Research Article   **Open Access**

The Dimensional Assessment of Personality Pathology – Short Form for Adolescents (DAPP-SF-A): normative data for Flemish adolescents aged 16 to 21 years

Daphne Raaijmakers[1†], Marike G. Polak[1†], Lidia R. Arends[1,2], Willemijn M. van Eldik[1], Peter Prinzie[1*]

[1]Department of Psychology, Education & Child Studies (DPECS), Erasmus University Rotterdam, Rotterdam, The Netherlands; [2]Department of Biostatistics, Erasmus Medical Centre, Rotterdam, The Netherlands

*Corresponding author: prinzie@essb.eur.nl   [†]Daphne Raaijmakers and Marike G. Polak contributed equally

Abstract

Background: The Dimensional Assessment of Personality Pathology – Short Form for Adolescents (DAPP-SF-A) is an age-adapted version of the DAPP Basic Questionnaire (DAPP-BQ). The psychometric properties of this questionnaire were established by Tromp and Koot. However, norming data are currently available exclusively for Dutch adolescents.
Objective: The main aim of this study was to provide community-based norming data for the DAPP-SF-A in Flemish adolescents and separately for boys and girls. The second aim was to compare the Flemish norms with the Dutch norms.
Method: The sample consisted of 425 adolescents (52% girls), aged 16 to 21 years (mean, 18.6; SD, 1.16), from the general Flemish population. In 2012, all respondents completed the DAPP-SF-A and the Youth Self-Report as a part of the longitudinal Flemish Study on Parenting, Personality, and Development.
Results: Internal consistency reliabilities of the lower-order dimensions were acceptable to good (a ranged from 0.71 to 0.87, median=0.85, mean item-rest correlations ranged from 0.44 to 0.67). The lower-order dimensions showed distinctive mean patterns for boys and girls, with higher scores for girls on Affective Instability and Insecure Attachment [effect sizes (d) were both −0.35] and higher scores for boys on all lower-order dimensions of Dissocial Behavior, Inhibitedness, and three lower-order dimensions of Emotional Dysregulation (d ranged from 0.21 to 0.79). The comparison of the Flemish scores with the Dutch scores showed substantial inter-cultural differences (d ranged from 0.13 to −1.78).
Conclusions: The DAPP-SF-A shows satisfactory reliability in a Flemish community-based sample of adolescents. Furthermore, given the differences between boys and girls, the use of gender-based norms seems appropriate. Finally, substantial differences with the Dutch general population norms warrant the use of separate norms in Flemish adolescents.

Keywords: personality disorders; adolescence; cross-cultural comparison; DSM-5 Section III; psychometric properties

Introduction

The categorical models of personality disorders (PDs) have been criticized for having several important limitations (1-3). One point of criticism is that these models fail to identify individuals who do not meet the exact criteria of a categorical PD, but who, nevertheless, show a significant amount of impairments in functioning. Furthermore, the substantial overlap between categories hampers clinical practice, such as treatment planning, as it is difficult to determine which PD to focus on (4,5).

Hence, there is a growing interest in dimensional models of personality pathology that offer insight into the heterogeneity within the diagnostic categories and in the overlap among the categories. In the past few decades, preceding and alongside the introduction of the alternative dimensional trait assessments in Section III (Criterion B) of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) (6), a growing body of dimensional personality self-report instruments has been developed. These models and measures of

maladaptive personality traits were synthesized into the Personality Inventory for DSM-5 (PID-5) (7) that was developed to promote the use of the alternative DSM-5 model for PDs by clinicians and researchers. A key benefit of these instruments is that they chart an individual's functioning in clinically relevant domains of personality pathology, such as emotional dysregulation and dissocial behavior (8). Furthermore, these models have a strong empirical basis, in contrast to the traditional DSM categorical approach, which makes them more suited for further development of evidence-based DSM diagnosis of PD.

A relatively young discipline in the assessment of PD is diagnosing adolescents, which is included in the DSM-5, Section II. In the past there has been intense debate about diagnosing adolescents with PD, because personality characteristics are still developing at that stage (9). However, there is growing consensus that PDs, such as borderline PD and antisocial PD, can be diagnosed reliably in adolescents and that early intervention is beneficial (10,11). In their recent review, Kongerslev et al. (11) further provided empirical evidence for stability of impaired functioning associated with PD symptoms in youth that predicted functional impairments in adulthood. Prevalence rates of mental disorders in adolescent populations in Western countries tend to vary. For example, Ihle and Esser's (12) meta-analysis showed a median rate of 18%. In addition, Kasen et al. (13) report, respectively, 15.3% and 23.6% prevalence rates of PDs in adolescents and young adults. Hence, the assessment of PD during adolescence appears to be of great significance.

A predominant instrument that uses a dimensional model is the Dimensional Assessment of Personality Pathology Basic Questionnaire for adults (DAPP-BQ) (14), which has a shortened version in the Dutch language (15). These instruments assess four higher-order dimensions of personality pathology (i.e., Emotional Dysregulation, Dissocial Behavior, Inhibitedness, and Compulsivity) as well as 18 lower-order trait-based dimensions (e.g., Identity Problems, Stimulus Seeking, and Intimacy Problems). The DAPP-BQ was developed to chart maladaptive personality traits that cover the whole spectrum of PDs ranging from mild to extreme trait manifestations. Livesley (16) showed that with the DAPP, an integrated approach is possible that supplements the current categorical DSM-5 classification with more information on individual differences on clinically relevant traits. Van den Broeck et al. (17) showed that the four higher-order constructs in the DAPP-BQ resembled the higher-order domains in the PID-5 model (Emotional Dysregulation/Negative Affect, Dissocial Behavior/Antagonism, Inhibitedness/Detachment,

and Reversed Compulsivity/Disinhibition), except that the latter model includes a separate Psychoticism component that did not fit the DAPP lower-order traits. The DAPP-BQ showed adequate psychometric properties (i.e., factorial structure, internal consistency, test-retest reliability, discriminative validity, and classification accuracy (14)), also for various translations, such as Spanish (18) or Danish (19).

Tromp and Koot (20) adapted the DAPP-BQ for use in adolescents aged 12 to 22 years by simplifying the questions to be more age appropriate and by adding 'not applicable' to the response options when asked about sex and alcohol and drug use (DAPP-BQ-A). In a similar manner, they developed a short form containing 136 items for adolescents (DAPP-SF-A) from the DAPP-SF. The DAPP-BQ-A and DAPP-SF-A have been examined in the Netherlands, where adequate psychometric properties were established (20,21). These findings are in line with recent studies that provided evidence for the reliable measurement of PD in adolescents using the PID-5 model (22-24). For the DAPP-SF-A, only Dutch population norms are available for both referred and non-referred adolescent boys and girls (25). Therefore, research on psychometric properties and normative data for other countries are needed.

Adequate and appropriate norms are highly relevant, for instance, to prevent misclassification. The need for culture-specific norms, even for societies that share the same language, has also been shown in numerous studies concerning the measurement of intellectual abilities. For example, differential norms were developed for the Wechsler Preschool and Primary Scale of Intelligence III for Dutch and Flemish children in preschool age (26). Research showed that Dutch children aged 4 to 7 years scored, on average, slightly higher than the Flemish children did, which was explained by differences between the school systems in both countries. Note that Dutch is the language spoken in the Netherlands, and Flemish is one of the three official languages in Belgium, the country south of the Netherlands. Belgium consists of a Flemish speaking part (Flanders), a French, and a German speaking part. Flemish and Dutch are almost the same language, comparable to different dialects within the same county.

Currently, the DAPP-BQ and DAPP-SF for adults already provide separate norms for the Netherlands and the Flemish speaking part of Belgium (27). It is important to extend the norms for the adolescent version of these questionnaires as well. The aim of the present study is two-fold: first, we aim to provide Flemish community-based normative data for the DAPP-SF-A, where we will compare scores across

boys and girls; and, second, we aim to determine the extent to which these norms differ from Dutch normative data reported by Tromp and Koot (21).

Method
Participants and procedure
The Flemish Study on Parenting, Personality, and Development is a longitudinal Belgian study that started in 1999 [see Prinzie et al. (28) for a complete description of the sampling procedure]. At the start of this study, a proportional stratified sample of elementary-school-aged children attending regular schools was randomly selected. Strata were

constructed according to geographical location (province), sex, and age. Participants were 680 native Flemish families (92.5% two-parent families) with an elementary-school-aged child. The present study concerns the seventh wave, collected in 2012, when 425 participants completed the Dutch versions of the DAPP-SF-A (21) and the Youth Self-Report (YSR) (29) online. The YSR was included as an instrument to identify youths that scored within the clinical range. Sample characteristics are presented in Table 1.

TABLE 1. Demographics of the Flemish Study on Parenting, Personality, and Development, wave seven

	Community sample (n = 425; mean age, 18.6; SD, 1.16)		Adjusted sample (n = 288; mean age, 18.6; SD, 1.16)	
	n	%	n	%
Age				
16	3	0.7	3	1.0
17	90	21.2	63	21.9
18	107	25.2	71	24.7
19	107	25.2	77	26.7
20	109	25.6	68	23.6
21	9	2.1	6	2.1
Gender				
Male	203	47.8	147	51.0
Female	222	52.2	141	49.0
Current education				
Secondary school	151	35.5	104	36.1
Non-university, higher education	141	33.2	94	32.6
University	96	22.6	64	22.2
Other	8	1.9	7	2.4
Missing	29	6.8	19	6.6

To compare Flemish and Dutch norms, we analyzed a subsample (n = 288, 67.8% of the total amount) that matched as closely as possible to Tromp and Koot's (21) Dutch non-referred sample (i.e., a community sample from which clinically referred children were excluded). The clinical cut-off score of the YSR at the 80th percentile was shown to be the most accurate cut point for discriminating between referred and non-referred children (29). To this aim, we excluded adolescents potentially meeting criteria for psychopathology. That is, we excluded 89 (20.9%) adolescents scoring above the 80th percentile of either the Externalizing or Internalizing broadband scale of the YSR (29). Furthermore, we matched the non-referred sample of Tromp and Koot (21) exactly in terms of gender (49% girls) by randomly excluding an additional 48 girls from the

adjusted sample. The mean age in the adjusted sample was 18.6 years (SD, 1.16 years). Note that in the current wave the DAPP-SF-A was administered for the first time. Therefore, for this instrument no data were available from this cohort at a younger age. In the non-referred sample of Tromp and Koot the mean age was 14.6 years (SD, 1.7 years).

Measures
Dimensional Assessment of Personality Disorders – Short Form for Adolescents. The DAPP-SF-A (21) consists of 144 items that are rated on a five-point Likert scale from 1 ("Very unlike me") to 5 ("Very like me"). Eight items form a validity scale. The remaining 136 items are grouped in 18 lower-order dimensions (Table 2). These lower-order dimensions form the four higher-order factors:

Emotional Dysregulation, Dissocial Behavior, Inhibitedness, and Compulsivity. Evidence for the good psychometric qualities and clinical validity of the DAPP-SF-A has been reported by Tromp and Koot (21,25).

Youth Self-Report. The YSR is a questionnaire measuring a wide variety of emotional and behavioral problems and consists of 112 items, which are scored on a three-point scale: 0 = "Not true", 1="Somewhat or sometimes true", and 2 = "Very true or often true" (29). Five of the nine lower-order dimensions are grouped into two higher-order factors: Externalizing Problems and Internalizing Problems. The YSR has been widely used in both clinical and academic fields and its psychometric properties have been well established (29).

Data analysis

To provide norming data for a Flemish community-based sample of adolescents, means and standard deviations of the sample were computed for the lower- and higher-order dimensions of the DAPP-SF-A. Furthermore, internal consistency reliabilities for these dimensions were measured by Cronbach's alphas. Item-rest correlations (r_{ir}) were examined to investigate item functioning. r_{ir}'s for individual items and r_{ir} means for lower- and higher-order dimensions were compared against a threshold value of < 0.20 as described by Kline (30) and Nunnally (31). Normality of scale distribution was investigated visually using histograms for boys and girls separately. Gender differences were examined by independent sample t-tests and, in case of non-normality, the non-parametric equivalent Mann–Whitney's U test, to determine whether the results were influenced by non-normality.

With regard to our second aim, determining to what extend these norms differ from Dutch normative data, two-tailed independent sample t-tests were conducted to compare means on the lower- and higher-order dimensions in the current sample to those provided by Tromp and Koot (21). Effect sizes for gender and sample differences were computed as Cohen's *d* and interpreted by the guidelines of Cohen (32): 0.2 = small, 0.5 = medium, and 0.8 = large. The influence of participants' age on scores was investigated by computing correlations between age and lower- and higher-order dimensions. These correlations were interpreted by Cohen's guidelines (0.1 = small, 0.3 = medium, 0.5 = large). All analyses were conducted with SPSS 24 (33).

Results

Table 2 shows the internal consistency reliabilities, mean r_{ir}, means and standard deviations of the

community sample, both for boys and girls, combined and separated. Cronbach's alpha for both higher- and lower-order dimensions was generally high, ranging, respectively, from 0.81 for Inhibitedness to 0.97 for Emotional Dysregulation (median, 0.88), and from 0.71 for Conduct Problems to 0.87 for Affective Instability, Self-Harm, and Restricted Expression (median, 0.85). The mean r_{ir}'s for dimensions also showed a good level of internal consistency, ranging from 0.41 for Inhibitedness to 0.57 for Compulsivity for the higher-order dimensions, and from 0.44 for Conduct Problems to 0.67 for Self-Harm for the lower-order dimensions. Individual item functioning for the lower-order dimensions was good, all items had a r_{ir} larger than 0.20 (item 17, "Sex is not important in my life", had the lowest r_{ir} of 0.24). For the higher-order dimensions individual item functioning was also good, 99.3% of the items had a r_{ir} of > 0.20. Exceptions with low-to-fair item functioning were Emotional Dysregulation (item 44, "When I was very upset, I took a drug overdose", r_{ir} = 0.17; item 35, "I am not very organized when I do things", r_{ir} = 0.23; and item 48, "I feel it is important that other people see me", r_{ir} = 0.24), Dissocial Behavior (item 97, "As a child I started fires that destroyed things of other people", r_{ir} = 0.24); and Inhibitedness (item 127, "If there was nobody in my life, I would wish that I had someone close to me", r_{ir} = 0.21; and item 100, "I need a love relationship", r_{ir} = 0.23).

The means in the sample showed considerable differences in overall levels of personality pathology, defined by the different lower-order dimensions, even when taking into account differences in number of items for each scale. For instance, the mean score on Self-Harm was the lowest (i.e., mean, 7.31/6 = 1.21), whereas Compulsivity showed the highest mean score (i.e., mean, 21.56/8 = 2.70). Overall, boys scored significantly higher on 10 of the 18 lower-order dimensions (*d* ranged from 0.21 for Rejection to 0.79 for Conduct Problems); namely, all lower-order dimensions of Dissocial Behavior and Inhibitedness and four lower-order dimensions of Emotional Dysregulation (i.e., Oppositionality, Social Avoidance, Suspiciousness, and Self-Harm). Girls scored significantly higher than boys on Affective Instability [$t(423) = -3.62, p < .001, d = -0.35$] and Insecure Attachment [$t(423) = -3.64, p < .001, d = -0.35$], which are lower-order dimensions of Emotional Dysregulation. For dimensions that showed evident non-normality (i.e., Self-Harm and Conduct Problems, which showed heavily skewed distributions), Mann–Whitney U tests were computed. These non-parametric tests resulted in p-values within the same range as the independent t-tests.

TABLE 2. Sample means, standard deviations, and internal consistency reliabilities of the Dimensional Assessment of Personality Pathology – Short Form for Adolescents community sample (n=425)

DAPP-SF-A	Items (n)	$\alpha^{\dagger}$	Mean $r_{ir}^{\ddagger}$	Combined Mean	SD	Boys (n = 203) Mean	SD	Girls (n = 222) Mean	SD	$d^{\S}$
Emotional Dysregulation	78	0.97	0.51	170.30	43.56	172.00	45.39	168.75	41.86	0.07
Submissiveness	8	0.84	0.58	18.28	5.86	18.72	6.05	17.88	5.66	0.14
Cognitive Distortion	6	0.78	0.53	10.88	4.03	11.17	4.40	10.60	3.63	0.14
Identity Problems	6	0.86	0.65	12.71	5.20	13.00	5.16	12.44	5.23	0.11
Affective Instability	8	0.87	0.62	19.82	6.65	18.62	6.47	20.92	6.64	−0.35***
Oppositionality	10	0.85	0.55	24.00	7.12	24.86	6.98	23.21	7.16	0.23*
Anxiety	6	0.86	0.65	14.87	5.41	14.46	5.53	15.23	5.28	−0.14
Social Avoidance	6	0.86	0.65	12.95	5.11	13.61	5.44	12.35	4.71	0.25*
Suspiciousness	8	0.86	0.61	15.06	5.41	16.16	5.54	14.05	5.09	0.40***
Insecure Attachment	6	0.86	0.66	14.47	5.61	13.45	5.14	15.40	5.87	−0.35***
Narcissism	8	0.80	0.52	19.96	5.62	20.27	5.57	19.68	5.66	0.10
Self-Harm‖	6	0.87	0.67	7.31	2.98	7.68	3.44	6.97	2.45	0.24*
Dissocial Behavior	34	0.91	0.46	73.39	17.33	79.16	17.46	68.11	15.46	0.67***
Stimulus Seeking	8	0.83	0.56	20.14	6.29	21.73	6.17	18.68	6.06	0.50***
Callousness	10	0.83	0.53	19.56	5.98	21.53	5.87	17.76	5.50	0.66***
Rejection	8	0.81	0.52	20.88	5.60	21.48	5.53	20.33	5.62	0.21*
Conduct Problems‖	8	0.71	0.44	12.81	4.18	14.42	4.51	11.34	3.22	0.79***
Inhibitedness	16	0.81	0.41	38.12	9.11	40.49	8.78	35.95	8.87	0.51***
Restricted Expression	8	0.87	0.63	19.75	6.65	21.32	6.39	18.31	6.56	0.47***
Intimacy Problems	8	0.80	0.50	18.37	5.59	19.17	5.67	17.64	5.43	0.28**
Compulsivity	8	0.84	0.57	21.56	6.09	21.42	6.14	21.68	6.05	−0.04

†Cronbach's alpha
‡Item-rest correlation
§Cohen's d
‖Mann–Whitney U tests resulted in *p*-values equal or smaller than those corresponding to independent samples *t*-tests
*p < .05
**p < .01
***p < .001
DAPP-SF-A, Dimensional Assessment of Personality Pathology – Short Form for Adolescents

TABLE 3. Sample differences between the adjusted Flemish sample and the non-referred Dutch sample of Tromp and Koot (2015) for the Dimensional Assessment of Personality Pathology – Short Form for Adolescents

DAPP-SF-A	Adjusted sample (n=288) Mean	SD	Tromp and Koot (Sample 1, n = 1596) Mean	SD	t	p	$d^{\dagger}$
Emotional Dysregulation	156.74	34.85	157.9	39.0	−0.48	.631	−0.03
Submissiveness	16.85	5.01	15.9	5.0	**3.00**	**.003**	**0.19**
Cognitive Distortion	9.85	3.25	11.0	4.3	**−4.36**	**<.001**	**−0.28**
Identity Problems	11.18	4.09	10.7	4.3	1.77	.077	0.11
Affective Instability	17.95	5.91	18.1	6.1	−0.38	.704	−0.02
Oppositionality	22.56	6.41	25.1	7.1	**−5.74**	**<.001**	**−0.36**
Anxiety	13.43	4.79	12.2	4.8	**4.06**	**<.001**	**0.26**
Social Avoidance	11.44	4.00	11.5	4.3	−0.22	.826	−0.01
Suspiciousness	13.60	4.12	14.7	4.5	**−3.91**	**<.001**	**−0.25**
Insecure Attachment	13.78	5.50	12.7	4.7	**3.52**	**<.001**	**0.22**
Narcissism	19.35	5.31	18.6	5.7	**2.11**	**.035**	**0.13**
Self-Harm	6.74	1.79	7.4	3.1	**−3.56**	**<.001**	**−0.23**
Dissocial Behavior	72.36	15.81	77.0	19.4	**−3.88**	**<.001**	**−0.25**
Stimulus Seeking	19.96	6.15	21.4	6.5	**−3.53**	**<.001**	**−0.22**
Callousness	19.09	5.45	20.7	6.4	**−4.05**	**<.001**	**−0.26**
Rejection	20.89	5.30	20.9	5.7	−0.02	.984	0.00
Conduct Problems	12.41	3.77	14.0	5.7	**−4.61**	**<.001**	**−0.29**
Inhibitedness	36.50	7.96	45.2	7.3	**−18.57**	**<.001**	**−1.18**
Restricted Expression	18.43	5.84	18.4	5.6	0.10	.920	0.01
Intimacy Problems	18.06	5.23	26.9	4.9	**−28.19**	**<.001**	**−1.78**
Compulsivity	21.11	5.89	18.4	5.7	**7.48**	**<.001**	**0.47**

Note. Bold is significant at *p* < .05 (two-tailed)
†Cohen's d
DAPP-SF-A, Dimensional Assessment of Personality Pathology – Short Form for Adolescents

In the combined sample, correlations between age and the higher- and lower-order dimensions were small to negligible and statistically non-significant, ranging from −0.08 for Narcissism to 0.09 for Affective Instability. Intimacy Problems was an exception and showed a small significant correlation of −0.13 ($p < 0.01$), indicating that relatively fewer problems were reported by older adolescents.

The sample differences of the adjusted (matched) sample with the non-referred sample of Tromp and Koot (21) are presented in Table 3. The results indicate that Flemish adolescents scored significantly higher than Dutch adolescents on the higher-order dimension Compulsivity and the lower-order dimensions Submissiveness, Anxiety, Insecure Attachment, and Narcissism (d ranged from 0.13 to 0.47). Conversely, Dutch adolescents showed significantly higher scores on the higher-order dimensions Dissocial Behavior and Inhibitedness and the lower-order dimensions Cognitive Distortions, Oppositionality, Suspiciousness, Self-Harm, Stimulus Seeking, Callousness, Conduct Problems, and Intimacy Problems (d ranged from −0.22 to −1.78).

Discussion
Adequate and appropriate norming data are highly relevant in the use of all assessment instruments supporting diagnosis, treatment planning, and evaluation in clinical practice. The primary goal of this study was to provide normative data for the DAPP-SF-A in a Flemish community sample, aged 16 to 21 years. The results showed that the internal consistency reliabilities of both the DAPP-SF-A lower- and higher-order dimensions were acceptable to high and were comparable in magnitude to Tromp and Koot (21). In addition, the sample means showed differences in the overall level of personality pathology defined by the different lower-order dimensions, with the lowest mean scores for Self-Harm and the highest mean scores for Compulsivity. Differences between boys and girls were small to medium. In general, boys scored significantly higher than girls on lower-order dimensions associated with externalizing problems (e.g., lower-order dimensions of Dissocial Behavior) as well as on lower-order dimensions associated with Inhibitedness. Girls only scored significantly higher than boys on Insecure Attachment and Affective Instability. This pattern of gender differences, in which boys tend to show more externalizing problem behavior and girls show more internalizing problems, resembles earlier findings, for instance, in a large-scale general population survey in the United States by Eaton et al. (34).

The second goal of the present study was to compare an adjusted, non-clinical, subsample of the Flemish data with a non-referred sample of Dutch adolescents (21). Significant differences between both countries were found with small-to-large effect sizes; Flemish adolescents scored higher on the Compulsivity, Submissiveness, Anxiety, Insecure Attachment, and Narcissism scales and Dutch adolescents scored higher on the Dissocial Behavior, Inhibitedness, Cognitive Distortions, Opposition-ality, Suspiciousness, Self-Harm, Stimulus Seeking, Callousness, Conduct Problems, and Intimacy Problems scales. The results of this study are in support of earlier findings by Tromp and Koot (21) concerning adequate reliability and the use of separate norms for boys and girls. Furthermore, the results warrant the use of differential norms for Dutch and Flemish adolescents.

For the larger part, we confirmed previous findings by Tromp and Koot (21) concerning gender differences in terms of direction and magnitude. Although for some lower-order dimensions of Emotional Dysregulation, such as Submissiveness, we did not replicate Tromp and Koot's finding that girls showed significantly higher mean scores. In general, this was only the case for differences with a small effect size in Tromp and Koot's study. The difference between the sample size of the current study (n = 425) and the sample size in Tromp and Koot (n = 1596) explains the lack of power for tests of small effects.

In the present study differences that were found between Flemish and Dutch adolescents might be explained from the perspective of Hofstede's cultural dimensions theory (35,36). This theoretical framework defines societal differences for many countries along six different dimensions that are Power Distance, Uncertainty Avoidance, Individualism/Collectivism, Masculinity/Femininity, Long/Short Term Orientation, and Indulgence/Restraint. Hofstede's research shows that for the dimensions Power Distance, Masculinity, and Uncertainty Avoidance, the Belgian population scores are higher than the Dutch (35). Scoring high on Power Distance means that members of a society generally accept a hierarchy of power differences easier, whereas a high level of Uncertainty Avoidance implies that risks are avoided and rules adhered (36). This could be an explanation for the lower scores on Oppositionality, Suspiciousness, and Dissocial Behavior and the higher scores on Submissiveness, Identity Problems, and Anxiety in Flemish adolescents. Additionally, the fact that Flemish adolescents scored higher on Compulsivity and Narcissism could be explained by both the Hofstede

dimension of Masculinity, a dimension that encompasses competition, achievement, and success, and the dimension of Uncertainty Avoidance that partly reflects people's desire for fixed habits and rituals. Hofstede's theory illustrates that the evaluation of behavior as problematic or pathological is not only relative to individual characteristics, such as gender and age, but also to what within a society is defined as deviant. Clearly, for some behavior, such as suicidality or criminal behavior, intervention is always required regardless of cultural conventions.

The current study showed a large difference between Flemish and Dutch adolescents on the lower-order dimension Intimacy Problems with relatively high scores in the Dutch non-referred population that could not be explained from Hofstede's theory. Remarkably, the current results did match the originally reported non-referred population means in the DAPP-A manual (mean, 18.3; SD, 5.2) (25). On closer inspection, the non-referred population means reported by Tromp and Koot (21) equaled those reported in the manual, except for the means on Intimacy Problems and, consequently, its higher-order dimension Emotional Inhibitedness. Apparently, these means were adjusted after reverse-scoring errors were discovered (personal communication with Tromp). The question remains which of the different means on Intimacy Problems, and consequently Emotional Inhibitedness, are correct. It might be the case that the original report in the manual is correct because the pattern of means in that report – with higher scores on Intimacy Problems for the clinical samples compared to the non-referred sample – is more intuitive and resembles earlier findings concerning the adult version of the DAPP-SF in non-referred and clinical populations (15,37), whereas in Tromp and Koot's (21) study this pattern is reversed. Future research must provide further insight into the magnitude of intercultural differences in personality pathology defined by the DAPP-SF-A.

A strength of this study was that we were able to derive empirical results from a broad sample of the general Flemish population and compare those directly to the original Dutch results. Given the substantial differences between the Dutch and Flemish samples, the presented Flemish norms could serve as a benchmark for the application of the DAPP-SF-A within the Flemish culture. In line with our findings, the adult version of the DAPP-BQ and DAPP-SF provides separate Dutch and Flemish norms (27). Relating to the current study that explored the DAPP's cross-gender and cross-cultural variation in norms, the topic of measurement invariance of the DAPP model, deserves further attention. Studies that investigated the factorial stability of the PID-5 model across populations

(clinical vs. non-clinical) (38), or across different cultures (39), have shown promising results; future studies on the DAPP could build on these findings.

A limitation of the current study was that the mean age of participants in the Flemish sample was higher compared to the sample of Tromp and Koot's (21) study; as we did not have the original data from Tromp and Koot we could not control for age in both samples. However, Tromp and Koot (21) reported small-to-negligible effects of age on all Dissocial Behavior and Emotional Dysregulation scales within Dutch adolescents. Likewise, in the current sample all correlations between age and the DAPP-SF-A dimensions were small to negligible and statistically non-significant. The only exception was a significant but small correlation between age and Intimacy Problems, indicating that Intimacy Problems decreased with age. This negative correlation was mainly caused by the relatively low scores of the group aged 21 years, whereas the younger age groups scored quite constant over the years. Correspondingly, Tromp and Koot (21) reported a non-significant difference in Intimacy Problems between the age groups below 16 versus above 16 years. Summarizing, we hypothesize that in general the age difference will have a minimal effect on the comparison between both samples. Secondly, the samples were not exactly matched in terms of clinical referral status. In the current Flemish community study, clinical referral was not an exclusion criterion. Therefore, an approximate match was attempted with the YSR cut-off values for Internalizing and Externalizing Problems as external exclusion criteria. The clinical cut-off values of the YSR have shown to have good sensitivity and specificity (29). Nonetheless, the approach could have resulted in a suboptimal representation of non-referred adolescents. However, we hypothesize that potential bias was restricted to a minimum, given that the scores in the adjusted sample only slightly deviated from the original sample. In addition, the current clinical cut-off values of the YSR, as mentioned in the Method section, resulted in an exclusion of 20.9% of the participants, which is consistent with prevalence data of psychopathology in the general population (12,13). Future studies on the DAPP should be conducted in Flemish clinical adolescent population to provide clinical norms.

The main clinical implication of the current findings comprises the use of separate clinical cut-off values on the DAPP-SF-A in the Flemish-speaking part of Belgium, which were shown to be significantly different from Dutch values. If, for example, a score on the dimension Compulsivity of a Flemish adolescent is compared to Dutch norms, one could falsely interpret the self-reported scores as deviant because of the lower cut-off in the Dutch

population. Conversely, if a Flemish score on the dimension Oppositionality is interpreted using Dutch norms, there is a chance on a false-negative because of the higher cut-off in the Dutch population.

To conclude, the DAPP-SF-A shows satisfactory reliability in a Flemish community sample of adolescents. Furthermore, given the differences between boys and girls the use of separate norms for gender is highly relevant. Finally, substantial differences with the Dutch general population norms warrant the use of separate norms in Flemish adolescents. In future research, cultural effects must be accounted for when norms are developed for the DAPP-SF-A in other countries.

Financial Disclosures
The authors report no commercial bias.

Conflicts of interest
The authors report no conflict of interest.

Ethical approval
This study was conducted in full compliance with pertinent international treaties, national laws, regulations and codes concerning research involving minors (adolescents), as well as privacy. The study protocol meets the requirements of the codes of conduct of pertinent professional associations, in particular of national and international psychological and behavioral associations. Given that neither interventions nor invasive actions are part of this study, the board of the Katholieke Universiteit Leuven approved this study and conforming the Belgian law, no further approval was needed.

The Belgian law on research with human subjects stipulates that a scientific research project is subject to formal ethical approval by a Medical-ethical Committee if it's explicitly relevant to the medical science and experiments are used (Art. 1). In this project, no experiments or medications were involved.

References

1. Livesley WJ. Diagnostic dilemmas in classifying personality disorder. In: Phillips KA, First MB, Pincus HA (eds.) Advancing DSM: Dilemmas in psychiatric diagnosis. Arlington, VA: American Psychiatric Association; 2003, pp 153–89.

2. Shiner RL, Tackett JL. Child psychopathology. In: Mash EJ, Barkley RA (eds.) Personality disorders in children and adolescents. 3rd ed. New York, NY: Guilford Publications; 2014, pp 848–96.

3. Widiger TA. Personality disorder diagnosis. World Psychiatry 2003;2:131–5.

4. Krueger RF, Eaton NR. Personality traits and the classification of mental disorders: Toward a more complete integration in DSM-5 and an empirical model of psychopathology. Personal Disord 2010;1:97–118.

5. Widiger TA, Simonsen E. Alternative dimensional models of personality disorder: Finding a common ground. J Pers Disord 2005;19:110–30.

6. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Washington, DC: American Psychiatric Association; 2013.

7. Krueger RF, Derringer J, Markon KE, Watson D, Skodol AE. Initial construction of a maladaptive personality trait model and inventory for DSM-5. Psychol Med 2012;42:1879–90.

8. Widiger TA, Livesley WJ, Clark LA. An integrative dimensional classification of personality disorder. Psychol Assess 2009;21:243–55.

9. Adshead G, Brodrick P, Preston J, Deshpande M. Personality disorder in adolescence. Adv Psychiatr Treat 2012;18:109–18.

10. Chanen AM, McCutcheon L. Prevention and early intervention for borderline personality disorder: Current status and recent evidence. Br J Psychiatry Suppl. **2013** Jan;54:s24-9 Br J Psychiatry Suppl 2013;54:s24–9.

11. Kongerslev MT, Chanen AM, Simonsen E. Personality disorder in childhood and adolescence comes of age: A review of the current evidence and prospects for future research. *Scand J Child Adolesc Psychiatr Psychol* 2015;3:31–48.

12. Ihle W, Esser G. Epidemiology of mental disorders in childhood and adolescence: Prevalence, course, comorbidity and gender differences. Psychologische Rundschau 2002;53:159–69.

13. Kasen S, Cohen P, Skodol AE, Johnson JG, Brook JS. Influence of child and adolescent psychiatric disorders on young adult personality disorder. Am J Psychiatry 1999;156:1529–35.

14. Livesley WJ, Jackson DN. Technical Manual for the Dimensional Assessment of Personality Pathology – Basic Questionnaire (DAPP-BQ). Port Huron, MI: Sigma Assessment Systems; 2009.

15. Van Kampen D, de Beurs E, Andrea H. A short form of the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ): The DAPP-SF. Psychiatry Res 2008;160:115–28.

16. Livesley WJ. A framework for integrating dimensional and categorical classifications of personality disorder. J Pers Disord 2007;21:199–224.

17. Van den Broeck J, Bastiaansen L, Rossi G, Dierckx E, De Clercq B, Hofmans J. Hierarchical structure of maladaptive personality traits in older adults: Joint factor analysis of the PID-5 and the DAPP-BQ. J Pers Disord 2013;28:198–211.

18. Gutiérrez-Zotes JA, Gutiérrez F, Valero J, Gallego E, Baillés E, Torres X, et al. Structure of personality pathology in normal and clinical samples: Spanish validation of the DAPP-BQ. J Pers Disord 2008;22:389–404.

19. Simonsen S, Simonsen E. The Danish DAPP-BQ: Reliability, factor structure, and convergence with SCID-II and IIP-C. J Pers Disord 2009;23:629–46.

20. Tromp NB, Koot HM. Dimensions of personality pathology in adolescents: Psychometric properties of the DAPP-BQ-A. J Pers Disord 2008;22:623–38.

21. Tromp NB, Koot HM. Psychometric qualities of the Dimensional Assessment of Personality Pathology – Short Form for Adolescents. Scand J Child Adolesc Psychiatr Psychol 2015;3:71–9.

22. Fossati A, Somma A, Borroni S, Markon KE, Krueger RF. The personality inventory for DSM-5 Brief Form: Evidence for reliability and construct validity in a sample of community-dwelling Italian adolescents. Assessment 2017;24:615–31.

23. Somma A, Fossati A, Terrinoni A, Williams R, Ardizzone I, Fantini F, et al. Reliability and clinical usefulness of the personality inventory for DSM-5 in clinically referred adolescents: A preliminary report in a sample of Italian inpatients. Compre Psychiatry 2016;70:141–51.

24. Clercq BD, Fruyt FD, Bolle MD, Hiel AV, Markon KE, Krueger RF. The hierarchical structure and construct validity of the PID-5 trait measure in adolescence. J Pers 2014;82:158–69.

25. Tromp NB, Koot HM. Dimensional Assessment of Personality Pathology Basic Questionnaire for Adolescents en Dimensional Assessment of Personality Pathology Short Form for Adolescents – Voorlopige handleiding 2.0. Amsterdam: Vrije Universiteit Amsterdam: Unpublished manual; 2012.

26. Wechsler D. WPPSI-III-NL Nederlandse bewerking: Technische Handleiding [Dutch version of the WPPSI-III-NL: Technical and interpretive manual] (Dutch adaptation by: Hendriksen J, Hurks P). 2nd ed. Amsterdam, The Netherlands: Pearson Assessment and Information BV; 2010.

27. Van Kampen D, de Beurs E. DAPP–BQ: Dimensionale assessment van persoonlijkheidspathologie inclusief screeningsversie [DAPP–BQ: Dimensional assessment of personality pathology including screening version]. Amsterdam, The Netherlands: Hogrefe; 2009.

28. Prinzie P, Onghena P, Hellinckx W, Grietens H, Ghesquière P, Colpin H. The additive and interactive effects of parenting and children's personality on externalizing behaviour. Eur J Pers 2003;17:95–117.

29. Achenbach TM, Rescorla LA. Manual for the ASEBA school-age forms & profiles. Burlington, VT: University of Vermont, Research Center for Children, Youth & Families: ASEBA; 2001.

30. Kline PA. Handbook of test construction: Introduction to psychometric design. London: Methuen & Co. Ltd.; 1986.

31. Nunnally JC. Psychometric theory (McGraw-Hill Series in Psychology, Vol. xiii). New York, NY: McGraw-Hill; 1967, p 640.

32. Cohen J. A power primer. Psychol Bull 1992;112:155–9.

33. IBM Corp. IBM SPSS Statistics for Windows, version 24.0. Armonk, NY: IBM Corp; 2016.

34. Eaton NR, Keyes KM, Krueger RF, Balsis S, Skodol AE, Markon KE, et al. An invariant dimensional liability model of gender differences in mental disorder prevalence: Evidence from a national sample. J Abnorm Psychol 2012;121:282–8.

35. Hofstede G. Culture's consequences: Comparing values, behaviors, institutions and organizations across nations. Thousand Oaks, CA: SAGE Publications; 2001.

36. Hofstede G. Dimensionalizing cultures: The Hofstede model in context. Online Readings in Psychology and Culture 2011;2:1–26.

37. De Beurs E, Rinne T, van Kampen D, Verheul R, Andrea H. Reliability and validity of the Dutch Dimensional Assessment of Personality Pathology-Short Form (DAPP-SF), a shortened version of the DAPP-Basic Questionnaire. J Pers Disord 2009;23:308–26.

38. Bach B, Sellbom M, Simonsen E. Personality inventory for DSM-5 (PID-5) in clinical versus nonclinical individuals: Generalizability of psychometric features. Assessment 2017;1:1073191117709070.

39. Thimm JC, Jordan S, Bach B. Hierarchical structure and cross-cultural measurement invariance of the Norwegian version of the personality inventory for DSM-5. J Pers Assess 2017;99:204–10.