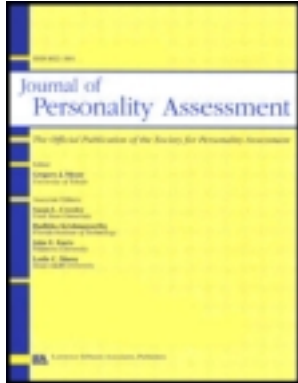


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Normal People in Clinical Practice: A General Factor of Personality in Biproportional Scaling and Its Practical Relevance

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STATISTICAL DEVELOPMENTS AND APPLICATIONS

Normal People in Clinical Practice: A General Factor of Personality in Biproportional Scaling and Its Practical Relevance

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To investigate the clinical relevance of absolute scaling in personality assessment, Hofstee and Ten Berge's (2004) biproportional scaling method was applied to 3 clinical samples and compared with relative scaling in traditional analyses. In the first sample, 80 psychotherapy clients provided self-reports as well as reports by 3 informants, resulting in 320 ratings of the Dutch short form of the MMPI (NVM). In the second sample, 96 psychotherapy clients provided self-reports and informant reports, resulting in 384 Five-Factor Personality Inventory (FFPI) ratings. In the third sample, 95 clients provided self-reports and informant reports, resulting in 380 ratings of the NEO Five-Factor Inventory (NEO-FFI). In Part I of the study, the personality structure based on biproportional scaling was examined by replicating Hofstee, Barelds, and Ten Berge (2006). In Part II, this personality structure as well as self-informant distances and self-informant likenesses were related to symptoms, personality pathology, and level of functioning. The results confirmed the presence of a general factor of personality in absolute scaling, which appears to reflect social fitness and the absence of severe psychopathology. This factor was significantly associated with fewer symptoms and better functioning in all 3 samples. The personality pathology results were only significant in the FFPI sample. Self-informant distance and self-informant likeness were primarily associated with symptoms. A relationship between poor social fitness and insecure early attachment was suggested in 3 case studies.

The traditional method of scale standardization in personality assessment, in which personality is determined in terms of a person's trait position in relationship to a sample mean, results in a relative and normative definition of personality. This method implies that an individual's personality depends on those of others and leads to judgments such as "this person is less conscientious than other people." This approach is appropriate in comparative contexts such as selecting the best job candidate. However, this relative approach cannot answer the question of whether the person is conscientious at all. For example, a person with a score of 3.5 on a 5-point Likert conscientiousness scale that ranges from *not at all applicable* to *entirely applicable*, with a neutral category of 3 in the middle, is supposed to represent conscientiousness in an absolute sense; however, a group mean of 3.7 might lead to a judgment of "less conscientious compared with others." Relative within-group trait measurements might be inappropriate for contexts in which strictly individual trait positions are important. For instance, a clinical diagnostician needs to know whether a patient is emotionally stable in an absolute sense and would not be interested in this patient's relative position to others. The easiest method of obtaining a group-invariant scale in which absolute scores determine trait positions is to recode the item scores into bipolar scores with a natural midpoint of 0 at which the trait or quality is reversed. The summation of these items will result in a negative or positive value that can

be directly interpreted as the presence or absence of the trait, respectively. However, a data set of bipolar scores cannot be analyzed using traditional methods because classical statistics transform absolute scores into relative ones, which brings the problem back to the beginning.

Hofstee and Ten Berge (2004) developed an alternative method of analyzing personality assessment data based on a bipolar proportional scale $[-1, \dots, 0, \dots, +1]$, a corresponding coefficient of raw-scores likeness $L = \sum XY/N$, and raw-scores principal component analysis (PCA). The L coefficient is the most elementary coefficient of association for (raw scores) absolute scales. Contrary to relative association coefficients (e.g., the Pearson correlation) no transformations (e.g., into z scores) are performed in absolute scaling.

Hofstee and Ten Berge (2004) demonstrated that the biproportional scaling method (BSM) alters the trait structure of personality. Contrary to the original five-factor structure of their data, they found a relatively large first principal component after applying the biproportional method to a Five-Factor Personality Inventory (FFPI) data set of 133 people who rated themselves and were rated by four others (Hendriks, 1997). Hofstee, Barelds, and Ten Berge (2006) hypothesized that a more differentiated structure might be found in a clinical sample and applied this method to data from a sample of 775 psychiatric patients who completed the Dutch Personality Questionnaire (NPV; Luteijn, Starren, & van Dijk, 2000). They compared these results with a sample from the normal adult population in the Netherlands. They found a dominant first component in both samples; however, the first eigenvalue in the population was 1.7 times larger than that of the clinical sample, which confirmed their

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hypothesis that clinical patients share far less with regard to the first principal component of personality.

Hofstee and Ten Berge (2004) interpreted this first component as social desirability in a strict sense: as a personality attribute and not a response bias. In their studies, a vast majority of people were weakly to mildly socially desirable, and only a few people weakly to mildly undesirable. Hofstee (2001) suggested the existence of a general factor of personality analogous to *g*, the general factor of cognitive ability.

The question of the nature and structure of personality is likely as old as humankind. The number of basic dimensions that underlie the concept of personality has long been a subject of research; however, since the 1980s, an increasing interest and apparent consensus in the five-factor model emerged (Digman, 1990). However, Digman later doubted whether the Big Five (extraversion/surgency, agreeableness, conscientiousness, emotional stability and intellect/openness to experience) were really the most basic trait dimensions. In a factor analysis of estimated factor correlations from 14 studies, Digman (1997) found evidence for two higher order factors provisionally labeled factor α , indicated by the Big Five factors agreeableness, emotional stability, and conscientiousness, and factor β , indicated by intellect/openness to experience. Van der Linden, Te Nijenhuis, and Bakker (2010) found supporting evidence for the existence of α (also called stability) and β (plasticity) in a meta-analysis of 212 studies on the intercorrelations among the Big Five personality factors. Moreover, they also found the existence of a general factor of personality (GFP) at the top of the personality structure hierarchy. Van der Linden and colleagues investigated the criterion-related validity of the GFP in a study on job performance. Their results indicated that the GFP was related to actual behavioral outcomes, which appears to substantiate this component. They described people who have a high GFP as open-minded, hard-working, sociable, friendly, and emotionally stable.

By now, a GFP has been extracted from more than 24 different personality inventories, covering both the domain of normal and abnormal personality. The GFP appears to occupy the apex of the personality hierarchy regardless of the approach to scale construction or whether data consists of self- or other-rated personality (Rushton & Irwing, 2011). Like Hofstee (2001), Musek (2007) discussed the likelihood of the GFP's roots in human evolution. Rushton and Irwing (2011) elaborated on the theoretical concept of the GFP in relation to evolutionary theory and life history theory. The GFP has been interpreted as a dimension of social desirability (Hofstee & Ten Berge, 2004; Hofstee et al., 2006), social effectiveness (Rushton & Irwing, 2011), social intelligence (Van der Linden et al., 2010), social fitness (Just, 2011), and summarized by Block (2010) as a "fitness for collective living."

Several researchers have suggested that a GFP is a methodological artifact and not a fundamental factor of personality (e.g., Ashton, Lee, Goldberg, & de Vries, 2009; Hopwood, Wright, & Donnellan, 2011). To illuminate the matter of whether the GFP is an artifact or a relevant finding, a study must use different methods and be related to different criteria. Although the findings regarding the GFP are impressive, the aforementioned GFP research (with the exception of Hofstee et al., 2006; Hofstee & Ten Berge, 2004) employed classical statistics and used correlations as a measure of association. These relative measurements might enhance the social component of the GFP. Furthermore,

only limited research has been undertaken with regard to the external validity of the construct.

The present investigation addressed the following issues. Part I applies the BSM to three clinical samples with the expectation of replicating the biproportionally based personality structure of Hofstee et al. (2006; Hofstee & Ten Berge, 2004). The participants are rated by themselves and others on three personality questionnaires. Part II attempts to validate the personality structure with regard to the amount of physical and emotional symptoms, personality pathology, and level of functioning. Because of the GFP's supposed social aspect, I also examined the associations of self-informant distance and self-informant likeness with the aforementioned criterion variables. Whenever possible, I compared the personality structure based on the BSM with the structure derived from the traditional approach.

METHOD

Participants

Participants included 271 clients referred by a primary care physician to my psychotherapy practice. They made up three samples, each based on another personality questionnaire. Sample 1 ($n = 80$) had a mean age of 37 years ($SD = 13$) and consisted of 61 women (76%) and 19 men (24%); Sample 2 had a mean age of 35 ($SD = 12$) and consisted of 76 women (79%) and 20 men (21%); and Sample 3 had a mean age of 36 years ($SD = 12$) and consisted of 70 women (74%) and 25 men (26%).

The clients provided self-ratings of their symptoms and personality. In addition, each client obtained ratings of his or her personality from three well-acquainted informants. According to an intersubjective approach to personality (Hofstee, 2009), these 813 obtained informant reports enhanced the reliability and validity of the assessments. Analyses were conducted on the data of all 1,084 ratings.

Measures

Nederlandse Verkorte MMPI (NVM; the Dutch short form of the Minnesota Multiphasic Personality Inventory). The NVM (Luteijn & Kok, 1985) was used to assess personality in Sample 1. The NVM consists of 83 items derived from the MMPI (Hathaway & McKinley, 1943). The NVM distinguishes five scales: Negativism, Somatization, Shyness, Severe Psychopathology, and Extraversion. The 3-point answering format of the NVM is *Yes, ?, No*. This instrument is primarily used in clinical personality assessment.

Five-Factor Personality Inventory. The FFPI (Hendriks, Hofstee, & De Raad, 1999, 2011) was used to assess personality in Sample 2. The FFPI assesses the Dutch psycholexically based Big Five personality dimensions: Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and (intellectual) Autonomy. The latter construct is a measure of independent decision making. The FFPI consists of 100 items. The instrument is suitable for self- and other ratings and has been designed to be applied broadly because of its item format and wording. Ratings are recorded on a 5-point scale that ranges from *not at all applicable* to *entirely applicable*, with a neutral category in the middle.

NEO Five-Factor Inventory (NEO-FFI). The NEO-FFI (the shortened version of the NEO PI-R; Costa & McCrae, 1992; Dutch version: Hoekstra, Ormel, & De Fruyt, 2007) was used

to assess personality in Sample 3. This 60-item questionnaire assesses five personality domains with 12 items: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The 5-point rating scale ranges from *entirely disagree* to *entirely agree* with a neutral category in the middle.

Symptom Check List-90 (SCL-90). The SCL-90 (Arindell & Ettema, 1986) was applied to the clients in all three samples. It is an inventory of physical and emotional symptoms. The questionnaire consists of 90 descriptions and includes eight scales: Anxiety, Agoraphobia, Depression, Somatic Complaints, Insufficiency of Cognition and Action, Suspiciousness and Interpersonal Sensitivity, Hostility, and Sleep Problems. The total score on the SCL-90 indicates the overall level of emotional and physical dysfunction.

Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM-IV-TR; Dutch translation: Koster van Groos, 2001). Diagnoses were classified according to the *DSM-IV-TR* multi-axial coding system. For this study, Axis II and Axis V were recorded for each client. Axis II lists 10 personality disorders, grouped into three clusters. In Cluster A the odd or eccentric disorders are described; Cluster B describes the dramatic, emotional, or erratic disorders; and Cluster C includes the anxious or fearful disorders.

Axis V, the Global Assessment of Functioning (GAF) scale, ranges from 1 (persistent danger of severely hurting self or others, or persistent inability to maintain minimal personal hygiene, or serious suicidal act with clear expectation of death) to 100 (superior functioning in a wide range of activities, no problems). Roughly speaking, ratings of 50 or above encompass most of the criteria necessary for an uncovering form of psychotherapy, whereas ratings below 50 signal for more supportive interventions.

Self-other likeness. For each client, the Likeness coefficient $L_{XY} = \sum XY/N$ between the biproportional scores of self-report (X) and three informant reports (Y) over all items and over all raters was computed (see also Hofstee & Ten Berge, 2004). In this computation, self-other likeness is the mean of the L coefficients over items reported by self and informant 1, self and informant 2, and self and informant 3.

Self-other distance. For each client the Euclidean distance $= \sqrt{(x - y_1)^2 + (x - y_2)^2 + (x - y_3)^2}$ between the component scores was computed, in which x is the self-report score on the first component, and y_1 , y_2 , and y_3 are the first component scores of the three informants.

Procedure

Prior to the first appointment, clients completed a short questionnaire concerning sociodemographic characteristics, problems, symptoms, and the help they sought. Manifested problems and symptoms were assessed in detail during the first interview. At the end of this session, clients were provided with self-report questionnaires to be completed at home. In addition, they received three envelopes that each contained an informant version of the personality questionnaire to be completed by associates who knew the client well. The instructions explicitly informed associates not to discuss these ratings with the client. Informants were instructed to seal the envelope after completing the questionnaire and return it to the client. Informants were assured

that their ratings would remain confidential. They were also informed that an average personality profile would be calculated across judges, and individual answers would not be discussed with the client.

Completed questionnaires were collected during the client's second interview. An assessment of the client's developmental and personal history continued the diagnostic procedure. After the second interview, questionnaires were scored according to the manual's instructions, and the informant reports were averaged across the scales. *DSM-IV* classifications were based on clinical interviews, observations made during both sessions, and the results of the self-report questionnaires. In most cases, formal personality disorder categorizations with regard to *DSM-IV* Axis II were postponed to rule out false positives due to the potential confounding influence of clients' psychiatric states. Instead, I listed the presence or absence of cluster features that I had noticed during the assessment process and recorded these as personality pathologies. (I prolonged the assessment period of the few clients who had personality pathology as their initial core problem and applied the Structured Clinical Interview for *DSM-IV* Axis II Personality Disorders [SCID-II; First, Gibbon, Spitzer, Benjamin, & Williams, 1997; Dutch version: Weertman, Arntz, & Kerkhofs, 2000] to diagnose personality disorders.) Neither the informant reports nor self-informant discrepancies were used to diagnose clients or conduct their therapy. A psychological report summarized the results of the assessment, including questionnaire interpretation, *DSM-IV* classification, and treatment design.

In the third and feedback session the report was discussed. The client received feedback and provided informed consent. Clients were only informed of global averaged informant reports; no interpretations or possible meanings of discrepancies were provided. For instance, clients were told that they rated themselves as highly extraverted in relation to the norm, whereas their informants rated them as less extraverted but nevertheless above average. Subsequently, therapy occurred according to the standard practice.

Analyses

The answer formats of the personality questionnaires were translated into biproportional scales. This resulted in a [+1, 0, -1] scale for the NVM and a [-1, -.5, 0, +.5, +1] scale for the FFPI and NEO-FFI. Based on these biproportional scores, the likeness coefficients ($L = \sum X_1 X_2 / N$ of N raw scores on variables X_1 and X_2) were calculated. Subsequently, the three L coefficient matrices were factor analyzed (i.e., raw scores PCA). This analysis is not available in SPSS; however, an easy applicable macro to conduct a biproportional analysis using this software can be freely downloaded from the Groningen University Web site (Timmerman, Hofstee, & Ten Berge, 2008).

This study focuses on understanding personality structure with regard to absolute scaling using the BSM. To provide a better idea of the meaning of the BSM and to allow a comparison between the two methods, I also conducted PCAs using the traditional relative scaling method (RSM).

RESULTS

Part I: Personality Structure According to the BSM

Because I used client self-reports and informant reports (see Hofstee, 1994; 2009; Mosterman & Hendriks, 2011), I conducted a BSM PCA for each instrument using the biproportional

TABLE 1.—Means of squares of raw scores principal component analyses loadings.

C	BSM Samples			RSM Samples			BSM Random			RSM Eigenvalues		
	NVM	FFPI	NEO-FFI	NVM	FFPI	NEO-FFI	NVM	FFPI	NEO-FFI	NVM	FFPI	NEO-FFI
1	.1071	.0330	.0196	.1191	.1854	.2343	.0054	.0071	.0088	8.21	18.54	14.06
2	.0074	.0017	.0022	.0896	.0976	.1255	.0020	.0005	.0010	6.18	9.76	7.53
3	.0046	.0004	.0008	.0508	.0589	.1076	.0009	.0003	.0003	3.50	5.89	6.46
4	.0022	.0003	.0005	.0429	.0479	.0942	.0005	.0001	.0002	2.95	4.79	5.65
5	.0010	.0002	.0004	.0342	.0320	.0840	.0004	.0001	.0002	2.14	3.20	5.04

Note. BSM = bi-proportional scaling method; RSM = relative scaling method; C = Component; NVM = Dutch short form of the Minnesota Multiphasic Personality Inventory; FFPI = Five-Factor Personality Inventory; NEO-FFI = NEO Five-Factor Inventory. Number of items: NVM = 83; FFPI = 100; NEO-FFI = 60.

raw scores matrix of the number of questionnaire items (columns) by four raters per case (rows), which resulted in $N = 320$ for the NVM, $N = 384$ for the FFPI, and $N = 380$ for the NEO-FFI. I also conducted relative PCAs on the equally sized original raw scores matrices.

The best indicators of BSM component strength are the sums of their squared loadings (which in RSM PCA are identical to eigenvalues). Because the three questionnaires of this study contained different numbers of items, the means of the squared loadings were computed to compare across surveys. In Table 1, columns 2 through 7 show that a large first principal component was found in each of the three personality questionnaires using both methods. The squared mean loading of the first component in the BSM was over 14 times greater than the second component in the NVM sample, over 19 times greater in the FFPI sample, and approximately 9 times greater in the NEO-FFI sample. However, the first component loadings in the RSM were not even twice as large as that of the second component.

To determine the number of components to retain, I created parallel random data sets by randomly and irreversibly copying portions of one sample and pasting them into the format of another such that the data were completely meaningless. The results of the BSM PCAs on these random data sets are displayed in Table 1 (columns 8–10). All five mean squared loadings of the bi-proportional samples were larger than those suggested by chance; however, because of the small values of the last components, I reasoned that only from the first two components as well as perhaps from the third component a content meaning could be extracted.

Hofstee et al. (2006) applied another approach to determine the number of principal components to retain. They examined the components that play a role in describing clients and reasoned that only principal components should be retained on which clients have salient scores. Scores approaching 0 on the $[-1, 0, +1]$ scale are supposed to be not salient. I arbitrarily set the limits for this neutral score at $-.333$ and $+.333$. Thus, the number of people with absolute scores $> .333$ on a component is an appropriate indicator of the contribution of the component. For the first five principal components, the numbers of clients with an absolute score $> .333$ were as follows:

Principal component:	1	2	3	4	5
NVM:	67	16	13	10	5
FFPI:	70	6	0	0	0
NEO-FFI:	62	9	7	1	1

I decided to inspect the content of the first three components in the first part of the study and to explore the validation of the first component in the second part of the study.

Classifying items. Following the steps of Hofstee et al. (2006), an abridged three-dimensional circumplex design (Hofstee, De Raad, & Goldberg, 1992) was applied to classify the BSM questionnaire items. In accordance with this design, the loadings were assigned to clock vectors. The primary loading per item was determined by the highest absolute component loading of that item. The second highest absolute loading per item was classified as the secondary loading when it was greater than $.268$ ($= \tan 15^\circ$) times the primary loading. Table 2 displays the results of the classification for each questionnaire.

Table 2 shows that 36 NVM items loaded only onto the first BSM component (bold). This component revealed an approximately unipolar dimension of (absence of) severe psychopathology, with the greatest negative loadings on severe pathological symptoms such as “I believe I am being followed” (1–, Item 29) and “Someone has been trying to poison me” (1–, Item 34). The positive counterpart of the dimension, defined by five items

TABLE 2.—Distribution of the items according to the abridged three-dimensional circumplex design.

	1+	1–	2+	2–	3+	3–
NVM						
1+	5	X		1	2	1
1–	X	31		2	5	
2+	1	10	2	X		
2–	6	5	X	1		1
3+	2	3			1	X
3–	3				X	1
FFPI						
1+	28	X	1	2		
1–	X	27		2		
2+	6	11		X		
2–	12	8	X			
3+		2				X
3–	1				X	
NEO-FFI						
1+	17	X		1		1
1–	X	10	1	4	1	
2+	1	4		X	1	
2–	1	6	X	2		
3+	2	2			1	X
3–	2	1			X	2

Note. Number of items combined of two bi-proportional scaling method component loadings: The columns represent the primary loadings (the highest absolute component loading); the rows represent the secondary loadings (a loading higher than $.268$ times the primary loading). Numbers shown in bold indicate unmixed items. NVM = Dutch short form of the Minnesota Multiphasic Personality Inventory; FFPI = Five-Factor Personality Inventory; NEO-FFI = NEO Five-Factor Inventory; X = combination not possible. NVM 1+ = Absence of psychopathology; 2+ = Shyness; 3+ = Emotional Instability. FFPI 1+ = Social Fitness; 2+ = Risk Avoidance; 3+ = Not Interpretable. NEO-FFI 1+ = Social Fitness; 2+ = Emotional Stability; 3+ = Open-mindedness.

(Items 15, 24, 32, 14, and 69) with relatively small loadings, was difficult to interpret but primarily appeared to reflect the absence of severe psychopathology. On the second component, three items (two positive and one negative) were found that did not substantially load onto another component. This factor referred to a dimension that I interpreted as shyness versus extraversion, defined by the items “In school I found it very hard to talk in front of the class” (2+, Item 63) and “I am often amazed at how naturally and easily others can behave” (2+, Item 68) on the positive side, and the item “I like going out to dance” (2-, Item 72) on the negative side. The third component was interpreted based on mixed component loadings and revealed a dimension of emotional instability versus stability. Examples of items include the following: “Sometimes I feel like swearing” (3+1-, Item 6) versus “I’m usually not troubled by headaches” (3-1+, Item 41).

With regard to the FFPI, 55 items referred to unmixed loadings on the first BSM principal component. This dimension appeared to reflect social fitness: On the positive pole items referred to agreeableness and conscientiousness, including “Keeps his/her appointments” (1+, Item 83) and “Inquires about others’ well-being” (1+, Item 12), and on the negative pole items with opposite content included “Tells tall stories about him- or herself” (1-, Item 62) and “Will believe anything” (1-, Item 25). The second component did not include unmixed component loadings. An interpretation of the mixed items revealed a dimension that ranged from risk avoidance to sensation seeking. Items included “Is afraid that he/she will do the wrong thing” (2+1+, Item 24) versus “Loves large parties” (2-1-, Item 36), and “Takes risks” (1-2-, Item 35) versus “Does as he/she is told” (1+2+, Item 5). Interpreting the third component, with only three mixed items (Items 41, 18, and 54), was not possible.

The NEO-FFI contained 27 unmixed item loadings on the first BSM component. As in the FFPI, social fitness appeared to represent this dimension. The greatest positive loadings were found on items such as “I generally try to be thoughtful and considerate” (1+, Item 49), and “I try to perform all the tasks assigned to me conscientiously” (1+, Item 20). The greatest negative loadings were for the items “Sometimes I’m not as dependable or reliable as I should be” (1-, Item 45), and “Some people think I’m selfish and egotistical” (1-, Item 14). Based on two negative, unmixed loadings in combination with mixed item loadings, the second component was interpreted as a dimension of instability or withdrawal versus stability or outgoing. Unmixed items were “I usually prefer to do things alone” (2-, Item 27) and “Sometimes I feel completely worthless” (2-, Item 26); mixed items included “I rarely feel lonely or blue” (2+1-, Item 16) and “I am not a worrier” (1-2+, Item 1). The third component reflected sensitivity and open-mindedness versus close-mindedness and included items such as “Sometimes when I’m reading poetry or looking at a work of art, I feel a chill or wave of excitement” (3+, Item 43) versus “Poetry has little or no effect on me” (3-, Item 23), and “I am intrigued by the patterns I find in art and nature” (3+1-, Item 13) versus “My life is fast-paced” (3-1+, Item 47).

Classifying clients. To classify the clients, the component scores of the self- and three informant ratings were aggregated by averaging these four scores within each client. Accounting for the limits of the neutral score at $-.333$ and $+.333$, 84% of NVM raters, 73% of FFPI raters, and 65% of NEO-FFI raters

TABLE 3.—Distribution of the clients according to the abridged three-dimensional circumplex design.

	1+	1-	2+	2-	3+	3-	0
NVM							
1+	51	X	6		2		
1-	X						
2+	3		1	X			
2-	6		X				
3+	6				2	X	
3-	1				X		
0							2
FFPI							
1+	67	X	1				
1-	X						
2+	2		2	X			
2-	1		X				
3+							
3-					X		
0							23
NEO-FFI							
1+	57	X		1	1		
1-	X						
2+			1	X			
2-	2		X	4			
3+	2			1	1	X	
3-	1				X	2	
0							22

Note. Number of clients based on their combination of two aggregated (= averaged scores of self-report and three other reports) biproportional scaling method component scores: The columns represent the highest absolute primary scores; the rows represent the secondary scores; in the category 0 the clients are represented with scores not exceeding the neutral zone of scores between $-.333$ and $.333$. Numbers shown in bold indicate clients scoring only on one factor. NVM = Dutch short form of the Minnesota Multiphasic Personality Inventory; FFPI = Five-Factor Personality Inventory; NEO-FFI = NEO Five-Factor Inventory; X = combination not possible. NVM 1+ = Absence of psychopathology; 2+ = Shyness; 3+ = Emotional Instability. FFPI 1+ = Social Fitness; 2+ = Risk Avoidance; 3+ = Not Interpretable. NEO-FFI 1+ = Social Fitness; 2+ = Emotional Stability; 3+ = Open-mindedness.

assigned an absolute score $> .333$ on the first BSM component. Two NVM clients, 23 FFPI clients, and 22 NEO-FFI clients only had neutral component scores and could not be characterized by one or more of the three components. Table 3 presents the client classification based on the abridged three-dimensional circumplex design.

Comparing BSM with RSM. The first BSM component was primarily represented by negative loadings on the items of the original Severe Psychopathology scale of the NVM, and positive loadings on the Conscientiousness and Agreeableness scales of the FFPI and NEO-FFI. On the other hand, the first RSM component was represented by negative loadings on the items of the original Shyness scale of the NVM and positive loadings on the Extraversion and Emotional Stability scales of the FFPI as well as the Extraversion and Conscientiousness scales of the NEO-FFI. The Appendix reports the first component loadings, items, and original scale labels. The first BSM component can be interpreted as a social fitness dimension, whereas the first RSM component primarily reflects an extraversion dimension.

Assigning RSM item loadings to clock vectors revealed that only three NVM items had unmixed 1+ loadings, five FFPI items had 1+ and three FFPI items had 1- unmixed loadings, and the NEO-FFI had one 1+ and one 1- item loading. To categorize clients based on their RSM scores, the neutral zone limits

TABLE 4.—Descriptive statistics of clients' aggregated component scores.

	C	N	BSM				RSM				
			Min	Max	M	Size	Min	Max	M	SD	Size
NVM	1	80	.077	.871	.575	.352	-1.267	2.110	0	.769	.583
	2	80	-.416	.664	.053	.076	-2.154	1.440	0	.794	.622
	3	80	-.489	.532	.062	.049	-1.734	2.035	0	.794	.621
FFPI	1	96	-.026	.652	.406	.182	-2.031	1.669	0	.789	.617
	2	96	-.545	.365	.038	.035	-2.198	1.791	0	.796	.626
	3	96	-.231	.309	.021	.015	-1.735	1.629	0	.822	.669
NEO-FFI	1	95	.030	.610	.370	.153	-2.157	1.832	0	.764	.577
	2	95	-.492	.368	-.047	.038	-1.790	1.729	0	.792	.621
	3	95	-.420	.462	-.011	.026	-2.514	1.979	0	.823	.670

Note. Aggregated component scores = mean of self-report and three informant reports. BSM = biproportional scaling method; RSM = relative scaling method; C = component; NVM = Dutch short form of the Minnesota Multiphasic Personality Inventory; FFPI = Five-Factor Personality Inventory; NEO-FFI = NEO Five-Factor Inventory; Size = mean squared component scores. NVM 1 = Absence of psychopathology; 2 = Shyness; 3 = Emotional Instability. FFPI 1 = Social Fitness; 2 = Risk Avoidance; 3 = Not Interpretable. NEO-FFI 1 = Social Fitness; 2 = Emotional Stability; 3 = Open-mindedness.

were set at ± 1 SD. Because these scores were more proportionally distributed over the components, only 8 participants of each sample had unmixed scores with regard to the first component. These numbers were too small to conduct reliable analyses.

Table 4 shows the descriptive statistics of clients' aggregated component scores. All first component scores were positive in the NVM and NEO-FFI samples. An inspection of the FFPI data revealed that only one client had a negative BSM self-report score (-.026). The next lowest score was .084.

Part II: The Relevance of the GFP

To investigate the clinical relevance of the first BSM component described in Part I, I selected three criterion variables: (a) the amount of self-reported symptoms measured by the SCL-90 total score; (b) the personality pathology clinical diagnosis; and (c) the clinical assessment of client level of functioning (GAF). The personality variables (i.e., the BSM and RSM first component scores, relative scale scores, and self-informant likeness and distance scores) were correlated with the criterion variables.

Table 5 presents the descriptive statistics of the BSM and RSM personality variables. On average, the BSM scores from the NVM and FFPI sample self-reports were smaller than the averaged informant scores, whereas the RSM scores revealed higher self-report scores compared with averaged informant

scores. This finding indicates that the first components of each method differ in content validity. Although all the correlations between the self-reports and averaged informant reports were significant and relatively high, the self-informant differences (as determined by *t* tests) were also significant. Cohen's effect sizes ($d = 2t/\sqrt{df}$) were medium to large except with regard to the RSM in the NEO-FFI sample.

The three samples did not significantly differ with regard to total symptom score, $F(2, 268) = .051, p = .95$; personality pathology percentage, $\chi^2 = .204, p = .90$; or level of functioning, $F(2, 268) = .059, p = .94$. The total SCL-90 score means were 166 ($SD = 46$), 164 ($SD = 45$), and 164 ($SD = 50$) for the NVM, FFPI, and NEO-FFI samples, respectively. The GAF score means for all samples were 58 ($SDs = 8, 7, \text{ and } 6$ for the NVM, FFPI, and NEO-FFI samples, respectively). The personality pathology percentages were 54%, 51%, and 50% for the NVM, FFPI, and NEO-FFI samples, respectively.

Symptoms. Both the BSM- and RSM-derived first component scores were significantly negatively associated with symptoms in all three samples. Not surprisingly, the relative RSM scale scores revealed that Negativism, Somatization, Severe Psychopathology, and Neuroticism were positively associated with symptoms, whereas Extraversion, Conscientiousness, and Emotional Stability were negatively correlated with symptoms. Table 6 (columns 2 and 3) presents these results.

TABLE 5.—Descriptive statistics of clients' first component scores and self-informant measures.

	Aggregated		Self		Informants		S-I			S-I		Likeness		Distance	
	M	SD	M	SD	M	SD	$M_{(diff)}$	<i>t</i>	<i>df</i>	<i>d</i>	<i>r</i>	M	SD	M	SD
NVM															
BSM	.57	.19	.52	.15	.59	.15	.07**	4.34	79	.98	.67	.47	.12	.32	.18
RSM	0	.79	.25	.91	-.08	.80	.33**	4.39	79	.99	.69			1.49	.84
FFPI															
BSM	.41	.13	.36	.16	.42	.14	.06**	3.73	95	.77	.52	.21	.09	.32	.15
RSM	0	.79	.20	.92	-.07	.81	.27**	3.94	95	.81	.70			1.48	.72
NEO-FFI															
BSM	.37	.13	.40	.18	.36	.13	.04*	2.44	94	.50	.53	.10	.04	.31	.15
RSM	0	.76	.02	1.07	-.01	.75	.03	.36	94	.08	.65			1.57	.85

Note. Aggregated scores = mean of self-report and three informant reports; Informants = averaged informant reports; $M_{(diff)}$ = mean discrepancy between self-report and averaged informant reports; *d* = Cohen's effect size; *r* = Pearson correlation between self-report and averaged informant report; S-I = self-informant; Likeness = coefficient of the likeness between aggregated first component scores; Distance = Euclidean distance between aggregated first component scores. NVM = Dutch short form of the Minnesota Multiphasic Personality Inventory; BSM = biproportional scaling method; RSM = relative scaling method; FFPI = Five-Factor Personality Inventory; NEO-FFI = NEO Five-Factor Inventory. NVM: *N* = 80; FFPI: *N* = 96; NEO-FFI: *N* = 95.

p* < .05. *p* < .001.

TABLE 6.—Zero order and partial correlations between personality questionnaire scores and criterion variables.

Method	Symptoms (SCL-90)		Personality pathology		Functioning (GAF)	
	BSM	RSM	BSM	RSM	BSM	RSM
NVM						
Component 1	-.49**	-.39**	-.11	-.09	.32**	.34**
Likeness	-.40**		-.15		.16	
Distance	.42**	.39**	-.04	-.01	-.12	-.11
C1 controlled for likeness	-.36**		-.03		.28*	
C1 controlled for distance	-.39**	-.34**	-.13	-.09	.29**	.32**
Negativism		.26*		.18		-.32**
Somatization		.37**		-.08		-.37**
Shyness		.18		.08		-.13
Severe psychopathology		.26*		.24*		-.06
Extraversion		-.02		-.01		.12
FFPI						
Component 1	-.50**	-.49**	-.37**	-.34**	.31**	.35**
Likeness	-.32**		-.21*		.21*	
Distance	.23*	.30*	.03	.16	-.11	-.10
C1 controlled for likeness	-.41**		-.33**		.22**	
C1 controlled for distance	-.51**	-.48**	-.37**	-.33**	.30**	.34**
Extraversion		-.32**		-.30**		.34**
Agreeableness		-.08		-.08		.02
Conscientiousness		-.20*		-.21*		.05
Emotional Stability		-.42**		-.13		.23*
Autonomy		-.07		-.12		.03
NEO-FFI						
Component 1	-.30*	-.56**	-.16	-.23*	.20*	.25*
Likeness	-.04		-.07		-.09	
Distance	.09	.15	.17	.20	-.05	-.10
C1 controlled for likeness	-.33**		-.14		.19	
C1 controlled for distance	-.30**	-.56**	-.16	-.23*	.20	.34**
Neuroticism		.61**		.18		-.27**
Extraversion		-.24*		-.31**		.23*
Openness		.09		-.06		-.10
Agreeableness		-.16		-.01		.05
Conscientiousness		-.40**		-.13		.16

Note. SCL-90 = Symptom Checklist-90; Symptoms = total score of self-reported symptoms on the SCL-90; Personality pathology = presence or absence of personality pathology (correlations are point-biserial); GAF = clinically assessed level of functioning; BSM = biproportional scaling method; RSM = relative scaling method; NVM = Dutch short form of the Minnesota Multiphasic Personality Inventory; Component 1 = aggregated scores over self-reports and three informant reports; Likeness = coefficient of the likeness between aggregated BSM scores; Distance = Euclidean distance between aggregated BSM or RSM scores; C1 controlled for = partial correlations of BSM or RSM scores and criterion variables; FFPI = Five-Factor Personality Inventory; NEO-FFI = NEO Five-Factor Inventory. NVM 1 = Absence of psychopathology; FFPI 1 = Social Fitness; NEO-FFI 1 = Social Fitness. NVM: N = 80; FFPI: N = 96; NEO-FFI: N = 95.

* $p < .05$. ** $p < .01$.

Personality pathology. As shown in Table 6 (columns 4 and 5), there was no clear relationship between component scores and personality pathology across samples. Except for the Severe Psychopathology scale, no significant relationships were found between the first NVM component scores and personality pathology. The BSM and RSM scores were significantly negatively correlated with personality pathology in the FFPI sample, as were the Extraversion and Conscientiousness scales. The RSM and the Extraversion scale scores were significantly negatively correlated with personality pathology in the NEO-FFI sample.

A significant correlation ($r = -.37$) was found between social fitness and personality pathology in the FFPI sample, which suggests a dimension of social fitness; therefore, I investigated the optimal FFPI score cutoff point in a fourfold table. Dividing the sample in half revealed a cutoff point of .415 for the first BSM component, an association of $L = -.34$, and $r = -.35$. The strongest negative association was found using a cutoff point of .400, $L = -.40$, and $r = -.41$. Of the clients who had a BSM score $> .400$, 10% were diagnosed with personality pathology and 31% were not. On the contrary, 39% of clients who had a

score $< .400$ had personality pathology and 20% did not. Thus, by using this cutoff point for the FFPI sample, the prediction of (absence of) personality pathology using social fitness should be correct for 70% of these clients.

GAF. The GAF scores in the NVM and FFPI samples were positively correlated with the BSM and RSM first component scores (see Table 6, columns 6 and 7). In both methods, higher functioning was associated with significantly greater first component scores; less Negativism, Somatization, and Neuroticism; and more Extraversion and Emotional Stability.

Self-informant likeness and distance. Large self-informant correlations denote strong agreement between a client's self-ratings and his or her informants' ratings, smaller self-informant distances, and greater self-informant likenesses. On the other hand, low self-informant correlations, larger distances, and smaller likenesses might signal biases in, for instance, self-knowledge or self-presentation. Because the overall correlations were substantially high (see Table 4), extracting

meaning from distances and likenesses by relating them to criterion variables is defensible.

The self-informant measures likeness and distance (see Table 6) were primarily associated with symptoms in the NVM and FFPI samples: More likeness was associated with fewer symptoms, whereas more distance was associated with more symptoms. No significant correlations were found in the NEO-FFI sample. Self-informant likeness was also related to personality pathology and GAF in the FFPI sample.

To examine the extent to which likeness and distance influenced these associations, I conducted partial correlations between the first component scores and the criterion variables after controlling for likeness and distance. As shown in Table 6, likeness and distance explained some of the association between the first component and the criterion variables, particularly with regard to the symptoms observed in the NVM and FFPI samples. Nevertheless, the significance of the correlations between social fitness and the criterion variables remained largely unchanged.

Client types. Turning back to the client types described in Part I, I divided the BSM samples into Type 1+ and mixed types subsamples based on the biproportional categorization presented in Table 2. Because in the RSM approximately all clients were characterized by more than one component (also see the sizes in Table 3), no reliable analyses could be conducted on these types of clients. The Type 1+ clients of the three BSM samples showed significantly fewer symptoms according to the SCL-90 compared with mixed-type clients. Thus, clients who were primarily characterized by positive scores on the first BSM component reported fewer symptoms. The effect sizes ranged from medium (NVM and NEO-FFI) to large (FFPI). On average, Type 1+ clients also appeared to function better than mixed-type clients. The difference in mean GAF scores was significant and revealed a medium effect for the NVM and FFPI samples but not the NEO-FFI sample. These results are shown in Table 7.

As expected, Type 1+ clients from the FFPI sample showed a significantly lower percentage of personality pathologies: 42% versus 51% in the full sample, $\chi^2 = 7.60, p = .006$. The effect size ($r = \sqrt{(\chi^2/N)} = .52$) was large. However, these percentages were not significant for the NVM and NEO-FFI samples.

DISCUSSION

Employing Hofstee and Ten Berge's (2004) BSM to analyze absolute personality scores altered their structure; specifically, a large first principal component predominated. The BSM is not complicated to apply, but its implications might be difficult to

fully understand immediately. This technique demands that one set aside concepts associated with relative classical statistics. Biproportional scales have no mean, standard deviations, or variance; rather, they include a midpoint of 0. Transformations, standardizations, and correlations do not apply. This method depends on bounded scales that range from -1 to 1 and on the likeness coefficient *L* as a measure of association. *L*, the averaged cross-product of raw scores, is the most elementary measure of likeness.

In Part I, the presence of a large first BSM component was replicated using three personality questionnaires applied to three samples. The loadings of the first component were 9 to 19 times greater than those of the second component. The second and third components were small, and an unambiguous interpretation of their content was impossible across the questionnaires.

Not only was the size of this first component much larger in the BSM than RSM, but also the content derived from these methods deviated markedly. An elaboration of the first BSM component's content revealed that it represented what Hofstee and colleagues (2006) called social desirability: the goodness of a person's character. This dimension includes a mixture of sociability, friendliness, a strong work ethic, compliance, emotional stability, and the absence of severe psychopathology. This study referred to this dimension as social fitness to avoid confusion with the response tendency social desirability. In general, all clients demonstrated social fitness because (except for one client) no negative scores were obtained for this component. This result makes sense: All clients participate in a society in which they, for better or for worse, fit. The RSM first component was primarily a dimension of extraversion.

The findings in Part I provided evidence for the existence of a BSM-based GFP. Although the construct validity of this factor depends on the content of the questionnaire, these results confirm the conclusions of previous GFP research: Regardless of its name, social fitness is atop the personality hierarchy. The absence of severe psychopathology defined social fitness in the NVM sample. In the five-factor model questionnaires, conscientiousness and agreeableness items represented social fitness. These results correspond with the findings of De Raad et al. (2010). They studied 14 trait taxonomies across 12 languages and stated that solutions with more than three factors are not (on average) replicable across different languages. Agreeableness, conscientiousness, and honesty and humility almost exclusively determined prior one-factor solutions.

Part II explored the criterion validity of the BSM-based GFP and compared it with the RSM first component scores. Because both the BSM and RSM first principal components are weighted

TABLE 7.—*T* tests of Type 1+ versus mixed types on symptoms and functioning.

Criterion Instrument	Type 1+			Mixed Types			<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>				
SCL-90 NVM	51	156.42	45.44	29	183.14	43.85	78	-2.52	.014	.57
FFPI	67	151.37	35.77	29	192.52	52.12	39.88	3.87	<.001	1.23
NEO-FFI	57	151.81	40.05	38	182.92	58.05	60.21	2.88	.006	.74
GAF NVM	51	60.20	7.87	29	54.14	6.82	78	-3.47	.001	.79
FFPI	67	59.40	6.72	29	54.83	6.88	94	-3.04	.003	.63
NEO-FFI	57	61.26	5.92	38	60.84	5.71	93	-.35	<i>ns</i>	.07

Note. SCL-90 = Symptom Checklist-90 total score of self-reported symptoms; GAF = clinically assessed level of functioning; *d* = Cohen's effect size (.2 = small effect, .5 = medium effect, .8 = large effect); NVM = Dutch short form of the Minnesota Multiphasic Personality Inventory; FFPI = Five-Factor Personality Inventory; NEO-FFI = NEO Five-Factor Inventory.

averages of numerous items with positive likenesses or correlations, it follows that the weighted averages of both methods are positively correlated as well, and that the correlations between these methods' component scores and external criteria should not significantly diverge. Social fitness was negatively correlated with self-reported symptoms and positively related to better functioning. A significant negative association between social fitness and personality pathology was found in the FFPI sample. Typing clients using the abridged three-dimensional circumplex method confirmed this meaningful pattern: Type 1+ clients showed significantly fewer symptoms and better functioning across all personality questionnaires. Based on these findings, it can be concluded that the biproportional GFP is not the result of a mere statistical or methodological artifact but has criterion validity, which confirms Van der Linden et al. (2010).

Likenesses and distances as measures of the association between self and informant judgments increase validity because they specify that at least a portion of the relationship between social fitness and criterion variables can be attributed to these measures. For instance, self-informant disagreement was associated with more self-reported symptoms; however, this finding does not answer the question of causality: Do symptoms lead to an incorrect judgment of one's social fitness, or do deviations in social fitness judgments cause symptoms?

Absolute scaling changes the definition of (ab)normality. In its strict sense, "normal" refers to a norm, which in standardization-based statistics is a group norm; that is, the sample mean. Using BSM, the midpoint of the scale is taken as the norm because it marks the point at which the characteristic becomes its opposite. The findings reported here reveal that all clients are "normal" in the first place, but some are more normal than others: "The average person belongs to the socially desirable type" (Hofstee et al., 2006, p. 91).

Nonetheless, approximately half of these normal clients were diagnosed with pathological personality traits, which suggests that personality pathology was overdiagnosed in the three samples. The prevalence of personality disorders varies widely. In the general population, figures between 6% and 13% (Paris, 2010) as well as between 6% and 10% (Samuels, 2011) have been found. Distinguishing problematic traits from clinical disorders has been a major problem. According to Paris, epidemiological studies might seriously overestimate psychopathology. On the other hand, Zimmerman, Rothschild, and Chelminski (2005) supposed that clinicians underdiagnose personality disorders. These authors interviewed 859 psychiatric outpatients using a structured interview and found that 45.5% of their sample showed some personality disorder. They recommended that personality disorders should be evaluated in all psychiatric patients because their presence might influence the course and

treatment of comorbid Axis I disorders. In this study, both clinical personality disorders and problematic personality traits were recorded, which might explain the somewhat higher percentages in this study compared to the Zimmerman et al. (2005) study. To investigate the extent of the possible overdiagnosis of personality pathology, I compared the distribution of personality pathology in the FFPI sample (see Table 8a) to the Zimmerman et al. base rate of 45.5% in a clinical sample. Assuming that there were no false negatives, I correctly diagnosed 94% of all cases (see Table 8b). Furthermore, I compared the FFPI sample to the modest base rate of 6% that Paris (2010) and Samuels (2011) found in the general population, and I only diagnosed 55% correctly (see Table 8c).

A more plausible explanation for this contradiction of normality versus pathology is the conclusion that social fitness and personality pathology are different constructs. In fact, general personality questionnaires are not meant to diagnose personality pathology. These questionnaires can be useful for clinicians because they provide a picture of the client's needs, feelings, motives, and interpersonal styles. In his study of 119 psychotherapy patients' NEO-PI reports, Miller (1991) observed, for example, a "misery triad" of high neuroticism, low extraversion, and low conscientiousness in patients with poor prognoses. According to Miller, knowledge of a client's general personality traits facilitates psychotherapy treatment.

Another observation can be made from Table 8. In Table 8b, likeness L and correlation r correspond; however, they diverge to some extent in Table 8c. Although the latter prediction hardly exceeded chance, r was still significant, whereas L significantly reduced. In fact, the superiority of the BSM might surface in relation to antecedent probabilities or base rates. For example, in Table 8d the imaginary prediction is correct in 82% of the cases, $L = .64$, but $r = 0$, whereas in Table 8e the prediction is correct in 20% of the cases, $L = -.60$ and $r = 1$. Intuitively, L is more appropriate than r . The fact that likeness is based on an overlap rather than statistical dependence, as Hofstee and Ten Berge (2004) explained, causes these dramatic differences.

Although the findings of this study correspond with earlier findings, caution is needed when interpreting the results. For example, although 1,084 people participated in the study, only a quarter made up the client population, which was spread over three samples. This distribution might have limited the component loading interpretations of the three questionnaires, particularly the second and third components. Because the three instruments replicate each other's first component criterion validity to a large extent, this distribution should not be a major concern. Another possible limitation is that the BSM criterion validity in the NEO-FFI sample was somewhat less robust compared with the NVM and FFPI samples. This finding might be

TABLE 8.—Base rates of true and false positives and negatives in diagnosing personality pathology.

(a)		(b)		(c)		(d)		(e)						
+	-	+	-	+	-	+	-	+	-					
+	51	0	+	45	6	+	6	45	+	81	9	+	10	0
-	0	49	-	0	49	-	0	49	-	9	1	-	80	10
		$L = .88; r = .88^{**}$		$L = .10; r = .24^*$		$L = .64; r = 0$		$L = -.60; r = 1$						

Note. (a) Distribution of diagnoses of personality pathology in the Five-Factor Personality Inventory sample. (b) Comparison with clinical percentage of Zimmerman et al. (2005). (c) Comparison with general percentage of Paris (2010) and Samuels (2011). (d) and (e): Examples showing the role of off-diagonal proportions in L and r .
* $p < .05$. ** $p < .001$.

because the NEO–FFI showed the smallest range and mean in the BSM first component scores, whereas the greater range was found in the RSM. Stronger correlations with the RSM than with the BSM scores were found for the GAF assessment in all samples, which indicates that the original scales might have directed my judgments. Other limitations include the fact that the convenience samples of this study were small, and the results might not generalize to other clinical samples or other questionnaires. To draw more firm conclusions, replication and additional research with larger and more diverse samples as well as supplemental questionnaires is needed.

The results of the BSM show that even when the social component (i.e., the group norm) is excluded from analysis, social fitness remains the major component that describes personality. The RSM suffices for comparative purposes, but standard scores are unfit for absolute purposes that involve certain thresholds (Hofstee, 2009). Absolute scaling appears to offer substantial benefits in noncomparative settings such as clinical personality assessment. The advantages of BSM are that norm groups are not necessary, and skewed distributions do not threaten interpretation reliability. It should not be necessary to choose between these methods: In individual personality assessments one can use both by combining the original relative scales with absolute scales and an absolute social-fitness scale.

To enhance the content meaning of the BSM GFP, I examined the files of the three clients from each sample who had the lowest first component score (i.e., the lowest social fit) to determine their commonalities. At first glance, these people could not have been more different.

Client A (first component score = .077, NVM sample), a 24-year-old woman, sought help for her chronic fatigue originating from Pfeiffer's disease when she was 17 years old. She was unable to finish college, live on her own, or hold a job for more than 3 days a week. The relative scaling of the NVM revealed high scores of negativism and somatization.

Client A was the third daughter of a middle-class family with four children. She described her parents as overly protective. Her eldest sister used to cause considerable stress and many arguments within the family. The eldest sister ran away from home as a teenager and broke off contact 3 years ago. The second sister compensated for the behavior of her older sister and was treated rigidly and strictly. Client A described her younger brother as the only "normal" one. Client A described herself as a "mommy's child." She felt obliged to make her mother happy, because the mother herself experienced a difficult childhood.

Client B (first component score = -.026, FFPI sample), a 43-year-old woman, felt insecure and unable to resist pressure from the man she had befriended for 12 years. He insisted on cohabiting, which she felt would be too close for her. In the end, however, she had yielded to his arguments. This decision made her so unhappy that she changed her mind, but she did not know how to undo their agreement. The relative FFPI scaling revealed that she was clearly introverted.

Client B was raised from the age of 5 in a foster family. Her biological parents did not care for either her or her younger sister. Her father was an alcoholic, and Client B remembered fragments of quarrels. When child welfare intervened, they found her to have suffered from serious malnutrition. She was admitted to an institution and separated from her sister. She did not speak and had nightmares and symptoms of derealization. She was reunited with her sister in the foster family.

Client B always felt that she was an outsider and did not form a close bond with her foster parents. She did not do well in school and left home when she was 17 years old. She accepted a job as a waitress, which helped her to become less shy. She never experienced a close relationship.

Client C (first component score = .030, NEO–FFI sample), a 62-year-old man, asked for help in saving his second marriage. His wife blamed him for being depressed, negative, and bad-tempered. Others had told him so before, but he did not acknowledge them and concluded that their complaints were not his problem. Relative NEO–FFI scaling revealed a high neuroticism score.

Client C was the eldest of five children. His parents adhered to a rigid and orthodox religion that offered strict guidelines for behavior. There was no affection, no shared feelings, and little interaction between family members. Client C was a withdrawn and fearful child and felt lonely most of the time. He was unable to make friends. He studied English language and literature and became a college teacher. His first sexual experience was with a married woman during a semester in England. A feeling of guilt was his atonement. He married the daughter of a church minister with whom he has three children. She was not happy in the marriage and divorced him after 12 years. He lost contact with his siblings and with the children of his first marriage. His second wife was 16 years his junior. He has two children with her, now teenagers. He recently retired.

Many factors can bias retrospective autobiographical memories of parental rearing styles. For instance, negative childhood memories in people with depression might be interpreted as epiphenomena of depressed mood rather than etiological factors (e.g., Gerlsma, Mosterman, Buwalda, & Emmelkamp, 1992). Nevertheless, these client vignettes all point to problems in early attachment: Client A depicted a suffocating relationship with her mother, Client B revealed an early childhood of maltreatment and neglect, and Client C reported a youth in which emotional and affective neglect were dominant.

Collective living and participation in society is part of the human condition. Social fitness is a developmental task for all people. People have innate tendencies to attach and form social bonds. Deviations in this capacity might lead to serious problems in social fit. In turn, problems in social fitness might lead to social or mental health problems.

Future research relating the biproportional GFP to developmental measures might illuminate the field of attachment. For now, I hope these findings will contribute to this intriguing topic and serve to support the construct validity of the biproportionally based GFP.

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APPENDIX

ITEM LOADINGS ON THE FIRST COMPONENT OF PRINCIPAL COMPONENT ANALYSES OF BIPROPORTIONAL SCALING METHOD (BSM) AND RELATIVE SCALING METHOD (RSM)

C1 = Unrotated First Component Loadings; Underscored Loading = Unmixed Type Item; Item = Questionnaire Item; Scale = Original Scale Label; (R) = Reversed Item Format.

NVM (Neg = Negativism; Som = Somatization; Shy = Shyness; Psy = Severe Psychopathology; Ex = Extraversion)

C1	BSM		C1	RSM	
	Item	Scale		Item	Scale
.358	15	Som(R)	.484	64	Shy(R)
.306	70	Neg	.407	52	Som(R)
.304	46	Ex	.403	41	Som(R)
.302	76	Ex	.377	83	Ex
.296	83	Ex	.368	35	Som(R)
.273	24	Neg	.349	43	Neg(R)
.262	37	Som(R)	.341	14	Som(R)
.236	32	Neg(R)	.335	73	Shy(R)
.232	14	Som(R)	.326	46	Ex
.230	43	Neg(R)	.310	37	Som(R)
.220	73	Shy(R)	.290	76	Ex
.220	78	Ex	.282	32	Neg(R)
.216	21	Neg	.282	47	Ex
.216	47	Ex	.264	40	Ex
.196	69	Neg	.253	2	Som(R)
.174	56	Ex	.186	81	Shy(R)
.163	64	Shy(R)	.183	23	Ex
.120	35	Som(R)	.173	15	Som(R)
.093	41	Som(R)	.173	56	Ex
.088	49	Neg	.139	72	Ex
.072	51	Neg	.123	77	Ex
.020	63	Shy	.069	62	Ex
.008	59	Neg	.062	78	Ex
-.013	52	Som(R)	.061	34	Psy
-.019	72	Ex	.022	58	Neg
-.022	2	Som(R)	-.013	50	Ex
-.024	68	Shy	-.031	75	Psy
-.087	6	Neg	-.043	51	Neg
-.100	50	Ex	-.054	53	Ex
-.105	40	Ex	-.082	48	Neg
-.108	31	Neg	-.101	4	Neg
-.108	62	Ex	-.106	57	Psy
-.113	16	Neg	-.117	8	Psy
-.115	10	Neg	-.131	70	Neg
-.127	23	Ex	-.133	66	Psy
-.130	11	Som	-.144	22	Neg
-.157	4	Neg	-.149	80	Neg
-.169	48	Neg	-.154	44	Psy
-.209	75	Psy	-.166	33	Neg
-.211	20	Shy	-.167	18	Psy
-.239	60	Shy	-.188	21	Neg
-.249	77	Ex	-.190	29	Psy
-.269	36	Shy	-.191	38	Neg
-.274	39	Shy	-.196	74	Psy
-.274	81	Shy(R)	-.204	6	Neg
-.282	45	Shy	-.212	24	Neg
-.290	1	Som	-.218	54	Som
-.295	9	Neg	-.218	69	Neg
-.300	38	Neg	-.220	61	Psy
-.309	65	Shy	-.222	10	Neg
-.315	8	Psy	-.227	9	Neg
-.330	12	Som	-.246	59	Neg
-.344	53	Ex	-.251	49	Neg
-.346	17	Som	-.281	28	Psy
-.347	55	Shy	-.290	5	Som
-.355	42	Shy	-.303	1	Som

C1	BSM		C1	RSM	
	Item	Scale		Item	Scale
-.357	71	Shy	-.307	79	Shy
-.363	3	Som	-.309	19	Som
-.364	25	Som	-.326	63	Shy
-.372	54	Som	-.334	13	Som
-.375	13	Som	-.341	26	Psy
-.379	80	Neg	-.344	82	Neg
-.392	79	Shy	-.344	67	Psy
-.407	82	Neg	-.345	7	Som
-.415	27	Som	-.349	17	Som
-.442	30	Som	-.357	30	Som
-.458	67	Psy	-.368	11	Som
-.474	5	Som	-.368	31	Neg
-.478	22	Neg	-.417	20	Shy
-.479	58	Neg	-.427	60	Shy
-.481	19	Som	-.440	12	Som
-.484	33	Neg	-.446	27	Som
-.499	61	Psy	-.481	3	Som
-.500	74	Psy	-.483	25	Som
-.503	26	Psy	-.492	16	Neg
-.532	57	Psy	-.504	55	Shy
-.539	7	Som	-.504	42	Shy
-.548	28	Psy	-.521	36	Shy
-.549	18	Psy	-.544	45	Shy
-.552	44	Psy	-.547	71	Shy
-.555	66	Psy	-.562	68	Shy
-.567	29	Psy	-.563	39	Shy
-.571	34	Psy	-.582	65	Shy

FFPI (E = Extraversion; A = Agreeableness; C = Conscientiousness; ES = Emotional Stability; Au = Autonomy)

C1	BSM		C1	RSM	
	Item	Scale		Item	Scale
.311	83	C	.737	76	E
.305	12	A	.703	26	E
.295	57	A	.702	74	ES
.288	73	C	.688	19	ES
.273	7	A	.687	59	ES
.265	47	A	.683	96	E
.257	17	A	.669	51	E
.255	87	A	.661	6	E
.252	67	A	.622	91	E
.248	1	E	.610	50	Au
.236	88	C	.604	61	E
.233	38	C	.573	44	ES
.220	43	C	.553	49	ES
.217	27	A	.544	80	Au
.199	8	C	.536	85	Au
.193	61	E	.495	99	ES
.192	15	Au	.487	20	Au
.188	69	ES	.481	100	Au
.188	76	E	.473	36	E
.187	45	Au	.458	15	Au
.183	37	A	.448	75	Au
.183	58	C	.440	41	E
.171	41	E	.432	67	A
.161	75	Au	.428	95	Au
.156	49	ES	.427	27	A
.153	22	A	.426	1	E
.152	95	Au	.423	7	A
.151	85	Au	.403	45	Au
.147	51	E	.402	73	C
.144	50	Au	.390	12	A
.139	13	C	.385	97	A(R)
.130	94	ES(R)	.372	9	ES
.120	91	E	.365	47	A
.120	100	Au	.362	64	ES
.118	48	C	.355	57	A
.115	19	ES	.344	87	A
.112	96	E	.310	83	C
.110	74	ES	.301	77	A(R)
.100	80	Au	.298	82	A(R)
.096	29	ES	.294	43	C

BSM			RSM			BSM			RSM		
C1	Item	Scale	C1	Item	Scale	C1	Item	Scale	C1	Item	Scale
.096	68	C	.250	69	ES	.296	40	C	.524	7	E
.094	5	Au(R)	.250	35	Au	.257	34	A	.503	52	E
.088	26	E	.213	29	ES	.254	17	E	.475	40	C
.087	59	ES	.196	38	C	.236	4	A	.472	46	N(R)
.086	99	ES	.196	17	A	.232	19	A	.465	16	N(R)
.076	6	E	.193	88	C	.214	35	C	.453	17	E
.061	24	ES(R)	.149	37	A	.211	7	E	.450	35	C
.055	20	Au	.097	28	C(R)	.192	5	C	.429	34	A
.039	9	ES	.064	48	C	.178	50	C	.428	31	N(R)
.017	44	ES	.049	93	C(R)	.169	8	O(R)	.425	10	C
-.028	70	Au(R)	.045	53	C(R)	.142	10	C	.424	25	C
-.033	77	A(R)	.037	62	A(R)	.126	52	E	.367	1	N(R)
-.038	36	E	.029	22	A	.123	37	E	.366	19	A
-.059	64	ES	.026	8	C	.108	57	E(R)	.361	5	C
-.065	89	ES(R)	.016	5	Au(R)	.099	22	E	.338	32	E
-.067	11	E(R)	.004	52	A(R)	.089	53	O	.332	20	C
-.068	33	C(R)	-.035	92	A(R)	.088	60	C	.312	3	O(R)
-.078	55	Au(R)	-.055	58	C	.078	28	O	.306	49	A
-.085	78	C(R)	-.056	68	C	.075	11	N	.292	53	O
-.086	84	ES(R)	-.056	3	C(R)	.059	21	N	.253	4	A
-.088	39	ES(R)	-.107	72	A(R)	.057	3	O(R)	.187	22	E
-.096	65	Au(R)	-.108	23	C(R)	.053	2	E	.137	2	E
-.100	14	ES(R)	-.119	13	C	.034	26	N	.135	13	O
-.114	18	C(R)	-.126	33	C(R)	.031	23	O(R)	.125	60	C
-.119	30	Au(R)	-.150	18	C(R)	.030	25	C	.106	8	O(R)
-.125	3	C(R)	-.154	70	Au(R)	.023	27	E(R)	.105	47	E
-.125	40	Au(R)	-.224	63	C(R)	.005	43	O	.105	43	O
-.128	93	C(R)	-.240	98	C(R)	.003	13	O	.055	58	O
-.129	35	Au	-.242	2	A(R)	-.006	54	A(R)	.049	28	3
-.130	82	A(R)	-.296	32	A(R)	-.008	47	E	-.035	48	O(R)
-.131	54	ES(R)	-.298	78	C(R)	-.030	6	N	-.037	38	O(R)
-.132	60	Au(R)	-.306	42	A(R)	-.033	41	N	-.092	44	A(R)
-.133	16	E(R)	-.325	55	Au(R)	-.042	58	O	-.092	23	O(R)
-.138	66	E(R)	-.327	54	ES(R)	-.046	42	E(R)	-.123	54	A(R)
-.142	97	A(R)	-.337	90	Au(R)	-.048	55	C(R)	-.171	57	E(R)
-.158	34	ES(R)	-.354	10	Au(R)	-.065	48	O(R)	-.202	18	O(R)
-.160	71	E(R)	-.356	21	E(R)	-.070	36	N	-.229	59	A(R)
-.161	28	C(R)	-.416	25	Au(R)	-.070	56	N	-.272	33	O(R)
-.162	79	ES(R)	-.463	71	E(R)	-.088	12	E(R)	-.294	9	A(R)
-.164	2	A(R)	-.473	86	E(R)	-.091	24	A(R)	-.320	39	A(R)
-.169	90	Au(R)	-.479	4	ES(R)	-.101	15	C(R)	-.333	27	E(R)
-.173	21	E(R)	-.493	81	E(R)	-.107	30	C(R)	-.344	6	N
-.179	23	C(R)	-.496	94	ES(R)	-.108	32	E	-.364	45	C(R)
-.184	56	E(R)	-.516	14	ES(R)	-.111	16	N(R)	-.378	36	N
-.187	63	C(R)	-.517	66	E(R)	-.124	1	N(R)	-.392	56	N
-.188	32	A(R)	-.524	89	ES(R)	-.132	31	N(R)	-.393	15	C(R)
-.196	86	E(R)	-.524	65	Au(R)	-.140	29	A(R)	-.403	29	A(R)
-.203	72	A(R)	-.527	56	E(R)	-.141	38	O(R)	-.425	14	A(R)
-.208	4	ES(R)	-.548	46	E(R)	-.144	51	N	-.427	11	N
-.214	46	E(R)	-.557	24	ES(R)	-.150	46	N(R)	-.439	30	C(R)
-.226	98	C(R)	-.560	39	ES(R)	-.164	9	A(R)	-.471	51	N
-.229	81	E(R)	-.564	11	E(R)	-.191	18	O(R)	-.496	21	N
-.247	92	A(R)	-.567	79	ES(R)	-.191	39	A(R)	-.496	24	A(R)
-.256	31	E(R)	-.567	30	Au(R)	-.207	44	A(R)	-.534	12	E(R)
-.258	42	A(R)	-.576	60	Au(R)	-.224	45	C(R)	-.555	26	N
-.265	10	Au(R)	-.583	31	E(R)	-.226	14	A(R)	-.556	55	C(R)
-.270	52	A(R)	-.586	40	Au(R)	-.226	59	A(R)	-.568	41	N
-.277	25	Au(R)	-.587	84	ES(R)	-.251	33	O(R)	-.664	42	E(R)
-.295	53	C(R)	-.645	34	ES(R)						
-.328	62	A(R)	-.692	16	E(R)						

NEO-FFI (N = Neuroticism; E = Extraversion; O = Openness to Experience; A = Agreeableness; C = Conscientiousness)

BSM			RSM		
C1	Item	Scale	C1	Item	Scale
.322	49	A	.641	37	E
.314	20	C	.525	50	C