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# Measuring personality functioning in older adults: construct validity of the Severity Indices of Personality Functioning – Short Form (SIPP-SF)

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**ABSTRACT**

**Objective:** The dimensional personality disorders model in the Diagnostic and Statistical Manual (DSM)-5 section III conceptually differentiates impaired personality functioning (criterion A) from the presence of pathological traits (criterion B). This study is the first to specifically address the measurement of criterion A in older adults. Moreover, the convergent/divergent validity of criterion A and criterion B will be compared in younger and older age groups.

**Method:** The Severity Indices of Personality Functioning – Short Form (SIPP-SF) was administered in older ($N = 171$) and younger adults ($N = 210$). The factorial structure was analyzed with exploratory structural equation modeling. Differences in convergent/divergent validity between personality functioning (SIPP-SF) and pathological traits (Personality Inventory for DSM-5; Dimensional Assessment of Personality Pathology-Basic Questionnaire) were examined across age groups.

**Results:** Identity Integration, Relational Capacities, Responsibility, Self-Control, and Social Concordance were corroborated as higher order domains. Although the SIPP-SF domains measured unique variation, some high correlations with pathological traits referred to overlapping constructs. Moreover, in older adults, personality functioning was more strongly related to Psychoticism, Disinhibition, Antagonism and Dissocial Behavior compared to younger adults.

**Discussion:** The SIPP-SF construct validity was demonstrated in terms of a structure of five higher order domains of personality functioning. The instrument is promising as a possible measure of impaired personality functioning in older adults. As such, it is a useful clinical tool to follow up effects of therapy on levels of personality functioning. Moreover, traits were associated with different degrees of personality functioning across age groups.

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SIPP-SF; older adults; personality functioning; PID-5; DAPP-BQ



The classification of personality disorders (PDs) in section III of the Diagnostic and Statistical Manual (DSM-5; American Psychiatric Association [APA], 2013) is highly innovative for conceptually differentiating impaired personality functioning (criterion A) from the presence of maladaptive traits (criterion B). Criterion B provides an alternative trait approach for further research with five higher order dimensions (i.e. Negative Affect, Detachment, Antagonism, Disinhibition, and Psychoticism) that are operationalized by the Personality Inventory for DSM-5 (PID-5; Krueger, Derringer, Markon, Watson, & Skodol, 2012). This approach to PDs is appealing to those who work with older adults because research has shown that dimensional models have been more fruitful than categorical ones (e.g. section II of DSM-5) for assessing the dysfunctional traits and behavior patterns that characterize these individuals (van Alphen, Rossi, Segal, & Rosowsky, 2013). Data show that the instruments used to measure dimensional PD qualities show less measurement bias among older adults than instruments measuring dichotomous PD features (Oltmanns & Balsis, 2011; Van den Broeck, Bastiaansen, Rossi, Dierckx, & De Clercq, 2013a; Van den Broeck, Rossi, Declercq, & Dierickx, 2012). These instruments also allow for a more nuanced analysis of PD symptom presentation across the life span than categorical PD measures (Debast et al., 2015).

Criterion A of DSM-5 section II specifies a set of problems common to all PDs, namely impairments in self and interpersonal functioning (Bender, Morey, & Skodol, 2011; Morey et al., 2011; Wright, 2011). Key elements were formulated as follows (APA, 2013): Identity (experience of oneself as unique; clear boundaries between self and others; stability of self-esteem and accuracy of self-appraisal; capacity for, and ability to regulate, a range of emotional experience), Self-Direction (pursuit of coherent and meaningful short- and long-term goals; utilization of constructive and prosocial internal standards of behavior; ability to self-reflect productively), Empathy (comprehension and appreciation of others' experiences and motivations; tolerance of differing perspectives; understanding of the effects of own behavior on others), and Intimacy (depth and duration of positive connection with others; desire and capacity for closeness; mutuality of regard reflected in interpersonal behavior).

Among older adults, criterion A may be especially valuable for differentiating normal and abnormal personality, given recent findings that the stability of PDs into late middle and old age is lower than previously thought (Debast et al., 2014). We believe that fluctuations in the level of severity of PDs can be meaningfully understood when examined from the perspective of adaptive versus deficient personality functioning (Verheul et al., 2008), and that changes over the lifespan in PD severity are more likely to be expressed at the level of personality functioning than the more descriptive level of personality style or traits.

DSM-5 offers a Levels of Personality Functioning Scale (LPFS; Morey et al., 2011) for evaluating criterion A markers.

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The scale was derived from two existing measures, the General Assessment of Personality Disorder (GAPD; Livesley, 2006) and the Severity Indices of Personality Problems (SIPP-118, Verheul et al., 2008). A major limitation of the LPFS is that self- and interpersonal functioning are not measured separately. This does not allow for differentiation of problems that center on the self versus those manifested in interpersonal situations. While difficulties in these areas are often intertwined, this is not always the case, and many therapeutic interventions target problems of self and interpersonal behaviors separately. For example, schizoid PD patients may report problems with poor self-image and low self-esteem, but not with interpersonal behavior as they are content to remain on the periphery in most social situations, which they find uninteresting. Measurements like the LPFS that confound these areas can hamper the clinician when it is time to make treatment recommendations.

In this regard, factor analyses (FAs) differentiating the domains of personality functioning most relevant to PDs suggest that adults vary reliably within themselves and across time on multiple indices encompassing self-image and interpersonal behavioral. For example, Verheul et al. (2008) conducted an FA on the SIPP-118 using data from a large sample ($N = 1195$) of PD patients who had completed psychotherapy in mental health institutions. They found that the 16 facet scales fit well into five dimensions labeled Self-Control, Identity Integration, Responsibility, Relational Functioning, and Social Concordance. Evaluating these dimensions for sensitivity to change in a follow-up subsample ($n = 60$) over three years, the researchers found that Self-Control, Identity Integration, and Responsibility showed a gradual improvement over two years, Relational Capacities increased most during the first year, and Social Concordance only augmented after the first year.

While it seems clear that assessment of personality functioning across multiple domains is important, this is a relatively new area of inquiry that lags behind the literature on personality traits measurement (Clark & Ro, 2014). As well, the personality functioning of older adults remains completely unexplored (Rossi, Van den Broeck, Dierckx, Segal, & van Alphen, 2014). The SIPP-118 is a promising instrument for assessing DSM-5 criterion A. It has been applied in several studies of personality functioning (e.g. Bastiaansen, De Fruyt, Rossi, Schotte, & Hofmans, 2013), and Verheul et al. (2008) has demonstrated good reliability, validity, and a robust factor structure for the SIPP-118 in both adult and adolescent populations.

A relevant consideration for assessment of older adults in mental health settings is fatigue because of extensive interviews or tests (van Alphen et al., 2015). Therefore, psychometrically sound, short-form versions of longer scales are preferred, in this regard; a SIPP-Short Form is available for research purposes in three languages (Dutch, English, and Italian; see http://www.deviersprong.nl/paginas/146-questionnairs.html). The SIPP-SF has only half ($n = 60$) the items of its parent measure but retains summary scales for all five dimensions of functioning found in the longer test (i.e. Self-Control, Identity Integration, Responsibility, Relational Functioning, and Social Concordance). An issue that has limited widespread use of the SIPP-SF is the lack of information on its reliability, validity, and functional equivalence to the SIPP-118. Because such data are essential to anyone using the instrument, our goal for the present study was to evaluate the psychometric properties of the SIPP-SF among young and old adults; in particular, to see if the five dimensions found in the SIPP-118 might be recovered in both age groups, and to verify the functional equivalence of the instruments by comparing convergent and discriminant validity scores across subject groups using data from the Dimensional Assessment of Personality Pathology (DAPP-BQ, Dutch version; van Kampen and de Beurs, 2009) and Krueger et al.'s (2012) PID-5.

Validity research on the SIPP-118 has focused mainly on correlations of its scales with those of other standardized personality measures. For example, Verheul et al. (2008) examined the concurrent validity of SIPP-118 facet scores by correlating them with the trait-based scales of the DAPP-BQ, Dutch version (van Kampen & de Beurs, 2009). The moderate values obtained for similar scales (overall median $r = .31$) led these researchers to conclude that SIPP-118 facet scales measure content not captured by the DAPP-BQ. Nevertheless, other investigators have found stronger associations among SIPP-118 and DAPP-BQ higher order domain scales (e.g. $r = -.82$ between DAPP-BQ Emotional Dysregulation and SIPP-118 Identity Integration; Berghuis, Kamphuis, & Verheul, 2014). Because additional data are needed to clarify this issue, in the present study, we will explore relations among SIPP-SF and DAPP-BQ domain scores. We will also examine the extent of overlap among the personality features specified in DSM-5 criterion A (i.e. impairment in personality functioning) and B (i.e. pathological traits), since the SIPP-SF was developed to measure the former and the DAPP-BQ the latter domain.

To expand the range of validation data for the SIPP-SF, we provide correlations for its scales with those of the PID-5 (Krueger et al., 2012; http://www.psychiatry.org/practive/dsm/dsm5/online-assessment-measure), the instrument proposed on the APA website to operationalize criterion B. For both the PID-5 and DAPP-BQ, convergent and divergent validity with the SIPP-SF domains will be compared across age groups to identify possible differences between younger and older adults.

## Method

### *Participants*

Serving as subjects were 381 Dutch-speaking community-dwelling Caucasian adults who were recruited by undergraduate psychology students to fill comparison groups of younger ($N = 210$) and older adults ($N = 171$). The younger group ranged in age from 17 to 31 years ($M = 18.89$; $SD = 1.52$), and 22.9% were men. All were university students (80 followed Psychology, 80 Law, 30 Criminology, and 20 did not indicate their study field). Older adults ranged in age from 61 to 99 years ($M = 72.77$; $SD = 6.09$), among whom 39.2% were men. Most were retired and no longer working (95.4%). A large majority were married (62.6%), with 28.7% being widowed, 3.5% legally divorced, 2.3% separated, 1.8% living together, or 1.2% single. Concerning educational attainment, 45% reported primary education, 21.7% lower secondary education, 27.7% higher secondary education, 25% higher education, and 13% university education. Prior to the current investigation, older subjects contributed data to Van Den Broeck et al. (2013b) research on the convergent validity of the DAPP-BQ and PID-5 facet scales. The SIPP-SF, PID-5, and DAPP-BQ domain data presented here were not published elsewhere.

All participants provided written informed consent before completing the SIPP-SF. Older subjects then filled out the PID-5 and DAPP-BQ. A subgroup of the younger subjects ($N = 110$) also completed the PID-5 and DAPP-BQ, while the remainder ($N = 100$) filled out only the SIPP-SF. Among the older adults, all questionnaires were valid and had no missing data; among younger participants, 10 PID-5s and 1 DAPP-BQ had to be abandoned because of missing responses. The final data set consisted of 110 SIPP-SFs, 100 PID-5s, and 99 DAPP-BQs.

### Instruments

#### SIPP-SF

The Severity Indices of Personality Problems – Short Form (derived from the SIPP-118; Verheul et al., 2008; available online at http://www.devriesprong.nl/paginas/146-questionnairs.html) is a 60-item self-report questionnaire that assesses five core domains of (mal)adaptive personality functioning. Higher scores imply more adaptive functioning. All items are answered on four-point Likert scales. In the current sample, the SIPP-SF domains showed the following excellent Cronbach alpha values: Self-Control .88, Social Concordance .81, Identity Integration .87, Relational Functioning .81 and Responsibility .83.

#### PID-5

The Dutch translation of Personality Inventory for DSM-5 (PID-5; van der Heijden, Ingenhoven, Berghuis, & Rossi, 2014; available online at http://www.dsm-5-nl.org/documenten/pid-5_volledig_zelfbeoordeling.pdf) was used to measure DSM-5 PD traits. It contains 220 items answered on four point-Likert scales. There are 25 primary, lower order scales or facets that load onto five higher order personality pathology dimensions. In the current sample, the PID-5 domain scores were used, and showed the following excellent Cronbach alpha values: Negative Affectivity .92, Detachment .89, Antagonism .91, Disinhibition .89, and Psychoticism .89.

#### DAPP-BQ

A Dutch translation of Livesley and Jackson's (2009) DAPP-BQ (van Kampen & de Beurs, 2009) was used to measure pathological personality traits. The DAPP-BQ covers 18 PD traits operationalized on dimensional scales that map onto four higher order factors. In the current sample, the DAPP-BQ higher order factor scales were used, and showed the following excellent Cronbach alpha values: Emotional Dysregulation .98, Dissocial Behavior .94, Inhibition .86, and Compulsivity .91.

### Statistical analyses

Mean scale scores were used to compare test scores among the younger and the older age groups. Equality of mean scale scores was evaluated using *t* tests for independent samples. Due to the large number of comparisons, Type I error rate was adjusted using a Bonferroni correction. The conventional $\alpha = .05$ was divided by the number of tests, 28 (a total of 14 domains over the three instruments, thus 14 scales multiplied by 2 age categories = 28), yielding an adjusted $\alpha = .002$. Cohen's *d* was used as a measure of effect size (Cohen, 2009), with $d \geq .20$ indicating a small effect, $d \geq .50$ a medium effect, and $d \geq .80$ a large effect.

To explore the factor structure of questionnaire data, a ratio of subjects-to-variables of 4:1 or larger is advised (i.e. 240 subjects needed for 60 SIPP-SF items; MacCallum, Widaman, Preacher, & Hong, 2001). Because of this, FA of the SIPP-SF could only be performed with the age groups combined. To evaluate the obtained factor structure, exploratory structural equation modeling analyses (ESEM; see Marsh, Morin, Parker, & Kaur, 2014) were applied using Mplus. For factor rotation, we chose an oblique equamax rotation which simplifies both variable and factor complexity, spreading variances across the factors (Browne, 2001).

Parallel analysis (Horn, 1965) was initially performed to determine the number of factors to extract. This indicated that up to seven factors could be derived with eigenvalues larger than the mean eigenvalue estimated from random data sets. The Hull method (Lorenzo-Seva, Timmerman, & Kiers, 2011) was then applied, estimating one to eight factors. This method aims to find the optimal balance between model fit and model complexity (i.e. number of parameters to be estimated). Therefore, a fit index (preferably the CFI) is plotted against the degrees of freedom, and those fit estimates that appear on or close to the plot's 'elbow' indicate the numbers of factors to be favored. Although this method is more precise than parallel analysis, its findings should not be rigidly interpreted. Therefore, we used this method as a guideline, in combination with substantiveness (interpretability of the solution), and prior theory to decide on the number of factors to retain.

Goodness of fit of our SIPP-SF factor solution was evaluated with the root mean square error of approximation (RMSEA), which nowadays is recognized as one of the most informative criteria in covariance modeling. It is a parsimony-adjusted index because it includes a built-in correction for model complexity. A rule of thumb is that RMSEA values $\geq .10$ suggest poor or unacceptable fit. Values $\leq .05$ suggest close model fit, and values $\leq .08$ suggest approximate or good model fit (Chen, Curran, Bollen, Kriby, & Paxton, 2008; Hu & Bentler, 1999). A key advantage is that a confidence interval can be calculated for the RSMEA value, which provides more information regarding model fit than a point estimate alone. The upper bound of this confidence interval should be $\leq .10$ (Chen et al., 2008) for acceptable model fit. The Bayesian Information Criterion (BIC) was used to compare models with different numbers of factors, as this index takes model parsimony into account and lower values indicate a better model fit (Browne, 2000). Items were considered to significantly load on a factor if the factor loading was at least .32 (Tabachnick & Fidell, 2013).

Finally, we computed partial correlations between the SIPP-SF domains and the external validity measures for both age groups controlling for gender, and interpreted them according to Cohen's *r* effect sizes (Cohen, 2009; .10 small, .30 medium and .50 large). An *r* to *z* transformation was applied to calculate Cohen's *q* effect sizes (Cohen, 2009; .10 small, .30 medium and .50 large) for differences between the older and the younger age groups.

## Results

### Differences in means

Differences in means between the younger and the older age group are depicted in Table 1. Differences between younger

**Table 1.** Means, standard deviations, and Cohen *d* effect sizes across age groups for the SIPP-SF, PID-5 and DAPP-BQ.

| | Younger age group $n = 210$ (SIPP-SF) $n = 100$ (PID-5) $n = 99$ (DAPP-BQ) | | Older age group $n = 171$ (SIPP-SF, PID-5, DAPP-BQ) | | | |
|---|---|---|---|---|---|---|
| Scale | *M* | *SD* | *M* | *SD* | *p* | Cohen's *d* |
| *SIPP-SF* | | | | | | |
| Relational Functioning | 3.23 | .51 | 3.21 | .51 | .631 | .05 |
| Responsibility | 3.22 | .45 | 3.46 | .47 | <.001 | **−.53** |
| Identity Integration | 3.39 | .52 | 3.49 | .52 | .048 | −.21 |
| Self-Control | 3.20 | .52 | 3.40 | .56 | <.001 | −.37 |
| Social Concordance | 3.24 | .43 | 3.31 | .50 | .125 | −.16 |
| *PID-5* | | | | | | |
| Negative Affectivity | 1.52 | .53 | 1.06 | .55 | <.001 | **.85** |
| Detachment | .39 | .30 | .79 | .46 | <.001 | **−1.04** |
| Antagonism | .67 | .44 | .50 | .50 | .008 | .34 |
| Disinhibition | 1.07 | .43 | .71 | .47 | <.001 | **.79** |
| Psychoticism | .57 | .42 | .47 | .46 | .064 | .24 |
| *DAPP-BQ* | | | | | | |
| Emotional Dysregulation | 385.50 | 80.39 | 330.16 | 96.09 | <.001 | **.63** |
| Dissocial Behavior | 136.03 | 29.99 | 122.62 | 32.05 | .002 | .43 |
| Inhibition | 62.86 | 15.40 | 80.52 | 15.20 | <.001 | **−1.15** |
| Compulsivity | 41.90 | 12.22 | 53.64 | 12.03 | <.001 | **−.97** |

Note: For the SIPP-SF and PID-5, the mean domain scores are mean item scores; for the DAPP-BQ, the mean domain scores are factor scores. Medium or large effect size is indicated in bold if $p \leq .002$. These age differences are not confounded by gender differences. Gender differences were examined and are limited to one medium effect size (males score lower than females on the PID-5 Negative Affectivity scale; $d = -.59$).



and older adults on impairment of personality functioning (criterion A), as measured by the SIPP-SF, were limited. Actually, there was one domain out of five, namely Responsibility, with a medium effect size.

There were more differences between younger and older adults on pathological personality traits (criterion B), as measured by the DAPP-BQ and PID-5. Older adults scored lower on PID-5 Negative Affectivity, and DAPP-BQ Emotional Dysregulation with a large effect size, and lower on PID-5 disinhibition with a medium effect size. Furthermore, older adults scored higher on DAPP-BQ Compulsivity, Inhibition and PID-5 Detachment (large effect sizes).

### *Factor structure*

Hull's method did not indicate a clear elbow to determine the number of underlying factors. On the basis of prior theory (five domains), interpretability of the solution, and the model with the lowest BIC value, the five factor solution, for which the RMSEA value (=0.049, 90% confidence interval 0.046−0.051) indicates good model fit was selected (see Table 2). The equamax-rotated factor-loading pattern matrix for this five-factor solution, and the correlations among the factors, can be found in the Appendix. The major part of the a priori hypothesized item loadings (i.e. 55 out of 60) was corroborated.

**Table 2.** Fit indices for the 1−8 factor models of the SIPP-SF.

| Model | $\chi^2$ | df | RMSEA | CI | BIC |
|---|---|---|---|---|---|
| 1-Factor | 5505.42 | 1710 | 0.076 | 0.074−0.079 | 51260.250 |
| 2-Factor | 4618.02 | 1651 | 0.069 | 0.066−0.071 | 50723.472 |
| 3-Factor | 3896.77 | 1593 | 0.062 | 0.059−0.064 | 50346.908 |
| 4-Factor | 3431.00 | 1536 | 0.057 | 0.054−0.059 | 50219.878 |
| 5-Factor | 2992.10 | 1480 | 0.052 | 0.049−0.054 | 50113.780 |
| 6-Factor | 2711.94 | 1425 | 0.049 | 0.046−0.051 | 50160.467 |
| 7-Factor | 2465.61 | 1371 | 0.046 | 0.043−0.049 | 50235.052 |
| 8-Factor | 2232.87 | 1318 | 0.043 | 0.040−0.046 | 50317.28 |

Note: CI = 90% confidence interval RMSEA value.

### *External validity measures*

Partial correlations (controlled for gender) between the SIPP-SF domains and the DAPP-BQ and the PID-5 domains were examined for differences between older and younger age groups (see Table 3). Correlations of the SIPP-SF Self-Control and Identity Integration domains with the DAPP-BQ Dissocial Behavior scale showed a medium, and respectively large size difference between the age groups, with smaller correlations in the younger age group. Regarding the PID-5, older adults showed significantly larger correlations than the younger adults between the Antagonism scale and the SIPP-SF Self-Control, Identity Integration, and Social Concordance domains, between Disinhibition and SIPP-SF Self-Control, Identity Integration and Social Concordance domains, and between Psychoticism and SIPP-SF Responsibility, Identity Integration, and Social Concordance. Differences between the age groups were of a medium effect size, with the exception of the large effect size for the difference in correlations between Disinhibition and Identity Integration.

## Discussion

### *Differences in means between younger and older adults*

Younger and older adults did not show many mean differences in personality functioning. Actually, in this healthy community sample, younger and older individuals all scored uniformly high on personality functioning: the mean scores on the SIPP-SF domains ranged from 3.20 to 3.49. Verheul et al. (2008) found the highest scores on the SIPP-118 in normal samples, followed by intermediate scores in psychiatric outpatient samples and the lowest scores in patients with PDs. Differences in means on personality functioning scales discriminate between normal and clinical populations. In 'healthy' community populations, high levels of personality functioning are found independent of the age group. Nevertheless, it is no surprise that older adults scored higher on Responsibility compared to younger adults. This domain is

**Table 3.** Partial correlations controlled for gender between the SIPP-SF domains and the DAPP-BQ, and PID-5 domains across age groups (*N* younger age group = 210 for SIPP-SF, 100 for PID-5, and 99 for DAPP-BQ; *N* older age group = 171).

| | Self-Control | | | Responsibility | | | Identity Integration | | | Relational Functioning | | | Social Concordance | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIPP-SF | O | Y | | O | Y | | O | Y | | O | Y | | O | Y | |
| *DAPP-BQ* | *r* | | | *r* | | | *r* | | | *r* | | | *r* | | |
| | *z* | | *q* | *z* | | *q* | *z* | | *q* | *z* | | *q* | *z* | | *q* |
| ED | .72* | .71* | | .61* | .51* | | .73* | .68* | | .44* | .60* | | .67* | .55* | |
| | .91 | .89 | .02 | .71 | .56 | .15 | .93 | .83 | .10 | .47 | .69 | −.22 | .81 | .62 | .19 |
| DB | .59* | .29* | | .60* | .58* | | .54* | .09 | | .30* | .21 | | .65* | .49* | |
| | .68 | .30 | **.38** | .69 | .66 | .03 | .60 | .09 | **.51** | .31 | .21 | .10 | .78 | .54 | .24 |
| IN | .11 | .13 | | .35* | .37* | | .38* | .34* | | .56* | .67* | | .24* | .34* | |
| | .11 | .13 | −0.02 | .37 | .39 | −0.02 | .40 | .35 | .05 | .63 | .81 | −0.18 | .25 | .35 | −.10 |
| CO | .12 | .22 | | .14 | .27* | | .02 | .15 | | .01 | .09 | | .19 | .04 | |
| | .12 | .22 | −.10 | .14 | .28 | −.14 | .02 | .15 | −.13 | .01 | .09 | −.08 | .19 | .04 | .15 |
| *PID-5* | | | | | | | | | | | | | | | |
| NA | .60* | .63* | | .40* | .20* | | .55* | .55* | | .31* | .31* | | .50* | .26* | |
| | .69 | .74 | −.05 | .42 | .20 | .22 | .62 | .62 | .00 | .32 | .32 | .00 | .55 | .27 | .28 |
| DE | .42* | .26* | | .43* | .31* | | .58* | .54* | | .55* | .60* | | .47* | .40* | |
| | .45 | .27 | .18 | .46 | .32 | .14 | .66 | .60 | .06 | .62 | .69 | −0.07 | .51 | .63 | −.12 |
| AN | .53* | .18 | | .54* | .41* | | .44* | .08 | | .32* | .12 | | .53* | .27* | |
| | .59 | .18 | **.41** | .60 | .44 | .16 | .47 | .08 | **.39** | .33 | .12 | .21 | .59 | .28 | **.31** |
| DI | .68* | .38* | | .70* | .63* | | .65* | .20* | | .40* | .13 | | .54* | .22* | |
| | .83 | .40 | **.43** | .87 | .74 | .13 | .78 | .20 | **.58** | .42 | .13 | .29 | .60 | .22 | **.38** |
| PS | .62* | .47* | | .64* | .33* | | .60* | .30* | | .44* | .32* | | .53* | .25* | |
| | .73 | .51 | .22 | .76 | .34 | **.42** | .69 | .31 | **.38** | .47 | .33 | .14 | .59 | .26 | **.33** |

Note: NA = Negative Affectivity, DE = Detachment, AN = Antagonism, DI = Disinhibition, PS = Psychoticism, ED = Emotional Dysregulation, DB = Dissocial Behavior, IN = Inhibition, CO = Compulsivity, O = older adults, Y = younger adults, *q* = effect sizes differences in correlations between O and Y (medium or large effect sizes are indicated in bold), *r* = partial correlations, *z* = Fisher *z* correlations. All correlations were reversed since the SIPP-SF scales score in the direction of higher levels of functioning, $^{*}p \leq .05$.



known to be strongly associated with conscientiousness (Bastiaansen et al., 2013), a trait domain that increases with age, as demonstrated in both cross-sectional and longitudinal studies (Debast et al., 2014). As such, Responsibility is possibly not an indicator of personality functioning, but rather trait-related.

There were, in general, more differences between younger and older adults on pathological personality traits (criterion B), than on personality functioning. In community, as well as in patient samples, one can expect individual differences in terms of the personality style. Moreover, personality characteristics are susceptible to change over a person's entire lifetime, and cross-sectional and longitudinal studies demonstrate age-related changes in adaptive and maladaptive traits (Debast et al., 2014). Older adults scored lower on Negative Affectivity, and Emotional Dysregulation, which are the maladaptive counterparts of Neuroticism. Literature reviews confirm lower observed values of Neuroticism in older adults (Debast et al., 2014).

Detachment and Inhibition are the opposite poles of Extraversion and more externalizing behavior, which is known to remit with age (Debast et al., 2014; Van den Broeck et al., 2013a). Furthermore, Compulsivity is a component of a higher level Detachment/Inhibitedness factor (Van Den Broeck et al., 2013b). Thus, logically, in our study, older adults scored higher on Detachment, Inhibition, and Compulsivity, and lower on Disinhibition. This latter domain belongs to a higher level Externalizing factor (Wright et al., 2012), whereas Compulsivity also is a more maladaptive variant of Conscientiousness, which is known to increase with age (Debast et al., 2014).

These findings are also in line with earlier findings on specific age-relatedness of PDs: in older adults, high-energy features of disorders are less prevalent, and, on the contrary, schizoid and obsessive-compulsive characteristics are more prevalent than in younger age groups (Engels, Duijsens, Haringsma, & van Putten, 2003).

### The factor structure

The SIPP-SF construct validity was statistically demonstrated for five higher order domains of personality functioning. We evaluate the content of the factors into more detail on the basis of the factor loadings.

A first factor was Identity Integration with loadings above .32 on 10 of 12 a priori formulated items. The highest loadings were on the reversed scores items 12 'I often see no reason to continue living' and 31 'I often feel that my life is meaningless'. Unexpectedly, the reversed items 40 'One of my problems is that I cannot easily let myself have a good time' and 57 'I usually have a low opinion of myself' both had their highest loadings on Relational Functioning, and item 57 also loaded on Self-Control. Having a good opinion of oneself is certainly an aspect of Self-Control, and can facilitate Relational Functioning. Similarly, being able to let yourself have a good time is a capacity that will stimulate Relational Functioning. Therefore, we conclude that these cross-loadings certainly have face validity from a substantive point of view.

The second factor, Relational Functioning, had the highest loadings on 11 out of 12 a priori defined items, although the loading of item 44 'I can demonstrate my affection for others without too much discomfort' was slightly too low (.30). Most defining items for this factor were the reversed items 15 'It is hard for me to get attached to someone else' and 49 'It is hard for me to express affection to others'. Item 59 'I have been able to form lasting friendships' had, in sharp contrast to the prediction, a zero loading on Relational Functioning. Yet, this item neither showed loadings on other factors above .32. The possible elimination of this item should be considered on the basis of a more extensive evaluation, like, for example, Item Response Theory Analyses (e.g. Embretson & Reise, 2000) to examine how much information the item contributes to the scales of the SIPP-SF and to what portion of the scale score ranges.

All 12 a priori hypothesized items had their highest loadings on the third factor, namely Responsibility. The highest loadings were on the reversed scored items 19 'I often fail to get a job done because I didn't try hard enough', 32 'I seem to lack the sense of responsibility necessary to meet my obligations' and 33 'often fail to do things that I am supposed to do'. These items are indeed clearly related to a lack of Responsibility. The reversed scored item 13R 'Some people think of me as a rude person', hypothesized to represent Social Concordance, had a higher loading on Responsibility (.40) than on Social Concordance (.33).

The fourth factor Self-Control had loadings above .32 for 10 out of 12 a priori hypothesized items. The highest loadings were on the reversed scored items 1 'Sometimes I get so overwhelmed that I can't control my reactions', 53 'I often overreact to minor problems', and 54 'I often act impulsively even though I know I will regret it later on'. The reversed scored items 22 'I lose control sometimes to the extent that people are frightened of me' and 43 'It is hard for me to control my aggression towards others' showed a higher loading on Social Concordance. Although not expected, this is not illogical: both items capture aspects of aggression regulation and/or frustration tolerance, both facets belonging to Social Concordance according to Verheul et al. (2008).

The 12 a priori hypothesized items had high loadings on the fifth factor named Social Concordance. Nevertheless, item 5 'I can work with people on a joint project in spite of personal differences' only had a loading of .29, the reversed scored item10 'Sometimes I get so angry, that I feel like hitting or kicking people around me' a loading of 0.31, and the reversed scored item 58 'I regularly get into disputes with others at work or home' had a similar loading on Self-Control (respectively .27 on Social Concordance and .28 on Self-Control). Nevertheless, these loadings are very close to the .32 criterion we formulated for factor loadings.

Actually, the above-described content of the five corroborated SIPP-SF dimensions corresponds in a large degree to the key elements formulated for criterion A in DSM-5 section III in terms of face validity. The SIPP-SF Identity Integration and Self-Control scales, for example, capture the self dimension of criterion A (with Identity and Self-Direction elements). The SIPP-SF Relational Functioning and Social Concordance scales correspond to the interpersonal dimension of criterion A (with Empathy and Intimacy elements). However, on the basis of face validity, SIPP-SF Responsibility is more trait-content-related, by including aspects of trustworthiness and responsible industry. This was also empirically corroborated: in a joint principal component analysis of the SIPP-118, GAPD and NEO-PI-R (Berghuis, Kamphuis, & Verheul, 2012), these aspects formed a Conscientiousness factor, together with all six NEO-PI-R Conscientiousness facets. So, it seems not necessary to include this scale when purely exploring personality functioning.

### *External validity measures*

In general, most correlations between the DAPP-BQ and SIPP-SF domains were comparable to the Berghuis et al. (2014) SIPP-118 study in psychiatric patients. Emotional Dysregulation showed mostly large correlations with the severity domains measured by the SIPP-SF. Furthermore, exactly the same other correlations had a large effect size, namely Inhibition with Relational Functioning and Identity Integration; and Dissocial Behavior with Responsibility and Social Concordance. Given the overall similarity of correlational patterns with previous SIPP-118 studies, the SIPP-SF is a promising measure of personality functioning (criterion A).

Since most correlations were small or medium effect sizes, there is still unique variance supporting to define pathological traits and personality functioning separately to optimize assessment, whereas, at the same time, both are related since they capture aspects of personality pathology. Yet, at the same time, personality functioning was not always easy to empirically disentangle from maladaptive personality traits, as demonstrated by the high correlations of Emotional Dysregulation with personality functioning domains.

For the majority of the DAPP-BQ correlations, there were no differences between age groups. However, older adults showed a larger correlation between DAPP-BQ Dissocial Behavior and SIPP-118 Self-Control ($q = .37$), and Identity Integration ($q = .48$). A closer examination of the items revealed that older adults with higher levels of self-pathology were more likely to have conduct problems and/or showed less empathy.

Correlations between the PID-5 and SIPP-SF domains mostly showed small to medium effect sizes, again corroborating that pathological traits and levels of personality functioning each have unique variance, but are also associated like expected, since both are measures of personality pathology. Negative Affect is more intertwined with personality functioning: in both age groups, large correlations were found with Self-Control and Identity Integration.

When examining differences across age groups, more large correlations were found in older adults. Psychoticism is the trait domain most clearly related to maladaptive personality functioning in the elderly. There are three facet scales in Psychoticism, namely Eccentricity, Cognitive and Perceptual Dysregulation, and Unusual beliefs. The facet scale Unusual beliefs loaded on a higher order Disinhibition component in a joint factor analysis of the PID-5 and DAPP-BQ (Van den Broeck et al., 2013b). PID-5 Disinhibition and Antagonism also showed stronger correlations with maladaptive personality functioning in older adults in comparison to younger adults. Disinhibition in the PID-5 is composed of traits related to irresponsibility, impulsivity and distractibility. Note that there was no stronger relationship with DAPP-BQ Inhibition which is composed of different concepts, namely intimacy and restricted expression.

## Conclusions

As far as we know, this is the first validation study of the SIPP-SF. There are five underlying dimensions and, with the exception of Responsibility, the content of these dimensions is related to the criterion A domains of self- and interpersonal functioning. Correlational patterns also confirm that the instrument is a possible measure of impairment of personality functioning (criterion A) in older, as well as younger adults. At the same time, the differences in terms of effect sizes indicate that, according to the age group, certain domains of personality functioning can be more indicative for the presence of pathological traits. This is very useful for clinical practice: the SIPP-SF can be used as a screening instrument for the presence of personality pathology, especially in older adult populations where longer tests can be a practical bottleneck. Furthermore, the domains of personality functioning that are

elevated can guide treatment decisions, and the SIPP-SF can be used as an outcome measurement for treatment effects in terms of levels of personality functioning.

The availability of a short screening instrument for personality functioning also offers opportunities to create a stepwise diagnostic approach for the DSM section III model. Such an approach is advisable in older adults; as already mentioned, a main threat in geriatric psychiatry is subjecting older adults to extensive interviews and tests to assess their intrapersonal and interpersonal functioning as well as the five pathological personality traits and associated facets (van Alphen et al., 2015). Yet, also in adult populations, clinicians often prefer short screening instruments, certainly as a first step in an ongoing process of diagnosing personality pathology. When there is an indication of impaired personality dysfunctioning, in a second phase, a more thorough evaluation can be done. To evaluate the pathological personality style into detail, the PID-5 is available, measuring all five pathological trait domains, namely Negative Affect, Detachment, Antagonism, Disinhibition, and Psychoticism, and their associated facets. Despite not having explicitly considered the later life context during its development, most PID-5 traits are measured equally well across both a younger and an older age group: only 4 facets out of 25 (i.e. Withdrawal, Attention Seeking, Rigid Perfectionism and Unusual Beliefs) showed a differential endorsement of items for younger and older adults with the same level of the underlying trait (Van den Broeck et al., 2013a). Currently, the APA website does not propose an instrument covering all facets associated with the four key elements for criterion A, and we did not find any published validation studies for such instruments. Nevertheless, some initiatives are taken to fill this gap. In June 2015, 'Kenniscentrum Persoonlijkheidsstoornissen (Knowledge Centre Personality Disorders)' published a Manual for a Semi-Structured Interview for Personality Functioning for DSM-5 (STIP 5.1) on their website (http://www.kenniscentrumps.nl/publicatie/handleiding-bij-stip-51), covering all 12 facets associated with the criterion A Identity (i.e. uniqueness/boundaries, self-esteem, emotion regulation), Self-Direction (i.e. goals, norms, self-reflection), Empathy (i.e. understanding others, perspectives, impact), and Intimacy (i.e. connectedness, closeness, cooperation/mutuality).

Finally, some limitations of our study should be mentioned. A first one is that all measures were self-report. Common method variance can inflate correlations between personality functioning and traits, leading to an overestimation of the amount of overlap between criterion A and B. Also, self-report provides only one viewpoint, and is probably more suited for measuring internalizing problems which causes subjective distress, than for externalizing problems (e.g. grandiosity) which are possibly better captured by informant reports (Rossi et al., 2014).

Second, the sample was limited to community populations (and the younger sample to university students). Clinical samples are needed to explore several important issues. In older, as well as in younger adults, it is important to evaluate which domains of levels of personality functioning are rather capturing general personality dysfunction related to all PDs, or which levels of personality functioning are more specific predictors of a more limited number of PD categories.

Third, although the current findings indicated that in older adults certain domains of personality functioning were more associated with pathological traits than in younger adults, the age-neutrality of the SIPP-SF and DAPP-BQ items should be examined, since accurate personality development across the life-span is only possible with an age-neutral measurement instrument. However, studies (e.g. Oltmanns & Balsis, 2011) indicate that dimensional traits manifest less measurement bias across age groups than categorical approaches, and for the PID-5, the age-neutrality was demonstrated for 21 of 25 scales (Van den Broeck et al., 2013a).

Finally, one also needs to examine if specific gero-cut-off points need to be developed for the SIPP-SF. Only if appropriate norms for older adults are available, the SIPP-SF can be applied as an adequate instrument for diagnosing personality pathology and measuring treatment outcome in the elderly, and thus become a very useful tool for clinical practice.

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## Appendix

Geomin rotated factor loadings and correlations between factors for the five factor solution of the SIPP-SF ($N = 381$)

| Item/ factor | Identity Integration | Relational Functioning | Responsibility | Self-Control | Social Concordance |
|---|---|---|---|---|---|
| Item 1R | 0.09 | 0.08 | 0.01 | **0.65*** | 0.00 |
| Item 2 | 0.16* | −0.06 | −0.04 | −0.02 | **0.36*** |
| Item 3 | **0.63*** | 0.01 | 0.03 | −0.03 | 0.05 |
| Item 4 | **0.55*** | 0.06 | −0.08 | 0.06 | 0.20* |
| Item 5 | 0.14* | 0.09 | −0.05 | 0.15* | ***0.29**** |
| Item 6R | −0.02 | **0.39*** | −0.05 | 0.01 | 0.09 |
| Item 7 | 0.31* | −0.29* | **0.33*** | −0.06 | 0.07 |
| Item 8R | 0.14* | −0.03 | 0.07 | 0.13* | **0.40*** |
| Item 9 | *0.37** | −0.13* | 0.04 | **0.46*** | −0.04 |
| Item 10R | 0.16* | −0.14* | 0.09 | 0.21* | ***0.31**** |
| Item 11R | −0.04 | 0.24* | −0.01 | −0.01 | **0.40*** |
| Item 12R | **0.65*** | 0.01 | −0.01 | −0.01 | 0.10* |
| Item 13R | 0.16* | 0.01 | *0.40** | −0.11* | **0.33*** |
| Item 14R | 0.02 | **0.51*** | 0.05 | −0.12* | 0.26* |
| Item 15R | −0.01 | **0.62*** | 0.06 | −0.15* | 0.24* |
| Item 16R | −0.17* | −0.03 | **0.48*** | 0.01 | 0.15 |
| Item 17 | **0.43*** | 0.14* | −0.09 | 0.13* | −0.02 |
| Item 18R | 0.23* | **0.37*** | 0.12* | −0.14* | −0.02 |
| Item 19R | −0.12 | 0.10 | **0.63*** | 0.08 | −0.07 |
| Item 20R | −0.14* | −0.04 | **0.49*** | 0.02 | 0.20* |
| Item 21R | −0.24* | −0.03 | 0.23* | **0.42*** | 0.11 |
| Item 22R | 0.08 | −0.01 | 0.13* | ***0.21**** | *0.52** |
| Item 23 | 0.00 | 0.17* | −0.02 | 0.08 | **0.52*** |
| Item 24R | **0.42*** | *0.43** | −0.05 | 0.06 | 0.06 |
| Item 25R | −0.10 | 0.25* | 0.07 | 0.07 | **0.40*** |
| Item 26R | −0.07 | **0.56*** | 0.07 | −0.05 | 0.13* |
| Item 27R | 0.10* | 0.05 | **0.56*** | 0.16* | −0.07 |
| Item 28R | 0.20* | −0.12* | 0.12* | **0.61*** | 0.07 |
| Item 29R | 0.19* | −0.10 | **0.40*** | 0.02 | 0.15* |
| Item 30R | 0.03 | 0.22* | −0.02 | 0.14* | **0.43*** |
| Item 31R | **0.67*** | −0.03 | 0.09* | 0.01 | 0.06 |
| Item 32R | 0.14* | 0.04 | **0.58*** | −0.07 | 0.15* |
| Item 33R | 0.07 | 0.04 | **0.58*** | 0.16* | 0.01 |
| Item 34R | 0.11* | 0.08 | 0.01 | **0.46*** | 0.21* |
| Item 35R | **0.38*** | 0.24* | 0.05 | 0.25* | −0.07 |
| Item 36R | 0.27* | **0.37*** | 0.19* | 0.06 | 0.11* |
| Item 37R | **0.39*** | *0.37** | 0.06 | 0.09 | 0.07 |
| Item 38 | 0.03 | 0.21* | 0.09 | 0.20* | **0.33** |
| Item 39 | 0.17* | **0.56*** | 0.13* | 0.08 | −0.03 |
| Item 40R | ***0.27**** | *0.42** | 0.03 | 0.14* | 0.00 |
| Item 41R | −0.01 | 0.14* | 0.09 | **0.47*** | 0.18* |
| Item 42R | 0.05 | 0.04 | *0.32** | **0.38*** | 0.18* |
| Item 43R | 0.20* | −0.00 | 0.08 | ***0.17**** | *0.49** |
| Item 44 | 0.05 | ***0.30**** | −0.02 | −0.13* | 0.06 |
| Item 45R | 0.13* | **0.44*** | 0.10 | −0.07 | 0.14* |
| Item 46R | 0.03 | 0.02 | **0.45*** | 0.00 | 0.28* |
| Item 47R | 0.12 | −0.00 | 0.01 | 0.13* | **0.44*** |
| Item 48R | −0.06 | 0.07 | 0.11* | **0.53*** | 0.14* |
| Item 49R | −0.07 | **0.62*** | 0.02 | 0.05 | 0.08 |
| Item 50R | 0.18* | **0.47*** | 0.17* | 0.23* | −0.16* |
| Item 51R | −0.05 | 0.12 | **0.48*** | 0.10 | −0.17* |
| Item 52R | 0.23* | 0.05 | **0.40*** | −0.10 | 0.27* |
| Item 53R | 0.04 | 0.10* | −0.06 | **0.62*** | 0.18* |
| Item 54R | −0.11 | −0.02 | 0.16* | **0.62*** | 0.19* |
| Item 55R | **0.34*** | 0.19* | *0.34** | 0.31* | −0.20* |
| Item 56R | **0.32*** | 0.18* | 0.30* | 0.31* | −0.14* |
| Item 57R | ***0.21**** | *0.35** | 0.07 | *0.35** | −0.26* |
| Item 58R | 0.06 | 0.12* | 0.10 | 0.28* | ***0.27**** |
| Item 59 | *0.28** | **0.00** | 0.00 | −0.22* | 0.12 |
| Item 60R | −0.04 | 0.14* | **0.40*** | −0.05 | 0.23* |
| Factor 1 | 1.00 | | | | |
| Factor 2 | 0.31* | 1.00 | | | |
| Factor 3 | 0.27* | 0.26* | 1.00 | | |
| Factor 4 | 0.32* | 0.19* | 0.37* | 1.00 | |
| Factor 5 | 0.18* | 0.25* | 0.31* | 0.23* | 1.00 |

Note: A priori expected item loadings are in bold; unexpected item loadings are in cursive; *significant at $p < .05$.