A Brief Version Of The DIPSI Maladaptive Trait Measure For Children and Adolescents

Victor Rouco, Raissa Franssens & Barbara De Clercq

Ghent University

*Keywords*: child, adolescent, personality disorders, assessment, maladaptive personality

# Abstract

The present study addresses the need for short and accessible maladaptive trait measures that cover all relevant aspects of developmental trait pathology, in order to comprehensively assess potential antecedents of personality pathology. From this perspective, we present a 98-item version of the well-established DIPSI measure (DIPSI-B), that is fully age-neutral across the developmental stages of childhood and adolescence and further includes those items from the original measure with the most optimal coverage of the latent traits. Relying on a large community-based sample of Flemish children and adolescents (*N* = 1873) randomly split and balanced in terms of age and gender, a precise selection of items was performed followed by an inspection of psychometric properties. The final item-set appears to be reliable, structurally stable, and invariant across both gender and age. We hope that its feasibility stimulates the integration of the DIPSI-B in ongoing prospective designs examining developmental antecedents of personality disorders.

## Public Significance Statement

Increasing evidence suggests that adult personality pathology has significant developmental trait antecedents in youth. Early detection and intervention can therefore be essential for its prevention or alleviation. The present study contributes this research area by developing a brief but comprehensive measure of maladaptive traits for children and adolescents, which can be used to detect signs of trait vulnerabilities in a timely stage of development.

A Brief Version Of The DIPSI Maladaptive Trait Measure For Children and Adolescents

In past decades there has been a remarkable lack of research on temperamental antecedents of personality pathology (Cichetti & Crick, 2009; Crick et al., 2005). Instead, the scarce developmental literature on personality disorders (PDs) mostly studied antecedents through the lens of environmental conditions such as childhood trauma (Herman et al., 1989; Kroll, 1994). This neglected research focus can be understood from the traditional categorical conceptualization of PDs in established taxonomies, where PDs are defined as distinct disorders that only emerge in adulthood (DSM-IV; APA, 1994; DSM-5; APA, 2013). With the growing criticism on this categorical approach, dimensional models of personality pathology became increasingly valued as valid alternative operationalizations of personality disorders. Indeed, dimensional models of PD align with the nature of PDs, both at the phenotypic, neurobiological and genetic level (Kotov et al., 2017, Hopwood et al., 2018). As a result, traditional nosologies were forced to move toward more dimensional representations of personality disorders, as reflected for instance in the Alternative Model for Personality Disorders (AMPD; APA, 2013) included in section C of DSM-5. The inclusion of this alternative framework, in turn, facilitated a substantial growth in research on the development of PDs (Sharan & Prakash, 2016; Shiner & Tackett, 2014), as the underlying trait structure of adult personality pathology appeared to be replicable in younger age groups (De Clercq et al., 2014; Fossati et al., 2017; Anderson et al., 2018).

One of the most widely recognized inventories for describing maladaptive traits in childhood and adolescence along this dimensional perspective is the Dimensional Personality Symptom Item Pool (DIPSI; De Clercq et al., 2006; Verbeke & De Clercq, 2014). The DIPSI was constructed by transforming indicators of childhood adaptive personality characteristics into their maladaptive counterparts at both ends of the dimensional continua (based on the childhood HiPIC FFM measure, Mervielde & De Fruyt, 1999), as well as by including item-content of adult personality pathology measures that were considered to be relevant in younger age groups. The main focus during the construction processes of the DIPSI was to obtain a comprehensive item-pool covering all relevant aspects of childhood maladaptive traits, that were subjected to rigorous empirical analyses. After the initial release of a four-dimensional trait measure, a fifth domain of childhood Oddity was developed and empirically integrated within the established model (Verbeke et al., 2014). The final item-pool resulted in a set of 194 items clustered in 31 facets which assess five broader dimensions and two higher order domains. However, despite the established psychometric properties (De Clercq et al., 2006) and validity of the DIPSI measure (Sharp & De Clercq, 2020), the length of the DIPSI may limit the viability in clinical practice and research. Thus, the purpose of the current study is to develop a brief version of the DIPSI (DIPSI-B) that covers the need for a short assessment tool of maladaptive personality traits for children and adolescents. In constructing this short version, we prioritized the following criteria: (1) retaining the same number of facets as the original DIPSI version, represented by approximately half of the original version’s items, (2) ensuring the structural validity of facets and (3) selecting age-neutral items that behaved similarly in terms of informative value of the latent trait across childhood and adolescence. The relevance of each of these criteria will be shortly outlined, before addressing the actual development and validation strategies.

**Coverage**

As stated above, one of the main features of the DIPSI is its exhaustiveness. The DIPSI-B aims to preserve this extensive coverage as much as possible by keeping the original facets as captured in the DIPSI. In doing so, the DIPSI-B thus ensures *breadth* of coverage across facets, but not within facets, as the aim of the short version is to reduce the original number of items. However, the DIPSI-B will address *depth* of coverage within facets by selecting items more sensitive to the maladaptive end of the latent factors which model them. Hence, the first priority of the DIPSI-B is to ensure breadth of coverage *across* facets being measured, followed by depth of coverage *within* facets.

**Structural validity**

The second development criterion of the DIPSI-B is to ensure an adequate structural validity of the resulting facets. This interest is twofold. On the one hand, we aimed to avoid that facets would lose their original meaning if central items were dropped and only peripheral indicators were retained, which would compromise the convergence between the original and the brief version. On the other hand, in order to have an effective brief version while maintaining the same number of facets, the scales had to be robust enough to be used independently. If consistency of the facets is ensured, a more fine-grained use of the inventory by means of selecting only the particular scales of interest is possible. By allowing users to assess independent facets of the DIPSI-B, we ensure that the instrument is in fact brief and can be used in screening situations.

**Age-neutrality**

A third and final requirement is to obtain a short version that is capable of measuring maladaptive traits in both children and adolescents. Towards this end, items that behaved similar across age were preferred beyond items that were more sensitive to maladaptive manifestations of a specific age group. We confirmed age-neutrality by testing measurement invariance in the constructed facets of the DIPSI-B.

Along these outlined criteria, the present study thoroughly describes the development and validation phases of the DIPSI-B. Both phases were clearly separated by splitting a large sample (N=1879) in a group for running developmental analysis, followed by confirmatory tests in a validation sample. The development phase has been conducted relying on empirical and content-based criteria. In the validation phase, psychometric properties of the inventory were examined a posteriori using restrictive methods. The study’s preregistered information as well as the R scripts used to perform the analyses can be found on the OSF website (link here). The full DIPSI-B is available in open-access and can be retrieved at the end of the document or using this external link (link here).

# Method

## Participants and Procedures

During three consecutive years, third year undergraduate psychology students of Ghent University collected maternal DIPSI ratings of 1873 children and adolescents of the general population in return for course credit. Students were asked to visit an elementary or secondary school in their home town and distributed requests for participation in classrooms across grades, by providing information letters to the parents. Primary and secondary education in Belgium is an open-access system, which ensures that all socio-economical levels of the general population were represented in the current sample. In addition, Ghent University hosts students that originate from diverse hometowns across the Flemish part of Belgium, ensuring a representative demographic distribution of the sample. This convenience sampling method thus provided a community sample representative of a broad segment of the Flemish population of children and adolescents. Age of the subjects ranged from 7 to 18 (*M* = 12.28 years; *SD* = 2.77, 56% girls). All parents were informed about the purpose of the study, and were guaranteed that data would be treated confidentially. After parents provided written informed consent, the DIPSI measure was completed at home and returned to the student in a sealed envelope. Students were allowed to the secured platform to enter the raw data of their own subject without access to data of other students. All procedures formally addressed the general guidelines of the Ghent University Ethical Review Board.

Items measuring the dimension oddity (see Verbeke & De Clercq, 2017) were not administered from the beginning of the study as this item-set was developed and validated in a later stage of the data collection. In addition, this data collection wave solely involved children up to twelve years old, which means that the brief version of the facets measuring oddity could not be validated using an adolescent sample. In total, 488 subjects completed the full DIPSI (including oddity) while 1388 subjects filled out the original 4-dimensional DIPSI measure (without oddity). In total, 4.43% datapoints were missing. Most of them were concentrated in 65 subjects who failed to respond to more than half of the DIPSI items. These subjects were removed from the dataset. Sample size after deletion was 1812 subjects (of whom 461 also completed the Oddity item-set). The remaining missing data points (2.02%) were scattered among different variables with no clear pattern of missingness; missing at random was hence assumed.

The full dataset was divided in two sub-samples, balanced in terms of age and gender. The first subsample was used in the development phase, which comprised the selection of items and a progressive derivation of the measurement models. The second sub-sample was used in the validation phase, which aimed to confirm the proposed measurement models and to explore the psychometric properties of the inventory. The purpose of this methodology was to clearly differentiate between the exploratory and confirmatory phases of the study.

Sample sizes of the development sample (1) and the validation sample (2) were not exactly equal ( = 907, = 905, in the four-dimensional DIPSI items; = 231, = 230, including oddity) as we favoured balancing demographic variables over getting exactly equal sample sizes. There were no age differences between the samples administered the four-dimensional DIPSI (t = -0.19 (1805.65), *p* = 0.85) nor in the DIPSI including oddity (t = 0.46 (455.96), *p* = 0.64). Gender percentages were equal in both subsamples (44% males, 56% females in the four-dimensional DIPSI; 50% males, 50% females including oddity). Balancing item’s means was not an aim of our partition algorithm, therefore we expected a few random and small mean differences among the items of the two subsamples. Twelve items had significantly different means, although with negligible effect sizes (Cohen’s ranging between 0.09 and 0.11).

## Measures

***DIPSI (Dimensional Personality Symptom Item Pool; De Clercq et al., 2006)***

The DIPSI is an age-specific inventory designed to assess maladaptive personality traits in childhood and adolescence. A comprehensive set of maladaptive traits items is empirically organized in 31 facets and structured in five broader high-order personality domains, representing Disagreeableness, Emotional Instability, Introversion, Compulsivity, and Oddity. These five dimensions further group into a second-order structure of internalizing and externalizing problem behavior (De Clercq et al., 2006). The inventory consists of 194 single-stimuli items, including 22 items that were developed in a later module to cover the trait dimension Oddity (Verbeke & De Clercq, 2014). Items are rated on a 5-point Likert scale, ranging from 1 (‘not characteristic’) to 5 (‘highly characteristic’) and can either be answered from an informant or from a self-report perspective. Evidence of good psychometric properties has been consistent across several studies in both Flemish and English-speaking samples (De Clercq et al., 2006; Decuyper et al., 2015; Tackett, et al., 2014).

## Data Analytic Strategy

The analyses of the current study are structured in two phases, with a first phase describing the selection of items from the original DIPSI and the development of latent factor models for each of the short DIPSI-facets, relying on subsample 1. This scale development phase included four different steps. Step one focused on detecting Differential Item Functioning (DIF) across age. A Samejima Graded Response IRT Model (GRM) was fitted for each facet and participants were divided in two age categories (younger than 10 and older than 14). The middle age category (age 11 to 13) was omitted in order to obtain more sensitive DIF estimates. DIF was conducted with the *lordif* R package (Gibbons & Crane, 2011), which fits ordinal logistic regressions with age categories as predictors of the participant’s latent scores. Models including all items were compared with models extracting one item at a time, and differences in model fit were investigated to identify DIF. Significant estimates and McFaden’s pseudo greater than 0.013 were the criteria used to discard items based on DIF, as suggested by Zumbo (1999). Step two focused on the discrimination and difficulty parameters of the GRMs. Four items in each facet were selected based on higher discrimination and higher sensitivity towards the maladaptive end of the construct space. Step three aimed to select three item-candidates per facet (out of the previous selection of four) according to content and theoretical criteria evaluated by a panel of experts. These three items were the first candidates to be indicators of their respective facet models, the fourth item was listed in the queue as a possible substitute for the next step. In step four, a series of Confirmatory Factor Analyses (CFA) were performed on the items forming a facet. The initial models were essentially tau-equivalent (i.e. all factor loadings are constrained to be equal) in order to obtain non-saturated models and being able to assess their goodness of fit. CFAs were further adjusted by introducing modifications on misspecified parameters, following the procedure described in Saris and colleagues (2009). Possible modifications introduced in the initial models were, in this order: free one factor loading, add a correlated residual, and add a new indicator to the model. Modifications were added until model fit was satisfactory and no misspecified parameters were found in the modification indices. CFAs were fitted with *lavaan* (Rosseel, 2012) using Weighted Least Squares with adjusted Mean and Variance as estimator (*WLSMV*, cite Muthen), due to predominant floor effects in the item scores which compromised the assumption of continuity needed for Maximum Likelihood estimation (Rhemtulla et al., 2012; Viladrich et al., 2017).

The scale development phase was followed by a validation phase, using subsample 2. Reliability was tested with IRT’s test information function, and with Cronbach’s and McDonald’s estimators of internal consistency. Although and are in line with Classical Test Theory (CTT) framework and not with IRT’s, which was the main approach followed in this study, we opted to include CTT estimators for two reasons: First, because readers are more used to interpret the reliability of a scale using these coefficients; and second, because we are aware that the scales will be mostly used within a CTT framework by summing the indicator’s scores. These indices also enable a quick comparison with the original DIPSI psychometrics. To control the bias introduced by the sum score procedure, we calculated correlations at the scale level between the scores obtained in practical settings (using sumscores) and the scores obtained following our proposed models ( scores).

Structural validity was tested by inspecting model fit for each facet via CFA. The best-fitting model of the development phase was used in the validation phase. In case the model fit was not satisfactory in the validation phase, further modifications were proposed, while advising on the lower empirical support of the structural validity of these facets. To further inspect the overarching structure of five dimensions, latent scores were extracted from the facets and were fitted in an ESEM model. Furthermore, the part-to-whole correlations between the original DIPSI and the DIPSI-B were calculated at the facet level with Spearman’s , in order to inspect the extent to which the DIPSI-B covered similar constructs as the original DIPSI.

Measurement invariance across gender and age (childhood and adolescence) was tested at the configural (same structure), metric (equal factor loadings) and scalar (equal thresholds / intercepts) level. A significant change in the LRT was the criterium to identify non-invariance. Changes in approximate fit indices (CFI and RMSEA) were also investigated (Chen, 2007). In cases where the LRT resulted in non-invariance, but the difference in goodness of fit was lower than CFI -0.005 and RMSEA 0.01, as suggested by Chen (2007), invariance was assumed. Whenever non-invariance was detected, we explored the source of non-invariance by comparing unstandardized factor loadings or thresholds / intercepts between the two groups. The estimator used was WLSMV, which treat the indicators as categorical and thus estimates thresholds for each category (for scalar invariance). By splitting the data in two groups, there can be cases in which empty cells are found in certain categories. In those cases, the WLSMV estimator cannot be applied and a robust Maximum Likelihood estimator was used instead. Age measurement invariance could not be performed in the clusters measuring oddity as there was no adolescent data available.

# Results

**Phase 1: Scale development**

***IRT analysis***

The first step in developing the short version of the DIPSI was to detect items that functioned differently in children and adolescents. 17 Items were discarded from further inclusion according to and pseudo-R-squared values surpassing the pre-defined thresholds (see above). Examples of items with significant DIF were “Only can be focused for a few moments” (Distractibility) or “Wants to have his/her parents always around” (Insecure attachment). In a second step, discrimination and difficulty parameters guided the selection of four items per facet. Items with higher sensitivity at the maladaptive end of the construct space and with higher discrimination between the categories were preferred. Table A.1 in the supplementary materials provides information on these values at the item level.

***Content-wise selection***

The third step in the development phase was a content-wise selection of items, mainly focusing on discarding one item from the IRT derived set of four. Here we focused in the item’s wording and its theoretical importance for the cluster which was intended to measure. Strong content overlaps between items resulted in discarding the less sensitive item to the maladaptive end of the psychological construct. Repetition of words among items was a sign to flag models susceptible of including residual correlations in the following step.

***Derivation of the measurement models***

The last step in the development phase was to derive a robust measurement model for each of the facets. Items used as indicators were those selected in the previous step. The initial models were essentially tau-equivalent, which yielded 2 degrees of freedom. From these restricted model-set, 8 models were not modified due to exact or close fit and absence of misspecified parameters (Saris et al., 2009). These tau-equivalent models were included in the final set. From the remaining facet-models, 15 were modified by freeing one factor loading, 3 were modified by adding a correlated residual, and 5 were modified by including an extra item (as well as further releasing constraints). This means that we ended up having 26 facets formed with 3 items and 5 facets with 4 items (extreme achievement striving, withdrawn traits, submissiveness, lack of self-confidence, and distraction). All models included in the derivation set met the desired properties: At least approximate model fit and absence of any misspecified parameter according to the epc-power ratio (Saris et al., 2009). Model fit indices of the restricted and the derivation models can be found in Table 1.

--- INSERT TABLE 1 AROUND HERE ---

**Phase 2: Scale validation**

***Test information function***

The test information function (TIF) is a measure of reliability based in IRT which is conditional on levels of the ability parameter (). This function is a result of an additive combination of item’s reliabilities, thus penalizing inventories with a smaller number of items. Consequently, the original version of the DIPSI yields higher information than the brief version at every level of the ability parameter. An example can be found in Figure 1, where a TIF of the items that belong to the dimension compulsivity is presented for both the original DIPSI and the DIPSI-B. In addition, we have included a curve representing the original version but controlling for the number of items and ten curves for a random selection of 10 items- the number of items which cover this dimension in the DIPSI-B. We have included them in order to obtain a benchmark for comparing the short version with other same-length alternatives. It can be noted that the brief DIPSI outperforms this benchmark, specially at the mid and high levels of the parameter. TIFs of the other four dimensions, as well as TIFs for each individual facet were not included here due to space limits but can be found in the supplementary materials.

--- INSERT FIGURE 1 AROUND HERE ---

***Internal consistency***

Internal consistency of the facets was tested by means of Cronbach’s and McDonald’s , calculated using polychoric correlation matrices (Gadermann, Guhn, & Zumbo, 2007). Cronbach’s is considered to be a biased estimator of internal consistency unless the scale meets certain assumptions (Unidimensionality and tau-equivalence, Viladrich et al., 2017). We have reported Cronbach’s here because some facets meet the required assumptions. All of the facet models are above = .73, and a majority is above = .80, which is adequate internal consistency (Cicchetti, 1993). Both estimators of and for each facet can be found in Table 2.

***Structural validity***

The unidimensionality of each facet was tested using a CFA per facet. Twenty-four facet-models out of thirty-one had properties of exact fit. The remainder had properties of close fit according to goodness of fit indices (see Table 2). Two exceptions were Resistance and Separation Anxiety. Resistance was a tau-equivalent model as suggested by the analysis performed with the development dataset. The factor model of Resistance did fit the validation dataset when one factor loading was freed (“Cheats all the time”), resulting in = 0.10 (1), *p* = 0.91. Separation Anxietywas not a tau-equivalent model and therefore it could not be further refined unless a saturated model was fitted. Model fit indices of Separation Anxietywith the validation dataset were CFI = 0.992, SRMR = 0.031 and 95% C.I. RMSEA = [0.099; 0.177]. Overall, tests performed with the validation database provided reasonable evidence on the unidimensionality and structural validity of the facets.

--- INSERT TABLE 2 AROUND HERE ---

The adjustment of the facets to the big five overarching dimensions as proposed by Verbeke et al. (2017) was performed using an ESEM model, in order to allow secondary cross-loadings between the facets and all dimensions. The latent factor scores of the facets were used as indicators in the ESEM model. The model fit was very similar to what was reported by Verbeke et al. (2017) on the original DIPSI instrument, with a CFI of 0.89, a RMSEA of 0.9, and an SRMR of 0.03.

***Part-to-whole correlations***

In order to test the degree of congruence between the original DIPSI and the DIPSI-B, Spearman’s pairwise correlations were calculated at the facet level. These correlations were performed using the latent factor scores of each of the facets in both instruments. Spearman’s ranged from 0.77 to 0.99, with a mean of 0.91.

***Theta to sum-score correlations***

A parametric approach was used in this project to retrieve the scores of the facets, based on the models derived in the development phase. These final scores are commonly denoted as , or latent factor scores, in IRT and structural equation modelling literature. However, in practice most instruments are used in paper-and-pencil applications and a simple sum-score (or mean-score) is performed to retrieve such scores. We inspected the bias that the sum-score approach may cause by neglecting the parameters involved in the estimation of the facets. Spearman’s between the scores and the sumscores ranged from 0.970 to 0.999 with a mean of 0.992, indicating that both scoring methods virtually retrieve the same information.

***Measurement invariance***

Most facets were scalar invariant across age (30 out of 31) and across gender (29 out of 31), as informed by a non-significant *p* value in the LRT. In those cases where the LRT was statistically significant, the change in model fit indicators was usually very modest, meaning that the size of non-invariance was small to negligible ( < 0.005, < 0.01; Chen, 2007). Table 3 in the Appendix summarizes the information of the measurement invariance procedure for all the facets. Next, we will discuss the three facets that were non-invariant in terms of age and gender.

Resistance was not scalar invariant across age, according to a significant change in the LRT ((df) of the difference = 17.66, *p* < 0.01) and the differences on -some- model fit indices ( = -0.035, = 0.025). Two indicators of resistance were the reason of this non-invariance (“Breaks rules all the time, both at school and at home” and “Cheats all the time”). Both of them were higher for adolescents than for children, although the size of the differences was not very substantial (1.48 to 1.35 and 1.36 to 1.29, unstandardized intercepts). These differences are also evident when comparing simple endorsement rates: “Breaks rules all the time, both at school and at home” had a mean of 1.48 in adolescents and a mean of 1.35 in children, while “Cheats all the time” had a mean of 1.38 in adolescents and a mean of 1.29 in children. Non-scalar invariance in Resistance means that a slight increase in this facet for older subjects will be expected, which aligns with the normative developmental trend of turmoil in adolescence

Two facets were not metric invariant across gender: Paranoid Traits, with a significant change in the LRT ((df) of the difference = 9.41 (1), *p* < 0.01) and = -0.017, = 0.07); and Insecure Attachment ((df) of the difference = 17.05 (1), *p* < 0.01; and = -0.005, = 0.08). In Paranoid Traits, the indicator “distrusts most people” has a higher factor loading for boys than for girls, i.e. it has a more central role in defining paranoid traits in boys than in girls. In Insecure Attachment, the indicator “often clings to other people” loads higher on the latent factor in the group of girls than it does in the group of boys, potentially pointing to gender-specific manifestations of Paranoid traits.

# Discussion

The DIPSI-B has been developed in order to promote the inclusion of the alternative DSM-5 section III perspective on personality disorders (APA, 2013) into studies on developmental antecedents of personality disorders and early intervention programs. Whereas the PID-5 (Krueger et al., 2012) was empirically developed to describe these pathological personality traits in adult populations, the original DIPSI was conceived to study a similar but age-specific set of maladaptive traits in in children, hence opening avenues for investigating the development of personality pathology within a single conceptual framework from early on.

However, despite the major advantages of the original DIPSI, its extensiveness complicates application in projects where time resources are limited. As stated by the Global Alliance for Prevention and Early Intervention for Borderline Personality Disorder (GAP): “*further development and validation of brief and user-friendly assessment tools is needed to promote the systematic use of standardized evaluation in research and clinical settings*”, both for borderline PD as well as for other PDs and their early signs (Chanen et al., 2017, p. 2016). Indeed, short but comprehensive instruments are needed to thoroughly monitor young individuals in the pursuit of emerging PDs, in order to implement adequate prevention and early interventions policies. The novel DIPSI-B is suitable to address this need and to significantly contribute the field. Overall, the DIPSI-B has retained the same number of facets with a rough 50% decrease in the number of items (from 194 to 98). The items selected to form the DIPSI-B maximized the sensitivity to detect differences in the maladaptive end of the construct space, which ensures that the screening tool is able to signal cases which would benefit more from an early intervention. Furthermore, each of the DIPSI-B facets has been carefully constructed to represent a robust unidimensional structure. This makes the DIPSI-B a screening tool that can also be used to cover specific needs of both clinicians and researchers, by only assessing those facets that are relevant to them. In addition, we considered possible threats of validity when using the DIPSI-B in practical settings. On the one hand, we precisely constructed the DIPSI-B facets taking into account the content of the indicators included. Therefore, not only an empirically driven bottom-up approach was used but also a theoretically driven top-down strategy was considered. This ensures a high degree of face-validity of the facets assessed by the DIPSI-B. On the other hand, we inspected a less commonly studied threat of validity by testing the bias introduced when computing sum-scores, instead of latent factor scores, in practical pen-and-paper applications. A correlation of both scoring methods was computed in order to test the systematic error introduced by not taking into account the parameters involved in the latent factor scoring method. An impressive mean of was obtained, suggesting that pen-and-paper applications introduce negligible bias in the computation of the construct’s scores.

**Psychometric Properties**

The first evidence of the DIPSI-B’s psychometric properties appears to be promising, both with regard to its reliability, structural validity, congruency with the original DIPSI, and invariance across gender and childhood vs adolescent age.

In terms of reliability, internal consistencies for each individual construct (McDonald’s and Cronbach’s ) were consistently above .70, and 70% of the facets had values above .80, indicating good to very good internal consistencies. The TIF of the whole instrument, which computes reliability -or information- for each level of the underlying trait, suggests that the DIPSI-B is especially reliable when assessing subjects with an average-to-high degree of maladaptive traits, underscoring that the DIPSI-B is a reliable instrument with great screening potential of vulnerable children.

With regard to validity, the current findings suggest that the DIPSI-B is structurally robust. Out of the 31 latent factor models specified in the development phase of this study, only two were not supported in the validation sample (less than 7%). These two (Resistance and Separation Anxiety) were modified in a later stage, and need subsequent research to collect confirmatory evidence on its structural validity. From the remainder 29 factor models, 24 could not be rejected by the test of model fit. Taking into account that the sample size used in the validation phase was extensive compared to the number of parameters being tested, there is strong evidence that these 24 factor models represent the actual data generating mechanism of the latent constructs. Five other latent factor models were rejected by the test, but model fit indices (CFI, RMSEA and SRMR) suggest that the size of the misfit is small. It is important to bear in mind that most of the factor models were constructed by three reflective indicators, which means that, in order to have non-saturated models, some a priori restrictions had to be imposed (either fitting an essentially tau-equivalent model, or a model with only one factor loading allowed to differ from the other two, or a model with one correlated residual among two indicators). These restrictions further outline the good psychometric properties that were obtained, as restricted models quite commonly show, in practice, worse fit than non-restricted peers.

Regarding the higher order structure of the 31 facets in five overarching maladaptive trait dimensions, the findings on the validation sample suggest that model fit of the DIPSI-B is similar as was found with the original DIPSI by Verbeke et al. (2017), underscoring that the DIPSI-B has a similar fit to the maladaptive Big Five framework as the original DIPSI. Furthermore, we investigated the congruency between each of the original DIPSI scales and the DIPSI-B’s, finding strong correlation coefficients, underscoring the high degree of congruency of the DIPSI-B with the original DIPSI, even though the item set has been reduced by almost a half. Unfortunately, in this study we did not include external instruments to test the construct validity of the DIPSI-B, however, given this high degree of congruency with the original version, the construct validity of the DIPSI-B is likely to be very close to its long-version counterpart.

Finally, this study also inspected the invariance of the DIPSI-B facets across gender and age. Obtaining an invariant instrument for children and adolescents was one of the objectives of the derivation phase of this study and was confirmed with the validation sub-sample. The results of the validation sample show that most of the facets supported the most stringent level of measurement invariance (i.e. scalar invariance), in both children versus adolescents (30 out of 31 facets), and in boys versus girls (29 out of 31 facets). Furthermore, facets with no scalar invariance only demonstrated slight deviances between the group’s parameters and thus, can be confidently applied to different age and gender populations. This underscores the ability of the DIPSI-B to be used in longitudinal designs, and its convenience as a screening tool applicable in all stages of the maturation process of pre-adult maladaptive personality traits. This ability of the novel DIPSI-B to invariantly assess maladaptive personality traits in childhood and adolescence is not trivial. Previous research in the precursors of PDs mainly focused on contextual determinants such as traumatic experiences or continuous exposure to destabilizing environments in the development of PDs (Herman et al., 1989; Kroll, 1994), thereby neglecting early temperamental precursors (Cichetti & Crick, 2009; Crick et al., 2005). A developmental-continua approach of PDs can compensate these shortcomings and unveil interactions between contextual determinants and temperamental precursors in the development and maintenance of PDs. Nonetheless, only if the instrument is able to maintain its psychometric robustness throughout the maturation stages, it will be useful in such endeavor. The DIPSI-B ensures this psychometric robustness across childhood and adolescence, thus enabling researchers to apply this instrument in longitudinal designs. Overall, we hope that the novel DIPSI-B becomes useful to many researchers and contributes to the further elaboration of a life-span perspective on the development of personality pathology.

**Limitations and future directions**

This study has some limitations that need to be taken into consideration. First, we used a convenience sample which falls into the definition of a community sample. As such, the current findings should be further explored in referred samples where prevalence of psychopathology and personality difficulties is higher. Second, we only used informant ratings in the development of this short version. The usefulness of the DIPSI-B to be applied in self-reports remains unclear and is subject to forthcoming adaptations. Third, age neutrality has not been tested in the facets that belong to the domain oddity. Although we took great care in the selection of oddity items content-wise, we did not have sufficient age variability in our sample to test it empirically. Therefore, the age-neutrality of the oddity facets remains to be explored in subsequent research. Fourth, the original-Dutch version of the DIPSI was used to derive the DIPSI-B. The extent to which the DIPSI-B’s psychometric properties are invariant with an English-speaking population remains unknown. Last, other forms of validity, such as congruent and discriminant validity as well as predictive validity, remain to be explored in future research projects.

**A Broader Perspective on the Assessment of Developmental Trait Pathology**

The current study empirically developed a brief but comprehensive version of an established youth maladaptive trait measure (De Clercq, 2006; De Clercq & Verbeke, 2014), to describe early Criterion B trait-pathology in a more feasible way. The broad coverage of the DIPSI-B directly addresses the developmental principle of equifinality (Cicchetti & Rogosch, 1996) that is applicable to the development of personality disorders (De Clercq, 2018). This empirically-based principle states that a wide range of early maladaptive trait manifestations may lead to similar configurations of adult personality pathology, thus pointing to the necessity of describing early trait vulnerabilities in a comprehensive manner. At the same time, the DIPSI-B items were selected for their quality in terms of depth in coverage, implying that this short DIPSI measure is actually able to detect the most vulnerable children at the extreme end of the maladaptive trait spectrum. As each of these maladaptive DIPSI traits can be linked to normative trait equivalents at a young age (Widiger, De Clercq, & De Fruyt, 2009) that are significantly involved in normative developmental tasks (De Fruyt, De Clercq, & De Bolle, 2017), it can thus be assumed that children flagged from the DIPSI-B are actually those children that fail normative developmental tasks and represent the subgroup of children in need for targeted intervention to prevent further development towards consolidated personality pathology. Indeed, as traits form the continuous core around which personality pathology develops across time, the actual onset of acute personality dysfunction as typically seen in adolescence (Sharp, 2020) may be hold back by strengthening the underlying traits in an earlier stage of development. This suggestion can be framed from the fact that personality dysfunction, as represented by Criterion A in the DSM-5 AMPD, is strongly related to a substantial number of Criterion B traits (Widiger et al., 2019), mirrored in the DIPSI-B from a developmentally sensitive viewpoint. Given that these traits are already observable and measurable during childhood, as opposed to specific Criterion A-manifestations, indicated prevention programs for personality pathology may benefit from assessment resources at the criterion B level in childhood. As it is our aspiration to promote research and assessment of developmental trait pathology already from this early age onwards, we hope to stimulate the field by providing open access to the DIPSI-B measure.

##### newpage

# References

American Psychiatric Association. (1994). DSM-IV: *Diagnostic and statistical manual of mental disorders*.

American Psychiatric Association. (2013). DSM-5 Diagnostic Classification. In *Diagnostic and statistical manual of mental disorders*. doi: [10.1176/appi.books.9780890425596.x00diagnosticclassification](https://doi.org/10.1176/appi.books.9780890425596.x00diagnosticclassification)

Anderson, J. L., Sellbom, M., Salekin, R. T. (2018). Utility of the Personality Inventory for DSM-5–Brief Form (PID-5-BF) in the measurement of maladaptive personality and psychopathology. *Assessment, 25(5), 596-607.* doi:[10.1177/1073191116676889](https://doi.org/10.1177/1073191116676889)

Chanen, A., Sharp, C., & Hoffman, P. (2017). Prevention and early intervention for borderline personality disorder: a novel public health priority. *World Psychiatry*, *16*(2), 215–216. doi: [10.1002/wps.20429](https://doi.org/10.1002/wps.20429)

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, *14*(3), 464–504. doi: [10.1080/10705510701301834](https://doi.org/10.1080/10705510701301834)

Cicchetti, D. V. (1993). Guidelines, Criteria , and Rules of Thumb for Evaluating Normed and. *Psychological Assessment*, *6*(4), 284–290. doi: [10.1037/1040-3590.6.4.284](https://doi.org/10.1037/1040-3590.6.4.284)

Cicchetti, D., & Rogosch, F. A. (1996). Equifinality and multifinality in developmental psychopathology. *Development and psychopathology*, *8*(4), 597-600.

Cicchetti, D. V., Crick, N. (2009). Precursors and diverse pathways to personality disorder in children and adolescents. *Development and Psychopathology*, 21, 683-685. doi: ﻿10.1017/S0954579409000388

Crick, N., Murray-Close, D., Woods, K. (2005). Borderline personality features in childhood: A short-term longitudinal study. *Development and Psychopathology*, 17, 1051-1070. doi: ﻿10.1017/S0954579405050492

De Clercq, B., De Fruyt, F., Van Leeuwen, K., & Mervielde, I. (2006). The structure of maladaptive personality traits in childhood: A step toward an integrative developmental perspective for DSM-V. *Journal of Abnormal Psychology*, *115*(4), 639–657. doi: [10.1037/0021-843X.115.4.639](https://doi.org/10.1037/0021-843X.115.4.639)

De Clercq, B., De Fruyt, F., De Bolle, M., Van Hiel, A., Markon, K. E., & Krueger, R. F. (2014). The hierarchical structure and construct validity of the PID–5 trait measure in adolescence. *Journal of Personality*, 82, 158–169

De Clercq, B. (2018). Integrating developmental aspects in current thinking about personality pathology. *Current Opinions in Psychology*, *21*, 69–73.

Decuyper, M., De Clercq, B., & Tackett, J. L. (2015). Assessing maladaptive traits in youth: An English-language version of the Dimensional Personality Symptom Itempool. *Personality Disorders: Theory, Research, and Treatment*, *6*(3), 239–250. doi: [10.1037/per0000114](https://doi.org/10.1037/per0000114)

De Fruyt, F., & De Clercq, B. (2012). Childhood Antecedents of Personality Disorders. In T. A. Widiger (Ed.), *The oxford handbook of personality disorders*. doi: [10.1093/oxfordhb/9780199735013.013.0008](https://doi.org/10.1093/oxfordhb/9780199735013.013.0008)

De Fruyt, F., De Clercq, B., & De Bolle, M. (2017). The five-factor model of personality and consequential outcomes in childhood and adolescence. In T. Widiger (Ed.), *The Oxford Handbook of the five factor model* (pp. 507–520).

Fossati, A., Somma, A., Borroni, S., Markon, K. E., & Kruger, R. F. (2017). The Personality Inventory for DSM-5 Brief Form: Evidence for Reliability and construct validity in a sample of community-dwelling Italian adolescents. *Assessment*, 24(5), 615-631*.* doi:10.1177/1073191115621793

Gadermann, A. M., Guhn, M., & Zumbo, B. D. (2007). Estimating Ordinal Reliability for Likert-Type and Ordinal Item Response Data: A Conceptual, Empirical, and Practical Guide - Practical Assessment, Research & Evaluation. *Practical Assessment, Research and Evaluation*, *17*(3). Retrieved from <http://www.r-project.org>

Gibbons, L. E., & Crane, P. K. (2011). lordif: An R Package for Detecting Differential Item. *Journal of Statistical Software March*.

Herman, J. L., Perry, J. C., & Van Der Kolk, B. A. (1989). Childhood trauma in borderline personality disorder. *American Journal of Psychiatry*. doi: [10.1176/ajp.146.4.490](https://doi.org/10.1176/ajp.146.4.490)

Hopwood, C. J., Kotov, R., Krueger, R. F., Watson, D., Widiger, T. A., Althoff, R. R., . . . Zimmermann, J. (2018). The time has come for dimensional personality disorder diagnosis. *Personality and Mental Health*. 12(1), 82-86. doi: [10.1002/pmh.1408](https://dx.doi.org/10.1002%2Fpmh.1408)

Kotov, R., Krueger, R. F., Watson, D., Achenbach, T. M., Althoff, R. R., Bagby, R. M., & … Zimmerman, M. (2017). The Hierarchical Taxonomy of Psychopathology (HiTOP): A dimensional alternative to traditional nosologies. *Journal of Abnormal Psychology*, 126(4), 454–477.

Kroll, J. (1994). PTSD/Borderlines In Therapy: Finding the Balance. *Journal of Clinical Psychopharmacology*. doi: [10.1097/00004714-199410000-00021](https://doi.org/10.1097/00004714-199410000-00021)

Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological Medicine*. doi: [10.1017/S0033291711002674](https://doi.org/10.1017/S0033291711002674)

Maples, J. L., Carter, N. T., Few, L. R., Crego, C., Gore, W. L., Samuel, D. B., … Miller, J. D. (2015). Testing whether the DSM-5 personality disorder trait model can be measured with a reduced set of items: An item response theory investigation of the personality inventory for DSM-5. *Psychological Assessment*, *27*(4), 1195–1210. doi: [10.1037/pas0000120](https://doi.org/10.1037/pas0000120)

Markon, K. E., Quilty, L. C., Bagby, R. M., & Krueger, R. F. (2013). The Development and Psychometric Properties of an Informant-Report Form of the Personality Inventory for DSM-5 (PID-5). *Assessment*, *20*(3), 370–383. doi: [10.1177/1073191113486513](https://doi.org/10.1177/1073191113486513)

Mervielde, I., & De Fruyt, F. (1999). Construction of the hierarchical personality inventory for children (HiPIC). *Personality psychology in Europe*, *7*, 107-127.

Rhemtulla, M., Brosseau-Liard, P. É., & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods*, *17*(3), 354–373. doi: [10.1037/a0029315](https://doi.org/10.1037/a0029315)

Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*. doi: [10.18637/jss.v048.i02](https://doi.org/10.18637/jss.v048.i02)

Saris, W. E., Satorra, A., & Veld, W. M. van der. (2009). Testing Structural Equation Models or Detection of Misspecifications? *Structural Equation Modeling: A Multidisciplinary Journal*, *16*(4), 561–582. doi: [10.1080/10705510903203433](https://doi.org/10.1080/10705510903203433)

Sharan, P., & Prakash, S. (2016). Childhood antecedents of personality disorders. In S. Malhotra & P. Santosh (Eds.), *Child and adolescent psychiatry*. doi: [10.1007/978-81-322-3619-1](https://doi.org/10.1007/978-81-322-3619-1)

Sharp, C. (2020). Adolescent personality pathology and the alternative model of personality disorders: Self development as nexus. *Psychopathology, 53,* 98-104

Sharp, C., & De Clercq, B. (2020). Personality pathology in youth. In C.J. Lejuez and K.C. Gratz (Eds.),*The Cambridge Handbook of Personality Disorders* (pp.74-90). Cambridge: Cambridge University Press.

Shiner, R. L., & Tackett, J. L. (2014). Personality disorders in children and adolescents. In E. J. Marsh & R. A. Barkley (Eds.), *Child psychopathology* (pp. 848–896). The Guilford Press.

Tackett, J. L., Herzhoff, K., Reardon, K. W., De Clercq, B., & Sharp, C. (2014). The externalizing spectrum in youth: Incorporating personality pathology. *Journal of Adolescence*, *37*(5), 659–668. doi: [10.1016/j.adolescence.2013.10.009](https://doi.org/10.1016/j.adolescence.2013.10.009)

Verbeke, L., De Caluwe, E., & De Clercq, B. (2017). A five-factor model of developmental personality pathology precursors. *Personality Disorders: Theory, Research, and Treatment*, *8*(2), 130–139. doi: [10.1037/per0000178](https://doi.org/10.1037/per0000178)

Verbeke, L., & De Clercq, B. D. (2014). Integrating Oddity traits in a dimensional model for personality pathology precursors. *Journal of Abnormal Psychology*, *123*(3), 598–612. doi: [10.1037/a0037166](https://doi.org/10.1037/a0037166)

Viladrich, C., Angulo-Brunet, A., & Doval, E. (2017). A journey around alpha and omega to estimate internal consistency reliability. *Anales de Psicologia*, *33*(3), 755–782. doi: [10.6018/analesps.33.3.268401](https://doi.org/10.6018/analesps.33.3.268401)

Widiger, T. A., De Clercq, B., & De Fruyt, F. (2009). Childhood antecedents of personality disorder: an alternative perspective. *Development and Psychopathology*, *21*(3), 771–791.

Widiger, T. A., Bach, B., Chmielewski, M., Clark, L. A., DeYoung, C., Hopwood, C. J., ... & Mullins-Sweatt, S. N. (2019). Criterion A of the AMPD in HiTOP. *Journal of Personality Assessment*, *101*(4), 345-355.

Zumbo, B. (1999). A handbook on the theory and methods of differential item functioning (DIF). *Ottawa: National Defense Headquarters*.

**Table 1.**

*Model Fit Information of the Initial (Restricted) and Final Models in the Derivation Phase.*

|  | Restricted Model | | | | Derived Model | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Facet | (df) | | *p* | RMSEA | (df) | *p* | RMSEA | |
| Hyperexpressive traits | 214.32(2) | 0.000 | | 0.340 | 0.66(1) | 0.42 | | 0 |
| Hyperactive traits | 21.98(2) | 0.000 | | 0.110 | 3.96(1) | 0.05 | | 0.06 |
| Dominance–Egocentrism | 7.09(2) | 0.030 | | 0.050 | 1.36(1) | 0.24 | | 0.02 |
| Impulsivity | 19.8(2) | 0.000 | | 0.100 | 3.87(1) | 0.05 | | 0.06 |
| Irritable–Aggressive Traits | 20.34(2) | 0.000 | | 0.100 | 6.89(1) | 0.01 | | 0.08 |
| Disorderliness | 15.91(2) | 0.000 | | 0.090 | 4.15(1) | 0.04 | | 0.06 |
| Distraction | 42.68(2) | 0.000 | | 0.150 | 1.21(2) | 0.55 | | 0 |
| Risk Taking | 3.33(2) | 0.190 | | 0.030 | - | - | | - |
| Narcissistic Traits | 19.74(2) | 0.000 | | 0.100 | 2.98(1) | 0.08 | | 0.05 |
| Affective Lability | 15.87(2) | 0.000 | | 0.090 | 2.42(1) | 0.12 | | 0.04 |
| Resistance | 2.85(2) | 0.240 | | 0.020 | - | - | | - |
| Lack of Empathy | 17.14(2) | 0.000 | | 0.090 | - | - | | - |
| Dependency | 22.57(2) | 0.000 | | 0.110 | - | - | | - |
| Anxious Traits | 13.89(2) | 0.000 | | 0.080 | 10.48(1) | 0 | | 0.1 |
| Lack of Self-Confidence | 48.17(2) | 0.000 | | 0.160 | 10.92(2) | 0 | | 0.07 |
| Insecure Attachment | 16.44(2) | 0.000 | | 0.090 | 1.67(1) | 0.2 | | 0.03 |
| Submissiveness | 86.2(2) | 0.000 | | 0.220 | 0.76(2) | 0.69 | | 0 |
| Ineffective Coping | 10.17(2) | 0.010 | | 0.070 | - | - | | - |
| Separation Anxiety | 35.41(2) | 0.000 | | 0.140 | 5.45(1) | 0.02 | | 0.07 |
| Depressive Traits | 53.25(2) | 0.000 | | 0.170 | 6.9(1) | 0.01 | | 0.08 |
| Inflexibility | 8.85(2) | 0.010 | | 0.060 | 1.58(1) | 0.21 | | 0.03 |
| Shyness | 24.79(2) | 0.000 | | 0.110 | 1.67(1) | 0.2 | | 0.03 |
| Paranoid Traits | 17.23(2) | 0.000 | | 0.090 | 0.05(1) | 0.82 | | 0 |
| Withdrawn Traits | 62.29(2) | 0.000 | | 0.180 | 17.23(3) | 0 | | 0.07 |
| Perfectionism | 72.15(2) | 0.000 | | 0.200 | 1.65(1) | 0.2 | | 0.03 |
| Extreme Achievement Striving | 24.98(2) | 0.000 | | 0.110 | 12.73(4) | 0.01 | | 0.05 |
| Extreme Order | 25.39(2) | 0.000 | | 0.110 | 4.94(1) | 0.03 | | 0.07 |
| Oversensitivity to feelings | 0.27(2) | 0.870 | | 0.000 | - | - | | - |
| Extreme fantasy | 8.63(2) | 0.010 | | 0.120 | 0.05(1) | 0.82 | | 0 |
| Daydreaming | 1.03(2) | 0.600 | | 0.000 | - | - | | - |
| Odd thoughts and behavior | 0.12(2) | 0.940 | | 0.000 | - | - | | - |
| *Note.* '-' in the derivation model columns = the derivation model is the restricted model. | | | | | | | | |

**Table 2**

*Internal Consistency and Model Fit in the Validation Sample*

| Facet |  |  | (df) | *p* | CFI | RMSEA | SRMR |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Hyperexpressive traits | 0.791 | 0.809 | 0.53(1) | 0.469 | 1.000 | 0.000 | 0.008 |
| Hyperactive traits | 0.864 | 0.870 | 6.64(1) | 0.010 | 0.999 | 0.079 | 0.020 |
| Dominance–Egocentrism | 0.807 | 0.813 | 1.72(1) | 0.190 | 1.000 | 0.028 | 0.013 |
| Impulsivity | 0.862 | 0.866 | 4.22(1) | 0.040 | 0.999 | 0.060 | 0.013 |
| Irritable–Aggressive Traits | 0.856 | 0.861 | 5.09(1) | 0.024 | 0.999 | 0.067 | 0.018 |
| Disorderliness | 0.883 | 0.886 | 0.03(1) | 0.866 | 1.000 | 0.000 | 0.001 |
| Distraction | 0.851 | 0.868 | 0.49(2) | 0.783 | 1.000 | 0.000 | 0.005 |
| Risk Taking | 0.856 | 0.860 | 7.66(2) | 0.022 | 0.999 | 0.056 | 0.020 |
| Narcissistic Traits | 0.852 | 0.855 | 0.5(1) | 0.478 | 1.000 | 0.000 | 0.006 |
| Affective Lability | 0.887 | 0.888 | 0.07(1) | 0.790 | 1.000 | 0.000 | 0.002 |
| Resistance | 0.725 | 0.736 | 23.94(2) | 0.000 | 0.985 | 0.110 | 0.059 |
| Lack of Empathy | 0.779 | 0.781 | 0.04(2) | 0.980 | 1.000 | 0.000 | 0.002 |
| Dependency | 0.784 | 0.786 | 2.52(2) | 0.283 | 1.000 | 0.017 | 0.013 |
| Anxious Traits | 0.820 | 0.824 | 2.32(1) | 0.127 | 1.000 | 0.038 | 0.014 |
| Lack of Self-Confidence | 0.872 | 0.886 | 5.03(2) | 0.081 | 1.000 | 0.041 | 0.010 |
| Insecure Attachment | 0.726 | 0.739 | 1.04(1) | 0.307 | 1.000 | 0.007 | 0.010 |
| Submissiveness | 0.829 | 0.856 | 2.8(2) | 0.247 | 1.000 | 0.021 | 0.014 |
| Ineffective Coping | 0.870 | 0.871 | 2.8(2) | 0.246 | 1.000 | 0.021 | 0.011 |
| Separation Anxiety | 0.862 | 0.867 | 23.38(1) | 0.000 | 0.996 | 0.157 | 0.039 |
| Depressive Traits | 0.765 | 0.781 | 0.66(1) | 0.418 | 1.000 | 0.000 | 0.010 |
| Inflexibility | 0.746 | 0.751 | 0.08(1) | 0.776 | 1.000 | 0.000 | 0.003 |
| Shyness | 0.836 | 0.838 | 0.25(1) | 0.616 | 1.000 | 0.000 | 0.004 |
| Paranoid Traits | 0.801 | 0.807 | 0.13(1) | 0.723 | 1.000 | 0.000 | 0.003 |
| Withdrawn Traits | 0.819 | 0.840 | 6.45(3) | 0.091 | 0.999 | 0.036 | 0.021 |
| Perfectionism | 0.783 | 0.798 | 5.94(1) | 0.015 | 0.998 | 0.074 | 0.025 |
| Extreme Achievement Striving | 0.863 | 0.882 | 8.36(4) | 0.079 | 0.999 | 0.035 | 0.018 |
| Extreme Order | 0.741 | 0.752 | 0.03(1) | 0.853 | 1.000 | 0.000 | 0.002 |
| Oversensitivity to feelings | 0.817 | 0.818 | 0.14(2) | 0.931 | 1.000 | 0.000 | 0.006 |
| Extreme fantasy | 0.774 | 0.785 | 0.58(1) | 0.446 | 1.000 | 0.000 | 0.016 |
| Daydreaming | 0.884 | 0.885 | 0.4(2) | 0.819 | 1.000 | 0.000 | 0.008 |
| Odd thoughts and behavior | 0.858 | 0.859 | 0.57(2) | 0.751 | 1.000 | 0.000 | 0.011 |

**Figure 1**

***Test Information Function of the Compulsivity dimension in DIPSI and DIPSI-B***



*Note.* TIF of the original DIPSI (dotted line) and the DIPSI-B (solid line) covering Compulsivity. The dashed line represents the original DIPSI’s TIF times 0.66 -to control for the item reduction of the DIPSI-B. The grey lines are TIFs of random selections of 10 items.

# Annex 1. DIPSI-B

| Facet label | Item |
| --- | --- |
| Extreme Achievement Striving | Always demands him/herself to be the best |
|  | Makes too high demands for him/herself |
|  | Wants to shine at everything |
|  | Always plays hard to win, even when not necessary |
| Extreme Order | Controls surroundings by being neat all the time |
|  | Feels an extreme need for an orderly environment |
|  | Becomes very irritated when things are lying around |
| Perfectionism | Wants life to be perfectly organized |
|  | Finds it important to do all things perfectly |
|  | Loses a lot of time trying to be perfect |
| Affective Lability | Is often moody |
|  | Has very unpredictable moods |
|  | Has frequent mood changes from one extreme to the other |
| Disorderliness | Has no sense of order |
|  | Is constantly leaving big messes |
|  | Never takes care of his/her belongings |
| Distraction | Never finishes his/her work |
|  | Can only be focused for a few moments |
|  | Never persists until his/her goals are achieved |
|  | Can never concentrate |
| Dominance–Egocentrism | Wants to assert him/herself all the time |
|  | Manipulates other children repeatedly to have his/her way |
|  | Always imposes his/her opinion |
| Hyperactive traits | Can never sit still |
|  | Needs action at all times |
|  | Has too much energy |
| Hyperexpressive traits | Exhibits his/her feelings at all occasions |
|  | Always tries to impress |
|  | Does all that is possible to draw attention |
| Impulsivity | Acts constantly without considering the consequences |
|  | Always makes decisions in a very inconsiderate way |
|  | Often acts without thinking |
| Inflexibility | Always sticks rigidly to the familiar way of doing things |
|  | Feels forced to repeat the same routine over and over again |
|  | Cannot adjust to sudden changes in plans |
| Irritable–Aggressive Traits | Explodes at any little thing |
|  | Gets frequently out of control when he/she is angry |
|  | Loses his/her self-control too often |
| Narcissistic Traits | Considers him/herself more worthy than others |
|  | Will do anything to be in the spotlight |
|  | Frequently thinks that he/she is the best |
| Resistance | Cheats all the time |
|  | Breaks rules all the time, both at school and at home |
|  | Is frequently disobedient without reason |
| Risk Taking | Seeks adventure all the time |
|  | Always seeks excitement |
|  | Likes to take risks |
| Anxious Traits | Always expects the worst |
|  | Often fears that everything will turn out badly |
|  | Worries all the time |
| Dependency | Is extremely dependent on other people |
|  | Only feels secure when others are around |
|  | Can never undertake something without help |
| Depressive Traits | Often feels empty inside |
|  | Regrets too often things that happened in the past |
|  | Is often pessimistic |
| Ineffective Coping | Is easily upset in stressful situations |
|  | Cannot think clearly when he/she is stressed |
|  | Gets extremely nervous in a stressful situation |
| Insecure Attachment | Always tries to ensure somebody’s help and concern |
|  | Often clings to other people |
|  | Is exceedingly attached to the home surrounding |
| Lack of Empathy | Does not care for other children |
|  | Is never interested in problems of other children |
|  | Shows no sympathy with other children |
| Lack of Self-Confidence | Always feels less worthy than other children |
|  | Is extremely uncertain about him/herself |
|  | Often thinks of him/herself as unable to manage things |
|  | Always doubts about him/herself |
| Separation Anxiety | Often fears of being abandoned one day |
|  | Often fears that his/her parents will desert him/her |
|  | Constantly fears being on his/her own one day |
| Submissiveness | Others frequently take advantage of him/her |
|  | Believes too easily what’s being told |
|  | He/she is easily persuaded |
|  | He/she believes anything anyone says |
| Paranoid Traits | Distrusts most people |
|  | Is very suspicious towards other children |
|  | Thinks that other children want to cheat him/her |
| Shyness | Fears contact with other children |
|  | Avoids contact with other children as much as possible |
|  | Always feels uncomfortable when other children are around |
| Withdrawn Traits | Is very reserved towards others |
|  | Always hides his/her feelings |
|  | Keeps feelings and thoughts to him/herself |
|  | Never tells something spontaneously |
| Daydreaming | His/her thoughts tend to stray at times |
|  | Is often completely unaware of what is happening around him/her |
|  | Misses parts of conversations because of daydreaming |
| Extreme fantasy | Gets lost in fantasy more than other kids his/her age |
|  | Sometimes doesn't know if something is real or just imaginary |
|  | At times, he/she cannot tell the difference between reality and fantasy |
| Odd thoughts and behavior | At times, says things that others find odd or strange |
|  | His/her behavior is weird |
|  | Has strange fantasies |
| Oversensitivity to feelings | Feels intensely upset when he/she sees something sad on television |
|  | Is often absorbed by intense emotions |
|  | Sometimes empathizes too strongly with others' feelings or experiences |

# Annex 2.

## Table A1. IRT information per facet

| item | label | b1 | b2 | b3 | b4 | a | DIF | Dec |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Hyperexpressive traits** | |  |  |  |  |  |  |  |
| impa\_1m | Demands his/her needs be immediately met | -0.77 | 1.38 | 1.87 | 2.79 | 1.82 |  |  |
| expr\_1m | Talks all the time about his/her own experiences | -0.69 | 0.59 | 1.63 | 2.73 | 1.58 |  |  |
| expr\_2m | Exhibits his/her feelings at all occasions | -0.01 | 1.04 | 1.95 | 2.66 | 2.25 |  |  |
| impu\_3m | Always interrupts other people | -0.18 | 0.85 | 1.66 | 2.48 | 2.6 | 0.016 |  |
| expr\_4m | Talks all the time | -0.32 | 0.58 | 1.28 | 1.92 | 2.33 | 0.013 |  |
| expr\_5m | Always tries to be in the center of attention | 0.07 | 0.86 | 1.57 | 2.14 | 3.58 |  |  |
| narc\_6m | Always tries to impress | 0.03 | 0.81 | 1.51 | 2.18 | 3.56 |  |  |
| expr\_6m | Does all that is possible to draw attention | 0.08 | 0.9 | 1.69 | 2.09 | 3.7 |  |  |
| **Hyperactive traits** | |  |  |  |  |  |  |  |
| acti\_1m | Acts too intensely | -0.95 | 0.35 | 1.31 | 2.34 | 1.69 | 0.02 |  |
| acti\_3m | Can never sit still | -0.03 | 0.76 | 1.4 | 2.08 | 2.46 |  |  |
| impa\_3m | Quickly gets impatient | -0.67 | 0.7 | 1.95 | 3.55 | 1.36 |  |  |
| acti\_4m | Always plays with very high energy | -0.96 | 0.22 | 1.29 | 2.4 | 1.88 |  |  |
| impa\_4m | Gets very frustrated when he/she needs to wait somewhere | -0.74 | 0.57 | 1.76 | 3.04 | 1.52 |  |  |
| acti\_5m | Needs action at all times | -0.47 | 0.51 | 1.28 | 2.1 | 2.76 |  |  |
| acti\_6m | Has too much energy | -0.28 | 0.54 | 1.2 | 1.97 | 3.74 |  |  |
| **Dominance–Egocentrism** | |  |  |  |  |  |  |  |
| domi\_1m | Always demands other children to listen | -1.08 | 0.31 | 1.24 | 2.68 | 1.7 |  |  |
| domi\_2m | Always takes the leading position in games | -0.73 | 0.88 | 2.27 | 4.18 | 0.94 |  |  |
| egoc\_3m | Tries very hard to get his/her way | -0.32 | 0.68 | 1.46 | 3.1 | 1.5 |  |  |
| domi\_3m | Wants to assert him/herself all the time | 0.03 | 0.82 | 1.66 | 3.07 | 2.79 |  |  |
| mani\_4m | Manipulates other children repeatedly to have his/her way | 0.6 | 1.53 | 2.71 | 3.43 | 2.32 |  |  |
| domi\_4m | Always tries to interfere | -0.62 | 0.64 | 1.83 | 3.52 | 1.6 |  |  |
| domi\_5m | Always imposes his/her opinion | 0.23 | 0.74 | 1.63 | 2.45 | 3.57 |  |  |
| egoc\_6m | Considers own needs more important than those of others | 0.38 | 1.25 | 2.52 | 3.79 | 1.61 |  |  |
| **Impulsivity** | |  |  |  |  |  |  |  |
| impu\_1m | Acts constantly without considering the consequences | -0.36 | 0.75 | 1.66 | 2.58 | 2.61 |  |  |
| impu\_2m | Often reacts impulsively | -0.62 | 0.57 | 1.36 | 2.27 | 2.15 |  |  |
| impu\_4m | Always makes decisions in a very inconsiderate way | 0.08 | 1.18 | 1.99 | 2.98 | 3.32 |  |  |
| impu\_5m | Often acts without thinking | -0.14 | 0.84 | 1.63 | 2.62 | 3.44 |  |  |
| **Irritable–Aggressive Traits** | |  |  |  |  |  |  |  |
| irri\_1m | Is extremely touchy | -1.29 | 0.13 | 1.44 | 2.83 | 1.61 |  |  |
| irri\_2m | Gets easily irritated | -0.35 | 0.66 | 1.6 | 2.5 | 2.44 |  |  |
| aggr\_2m | Destroys things out of anger | 1.33 | 2.34 | 3.07 | 4.41 | 1.55 |  |  |
| irri\_3m | Explodes at any little thing | -0.26 | 0.65 | 1.45 | 2.46 | 2.95 |  |  |
| aggr\_3m | Gets frequently out of control when he/she is angry | 0.02 | 1 | 1.81 | 2.6 | 2.65 |  |  |
| irri\_5m | Is easily bothered | -0.03 | 1.21 | 2.14 | 3.72 | 2.29 |  |  |
| aggr\_5m | Loses his/her self-control too often | 0.16 | 1.17 | 1.95 | 3.23 | 3.31 |  |  |
| irri\_6m | Is extremely quick to take offence | -0.19 | 0.99 | 1.82 | 3.31 | 1.69 |  |  |
| aggr\_6m | Often has excessive tempers | 0.49 | 1.41 | 2.05 | 3.26 | 3.1 |  |  |
| **Disorderliness** | |  |  |  |  |  |  |  |
| diso\_1m | Always leaves belongings lying around | -1.28 | -0.41 | 0.39 | 1.16 | 2.55 |  |  |
| diso\_2m | Has no sense of order | -0.55 | 0.28 | 1.01 | 1.75 | 3.58 |  |  |
| pers\_2m | Always chooses the easy way | -1.01 | 0.23 | 1.33 | 2.43 | 1.59 |  |  |
| diso\_3m | Is constantly leaving big messes | -0.28 | 0.58 | 1.34 | 2.03 | 3.28 |  |  |
| diso\_4m | Never takes care of his/her belongings | -0.11 | 0.79 | 1.51 | 2.35 | 2.63 |  |  |
| pers\_5m | Frequently postpones hard things | -0.98 | 0.35 | 1.48 | 2.73 | 1.6 |  |  |
| diso\_6m | Is often unable to find his/her belongings | -0.58 | 0.44 | 1.35 | 2.24 | 2.66 |  |  |
| pers\_6m | Puts things off until the last moment | -0.68 | 0.34 | 1.29 | 2.28 | 1.84 |  |  |
| **Distraction** | |  |  |  |  |  |  |  |
| dist\_1m | Only can be focused for a few moments | 0.18 | 1.2 | 2.03 | 2.92 | 1.97 | 0.021 |  |
| pers\_1m | Never finishes his/her work | 0.45 | 1.63 | 2.79 | 3.88 | 1.67 |  |  |
| dist\_2m | Often has problems with focusing attention | -0.07 | 0.84 | 1.56 | 2.28 | 2.77 |  |  |
| dist\_3m | Can only be focused for a few moments | 0.14 | 1.04 | 1.81 | 2.47 | 3.54 |  |  |
| pers\_3m | Always quits when things get harder | -0.66 | 0.8 | 1.96 | 3.53 | 1.79 | 0.025 |  |
| pers\_4m | Never persists until his/her goals are achieved | -0.04 | 1.26 | 2.19 | 3.46 | 2.22 |  |  |
| dist\_6m | Can never concentrate | 0.15 | 1.14 | 1.84 | 2.81 | 3.32 |  |  |
| **Risk Taking** | |  |  |  |  |  |  |  |
| risk\_1m | Is often attracted to dangerous situations | 0.26 | 1.47 | 2.08 | 3.22 | 2.35 |  |  |
| risk\_2m | Often gets hurt by taking irresponsible risks | 0.94 | 2.29 | 3.06 | 3.69 | 1.7 |  |  |
| risk\_3m | Seeks adventure all the time | -0.54 | 0.63 | 1.62 | 2.87 | 2.08 |  |  |
| risk\_4m | Always seeks excitement | -0.11 | 0.83 | 1.64 | 2.64 | 3.21 |  |  |
| risk\_5m | Likes to take risks | 0.11 | 1.12 | 2.01 | 2.93 | 3.41 |  |  |
| risk\_6m | Always behaves carelessly | 0.51 | 1.97 | 2.96 |  | 2.09 |  |  |
| **Narcissistic Traits** | |  |  |  |  |  |  |  |
| narc\_1m | Fantasizes all the time about being admired by others | 0.14 | 1.37 | 2.43 | 3.57 | 1.82 |  |  |
| narc\_2m | Regularly has visions of being famous, beautiful or beloved | 0.23 | 1.49 | 2.53 | 4.21 | 1.49 |  |  |
| gran\_2m | Believes that he/she is very special and unique | 0.15 | 1.15 | 1.98 | 3.38 | 2.32 |  |  |
| narc\_3m | Takes pride in his/her talents and accomplishments | -0.21 | 1 | 1.82 | 3.06 | 2.36 |  |  |
| gran\_3m | Believes he/she has a right to preferential treatment | 0.46 | 1.63 | 2.69 | 3.89 | 2.07 |  |  |
| gran\_4m | Considers him/herself more worthy than others | 0.47 | 1.56 | 2.47 | 3.96 | 3.09 |  |  |
| narc\_5m | Will do anything to be in the spotlight | 0.08 | 1.21 | 1.99 | 3.42 | 2.77 |  |  |
| gran\_5m | Frequently thinks that he/she is the best | 0.31 | 1.28 | 1.91 | 2.91 | 3.42 |  |  |
| **Affective Lability** | |  |  |  |  |  |  |  |
| labi\_1m | Has extreme mood swings | -0.67 | 0.43 | 1.19 | 2.09 | 2.84 |  |  |
| labi\_2m | Is often moody | -0.27 | 0.7 | 1.46 | 2.16 | 3.67 |  |  |
| labi\_3m | Has very unpredictable moods | 0 | 1.03 | 1.81 | 2.6 | 3.23 |  |  |
| labi\_4m | His/her feelings are easily influenced by small things | -0.88 | 0.33 | 1.32 | 2.79 | 2.09 | 0.027 |  |
| labi\_5m | Has frequent mood changes from one extreme to the other | 0.09 | 1.01 | 1.85 | 2.57 | 3.28 |  |  |
| labi\_6m | His/her feelings towards others are constantly changing | -0.02 | 1.34 | 2.22 | 3.09 | 2.47 |  |  |
| **Resistance** | |  |  |  |  |  |  |  |
| mani\_1m | Cheats all the time | 0.9 | 2.08 | 3.11 | 3.57 | 2.15 |  |  |
| resi\_1m | Always tries to resist | 0.6 | 1.67 | 2.71 | 3.92 | 2.44 |  |  |
| resi\_2m | Breaks rules all the time, both at school and at home | 0.64 | 1.83 | 2.56 | 4.4 | 2.93 |  |  |
| resi\_4m | Is frequently disobedient without reason | 0.86 | 1.81 | 2.45 | 2.57 | 3.42 |  |  |
| resi\_5m | Always refuses to do what is asked | 0.35 | 1.78 | 3.12 |  | 1.91 |  |  |
| **Lack of Empathy** | |  |  |  |  |  |  |  |
| remo\_1m | Feels no emotions when other children get hurt | 0.8 | 2.06 | 2.63 | 3.4 | 1.82 |  |  |
| unfo\_1m | Cannot forgive | 0.83 | 2.58 | 3.18 | 5.02 | 1.57 |  |  |
| empa\_2m | Rarely is willing to be helpful to others | 0.69 | 2.05 | 2.69 | 3.17 | 2.27 |  |  |
| empa\_3m | Does not care for other children | 0.86 | 1.87 | 2.56 | 2.93 | 2.91 |  |  |
| resi\_3m | Never sticks to agreements | 0.55 | 2.29 | 3.66 | 4.91 | 1.29 |  |  |
| empa\_4m | Is never interested in problems of other children | 0.61 | 1.71 | 2.61 | 3.23 | 2.52 |  |  |
| unfo\_4m | Always holds a grudge after a disagreement | 0.61 | 2.12 | 2.87 | 3.5 | 2.15 |  |  |
| empa\_5m | Shows no sympathy with other children | 0.88 | 1.87 | 2.45 | 3.47 | 3.24 |  |  |
| egoc\_5m | Cannot even stand small suggestions from someone else | 0.38 | 1.75 | 2.87 | 3.54 | 2.15 |  |  |
| empa\_6m | Never comforts other children when they are sad | 0.83 | 1.95 | 2.19 | 2.62 | 2.48 |  |  |
| **Dependency** | |  |  |  |  |  |  |  |
| depe\_2m | Needs someone around all the time | -0.42 | 0.7 | 1.46 | 2.56 | 2.02 |  |  |
| depe\_3m | Is extremely dependent on other people | -0.21 | 0.97 | 1.87 | 2.86 | 2.55 |  |  |
| depe\_4m | Only feels secure when others are around | -0.1 | 1.14 | 2.02 | 2.82 | 2.36 | 0.011 |  |
| depe\_5m | Can never undertake something without help | 0.19 | 1.39 | 2.38 | 3.02 | 2.41 |  |  |
| self\_6m | Feels insecure without advice | -0.18 | 1 | 1.98 | 3.1 | 2.34 |  |  |
| **Anxious Traits** | |  |  |  |  |  |  |  |
| anxi\_1m | Panics very easily | -1.11 | 0.29 | 1.55 | 2.87 | 1.43 |  |  |
| anxi\_2m | Always expects the worst | -0.06 | 1 | 1.82 | 2.75 | 2.43 |  |  |
| rumi\_2m | Worries all the time about minor things | -0.47 | 0.63 | 1.44 | 2.57 | 2.41 |  |  |
| anxi\_3m | Often experiences an intense fear | 0.13 | 1.19 | 1.84 | 2.89 | 2.07 |  |  |
| anxi\_4m | Often fears that everything will turn out badly | -0.24 | 0.86 | 1.72 | 2.64 | 3.22 | 0.004 |  |
| rumi\_5m | Worries all the time | -0.09 | 0.95 | 1.78 | 2.76 | 3.14 |  |  |
| rumi\_6m | Is often concerned about things that may happen | -0.53 | 0.54 | 1.52 | 2.59 | 2.43 | 0.006 |  |
| **Lack of Self-Confidence** | |  |  |  |  |  |  |  |
| self\_1m | Always feels less worthy than other children | -0.08 | 0.83 | 1.79 | 2.92 | 2.23 |  |  |
| self\_2m | Is extremely uncertain about him/herself | -0.43 | 0.47 | 1.24 | 2.04 | 2.92 |  |  |
| self\_4m | Often thinks of him/herself as unable to manage things | -0.55 | 0.5 | 1.31 | 2.36 | 3.1 |  |  |
| self\_5m | Always doubts about him/herself | -0.45 | 0.37 | 1.1 | 2 | 3.73 |  |  |
| **Insecure Attachment** | |  |  |  |  |  |  |  |
| atta\_1m | Always tries to ensure somebody’s help and concern | -0.86 | 0.66 | 2 | 3.46 | 1.45 |  |  |
| atta\_3m | Often clings to other people | -0.29 | 0.84 | 1.91 | 3.07 | 1.97 |  |  |
| atta\_4m | Wants to have his/her parents always around | -0.11 | 0.96 | 1.78 | 2.62 | 2.96 | 0.035 |  |
| atta\_6m | Is exceedingly attached to the home surrounding | -0.44 | 0.78 | 1.66 | 2.44 | 2.21 |  |  |
| **Submissiveness** | |  |  |  |  |  |  |  |
| subm\_1m | Others frequently take advantage of him/her | -0.04 | 1.27 | 2.23 | 3.26 | 1.64 |  |  |
| subm\_2m | Obeys other children all the time | -0.39 | 1.08 | 2.48 | 4.05 | 1.77 | 0.019 |  |
| naiv\_3m | Believes too easily what’s being told | -0.74 | 0.33 | 1.28 | 2.4 | 2.43 |  |  |
| subm\_3m | He/she is easily persuaded | 0.02 | 1.12 | 1.95 | 2.93 | 3.37 |  |  |
| naiv\_4m | He/she believes anything anyone says | 0.01 | 1.12 | 1.99 | 2.89 | 2.74 |  |  |
| subm\_4m | Frequently leaves decisions and responsibilities to others | -0.48 | 0.99 | 2.56 | 4.12 | 1.38 |  |  |
| subm\_5m | Always submits to other children | -0.45 | 0.97 | 2.41 | 4 | 1.4 |  |  |
| subm\_6m | Always keeps in the background | -0.34 | 1.37 | 2.8 | 4.17 | 1.22 | 0.015 |  |
| **Ineffective Coping** | |  |  |  |  |  |  |  |
| stre\_1m | Is very sensitive to stress | -1.29 | -0.07 | 0.85 | 1.72 | 2.16 | 0.01 |  |
| stre\_2m | Is easily upset in stressful situations | -0.68 | 0.39 | 1.16 | 2.01 | 3.03 |  |  |
| reac\_2m | Is easily overwhelmed by his/her emotions | -0.32 | 0.87 | 1.74 | 2.8 | 2.04 |  |  |
| stre\_4m | Cannot think clearly when he/she is stressed | -0.49 | 0.62 | 1.47 | 2.31 | 2.69 |  |  |
| reac\_4m | Always reacts very emotionally | -0.52 | 0.76 | 1.78 | 2.95 | 1.94 | 0.009 |  |
| stre\_5m | Loses contact with the environment in stressful situations | 0.02 | 1.19 | 2.03 | 3.07 | 2.73 | 0.02 |  |
| reac\_5m | Is dragged away by his/her emotions | -0.53 | 0.74 | 1.76 | 2.78 | 2.27 |  |  |
| stre\_6m | Gets extremely nervous in a stressful situation | -0.58 | 0.43 | 1.26 | 2.15 | 2.99 |  |  |
| **Separation Anxiety** | |  |  |  |  |  |  |  |
| sepa\_1m | Often fears of being abandoned one day | 0.34 | 1.15 | 1.7 | 2.53 | 3.1 |  |  |
| sepa\_2m | Often fears that his/her parents will desert him/her | 0.49 | 1.46 | 1.92 | 2.83 | 3.44 |  |  |
| sepa\_4m | Constantly fears being on his/her own one day | 0.08 | 1.19 | 1.8 | 2.89 | 2.08 |  |  |
| **Depressive Traits** | |  |  |  |  |  |  |  |
| pass\_1m | Often feels spiritless | 0.44 | 1.9 | 2.71 | 3.75 | 1.72 | 0.032 |  |
| depr\_3m | Often feels empty inside | 0.64 | 1.62 | 2.25 | 3.04 | 3.37 |  |  |
| rumi\_4m | Regrets too often things that happened in the past | 0.38 | 1.85 | 2.9 | 4.03 | 1.54 |  |  |
| depr\_5m | Is often pessimistic | 0.33 | 1.39 | 2.15 | 2.89 | 2.73 |  |  |
| **Inflexibility** | |  |  |  |  |  |  |  |
| flex\_1m | Cannot adjust to changes | 0.17 | 1.71 | 2.7 | 3.57 | 1.71 | 0.02 |  |
| obse\_1m | Constantly repeats same actions over and over | 0.4 | 1.21 | 1.95 | 2.5 | 2.39 |  |  |
| flex\_2m | Sticks too rigidly to his/her way of doing things | -0.63 | 1.03 | 2.29 | 3.49 | 1.81 |  |  |
| obse\_2m | Is too often fixed on certain thoughts | 0.15 | 1.06 | 1.81 | 2.49 | 2.63 |  |  |
| flex\_3m | Gets upset when situations suddenly change | -0.05 | 0.94 | 1.61 | 2.16 | 3 |  |  |
| obse\_3m | Always has to complete activities in a certain order | 0.28 | 1.15 | 1.95 | 2.33 | 2.84 |  |  |
| flex\_4m | Always sticks rigidly to the familiar way of doing things | -0.12 | 0.96 | 1.7 | 2.29 | 3.04 |  |  |
| obse\_4m | Feels forced to repeat the same routine over and over again | 0.13 | 1.35 | 1.88 | 2.18 | 3.66 |  |  |
| flex\_6m | Cannot adjust to sudden changes in plans | -0.03 | 1.09 | 1.74 | 2.27 | 3.19 |  |  |
| **Shyness** | |  |  |  |  |  |  |  |
| avoi\_1m | Avoids any collaboration with other children | 0.97 | 2.08 | 2.75 | 3.36 | 2.19 |  |  |
| inse\_1m | Avoids contact with other children for fear of criticism | 0.65 | 1.86 | 2.78 | 3.58 | 2.55 |  |  |
| shyn\_1m | Finds it hard to talk with other children | 0.68 | 1.74 | 2.47 | 3.59 | 2.87 |  |  |
| shyn\_2m | Fears contact with other children | 0.81 | 1.79 | 2.47 | 3.29 | 3.18 |  |  |
| inse\_3m | Believes that other children have an aversion for him/her | 0.49 | 1.75 | 2.75 | 3.59 | 1.76 | 0.011 |  |
| avoi\_4m | Avoids contact with other children as much as possible | 0.94 | 2.05 | 2.9 | 3.23 | 3.31 |  |  |
| shyn\_5m | Always feels uncomfortable when other children are around | 0.74 | 2.03 | 2.95 | 3.35 | 2.79 |  |  |
| inse\_6m | Is afraid of being rejected when others get to know him/her | 0.35 | 1.75 | 2.7 | 3.95 | 1.6 |  |  |
| **Paranoid Traits** | |  |  |  |  |  |  |  |
| para\_2m | Is convinced that other children always have bad intentions | 0.53 | 1.7 | 2.45 | 3.35 | 2.32 | 0.024 |  |
| para\_3m | Is always on his/her guard against others | 0.17 | 1.41 | 2.27 | 3.09 | 2.1 |  |  |
| para\_4m | Distrusts most people | 0.36 | 1.64 | 2.31 | 3.58 | 2.5 |  |  |
| para\_5m | Is very suspicious towards other children | 0.64 | 1.77 | 2.69 |  | 3.34 |  |  |
| para\_6m | Thinks that other children want to cheat him/her | 0.67 | 1.96 | 2.52 | 3.07 | 3.37 |  |  |
| **Withdrawn Traits** | |  |  |  |  |  |  |  |
| with\_2m | Is very reserved towards others | -0.62 | 0.47 | 1.39 | 2.39 | 1.95 |  |  |
| with\_3m | Always hides his/her feelings | -0.43 | 0.63 | 1.42 | 2.21 | 2.9 |  |  |
| with\_4m | Keeps feelings and thoughts to him/herself | -0.46 | 0.5 | 1.32 | 2.06 | 3.43 |  |  |
| with\_5m | Cannot express affection | 0.56 | 1.84 | 2.85 | 4.13 | 1.7 | 0.014 |  |
| with\_6m | Never tells something spontaneously | 0.24 | 1.31 | 2.43 | 3.18 | 2.08 |  |  |
| apat\_1m | Experiences less joy compared to other children | 0.8 | 2.28 | 3.3 | 4.16 | 1.37 |  |  |
| **Perfectionism** | |  |  |  |  |  |  |  |
| perf\_1m | Wants life to be perfectly organized | -0.54 | 0.79 | 2.05 | 3.11 | 1.56 |  |  |
| achi\_4m | Devotes too much of him/herself to tasks | -1.18 | 0.42 | 1.78 | 3.15 | 1.36 |  |  |
| perf\_4m | Finds it important to do all things perfectly | -0.7 | 0.31 | 1.18 | 2.12 | 3.07 |  |  |
| perf\_5m | Always makes detailed plans when doing something | -0.27 | 1.4 | 2.89 | 4.48 | 1.21 |  |  |
| perf\_6m | Loses a lot of time trying to be perfect | -0.08 | 1.14 | 1.8 | 2.61 | 2.92 |  |  |
| **Extreme Achievement Striving** | |  |  |  |  |  |  |  |
| achi\_1m | Always demands him/herself to be the best | -1.16 | 0.14 | 1.11 | 2.14 | 2.18 |  |  |
| achi\_2m | Makes too high demands for him/herself | -0.7 | 0.43 | 1.31 | 2.23 | 2.09 |  |  |
| achi\_3m | Wants to shine at everything | -0.32 | 0.68 | 1.53 | 2.49 | 3.34 |  |  |
| achi\_5m | Always plays hard to win, even when not necessary | -0.34 | 0.67 | 1.48 | 2.51 | 2.57 |  |  |
| **Extreme Order** | |  |  |  |  |  |  |  |
| orde\_1m | Controls surroundings by being neat all the time | -0.18 | 0.97 | 1.9 | 2.98 | 2.06 |  |  |
| orde\_2m | Is obsessed with cleaning | 0.83 | 2.01 | 2.74 | 3.54 | 2.23 |  |  |
| orde\_3m | Is extremely careful with his/her own belongings | -0.48 | 0.89 | 1.83 | 3.01 | 1.76 |  |  |
| orde\_4m | Feels an extreme need for an orderly environment | 0.13 | 1.34 | 2.25 | 3.12 | 2.54 |  |  |
| orde\_5m | Carries out every work with extreme care | -0.78 | 0.5 | 1.59 | 2.81 | 1.51 |  |  |
| orde\_6m | Becomes very irritated when things are lying around | 0.42 | 1.69 | 2.7 | 3.91 | 1.69 |  |  |
| **Oversensitivity to feelings** | |  |  |  |  |  |  |  |
| sens\_1m | Can be completely carried away by music | -0.7 | 0.37 | 1.29 | 2.92 | 1.35 |  |  |
| sens\_2m | Feels intensely upset when he/she sees something sad on television | -0.55 | 0.31 | 1.19 | 1.98 | 2.67 |  |  |
| sens\_3m | Is often absorbed by intense emotions | -0.02 | 0.76 | 1.3 | 2.04 | 3.21 |  |  |
| sens\_4m | Sometimes empathizes too strongly with others' feelings or experiences | -0.51 | 0.39 | 1.15 | 2.08 | 2.66 |  |  |
| **Extreme fantasy** | |  |  |  |  |  |  |  |
| fant\_1m | Gets lost in fantasy more than other kids his/her age | 0.65 | 1.57 | 2.15 | 2.8 | 3.02 |  |  |
| fant\_2m | Hears or sees things that others don't hear or see | 1 | 1.91 | 2.5 | 2.86 | 2.1 |  |  |
| fant\_3m | Sometimes doesn't know if something is real or just imaginary | 0.95 | 1.88 | 2.29 |  | 3.38 |  |  |
| fant\_4m | Strongly believes in supernatural powers | 1.03 | 2.06 | 3.12 | 4 | 1.69 |  |  |
| fant\_5m | At times, he/she cannot tell the difference between reality and fantasy | 0.83 | 1.58 | 2.41 | 2.56 | 3.48 |  |  |
| **Daydreaming** | |  |  |  |  |  |  |  |
| dayd\_1m | His/her thoughts tend to stray at times | -0.87 | 0.2 | 1.01 | 1.91 | 2.73 |  |  |
| dayd\_2m | Sometimes is completely unaware of what is happening around him/her | 0.07 | 0.91 | 1.53 | 2.42 | 3.58 |  |  |
| dayd\_3m | Sometimes feels confused | 0.39 | 1.2 | 1.95 |  | 2.67 |  |  |
| dayd\_4m | Misses parts of conversations because of daydreaming | 0.13 | 0.96 | 1.64 | 2.48 | 3.45 |  |  |
| dayd\_5m | Often forgets what he/she was doing just moments before | 0.65 | 1.59 | 2.54 | 2.92 | 2.24 |  |  |
| dayd\_6m | Tends to gaze off into the distance | 0.67 | 1.3 | 2.22 | 2.88 | 3.31 |  |  |
| dayd\_7m | His/her daydreaming interferes with the ability to complete daily tasks at school or home | 0.66 | 1.29 | 1.93 | 2.53 | 3.37 |  |  |
| **Odd thoughts and behavior** | |  |  |  |  |  |  |  |
| oddt\_1m | Has ideas that others cannot follow | -0.04 | 1.17 | 2.27 | 3.29 | 1.73 |  |  |
| oddt\_2m | At times, says things that others find odd or strange | 0.69 | 1.6 | 2.47 | 4.66 | 2.63 |  |  |
| oddt\_3m | His/her behavior is weird | 1.02 | 1.85 | 2.48 | 3 | 3.39 |  |  |
| oddt\_4m | His/her creativity is difficult to understand for other people | 0.35 | 1.75 | 2.86 | 6.53 | 1.39 |  |  |
| oddt\_5m | Comes up with new ideas that others do not understand | 0.66 | 2.03 | 2.58 | 4.84 | 1.86 |  |  |
| oddt\_6m | Has strange fantasies | 1.11 | 1.88 | 2.37 |  | 3.59 |  |  |