliability of the short and long forms of each scale. To adjust for correlated measurement error, we computed corrected part–whole correlations (r') for each trait scale (cf. Tellegen & Briggs, 1967) using the formula $r' = (\alpha_{bf}S_{bf}^2 + r_{bf\text{-}\sim bf}S_{bf}S_{\sim bf})/(S_{bf}S_{ff})$, where α_{bf} = reliability (coefficient α) for brief-form scale, S_{bf} = standard deviation for brief-form scale, $r_{bf\text{-}\sim bf}$ = correlation between brief-form scale and scale comprising full-form items not on brief form, $S_{\sim bf}$ = standard deviation for scale comprising full-form items not on brief form, and S_{ff} = standard deviation of full-form scale. Values of r', reflecting the correlation between short and long forms after adjusting for correlated measurement error, ranged from .78 for Aggression to .87 for Stress Reaction (M = .82). To adjust for unreliability of measurement, we applied the well-known correction for attenuation formula (Cohen & Cohen, 1983, p. 69) to the above-noted r' coefficients. Values of r'', reflecting the correlation between short and long forms after first adjusting for correlated measurement error and then disattenuating for unreliability, approached unity for all scales (i.e., r'' = 1.0 for 7 of the 11 primary trait scales, .99 for 3 of the scales, and .97 for the remaining scale).

[9] Similar results were obtained using common factor analysis.

[10] The three-factor PCA solution was derived from an initial four-factor solution, as described by Tellegen & Waller (in press). Specifically, PEM in the three-factor solution was defined as the intermediate (45°) vector between PEM–AG and PEM–CO in the four-factor solution, using the formula PEM = sine (PEM–AG) + cosine (PEM–CO), where values for both sine and cosine = 0.7071.

Table 4
Factor Loadings of Primary Trait Scales on Three Factors Derived From Principal-Components Analyses of the MPQ–BF and the MPQ in Development (n = 1,622) and Cross-Validation Samples (n = 549)

	Cross-validation sample						Development sample					
	MPQ–BF			MPQ			MPQ–BF			MPQ		
Scale	PEM	NEM	CON	PEM	NEM	CON	PEM	NEM	CON	PEM	NEM	CON
Wellbeing	**.78**	−.24	−.04	**.71**	−.15	−.12	**.70**	−.28	.01	**.72**	−.23	−.05
Social Potency	**.49**	−.01	*−.57*	**.49**	.08	*−.58*	**.64**	−.01	*−.33*	**.61**	.01	*−.35*
Achievement	**.45**	.00	.02	**.67**	.06	−.07	**.37**	.06	.14	**.40**	.04	.20
Social Closeness	**.57**	−.09	.04	**.30**	−.18	.20	**.70**	−.12	.06	**.65**	−.16	.09
Stress Reaction	−.14	**.77**	.17	−.15	**.77**	.27	−.12	**.77**	.16	−.10	**.78**	.20
Alienation	.02	**.73**	.12	−.04	**.75**	−.01	−.08	**.76**	.06	−.11	**.76**	.03
Aggression	−.06	**.58**	*−.37*	−.09	**.57**	*−.44*	.04	**.65**	*−.32*	.01	**.61**	*−.38*
Control	.00	*−.41*	**.55**	.23	*−.40*	**.42**	−.03	*−.20*	**.72**	−.05	*−.32*	**.68**
Harm Avoidance	−.03	.08	**.69**	−.05	−.01	**.79**	−.07	.05	**.64**	−.06	.04	**.66**
Traditionalism	.12	.13	**.70**	.24	.15	**.65**	.03	.12	**.65**	.04	.17	**.65**
Absorption	*.53*	*.43*	−.04	*.44*	*.53*	−.11	*.48*	*.40*	−.03	*.55*	*.41*	−.10

Note. MPQ–BF = Brief Form of the Multidimensional Personality Questionnaire; MPQ = current version; PEM = Positive Emotionality; NEM = Negative Emotionality; CON = Constraint. Factor loadings ≥ .40 are underlined; expected primary loadings are presented in bold, with secondary loadings in italics (see Tellegen & Waller, in press).

suggesting sample-specific variation as an explanation for these greater-than-expected loadings.

PCA results for the MPQ–BF in the larger development sample were markedly similar. In this case, the three-factor solution accounted for 50.3% of the variance among the MPQ–BF primary trait scales (vs. 51.4% for the full MPQ primary scales), and the pattern of factor loadings for these scales closely paralleled that observed in the cross-validation sample. The secondary negative loadings described above (Social Potency on CON; Control on NEM) were reduced to more appropriate levels in this larger development sample. Factor loadings for the full MPQ scales were virtually identical to those for the MPQ–BF in this sample (see Table 4).

Normative Data for the MPQ–BF

Table 5 lists means and standard deviations for the MPQ–BF primary and broad trait scales for participants in the normative sample who produced valid profiles ($n = 549$). Also presented are standard (*T*) score ranges of primary and broad trait scales for both the MPQ–BF and MPQ.

Examination of the standard score ranges for the primary trait scales reveals some restriction resulting from reductions in the number of items contributing to the brief- versus full-form scales. With fewer items on the MPQ–BF trait scales, it is not possible to achieve scores as extreme as those achievable on the full-form scales. The consequence is a reduction in the overall variability of the brief scales and a somewhat truncated range of *T* scores for the MPQ–BF trait scales relative to the corresponding MPQ scales. No reduction of this kind was evident for the broad trait scores, which reflect weighted sums of primary trait scores in both brief and full forms of the MPQ.

Relationships With Other Personality Measures

Table 6 contains simple correlations between the MPQ–BF primary trait scales and other self-report personality measures and multiple correlations (*R*s) for the prediction of these other measures using all MPQ trait scales in concert. Corresponding results for the MPQ trait scales are presented for purposes of comparison. The data are from a college undergraduate sample ($n = 340$) that was separate from the development, cross-validation, and normative samples described earlier.

Three aspects of Table 6 are particularly notable. The first is that each of the non-MPQ measures showed a meaningful pattern of univariate correlations with the 11 MPQ trait scales. For example, the Emotionality subscales of the EAS (Distress, Fear, and Anger) all showed marked positive relationships with MPQ Stress Reaction; Anger also showed unique positive correlations with MPQ Aggression and Social Potency. The Sociability subscale of the EAS correlated strongly with Social Closeness and to a lesser degree with Wellbeing and Social Potency (suggesting a relation to higher order communal PEM, which was confirmed by direct analysis; $r = .72$ for both the MPQ–BF and the MPQ), whereas EAS Activity correlated with Achievement, Wellbeing, and Social Potency (implying a relation to agentic PEM, which was also confirmed by direct analysis; $r = .54$ for both MPQ forms). Buss and Plomin's (1975) Impulsivity scale was related specifically, and inversely, to the Control component of MPQ CON.

A second notable aspect of Table 6 is that all of the non-MPQ trait measures were predicted to a significant degree by a weighted sum of the MPQ–BF trait scales, with most of the multivariate relationships (9/13) exceeding .60. These results illustrate the broad coverage of the MPQ vis-à-vis other well-established trait constructs. A third point is that patterns of univariate correlations, and magnitudes of multivariate *R*s, were highly similar for the brief and full forms of the MPQ. In keeping with the very strong correlations between forms presented in Table 3, this supports the interchangeability of the short and long forms of the MPQ in terms of their relationships with external criteria.

Further support for this latter point is provided by the data in Table 7, which presents relationships between self-report MPQ scores (brief and full 276-item versions) and trait ratings of the

Table 5
Raw Score Descriptive Statistics for MPQ–BF Scales Within the Normative Sample (n = 1,350) and Normalized T-Score Ranges for the MPQ–BF Compared With Those for the MPQ

Scale	MPQ–BF raw scores		Standard score range	
	M	*SD*	MPQ–BF	MPQ
Primary trait				
Wellbeing	8.7	2.9	22–64	22–66
Social Potency	4.8	3.6	34–71	29–78
Achievement	7.0	3.1	27–69	22–73
Social Closeness	7.8	3.2	27–66	22–71
Stress Reaction	5.6	3.5	31–71	27–78
Alienation	1.5	2.3	43–78	40–78
Aggression	2.5	2.4	38–78	35–78
Control	8.5	2.6	22–66	22–73
Harm Avoidance	8.7	2.8	22–63	22–69
Traditionalism	8.3	2.9	22–66	22–73
Absorption	5.5	3.1	29–73	22–78
Broad trait				
PEM	67.6	14.7	22–78	22–78
NEM	34.9	14.6	22–78	22–78
CON	85.3	14.5	22–78	22–78
PEM–AG	57.1	14.3	22–78	22–78
PEM–CO	62.6	14.7	22–78	22–78
NEM–AG	46.9	14.8	22–78	22–78
NEM–AL	35.2	14.3	22–78	22–78
Validity				
VRIN	2.6	1.5	31–78	22–78
TRIN	11.8	1.5	22–78	22–78
Unlikely Virtues	3.4	2.4	34–78	34–78

Note. Sample includes 675 men and 675 women (mean age = 40.3 years). MPQ–BF broad trait scores are unstandardized regression estimates reflecting weighted sums of MPQ primary trait scores. Score ranges for other scales are primary trait, 0–12; VRIN, 0–21; TRIN, 0–20; and Unlikely Virtues, 0–14. Standard scores are normalized *T* scores (see footnote 6). MPQ–BF = Brief Form of the Multidimensional Personality Questionnaire; MPQ = current version; PEM = Positive Emotionality; NEM = Negative Emotionality; CON = Constraint; PEM–AG = Agentic Positive Emotionality; PEM–CO = Communal Positive Emotionality; NEM–AG = Agentic Negative Emotionality; NEM–AL = Alienated Negative Emotionality; VRIN = Variable Response Inconsistency; TRIN = True Response Inconsistency.

same participants ($n = 232$) by knowledgeable observers. The observer ratings used in this analysis were a composite of trait ratings provided by the mother, father, and a close peer of each participant (see Harkness et al., 1995, for details). Again, the magnitude of relationships between the self-report trait scores and the external criterion scores were quite similar for the brief and full forms of the MPQ. Notable as well is the lower magnitude of relationship for some trait scales (i.e., Alienation, Absorption) in comparison to others. The implication is that some MPQ traits have fewer observable referents than others (for a more detailed discussion of this point, see Harkness et al., 1995).

Discussion

A major aim of the present work was to develop abbreviated versions of the MPQ primary trait scales that would correlate maximally with the full versions while maintaining coverage of the distinct facets of each trait construct. This objective was clearly achieved. Although some departures from a priori item selection rules were made to ensure representation of all content clusters within each brief-form scale (cf. Tellegen & Waller, in press), correlations between the final brief- and full-form primary scales were uniformly high. Internal consistencies of the brief-form scales were also high, despite the attenuation that naturally occurs with item reduction. Furthermore, by retaining 9 items in addition to those on the 12-item trait scales, we were able to preserve adequate representation of inconsistency item pairs (i.e., 16/28 TRIN pairs, 21/39 VRIN pairs) and thereby establish distribution-based invalidity criteria for the MPQ–BF.

Despite the robust relationships between abbreviated and full versions of the MPQ primary trait scales, a limitation of the brief-form scales became evident in comparing their standard score ranges with those of the full-form scales: By virtue of their smaller item sets, the range of possible *T* scores was attenuated, resulting in somewhat compressed score distributions and reduced discrimination at the extremes. This represents a potential constraint on the utility of the MPQ–BF for individual assessments in clinical and counseling settings, where the principal aim is to differentiate individuals on the basis of trait scale elevations. In this context, the full MPQ will provide more differentiated results, particularly for individuals with extreme scores. However, the very high correspondence between brief- and full-form trait scales ensures a high degree of comparability of results for the two versions in correlational studies, including investigations of links between personality and clinical disorders. Thus, the brief and full-length versions of the MPQ can be viewed as complementary assessment devices.

A second major aim of the present work was to preserve the higher order factor structure of the full MPQ and to maintain expected loadings of the primary trait scales on the PEM, NEM, and CON factors (cf. Tellegen & Waller, in press). This goal was also realized. A PCA of the MPQ–BF yielded three higher order factors readily identifiable as PEM, NEM, and CON. Within the large development sample, primary trait scales in all cases showed their strongest loadings on the appropriate higher order factor. This was true also in the cross-validation sample, with only one exception (i.e., a somewhat higher loading of Social Potency on CON than on PEM)—and in this instance, precisely the same result was obtained for the MPQ, indicating that the anomaly was sample related rather than test version related.

Furthermore, correlational analyses revealed that the higher order (broad trait) scores of the full-form MPQ, which represented weighted sums of the full-form primary trait scores, were well predicted by regression equations using the brief-form scales. Within the cross-validation sample, correlations between true MPQ values and regression-based MPQ–BF estimates were very high for all broad trait scores. The MPQ–BF thus provides a faithful representation of the personality trait data embodied by the full MPQ, at both lower and higher levels of analysis.

As would be expected from the foregoing, close correspondence was also observed between the brief and full forms of the MPQ in terms of predicting other self-report personality measures, including the Buss–Plomin (1975, 1984) temperament scales; trait measures of anxiety, fearfulness, empathy, and narcissism; indices of sensation seeking and delinquency (socialization); and a measure of imagery ability. Multiple correlations for prediction ranged from .42 to .78 ($M = .64$) for the brief-form scales and from .46

Table 6
Beta Weights and Multiple Correlations for Prediction of Standardized Questionnaire Measures Using Alternate Versions of MPQ Trait Scales (MPQ–BF/MPQ) Within an Independent College Sample (n = 340)

	MPQ trait scale											
Measure	Wellbeing	Social Potency	Achievement	Social Closeness	Stress Reaction	Alienation	Aggression	Control	Harm Avoidance	Traditionalism	Absorption	*R*
EAS												
Em—Distress	**−.12/−.12**		**.10/.11**		**.63/.68**		**−.14/−.13**			**.10**/.05		.71/.74
Em—Fear	**−.11/−.14**		**−.10/−.12**		**.43/.49**		**−.11/−.12**		.06/**.10**	**.13**/.08	.07/**.14**	.59/.65
Em—Anger	−.05/**−.15**	**.23/.28**			**.33/.26**		**.29/.28**	**−.12/−.11**			**−.12**/−.09	.61/.59
Activity	**.24/.25**	**.21/.26**	**.33/.31**		**.17/.20**			**−.10/−.10**		**.11**/.09		.61/.61
Sociability	**.12/.16**	**.09/.09**		**.65/.63**					**.09**/.06			.75/.75
Impulsivity[a]		**.11/.15**	**−.19/−.15**					**−.48/−.52**				.66/.68
MAS	**−.15/−.11**				**.56/.64**	**.25/.20**						.78/.80
FSS				**.15/.17**	**.26/.30**	**.20/.14**			**.15/.16**			.49/.51
EE		**−.13/−.12**		**.11/.19**	**.27/.27**		**−.30/−.27**				**.19/.31**	.50/.58
NPI	**.16/.14**	**.57/.60**	**.11/.11**		**−.11/−.13**		**.14/.11**			−.07/**−.11**		.75/.78
SSS	**.11**/.09			**.14/.14**			**.21/.19**	**−.22/−.20**	**−.36/−.36**	**−.30/−.32**	.08/**.09**	.75/.77
So	**.16/.20**	**−.10/−.12**		**.10**/.07		**−.28/−.27**	**−.18/−.13**	**.25/.22**		**.17/.25**		.64/.66
QMI				−.07/**−.14**							**−.30/−.37**	.42/.46

Note. Sample includes 93 men and 247 women. Higher So scores are indicative of lesser delinquent tendencies; lower QMI scores are indicative of better imagery ability. Coefficients on the left of each slash (/) are for the MPQ–BF; those on the right are for the MPQ. Standardized betas are listed for both versions of the MPQ if the coefficient for either was significant ($p < .05$, bolded). All *R*s are significant at $p < .001$. MPQ = Multidimensional Personality Questionnaire; MPQ–BF = Brief Form of the MPQ; EAS = Emotionality–Activity–Sociability Temperament Survey (Buss & Plomin, 1984); Em = Emotionality subscales of EAS; MAS = Manifest Anxiety Scale (Taylor, 1953); FSS = Fear Survey Schedule III (Arrindell, Emmelkamp, & van der Ende, 1984); EE = Emotional Empathy Scale (Mehrabian & Epstein, 1972); NPI = Narcissistic Personality Inventory (Raskin & Terry, 1988); SSS = Sensation Seeking Scale (Zuckerman, 1979); So = Socialization Scale (Gough, 1957); QMI = Questionnaire on Mental Imagery (Sheehan, 1967).
[a] Impulsivity scale is from Buss and Plomin (1975).

Table 7
Correlations of MPQ–BF and MPQ Primary Trait Scales With Observer Trait Ratings in a College Sample (n = 232)

Scale	MPQ–BF	MPQ
Wellbeing	.48	.48
Social Potency	.52	.58
Achievement	.52	.53
Social Closeness	.49	.50
Stress Reaction	.39	.42
Aggression	.28	.29
Alienation	.22	.20
Control	.40	.45
Harm Avoidance	.52	.55
Traditionalism	.47	.49
Absorption	.22	.22
M	.42	.44

Note. Correlations are based on data collected by Harkness, Tellegen, and Waller (1995). These investigators administered the original 300-item version of the Multidimensional Personality Questionnaire (MPQ–300) to participants (109 men and 123 women). MPQ correlations listed above are for the current 276-item version, and MPQ–BF correlations are for the brief form; both were extracted as subsets of the MPQ–300.

to .80 ($M = .66$) for the full-form scales. The MPQ–BF and MPQ self-report scales also showed quite similar correlations with observer ratings of the same trait constructs (cf. Harkness et al., 1995).[11]

Some substantive aspects of the observed relationships between the MPQ trait scales and other personality measures are noteworthy. First, the MPQ trait scales and the Buss–Plomin (1975, 1984) temperament scales appear to map converging domains. The Emotionality scales of the EAS (Distress, Fear, and Anger) all showed positive relationships with MPQ Stress Reaction, the core affective facet of NEM, with EAS Anger related additionally to the Aggression facet. The Activity and Sociability subscales of the EAS represent markers, respectively, of Agentic PEM and Communal PEM. The Buss–Plomin (1975) Impulsivity scale was most strongly related (inversely) to the Control subscale of the MPQ, a facet of CON. These relationships are on the whole consistent with the idea that the subscales of the MPQ assess temperament-related traits.

Questionnaire measures of anxiety (MAS) and fearfulness (FSS–III) showed interesting convergent–discriminant relationships with MPQ trait scales. In particular, the MAS was more closely linked to Stress Reaction, and the FSS–III was uniquely related to Harm Avoidance (cf. Tellegen & Waller, in press). Zuckerman's (1979) SSS was broadly related to the CON factor of the MPQ. The NPI, designed to capture the clinical construct of narcissistic personality (Raskin & Terry, 1988), was related principally to MPQ Social Potency. Imagery ability was related quite exclusively, albeit moderately, to MPQ Absorption. The So scale was developed through an empirical strategy to measure delinquent tendencies, with higher scores indicative of lesser delinquency. This scale was complexly related to the MPQ, but its strongest relationships, that is, negatively with Alienation and Aggression facets of NEM and positively with Control and Traditionalism facets of CON, coincide with prior evidence linking antisocial deviance to the NEM and CON factors of the MPQ (Krueger et al., 1994; Patrick et al., 1997).

These predictive relationships highlight the value of a broadband, multidimensional personality inventory for organizing and interpreting extant trait constructs. In this regard, the MPQ assesses a family of psychometrically well delineated traits that can serve as conceptual benchmarks for other trait measures. The availability of abbreviated versions of the MPQ trait scales will greatly facilitate ongoing work of this kind, as well as research on the relationship of personality to cognition, affect, and normal and abnormal behavior. The present article also demonstrates the equivalence of the brief and full forms of the MPQ at the higher order factor level. This makes the MPQ–BF suitable for use in multiinventory studies of the structural basis of personality (cf. Church, 1994; Church & Burke, 1994; Tellegen & Waller, in press) and in large-scale investigations of personality structure across genetic, developmental, social interpersonal, and cultural levels of analysis and of links between temperament and psychopathology.

[11] A limitation of these analyses is that the brief form was extracted from the full MPQ rather than being administered separately. It will be desirable in future studies to examine the validity of the brief form when completed by participants as a stand-alone instrument.

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Received May 1, 2001
Revision received December 4, 2001
Accepted December 18, 2001 ■