Open access • Journal Article • DOI:10.1007/S10608-009-9283-5

Maladaptive Schemas and Psychopathology in Adolescence: On the Utility of Young's Schema Theory in Youth — Source link

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Published on: 01 Aug 2010 - Cognitive Therapy and Research (Springer US)

Topics: Schema therapy, Schema (psychology) and Psychopathology

Maladaptive schemas and psychopathology in adolescence:

On the utility of Young's schema theory in youth

Abstract

Introduction: The present article reports on two studies that investigated the utility of Young's cognitive theory (Young, Klosko, & Weishaar, 2003) in adolescents. Study 1 focused on the factorial validity of the Young Schema Questionnaire (YSQ) in youth. In Study 2, the dimensionality of Young's schemas and their (content-specific) association with psychopathology were investigated. Methods: In Study 1, 635 adolescents were asked to complete the YSQ. In Study 2, participants were 112 non-referred and 104 referred adolescents. They were interviewed with the Structured Clinical Interview for DSM-IV – Child edition and completed the YSQ and the Youth Self Report. Their parents were asked to fill out the Child Behavior Checklist. Results: It was demonstrated that Young's theoretically proposed taxonomy of schemas and domains can be retrieved in adolescents. Referred youth displayed a higher severity of maladaptive schemas as compared with non-referred adolescents. A content-specific association of schemas and psychopathology was established. Conclusion: Young's schema theory might constitute a valuable framework to understand psychopathology in youth.

Keywords: cognitive theory, psychopathology, adolescence, content-specificity

Introduction

The cognitive framework, as originally outlined by Beck (1967), has generated a vast body of empirical research on psychopathology (Clark, Beck, & Alford, 1999; J. M. G. Williams, Watts, MacLeod, & Mathews, 1997). One of the core assumptions of cognitive theory is that negative basic beliefs about the self, about other people and their worlds, also denoted as maladaptive schemas, underlie the development and maintenance of emotional disorders (J. S. Beck, 1995). Dysfunctional schemas are presumed to develop early in life through negative interactions with primary caregivers, and make people vulnerable to psychological problems when confronted with stress. Hence, the model is often referred to as a vulnerability-stress framework (Clark et al., 1999). In cognitive theory, it is assumed that that each type of emotional disturbance is related to a unique cognitive profile characterised by specific cognitive content (A. T. Beck, 1976). In depression, the predominant cognitive theme is assumed to be about negative self-evaluation, loss and deprivation (Clark et al., 1999). It is hypothesized that the primary beliefs in anxiety are about physical or psychological threat (A. T. Beck, Emery, & Greenberg, 1985). In anger, the perception of a transgression to one's personal domain and the individual's appraisal of (in)capability to sustain, neutralize or repulse the assault are supposed to be central (A. T. Beck, 1976). Perceptions of personal assaults include restrictions or frustration of needs, which are interpreted as violation of rights.

Research on the cognitive model in adults has recently received a new impulse through the schema theory of Jefrrey Young. On the basis of clinical experience in adults with personality disorders, Young originally outlined a taxonomy of 15 maladaptive schemas differing in content, which can be grouped within five schema domains: i.e., Disconnection/Rejection, Impaired Autonomy/Performance, Impaired Limits, Other-

Directedness and Overvigilance/Inhibition (for a description, see Table 1). It is generally assumed that Young and colleagues provide a rich theoretical *expansion* of Beck's model, although there are also some *differences* between both schema-conceptualisations. For example, as noted by Schmidt, Joiner, Young and Telch (1995), whereas Beck's underlying assumptions are conditional, schema's as defined by Young are unconditional, suggesting that they are activated more frequently. However, both defined schema's as stable, overgeneralized belief structures that influence the selection and interpretation of information, have varying levels of activation, and contain stored affects and cognition (Riso & McBride, 2007). Further, Young's schema taxonomy finetunes Beck's earlier, rough distinction between so called 'helpless' and 'unloveable' schemas (see: J. S. Beck, 1995). Moreover, to assess the schemas and domains he outlined, Young developed a self report measure, the Young Schema Questionnaire (YSQ: Young & Brown, 1990). Hence, for clinical practice, Young has provided a valuable tool to help identify maladaptive schemas that might be missed through the classic cognitive behavioural assessment measures (e.g. the Automatic Thoughts Questionnaire) and techniques (e.g. thought recording) (Young et al., 2003).

Both in community and in patient samples, the YSQ shows adequate internal consistency, test-retest reliability, discriminant and construct validity, and factor analyses on the YSQ-items generally confirm the proposed 15-schema structure (e.g.: Calvete, Estevez, de Arroyabe, & Ruiz, 2005; Hoffart et al., 2005; Lee, Taylor, & Dunn, 1999; Rijkeboer & van den Bergh, 2006; Rijkeboer, van den Bergh, & van den Bout, 2005; Schmidt, Joiner, Young, & Telch, 1995; Waller, Meyer, & Ohanian, 2001; Waller, Shah, Ohanian, & Elliott, 2001; Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002). The first order factor structure of the YSQ is generally accepted, yet there has been quite some debate on the schema domain structure that Young hypothesized. Exploratory second order factor analyses on the YSQ in student samples (Calvete et al., 2005; Schmidt et al., 1995) and patient samples (Lee et al.,

1999) respectively led to a solution with three and four instead of five second order factors. However, the majority of schemas loaded substantially on two or more second order factors, since schema subscales tend to correlate highly. Surprisingly, when theoretically labelling the established second order factors, Lee et al. (1999) and Schmidt et al. (1995) ignored many of these crossloadings, without testing the influence on the overall model fit. Calvete and colleagues (2005) on the contrary did confirm the fit of their exploratory three-factor model. Using confirmatory factor analysis allows for balancing several models against each other and determining which one most parsimoniously represents the YSQ higher order structure. This way, Hoffart and colleagues (2005) evidenced the fit of a four-factor higher order structure in a patient sample, based on the results of Lee et al. (1999) and its superiority compared to a three-factor model, based on the results of Schmidt et al. (1995) as well as compared to the five-factor solution hypothesized by Young (2003). To the best of our knowledge, no other confirmatory second order factor analyses on the YSQ are available in the literature on adults.

Many researchers have used Young's taxonomy to characterize the content of cognitive vulnerability in adults with various forms of psychopathology, for instance personality disorders (e.g.: Jovev & Jackson, 2004; Petrocelli, Glaser, Calhoun, & Campbell, 2001), eating disorders (e.g.: Leung, Waller, & Thomas, 1999; Unoka, Tolgyes, & Czobor, 2007; Waller, Ohanian, Meyer, & Osman, 2000), alcohol and drug abuse (e.g.: Brotchie, Meyer, Copello, Kidney, & Waller, 2004), anxiety (e.g.: Pinto-Gouveia, Castilho, Galhardo, & Cunha, 2006) and depression (e.g.: Shah & Waller, 2000). In this type of study, it was consistently demonstrated that those suffering from psychopathology display significantly higher schema scores compared to 'healthy' controls, that schema scores can discriminate reliably between groups with different forms of psychopathology and/or that schema scores are associated psychological problems. Further, some studies have shown that higher levels of maladaptive schemas predict past history of major depressive episodes (Abela, Auerbach,

Sarin, & Lakdawalla, 2009) and eating disorders (Sarin and Abela, 2003) in currently non-disordered individuals even after controlling for current symptoms. These findings are in line with assumptions within cognitive theory on the dimensionality of the schema concept, on the positive association of maladaptive schemas and psychopathology, and on maladaptive schemas as a vulnerability factor for the development of psychological symptoms.

However, there are major differences between studies on the maladaptive schemas identified in individuals sharing the same psychological disorder (see e.g.: Calvete et al., 2005), which flatly contradicts with the cognitive content-specificity hypothesis. Obviously, these inconsistencies may reflect methodological differences between studies (e.g., the inclusion of a referred versus a non-referred sample, the use of different instruments to assess psychopathology, the age group under study, etc.). In our opinion, two other important issues are involved here. First, given the abovementioned strong association of schemas, analyses on content specificity are always conducted with a large set (n=15) of (highly) correlating predictors, seriously complicating the evaluation of the relative importance of each schema. Some statistical techniques, such as regression analysis, control for the overlap between predictors. Surprisingly, these techniques were seldom used in studies investigating specificity in the association of Young's schemas and psychopathology. Second, comorbidity between psychological disorders seems to be the rule rather than the exception (see e.g.: Ford, Goodman, & Meltzer, 2003). Consequently, it is never certain whether an established specific association between cognitive vulnerability and some form of psychopathology is unique to that type of disorder or whether it serves as a non-specific psychopathology risk factor (Grant et al., 2003). However, in studies on Young's theory, comorbidity has generally not been taken into account, which might have blurred the findings.

In conclusion, mounting evidence suggests the utility of Young's model in general and the YSQ in particular to conceptualize distorted thinking patterns in referred and non-referred

adults with various psychological problems. Nevertheless, some unresolved methodological issues reoccur in the literature and prevent us from drawing firm conclusions on (a) the validity of Young's domain taxonomy and (b) the tenability of the cognitive content-specificity hypothesis within this framework. In our opinion, (a) using confirmatory techniques to test second order models and (b) statistically controlling for the intercorrelation between schemas as well as for the comorbidity of psychological problems, might create an opportunity to overcome this impasse.

Research on maladaptive schemas in younger populations has lagged far behind that of adult samples. Nonetheless, as maladaptive schemas are presumed to originate early in life and subsequently create vulnerability for psychological problems, cognitive diatheses must be demonstrable from childhood onwards, albeit in some developing form (Cole et al., 2008; J. E. Turner & Cole, 1994). Studying schemas in general and Young's theory in particular among younger populations is of special relevance. First, hardly any research paid attention to whether specific schema's uniquely contribute to internalizing or externalizing problems in adolescence. Second, a better understanding of maladaptive schemas that develop out of familial adversity in childhood and the mechanisms involved, could yield insight in developmental trajectories leading to the development of psychopathology. Third, Young has outlined specific treatment strategies to deal with maladaptive schemas. Promising results of schema-focused therapy were found in a randomized control trial with borderline personality disorder patients (Giesen-Bloo et al., 2006) and the usefulness of techniques for treating cognitive schemas in Axis-I pathology is generally acknowledged. Consequently, in case Young's theory stands the test in youth, his schema model might create the opportunity of developing early interventions for youngsters.

To date, five reports have described the use of Young's framework in adolescents. In a community sample of about 300 17 - 18 year old girls, the YSQ was able to identify specific

schemas linked to depressive symptoms but not to eating disorder symptoms (Cooper, Rose, & Turner, 2005). When in this sample the top 10% and bottom 10% on Body Mass Index (BMI) were selected, a greater severity of maladaptive schemas and an association of schemas on the one hand and low levels of maternal care and high levels of overprotection on the other hand were demonstrated in the overweight group (n=23) (H. M. Turner, Rose, & Cooper, 2005). Van Vlierberghe and Braet (2007) also demonstrated greater severity of maladaptive schemas in referred obese youth (n=91) as compared to normal weight controls (n=91) and an association of schemas with internalizing and externalizing problem behaviour. Moreover, the YSQ appeared reliable in terms of internal consistency (alphas ranging from .65 up to .86). Next, in a community sample of 173 boys and girls aged 12 to 15 years, Muris (2006a) found correlations between maladaptive schemas on the one hand and parental rearing practices, personality and psychological symptoms on the other hand. Again, the YSQ appeared internally consistent. Moreover, an exploratory second order factor analysis on the schema subscales yielded support for a three-factor structure. Finally, in a sample of both referred (n=37) and non-referred (n=39) depressed youth (aged 13-19), Lumley and Harkness (2007) found evidence for a cognitive content specificity model: cognitions related to danger mediated the association of childhood maltreatment and anxiety symptoms, and schemas related to loss or worthlessness mediated the association of childhood maltreatment and depressive symptoms. In sum, the internal consistency levels of the YSQ in youth and the theoretically meaningful correlates and discriminative power of the maladaptive schemas outlined by Young seem promising. Nonetheless, more research on adolescents is needed. Hence, the present article reports on two studies that further investigated the utility of Young's cognitive framework in youth.

Study 1 focused on the factorial validity and the internal consistency of the YSQ in adolescents. First, it was investigated in a large sample of non-referred adolescents whether

Young's 15-schema structure could be replicated in youth, using confirmatory factor analysis. Second, the second order factor structure of the YSQ was examined using confirmatory analyses. The fit of Young's five-domain model was investigated and subsequently contrasted with the three-factor models outlined by Calvete et al. (2005) and Muris (2006a) and the four-factor model outlined by Hoffart et al. (2005).

Study 2 aimed to test three cognitive theoretical hypotheses of Young's framework: (1) the relevance of exploring schemas in youth and the dimensionality of the schema concept; (2) the hypothesis that maladaptive schemas have explanatory value for understanding psychopathology in adolescence; (3) the tenability of the cognitive content-specificity hypothesis. On the basis of theoretical viewpoints on content-specificity (A. T. Beck, 1976; A. T. Beck et al., 1985; Clark et al., 1999) as well as on the basis of empirical studies on content specificity within Young's framework (e.g.: Calvete et al., 2005; Pinto-Gouveia et al., 2006; Shah & Waller, 2000), we put forward the following specific hypotheses: (a) Depressive problems are specifically associated with the schemas Defectiveness/Shame, Dependence/Incompetence, Failure to Achieve (all referring to low self-evaluation/incompetence) and Emotional Deprivation; (b) Anxiety problems are specifically associated with the schemas Vulnerability to Harm/Illness and the schemas of the Overvigilance/Inhibition domain; (c) Disruptive behaviour problems are associated with the schemas of the Impaired Limits domain.

Study 1: Factor structure and internal consistency of the YSQ-SF in youth

Methods

Participants

The sample of Study 1 included 635 school aged non-referred adolescents (352 girls; 283 boys) with a mean age of 14.87 years (SD = 1.65; range 12-18, with an equal distribution of all age groups). According to Hollingshead four-factor index of socioeconomic status (Hollingshead, 1975), 1.10% of the adolescents' families were in upper, 15.91% in upper-middle, 59.06% in middle, 19.53% in lower middle and 3.31% in lower social class. In seven cases, data on SES were missing.

Measures

The Young Schema Questionnaire - Short Form (YSQ-SF: Young & Brown, 1990) is a 75-item self-report questionnaire that assesses 15 maladaptive schemas belonging to five schema domains as outlined by Young (Young et al., 2003). Each item is phrased as a negative belief regarding self and one's relationships with others, to be rated on a Likert scale from 1 ('completely untrue of me') to 6 ('describes me perfectly'). An individual schema score is obtained by averaging scores on the five items each schema consists of. The Dutch translation of the YSQ-Long Form (YSQ-LF: Sterk & Rijkeboer, 1997) demonstrates good psychometric properties in referred and non-referred adult populations (Rijkeboer & van den Bergh, 2006; Rijkeboer et al., 2005). Therefore, corresponding items constituting the short version were extracted from the Dutch long version for adults. These items were rephrased so to be comprehensible for adolescents and fit in their living environment. This Dutch adolescent short version was backtranslated and sent to the original author for approval.

Procedure

The institutional review board of Ghent University reviewed and approved the protocol of this study. Adolescents between 12 and 18 years of age, with a normal intelligence and without pervasive developmental disorder (PDD) were eligible. Two recruitment methods

were used. First, four secondary schools were contacted and agreed to take part. School sampling was based on grade (from 1 to 7), type of curriculum (general, technical and vocational education) and school type (public and catholic). In total, 220 boys and 259 girls were questioned via schools. One father refused the participation of his daughter (consent rate: 99.79%). However, as the participating schools were mainly situated in urban areas, we were concerned with an overrepresentation of adolescents living in the city at the expense of youth from more rural areas. Therefore, we instructed trained third-year clinical psychology students (living all over Flanders) to recruit participants meeting the inclusion criteria in their near home environment. This way, 70 boys and 110 girls were questioned. Besides in degree of urbanization, the second sample also showed diversity in age, school type, type of school curriculum and socio-economic class. After explication of the objectives and the procedure of the study, informed consent was obtained from all adolescents and their parents. Overall, 3.64% (n=24) of the adolescents were excluded due to an excess of missing YSQ-data (>5% missing YSQ-items).

Data analysis

We tested the first and the second order factorial validity of the YSQ in youth by means of confirmatory factor analyses (CFA's) performed with MPlus (Muthén & Muthén, 2007). Although overall only 0.28% of YSQ-items were missing, listwise deletion of participants would have reduced the total sample size to 539 subjects. Therefore, analyses were done using the Full Information Maximum Likelihood (FIML) method to deal with the missing values (for a discussion on this matter, see: Brown, 2006).

Several types of indices for determining overall model fit were used. First of all, the chi-square goodness-of-fit statistic divided by its degrees of freedom is reported. Ratios of 2:1 to 5:1 indicate acceptable fit, but values less than 3 are considered favourable (Kline, 1998).

The comparative fit index (CFI) and the Tucker-Lewis index (TLI) are incremental fit indices, with values greater than .90 and .95 indicating adequate and good model fit (Hu & Bentler, 1999). The root-mean-square error of approximation (RMSEA) is a non-centrality based index, with a RMSEA up to .08 and .06 representing respectively acceptable and good model fit (Browne & Cudeck, 1992). Finally, the standardized root-mean-square residual (SRMR) is a standardized summary of the average covariance residuals, with a cut-off value close to .08 indicating a relatively good fit to the model (Hu & Bentler, 1999). Because inspection of the data revealed that the assumption of (multivariate) normality did not hold, the distribution of the test statistics to evaluate model fit, might be distorted. Therefore, a robust estimator was used to correct for non-normality.

In all CFA's, oblique rotation was applied, assuming that schemas as well as higher order factors are not totally uncorrelated. Further, the following specifications were made for the first order analysis: (1) each item of the YSQ was allowed to load freely on its theoretically hypothesized schema, but was not allowed to load on other schemas; (2) schemas were free to correlate; (3) the measurement error variances between the observed variables were not allowed to correlate. For the second order models, the following specifications were made (1) each first-order factor of the YSQ was allowed to load freely on the theoretically hypothesized higher order factor (schema domain), with zero loadings on the other higher order factors, additionally, the associations between first-order factors were fixed to zero; (2) higher order factors were free to correlate; (3) the measurement error variances between the observed variables were not allowed to correlate.

Results

First order confirmatory factor analyses

The results of the goodness of fit indices for the first order CFA's (as shown in Table 2), suggest that the fit of Young's theoretically hypothesized 15 schema structure to the data is acceptable. Only the CFI and the TLI-values for the 15-factor model were just below the threshold of .90. Schema scores were computed in accordance with Young's theoretical 15-schema model. Table 3 depicts Cronbach alphas together with means and standard deviations of schema scores. As can be seen, the internal consistency levels of the schema subscales ranged from acceptable (alpha = .71) to very good (alpha = .83). Only the Enmeshment/Undeveloped Self schema demonstrated poor internal consistency (alpha = .64). Intercorrelations between observed schema scores varied between .18 and .62 (all $p < .001$).

Second order confirmatory factor analyses

The goodness of fit indices for the second order CFA's (see also Table 2), suggest a good fit for all tested models. Again, only the CFI and the TLI-values were just below the threshold of .90. Given that the present analyses yielded no psychometric arguments to assume that one of these models is preferable above the other, we chose to compute the five domain scores in accordance with Young's theoretical model. Means, standard deviations and Cronbach alphas of the domain scores are also depicted in Table 3. All schema domain subscales were internally consistent, with alphas ranging from .77 for the Other-Directedness schema domain up to .92 for the Disconnection/Rejection domain. Intercorrelations between observed schema domain scores varied between .47 and .68 (all $p < .001$).

Study 2: Tenability of Young's cognitive theory in youth

Methods

Participants

The sample of Study 2 consisted of 104 referred (41 girls; 63 boys) and 112 non-referred (38 girls; 74 boys) adolescents. In the referred sample, the adolescents' mean age was 14.60 years (*SD* = 1.60; range 12-18) and according to Hollingshead index of SES (Hollingshead, 1975), 1.92% of the adolescents' families were in upper, 15.38% in upper-middle, 43.27% in middle, 25.96% in lower middle and 1.92% in lower social class. Twelve referred adolescents permanently lived in an institution. In the non-referred sample, the adolescents' mean age was 15.50 years (*SD* = 1.70; range 12-18) and 14.41% of the adolescents' families were in upper-middle, 64.86% in middle, 18.92% in lower middle and 1.80% in lower social class. For one non-referred adolescent, no information on SES was obtained. The referred and the non-referred group did not differ from each other in terms of gender distribution, $\chi^2(1) = 0.70$, $p = .40$, or in terms of SES, $F(1,201) = 0.03$, $p = .87$. However, group differences were found for age, $F(1,214) = 16.06$, $p < .001$. The non-referred group was significantly older than the referred group.

Instruments

The Youth Self Report and the Child Behavior Checklist (YSR and CBCL: Achenbach & Rescorla, 2001) are valid and reliable questionnaires assessing emotional and behavioural problem areas in youth as reported by the adolescent and one of the parents respectively. For both the CBCL and the YSR, a global internalizing and externalizing problem behaviour score is obtained. Moreover, Achenbach and Rescorla (2001) constructed scales for scoring the CBCL and the YSR in terms of items that experienced psychiatrists and psychologists judged to be very consistent with DSM-IV diagnostic categories. For the purpose of the present study, the DSM-oriented scales 'affective problems', anxiety problems', 'oppositional

defiant problems' and 'conduct problems' were used[1]. Obviously, a particular score on a DSM-oriented scale is not directly equivalent to a DSM diagnosis: high scores on DSM-oriented scales suggest diagnoses that should be considered. However, in contrast with the categorical approach of using structured clinical interviews to asses the presence or absence of a psychiatric diagnosis, DSM-oriented scales provide the possibility of dimensional assessment of DSM pathology, which enables more advanced forms of statistical testing. On the basis of normative data from a large non-referred sample of American children who had not received any psychological or psychiatric help in the preceding 12 months (Achenbach & Rescorla, 2001), T-scores were assigned to raw scale scores to enable comparison of children with peers.

The Structured Clinical Interview for DSM-IV - Childhood version (KID-SCID: Hien et al., 1994) is based on the SCID for adults (Spitzer, Williams, & Gibbon, 1986), a widely used diagnostic interview that has acceptable reliability and validity (Spitzer, Williams, Gibbon, & First, 1992; J. B. W. Williams et al., 1992). Similar to the adult version, the KID-SCID is an interviewer-based semi-structured instrument designed to generate childhood DSM-IV diagnoses for clinical research studies. The interview was translated in Dutch by Dreessen, Stroux and Weckx (1998). In the current study, the following modules were administered in an interview format with the adolescent: disruptive behaviour disorders, mood disorders, anxiety disorders and adjustment disorders. Psychometric studies are still ongoing, but preliminary results of a study by Matzner, Silva, Silvan, Chowdhury and Nastasi (1997) showed fair to excellent test-retest reliability for the disruptive behaviour disorders (between .63 and .84) and various anxiety disorders (between .44 and 1.0). Other studies indicated excellent interrater reliability and/or convergent validity for the various modules (Matzner,

[1] The DSM-oriented scales were used to investigate the cognitive content-specificity hypothesis. Particularly the subscales 'affective problems', anxiety problems' oppositional defiant problems' and 'conduct problems' were selected, because for these four forms of psychopathology we were able to formulate literature-based (A. T. Beck, 1976; A. T. Beck et al., 1985; Clark et al., 1999) concrete hypotheses on content specificity.

1994; Smith, Huber, & Hall, 2005; Timbremont, Braet, & Dreessen, 2004; Van Vlierberghe, Braet, Goossens, & Mels, 2009)

For a description of the adolescent Young Schema Questionnaire – Short Version: see Study 1.

Procedure

The institutional review board of Ghent University reviewed and approved the protocol of this study. Adolescents between 12 and 18 years of age with a normal intelligence and without PDD were eligible. After explication of the objectives and the procedure of the study, informed consent was obtained from adolescents and their parents. The CBCL was sent to all parents. We aimed to interrogate the primary caregiver, hence the CBCL was predominantly filled out by mothers. However, in a minority of cases fathers completed the CBCL. Some fathers can nowadays indeed be considered the primary caregiver. Furthermore, although in this respect a reporter effect has been demonstrated, its impact seems rather small (Achenbach & Rescorla, 2001). Adolescent questionnaires (YSR and YSQ) and interviews (KID-SCID) were administered randomly by clinical psychology students or psychologists. All were trained by two clinical psychologists experienced in the administration of the KID-SCID in youth. The general introduction to the interview, its global procedure and the specific questions each module consists of were outlined in detail. Subsequently, a video demonstration of the mood disorder module was given to exercise the scoring of the interview. Afterwards, the exercise was discussed plenary. Finally, the trainees practiced the KID-SCID by role-playing (two by two). During the whole study period, the instructors kept stand by to answer questions and discuss problems encountered during interviewing.

Referred adolescents were recruited via two outpatient (eligible participants: n=30 and n=29 respectively) and four inpatient centres (eligible participants: n=12, n=47, n=9 and n=19

respectively) for assessment and treatment of adolescents with emotional and behavioural problems. Across institutions, 146 referred adolescents were eligible for this study, 84.93% (n=124) agreed to take part and 75.34% (n=110) effectively participated. Participation was rewarded with two movie theatre vouchers. Six adolescents (5.45%) were excluded due to an excess of missing YSQ-data (>5% YSQ-items missing). In the referred group, 41.35% of the parents did not return the CBCL, a problem frequently encountered in residential settings. In these cases, a close attendant of the child at the institution was asked to fill out the CBCL. This way, the inclusion of a second informant for the measurement of psychopathology was finally realised in 84.62% of the referred adolescents. Further, 3.85% (n=4) of the YSR's was not valid and two referred adolescents could not be interviewed for organisational reasons.

To compose the non-referred sample, third-year clinical psychology students were instructed to recruit two participants meeting the general inclusion criteria. Further, students were asked to include only adolescents following technical and/or vocational education and at least one of both participants had to be a boy. This was done to match the referred and the non-referred sample as closely as possible with respect to SES, educational level and gender. In total, 79 boys and 39 girls were questioned at home. Analyses revealed that referred and non-referred youth did not differ on any of the matching variables. None of the adolescents from study two was included in study one. Adolescents were asked whether they received any psychological or psychiatric help at the moment of the study. This was the case for two participants. For one adolescent no information on referral status was obtained. These three adolescents were excluded from further analyses. Another three adolescents (2.54%) were removed due to an excess of missing YSQ-data (>5% YSQ-items missing). Finally, two CBCL's (1.79%) were not returned.

Data analysis

CBCL and YSR data were combined to multi-informant scores, by extracting a common factor score from each pair of ratings. In case only ratings of one informant were available (n=22), the score of the other informant substituted the missing value for the construction of the composite psychopathology scores. This way, six dimensional composite psychopathology measures were obtained: internalizing problem behaviour, externalizing problem behaviour, affective disorder symptoms, anxiety disorder symptoms, oppositional defiant disorder symptoms and conduct disorder symptoms. Factor scores reflect the common core of variables. In our opinion, what is shared by both informants in their view is a much better reflection of the true problems of the adolescent, compared to a single informant's view. In the present study, the variance explained by the aggregated factors was for example 79% for internalizing problem behaviour and 80%, for externalizing problem behaviour, showing that both informants share a lot in their view.

Further, four categorical psychopathology measures were constructed on the basis of the clinical interview data: (1) The presence (value 1) or absence (value 0) of at least one mood disorder diagnosis (that is: the adolescent fulfilled all criteria for depressive disorder, (hypo)manic episode, dysthymic disorder and/or depressive disorder not otherwise specified; n=20); (2) The presence (value 1) or absence (value 0) of at least one anxiety disorder diagnosis (that is: the adolescent fulfilled all criteria for separation anxiety disorder, social phobia, specific phobia, obsessive compulsive disorder, generalized anxiety disorder, panic disorder, agoraphobia and/or anxiety disorder not otherwise specified; n=26); (3) The presence (value 1) or absence (value 0) of an oppositional defiant disorder diagnosis (that is: the adolescent fulfilled all criteria for oppositional defiant disorder; n=17); (4) The presence (value 1) or absence (value 0) of a conduct disorder diagnosis (that is: the adolescent fulfilled all criteria for conduct disorder; n=16).

To address the first research question, schema scores of the non-referred and the referred sample were compared by means of a Multivariate Analysis of Covariance (MANCOVA) with referral status as a factor and the 15 schemas as dependent variables. Age was adopted as a covariate given its significant association with the schemas Social Isolation/Alienation, $r = -.14$, $p < .05$, Defectiveness/Shame, $r = -.16$, $p < .05$, and Unrelenting Standards/Hypercriticalness, $r = .14$, $p = .05$.

To investigate the second hypothesis, the explanatory value of maladaptive schemas for internalizing and externalizing symptomatology in youth was explored by means of two multiple regression analyses, with the schemas as the independent variables and the composite internalizing and externalizing symptom score as the dependent variables.

Finally, the cognitive content specificity hypothesis was addressed in two sets of analyses. We controlled statistically for the intercorrelation between schemas by using (logistic) regression analyses. First, with the four composite DSM-oriented scales as the dependent variables, four multiple linear regression analyses were conducted. Each time, the three other DSM-oriented scales were entered as independent variables in block 1 (to control statistically for the comorbidity between symptoms) and the 15 schemas were entered as independent variables in block 2. Second, with the categorical KID-SCID diagnoses as dependent variables, four binary logistic regression analyses were conducted, each time with the 15 schema scores as the independent variables[2].

Results

[2] One could argue that we should have controlled for comorbidity by including only cases of 'pure' mood, anxiety, oppositional defiant or conduct disorder. However, only 8 adolescents fulfilled criteria for 'pure' mood disorder, only 13 adolescents fulfilled criteria for 'pure' anxiety disorder, only 8 adolescents fulfilled criteria for 'pure' oppositional defiant disorder and only 12 adolescents fulfilled criteria for 'pure' conduct disorder. As we were concerned with the power and hence the reliability of analyses with that few cases in one of both categories, we decided to include comorbid cases in the categorical analyses.

Descriptive statistics

Table 4 displays Cronbach alphas, mean T-scores and standard deviations on CBCL and YSR subscales as well as *F*-values for the comparison of non-referred and referred youth. Referred adolescents scored significantly higher than non-referred adolescents for all psychological symptom subscales. After calculation of the composite psychopathology scores, significant differences remained for internalizing, $F(1,214) = 86.35$, $p < .001$, and externalizing symptoms, $F(1,214) = 64.70$, $p < .001$, as well as for affective, $F(1,214) = 98.94$, $p < .001$, anxiety, $F(1,214) = 45.35$, $p < .001$, oppositional defiant, $F(1,214) = 39.41$, $p < .001$, and conduct disorder, $F(1,214) = 44.39$, $p < .001$.

Table 5 provides an overview of the mental disorder diagnoses obtained with the clinical interview. In the non-referred group, six adolescents (5.36%) received one diagnosis. In the referred sample, 69 adolescents (67.65%) obtained at least one mental disorder diagnosis: there were 40 adolescents (39.22%) with one, 18 (17.65%) with two, seven (6.86%) with three, and four (3.92%) with four diagnoses.

We checked whether referred adolescents with a diagnosis differed from referred adolescents without a diagnosis regarding the dimensional composite psychopathology measures. An overall difference between non-referred adolescents, referred adolescents without a diagnosis and referred adolescents with at least one diagnosis was found for internalizing, $F(2,211) = 43.99$, $p < .001$, and externalizing, $F(2,211) = 33.16$, $p < .001$, problem behaviour as well as for the affective, $F(2,211) = 51.84$, $p < .001$, anxiety, $F(2,211) = 25.59$, $p < .001$, oppositional defiant, $F(2,211) = 18.09$, $p < .001$ and conduct disorder, $F(2,211) = 23.48$, $p < .001$, scales. Post-hoc analyses revealed that each of these effects was attributable to differences between the non-referred group and the referred group with a diagnosis on the one hand, all $p < .001$, and between the non-referred group and the referred group without a diagnosis on the other hand, all $p < .01$. Referred adolescents without a

diagnosis did not differ significantly from referred adolescents with a diagnosis for any of these psychopathology scales, all $p > .05$. These findings indicate that is reasonable to consider referred adolescents as a homogenous group of adolescents with respect to the presence of psychological symptomatology.

In the total sample, intercorrelations between schemas varied between $r = .20$, $p < .01$, and $r = .75$, $p < .001$. Further, all schemas correlated significantly with internalizing and with externalizing problem behaviour. Finally, nearly all schemas correlated significantly with symptoms of anxiety, depression, oppositional defiant and conduct disorder. Only the schemas Self-Sacrifice and Unrelenting Standards/Hypercriticalness were not associated with oppositional defiant, $r = .05$, $p = .48$, and $r = .01$, $p = .89$, respectively and conduct disorder, $r = .10$, $p = .14$, and, $r = .13$, $p = .05$, respectively symptoms[3].

Dimensionality of the schema concept: mean differences in schema scores between non-referred and referred youth

Overall, the non-referred group differed from the referred group with respect to the presence of maladaptive schemas, $F(15,198) = 1.86$, $p < .05$. Significant differences were found for 10 out of 15 schemas. The referred group scored significantly higher for the schemas Emotional Deprivation, $F(1,212) = 15.52$, $p < .001$, Abandonment/Instability, $F(1,212) = 12.06$, $p = .001$, Mistrust/Abuse, $F(1,212) = 8.43$, $p < .01$, Social Isolation/Alienation, $F(1,212) = 14.28$, $p < .001$, Defectiveness/Shame, $F(1,212) = 10.09$, $p < .01$, Failure to Achieve, $F(1, 215) = 7.34$, $p < .01$, Vulnerability to Harm/Illness, $F(1,212) = 6.99$, $p < .01$, Enmeshment/Undeveloped Self, $F(1,212) = 4.03$, $p = .05$, Subjugation, $F(1,212) = 6.61$, $p = .01$, and Self-Sacrifice, $F(1,212) = 4.03$, $p < .05$. No differences emerged for the schemas Dependence/Incompetence, Entitlement/Grandiosity, Insufficient Self-Control/Self-

[3] Tables with a complete account of correlations between schemas, and correlations between schemas and dimensional psychopathology measures are available from the authors upon request.

Discipline, Emotional Inhibition and Unrelenting Standards/Hypercriticalness.

In Table 6, Cronbach alphas, means and standard deviations of schema scores in the referred and the non-referred group are reported. As can be seen, in both groups, an acceptable level of internal consistency (alpha >= .70) was reached for most schemas, except for the Dependence/Incompetence schema (alpha = .66), the Enmeshment/Undeveloped Self schema (alpha = .63) and the Unrelenting Standards/Hypercriticalness schema (alpha = .64) in the non-referred and the Entitlement/Grandiosity schema (alpha = .67) in the referred group.

Association of cognitive vulnerability and internalizing and externalizing problem behaviour

Regression analyses indicated that all maladaptive schemas together explained 29.8% of the variance in internalizing problem behaviour and 21.3% of the variance in externalizing problem behaviour.

In the build-up to our research questions on content-specificity, we calculated partial correlations to investigate the unique associations of schemas with internalizing and externalizing symptoms respectively. As can be seen in Table 7, when externalizing symptoms were partialled out, *all but* the schemas constituting the Impaired Limits domain, remained significantly associated with internalizing symptoms. When internalizing problem behaviour was partialled out, *only* the schemas constituting the Impaired Limits domain, remained significantly associated with externalizing problem behaviour.

Cognitive content-specificity: Analyses with continuous psychopathology measures

The first regression analysis indicated that the schemas Emotional Deprivation, $t = 1.99$, $p < .05$, and Failure to Achieve, $t = 2.38$, $p < .05$, were positively predictive for depressive symptomatology. The overall model, including anxiety, oppositional defiant and conduct disorder symptoms together with the 15 schemas showed good fit, $F(18, 196) =$

19.00, $p < .001$. Further, the 15 schemas explained a significantly additional amount of variance over and above the variance already explained by anxiety, oppositional defiant and conduct disorder symptoms, FChange(15,196) = 2.13, $p = .01$.

The second regression analysis indicated that the schemas Vulnerability to Harm/Illness, $t = 1.99$, $p < .05$, and Unrelenting Standards/Hypercriticalness, $t = 2.25$, $p < .05$, were positively, and the schemas Emotional Deprivation, $t = -2.97$, $p < .01$, and Insufficient Self-Control/Self-Discipline, $t = -2.73$, $p < .01$, were negatively predictive for anxiety symptoms. The overall model, including depressive, oppositional defiant and conduct disorder symptoms together with the 15 schemas showed good fit, $F(18, 196) = 17.02$, $p < .001$. Further, the 15 schemas explained a significantly additional amount of variance over and above the variance already explained by depressive, oppositional defiant and conduct disorder symptoms, FChange(15,196) = 3.39, $p < .001$.

The third regression analysis indicated that the schema Defectiveness/Shame, $t = 2.10$, $p < .05$, was positively predictive, and the schema Unrelenting Standards/Hypercriticalness, $t = -3.22$, $p < .05$, was negatively predictive for oppositional defiant disorder symptoms. The overall model, including depressive, anxiety and conduct disorder symptoms together with the 15 schemas showed good fit, $F(18,196) = 18.20$, $p < .001$. Further, the 15 schemas explained a significantly additional amount of variance over and above the variance already explained by depressive, anxiety and conduct disorder symptoms, FChange(15,196) = 1.78, $p = .04$.

The fourth regression analysis indicated that the schemas Unrelenting Standards, $t = 2.00$, $p < .05$, and Entitlement, $t = 2.48$, $p < .05$, were positively predictive for conduct disorder symptoms. The overall model, including depressive, anxiety and oppositional defiant disorder symptoms together with the 15 schemas showed good fit, $F(18,196) = 17.44$, $p < .001$. Further, the 15 schemas explained a significantly additional amount of variance over

and above the variance already explained by depressive, anxiety and oppositional defiant disorder symptoms, *F Change*(15,196) = 1.69, $p = .05$.

Cognitive content specificity: Analyses with categorical psychopathology measures

The first logistic regression analysis indicated that the schemas Defectiveness/Shame, *Wald(1)* = 4.29, $p < .05$, and Dependence/Incompetence, *Wald(1)* = 4.05, $p < .05$, were positively predictive for the presence of depressive disorder. The overall model showed good fit, $\chi^2(15) = 38.65$, $p = .001$.

The second logistic regression analysis indicated that the schemas Abandonment/Instability, *Wald(1)* = 3.90, $p < .05$, Failure to Achieve, *Wald(1)* = 5.70, $p < .05$, Dependence/Incompetence, *Wald(1)* = 6.94, $p < .01$, Unrelenting Standards/Hypercriticalness, *Wald(1)* = 4.35, $p < .05$, and Entitlement/Grandiosity, *Wald(1)* = 3.89, $p < .05$, were positively predictive for the presence of an anxiety disorder. The overall model showed good fit, $\chi^2(15) = 40.88$, $p < .001$.

The third logistic regression analysis indicated that the schema Social Isolation/Alienation, *Wald(1)* = 8.46, $p < .01$, was positively predictive for the presence of oppositional defiant disorder. However, the overall model showed no adequate fit, $\chi^2(15) = 21.77$, $p = .11$.

The fourth logistic regression analysis indicated that the schemas Failure to Achieve, *Wald(1)* = 4.88, $p < .05$, and Entitlement/Grandiosity, *Wald(1)* = 5.02, $p < .05$ were positively predictive for the presence of conduct disorder. However, the overall model showed no adequate fit, $\chi^2(15) = 21.73$, $p = .11$.

Discussion

The overall aim of the present article was to investigate the utility of Young's framework to understand cognitive vulnerability and its association with psychopathology in youth. Whereas Study 1 mainly focused on the structural properties of the YSQ, Study 2 dealt with the tenability of three main hypotheses of cognitive theory in youth.

Factor analyses confirmed Young's hypothesized first order model with 15 schemas already in this sample of youth aged 12-18 years. In addition, the 15 schema subscales proved reliable in terms of internal consistency. These results parallel findings in adults and confirm the reliability and the first order structural validity of the YSQ in younger populations. Further, we contrasted the adequacy of several second order models, as was performed earlier in adults by Hoffart and colleagues (2005). Analyses indicated that all tested second order models fit the data well. Hence, psychometrically, there are no arguments to prefer one second order model over another. Theoretically however, the use of Young's hypothesized five domain structure seems most appealing as in earlier studies (Calvete et al., 2005; Hoffart et al., 2005; Lee et al., 1999; Muris, 2006a; Schmidt et al., 1995) authors continually seem to return to Young's domain taxonomy to interpret the second order factor structure they established. This theoretical choice is not psychometrically 'wrong', since Young's model of five domains indeed showed good fit.

The dimensionality of the schema concept was confirmed: referred adolescents displayed higher levels of maladaptive schemas compared to non-referred adolescents and an association with internalizing as well as externalizing problem behaviour was established. This means that the Young's schema taxonomy can be seen as relevant for adolescents with psychopathology.

Both the dimensional and categorical analyses confirmed our hypotheses on cognitive content specificity in mood and conduct disorder. Depression was uniquely associated with schemas referring to incompetence (Failure to Achieve, Defectiveness/Shame,

Dependence/Incompetence) and deprivation (Emotional Deprivation). Depressed adolescents perceive themselves as defective, inferior and inadequate in important aspects relative to peers, as unlovable and as unable to handle everyday responsibilities. Further, they have the expectation that their need for emotional support will not be adequately met by significant others. Although the dimensional and categorical analyses differed on the specific schemas identified as predictive, all matched the presumed cognitive content in depression. Next, as hypothesized, both types of analyses evidenced the association of conduct disorder and the Entitlement schema. Adolescents with this severe type of disruptive behaviour perceive themselves as superior, entitled to special rights and privileges, or not bound by the rules of reciprocity that guide daily social interaction. Surprisingly however the schemas Unrelenting Standards/Hypercriticalness (dimensional analyses) and Failure to Achieve (categorical analyses) also appeared predictive for conduct disorder. This finding suggests that adolescents exhibiting conduct disorder problems strive for very high standards of behaviour and performance, but belief that they are unable to achieve them. However, the latter result should be interpreted with caution as the global model with the 15 schemas as predictors for the presence of conduct disorder showed no adequate fit.

As expected, the dimensional analyses revealed that adolescents with anxiety problems are preoccupied with the idea that a catastrophe can strike any time and that they will be unable to prevent this (Vulnerability to Harm/Illness). Anxious adolescents also hold the belief that they must meet very high standards (Unrelenting Standards/Hypercriticalness). These cognitions are combined with a great belief in the availability of others for emotional support (negative association with Emotional Deprivation) and one's own ability to exert sufficient self-control and frustration tolerance to achieve goals and restrain expression of emotions/impulses (negative association with Insufficient Self-Control/Self-Discipline). These last-mentioned findings can be linked to two risk factors for anxiety: overprotection

(Muris, Meesters, & van Brakel, 2003) and behavioural inhibition (Muris, 2006b).

Conform the hypotheses and in line with the dimensional analyses, the Unrelenting Standards/Hypercriticalness schema appeared predictive for anxiety disorder (categorical approach). However, in contrast with our expectations and with the dimensional analyses, the schemas Abandonment/Instability, Failure to Achieve, Dependence/Incompetence, and Entitlement/Grandiosity were predictive also. Hence, the results of the categorical analyses on anxiety yield a complex picture that largely disconfirms our hypotheses. We presume that the type of categorical anxiety measure used, has blurred the results. Whereas the items of the DSM-oriented scale reflect the common core characteristics of anxiety (e.g.: 'Clings to adults or too dependent, 'Nervous, highstrung, or tense', 'Too fearful or anxious', 'Worries'), in the categorical approach, very different types of anxiety disorders (e.g.: social phobia, separation anxiety disorder, panic disorder, post traumatic stress disorder) were considered in a single measure. Consequently, given that anxiety refers to a heterogeneous set of emotional, cognitive and physiological responses, it should be examined whether a generic set of schemas exists common to all anxiety disorders and/or whether subsets of schemas exist that are associated with specific clusters of anxiety disorders (R. Beck & Perkins, 2001).

Finally, it was found that adolescents exhibiting oppositional defiant disorder symptoms consider themselves as unlovable and as defective, bad, unwanted, and inferior in important aspects (Defectiveness/Shame schema) but not hold the belief that they must meet very high standards (negative association with Unrelenting Standards/Hypercriticalness schema). In contrast, the categorical analyses indicated that these adolescents have the idea that they are isolated and do not form part of any group or community (Social Isolation/Alienation schema). However, the latter result should be interpreted with caution as the global model with the 15 schemas as predictors for the presence of oppositional defiant disorder showed no adequate fit.

In sum, there seems to be at least some evidence that specific schemas are more closely related to specific forms of psychopathology. To investigate content specificity, we selected four specific types of psychopathology, i.e mood, anxiety, oppositional defiant and conduct disorder. They were selected because the existing theoretical literature on cognitive vulnerability (A. T. Beck, 1976; A. T. Beck et al., 1985; Clark et al., 1999) enabled us to formulate a number of concrete hypotheses on content-specificity in these disorders within Young's framework. Yet, many more types of psychological problems exist in children and adolescents (e.g.: attachment or eating disorders). Consequently, future studies could characterize the associated cognitive content for each of them.

A strength of Study 1 is the inclusion of a large sample. With respect to the study of maladaptive schemas in youth, this certainly adds to the existing literature. As earlier studies on the YSQ in adolescents were conducted in relatively small community samples, no adequate norm data are yet available. The present data collected in referred and non-referred youth provide preliminary norm data for the YSQ-SF in adolescents. These can be useful in research as well as in clinical practice.

A strength of Study 2 is the inclusion of multiple informants and methods for the assessment of psychopathology. Many studies within the cognitive framework have relied solely on self-report questionnaires. By also questioning parents, we aimed to control for the part of shared method variance caused by relying on one common rater for the assessment of predictor and outcome variables. Including different viewpoints clearly affects the strength of the associations established. Muris (2006a) administered only adolescent report questionnaires, which lead to 52% of the variance in depressive and 38% of the variance in anxiety symptoms explained by schema scores. In contrast, the schemas in the present Study 2 explained respectively 23% and 25% of the variance in multi-informant depressive and anxiety scores. Further, clinical interviews provide an alternative method to assess

psychopathology, which lead however to some surprising differences with the analyses on the basis of questionnaires. More research is certainly required on the validity of a dimensional versus categorical assessment of psychopathology.

The same might be true for the measurement of maladaptive schemas. Sarin and Abela (2003) for example used a semi-structured clinical interview to measure Young's schemas. In future studies, different methods to assess cognitive vulnerability should be evaluated.

Another interesting future line of research would be to elaborate on the dimensionality of the schema concept (see: Van Leeuwen, Mervielde, De Clercq, & De Fruyt, 2007). In this regard, Rijkeboer and van den Bergh (2006) have demonstrated the invariance of the YSQ 15-schema structure across referred and non-referred adults by means of multiple group confirmatory factor analysis. It would be interesting to investigate whether these findings can equally be replicated in adolescents. Similarly, the invariance of the YSQ structure across boys and girls can be studied. Unfortunately, the sample of Study 2 was too small to allow this kind of statistical analysis. Further, it can be investigated whether the correlation of maladaptive schemas and psychopathology is quantitatively (strength) and qualitatively (positive versus negative) parallel in non-referred and referred groups. Finally, it can be examined whether theoretically presumed mediator and moderator effects are present in both referred and non-referred individuals. As mentioned in the introduction, Lumley and Harkness (2007) used a referred sample of depressed adolescents to establish how specific schemas mediate the association of adverse childhood experiences (e.g., emotional maltreatment, physical abuse) on the one hand and anxiety and depressive symptoms on the other hand. It would be interesting to examine whether this mediation hypothesis holds in non-referred adolescents as well and/or can be extended to other forms of childhood adversity (e.g., more subtle maladaptive parenting practices such as overprotection or psychological

control) and psychopathology (e.g., anxiety, disruptive behavior or eating pathology). In this regard, it should be noted that an adequate test of the mediational component of cognitive theory actually requires a longitudinal design.

The diathesis-stress component of cognitive theory translates to the hypothesis that in adults maladaptive schemas moderate the association between currently experienced stress and psychopathology. From a developmental perspective, it would be interesting to investigate at what age Young's maladaptive schemas consolidate and actually start operating as vulnerability factors. This equally raises the issue of the invariance of cognitive vulnerability across age. In this respect, Muris (2006a) suggested that maladaptive schemas might still be less diversified in adolescents than in adults, as they are still in the process of elaboration.

Young developed his schema model because of a great dissatisfaction with the focus of classic cognitive behavioural therapy (CBT) on automatic thoughts and on symptoms (Young et al., 2003). Among other things, Young made a plea for a primary focus on maladaptive schemas during psychotherapy. It would be an over-simplification to state that classic CBT is blind to underlying schemas, but Beck indeed provided few concrete handles to assess and tackle them. Young's diversified schema taxonomy and the development of the YSQ provide clinicians with valuable tools to identify specific maladaptive schemas. Further, Young has outlined treatment guidelines to address each of the schemas. If in future studies, the utility of Young's theory in youth can be confirmed, it might be worthwhile to supplement and refine existing CBT protocols for adolescents on the basis of Young's ideas and treatment guidelines. Given our results on content-specificity, manuals that were developed for cognitive treatment of specific disorders could be analyzed on the extent to which they effectively address the relevant schemas and how they can be improved accordingly.

Acknowledgement

This study was funded by a doctoral fellowship awarded to the first author by the Fund for Scientific Research – Flanders (Belgium). The authors are grateful to the psychologists at the participating centres for the assistance provided. Also, we would like to sincerely thank Saskia Mels for her help in the collection of the data.

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Table 1 Schema descriptions, domain descriptions and exemplary YSQ-SF items[4] (Young et al., 2003).

SCHEMAS/DOMAINS	DESCRIPTION	EXEMPLARY YSQ-SF ITEM
A. Disconnection/Rejection	*Expectation that one's needs for security, safety, stability, nurturance, empathy, sharing of feelings, acceptance and respect will not be met in a predictable manner.*	
1. Abandonment/Instability	The perceived instability or unreliability of those available for support and connection.	'I need other people so much that I am afraid of losing them'
2. Mistrust/Abuse	The expectation that others will hurt, abuse, humiliate, cheat, lie, manipulate or take advantage.	'I feel I have to watch out with other people, otherwise they will deliberately hurt me'
3. Emotional Deprivation	The expectation that one's desire for a normal degree of emotional support will not be adequately met by others.	'In my life there have been few people who really listened to me, understood me or who considered my real needs and feelings'
4. Defectiveness/Shame	The feeling that one is defective, bad, unwanted, inferior or invalid in important respects or that one would be unlovable to significant others if exposed.	'None of the boys or girls that I like could still love me if they knew my flaws'
5. Social Isolation/Alienation	The feeling that one is isolated form the rest of the world, different form other people, and/or not part of any group or community.	'I do not belong; I'm a loner'
B. Impaired Autonomy/Performance	*Expectations about oneself and the environment that interfere with one's perceived ability to separate, survive, function independently or perform successfully.*	
6. Dependence/Incompetence	The belief that one is unable to handle one's everyday responsibilities in a competent manner without considerable help from others.	'I am not very confident in my ability to resolve common everyday problems'
7. Vulnerability to Harm/Illness	Exaggerated fear that imminent catastrophe will strike at any time and that one will be unable to prevent it.	'I am scared of me and/or my family losing all our money and becoming poor'
8. Enmeshment/Undeveloped Self	Excessive emotional involvement and closeness with one or more significant others (often parents) at the expense of full individuation or normal social development.	'I have not been capable of separating from my parent(s) like most other kids my age seem to have managed'
9. Failure	The belief that one has failed, will inevitably fail or is fundamentally inadequate relative to one's peers in areas of	'Most people can do more than I can in the areas of school and other achievements'

[4] To give an idea of the content of the YSQ for adolescents, the represented items are retrieved from the backtranslation of the Dutch adolescent YSQ used in the present study.

	achievement.	
C. Impaired Limits	*Deficiency in internal limits, responsibility to others or long-term goal orientation; leads to difficulty respecting the rights of others, cooperating with others, making commitments or setting and meeting realistic personal goals.*	
10. Entitlement/Grandiosity	The belief that one is superior to other people, entitled to special rights and privileges or not bound by the rules of reciprocity that guide normal social interaction.	'I feel that what I have to offer is of greater value than the things other people have to offer'
11. Insufficiënt Self-Control/Self-Discipline	Pervasive difficulty of refusal to exercise sufficient self-control and frustration tolerance to achieve one's personal goals or to restrain the expression of one's emotions and impulses.	'If I am unable to achieve a goal, I get easily frustrated and give up'
D. Other-Directedness	*An excessive focus on the desires, feelings and responses of others at the expense of one's own needs in order to gain love and approval, maintain one's sense of connection or avoid retaliation.*	
12. Subjugation	Excessive surrendering of control to others because one feels coerced submitting in order to avoid anger, retaliation or abandonment.	'I find it very difficult to stand up for my rights and insist that my feelings are taken into consideration'
13. Self-Sacrifice	Excessive focus on voluntarily meeting the needs of others in daily situations at the expense of one's own gratification.	'I am so busy doing for the people I care about that there is little time left for me'
E. Overvigilance/Inhibition	*Excessive emphasis on suppressing one's spontaneous feelings, impulses and choices or on meeting rigid, internalized rules and expectations about performance and ethical behaviour, often at the expense of happiness, self-expression, relaxation, close relationships or health.*	
14. Emotional Inhibition	The excessive inhibition of spontaneous action, feeling or communication, usually to avoid disapproval by others, feelings of shame or losing control of one's impulses.	'I am embarrassed about showing my feelings to other people'
15. Unrelenting Standards/Hypercriticalness	The belief that one must strive to meet very high internalized standards of behavior and performance, usually to avoid criticism.	'I try to do my level best; I do not settle for 'good enough''

Table 2

Goodness-of-fit indices for the different first and second order YSQ models tested in adolescents

			Fit indices			
Model	*χ^2 (df)*	*χ^2/df*	*CFI*	*TLI*	*RMSEA*	*SRMR*
1. 15 first order factors (Young et al., 2003)	4371.06 (2595)	1.68	0.86	0.85	0.03	0.05
2. Five second order factors (Young et al., 2003)	4645.21 (2675)	1.74	0.84	0.84	0.03	0.06
3. Four second order factors (Hoffart et al., 2005)	4642.78 (2678)	1.73	0.84	0.84	0.03	0.06
4. Three second order factors (Calvete et al., 2005)	4675.56 (2682)	1.74	0.84	0.84	0.03	0.06
5. Three second order factors (Muris, 2006)	4678.10 (2682)	1.74	0.84	0.84	0.03	0.06

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis index; RMSEA = Root-mean-square error of approximation; SRMR = standardized root-mean-square residual

Table 3

Cronbach alphas and norm data for non-referred boys and girls (n=635) on the adolescent YSQ-SF subscales

	α	*M (SD)*
Disconnection/Rejection	.92	1.97 (0.66)
- Emotional Deprivation	.79	1.72 (0.82)
- Abandonment/Instability	.85	2.53 (1.12)
- Mistrust/Abuse	.72	2.14 (0.80)
- Social Isolation/Alienation	.82	1.84 (0.81)
- Defectiveness/Shame	.76	1.62 (0.68)
Impaired Autonomy/Performance	.87	2.00 (0.61)
- Failure to Achieve	.82	1.89 (0.79)
- Dependence/Incompetence	.74	1.92 (0.71)
- Vulnerability to Harm or Illness	.77	2.12 (0.93)
- Enmeshment/Undeveloped Self	.64	2.06 (0.78)
Impaired Limits	.79	2.42 (0.76)
- Entitlement/Grandiosity	.71	2.21 (0.79)
- Insufficient Self-Control/Self-Discipline	.74	2.62 (0.90)
Other-Directedness	.77	2.49 (0.67)
- Subjugation	.71	1.99 (0.75)
- Self-Sacrifice	.74	2.99 (0.87)
Overvigilance/Inhibition	.84	2.41 (0.76)
- Emotional Inhibition	.83	2.16 (0.94)
- Unrelenting Standards/Hypercriticalness	.74	2.66 (0.97)

Table 4

Cronbach alphas, means and standard deviations for non-referred and referred adolescents on the YSR and the CBCL

	Non-referred group		Referred group		
	α	*M* (*SD*)	α	*M* (*SD*)	F
YSR - Internalizing problem behaviour	.88	51.41 (10.18)	.93	59.31 (11.03)	29.41***
YSR – Externalizing problem behaviour	.84	52.20 (8.78)	.86	57.11 (9.34)	15.59***
YSR – Affective problems	.76	54.34 (6.01)	.83	61.44 (9.40)	43.86***
YSR – Anxiety problems	.54	54.81 (5.57)	.58	57.65 (7.25)	10.33**
YSR – Oppositional defiant problems	.53	53.80 (4.85)	.54	55.68 (6.37)	5.89*
YSR – Conduct problems	.68	55.42 (5.58)	.78	58.69 (7.95)	12.23***
CBCL - Internalizing problem behaviour	.86	50.10 (9.91)	.92	65.18 (9.87)	113.56***
CBCL – Externalizing problem behaviour	.91	47.87 (9.91)	.92	62.15 (9.43)	105.81***
CBCL – Affective problems	.76	54.16 (5.94)	.79	66.69 (9.35)	131.34***
CBCL – Anxiety problems	.59	54.35 (5.61)	.76	63.20 (8.65)	75.52***
CBCL – Oppositional defiant problems	.79	53.17 (4.86)	.77	60.18 (7.70)	60.83***
CBCL – Conduct problems	.75	53.15 (4.44)	.87	61.33 (8.56)	75.36***

Note. YSR = Youth Self Report; CBCL = Child Behavior Checklist; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Table 5

Prevalence of DSM-IV disorders based on administration of structured clinical interviews in the non-referred and the referred group

	Non-referred group		Referred group	
	n	%	*n*	%
- ADHD	5	4.46	17	16.67
- ODD	0	0.00	17	16.67
- CD	0	0.00	16	15.69
- CD-NOS	0	0.00	3	2.94
- MDD	0	0.00	15	14.71
- Manic episode	0	0.00	2	1.96
- Hypomanic episode	0	0.00	1	0.98
- DD	0	0.00	3	2.94
- MDD-NOS	0	0.00	2	1.96
- SAD	0	0.00	2	1.96
- SP	0	0.00	3	2.94
- Specific Phobia	1	0.89	8	7.84
- OCD	0	0.00	3	2.94
- PTSD	0	0.00	4	3.92
- GAD	0	0.00	7	6.86
- PD	0	0.00	0	0.00
- AP	0	0.00	0	0.00
- AD-NOS	0	0.00	4	3.92
- Adjustment Disorder	0	0.00	6	5.88

Note. ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder; CD = Conduct Disorder; CD-NOS = Conduct Disorder-Not Otherwise Specified; MDD = Major Depressive Disorder; DD = Dysthymic Disorder; MDD-NOS = Major Depressive Disorder-Not Otherwise Specified; SAD = Separation Anxiety Disorder; SP = Social Phobia; OCD = Obsessive Compulsive Disorder; PTSD = Post Traumatic Stress Disorder; GAD = Generalized Anxiety Disorder; PD = Panic Disorder; AP = Agoraphobia without Panic Disorder; AD-NOS = Anxiety Disorder-Not Otherwise Specified.
% = the percentage adolescents with that specific diagnosis.
For the construction of the categorical mood disorder measure (see data analysis section), adolescents with *comorbid* mood disorder diagnoses were only counted once. Consequently, the total number of adolescents suffering from *at least* one mood disorder, does not equal the mere summation of the number of individual mood disorder diagnoses. The same holds for the construction of the categorical anxiety disorder measure.

Table 6

Cronbach alphas and norm data for non-referred (n=112) and referred (n=104) boys and girls on the YSQ-SF schema subscales

	Non-referred		Referred		
	α	*M (SD)*	*α*	*M (SD)*	*F*
Disconnection/Rejection					
- Emotional Deprivation	.70	1.62 (0.59)	.84	2.08 (1.13)	15.52***
- Abandonment/Instability	.85	2.47 (1.02)	.86	3.07 (1.41)	12.06***
- Mistrust/Abuse	.79	2.08 (0.79)	.85	2.50 (1.21)	8.43**
- Social Isolation/Alienation	.78	1.71 (0.65)	.85	2.22 (1.10)	14.28***
- Defectiveness/Shame	.76	1.56 (0.54)	.85	1.97 (1.06)	10.09**
Impaired Autonomy/Performance					
- Failure to Achieve	.81	1.95 (0.67)	.88	2.34 (1.16)	7.34**
- Dependence/Incompetence	.66	2.04 (0.65)	.84	2.15 (1.03)	1.03
- Vulnerability to Harm or Illness	.82	2.09 (0.82)	.85	2.51 (1.25)	6.99**
- Enmeshment/Undeveloped Self	.63	2.06 (0.71)	.78	2.34 (1.10)	4.03*
Impaired Limits					
- Entitlement/Grandiosity	.72	2.22 (0.72)	.67	2.37 (0.85)	3.13
- Insufficient Self-Control/-Discipline	.76	2.81 (0.91)	.76	2.82 (1.03)	0.28
Other Directedness					
- Subjugation	.80	2.09 (0.79)	.80	2.42 (1.06)	6.61**
- Self-Sacrifice	.73	3.11 (0.83)	.77	3.33 (1.08)	4.21*
Overvigilance/Inhibition					
- Emotional Inhibition	.85	2.25 (0.91)	.85	2.46 (1.16)	2.94
- Unrelenting Standards/Hypercriticalness	.64	2.67 (0.83)	.81	2.72 (1.17)	1.16

Note. * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Table 7

Partial correlations between adolescent schema scores and internalizing and externalizing problem behaviour symptoms

	Internalizing symptoms	Externalizing symptoms
Disconnection and Rejection		
Emotional Deprivation	.25***	.10
Abandonment/Instability	.28***	.10
Mistrust/Abuse	.33***	.02
Social Isolation/Alienation	.44***	-.07
Defectiveness/Shame	.28***	.12
Impaired Autonomy and Performance		
Failure to Achieve	.34***	.01
Dependence/Incompetence	.29***	-.02
Vulnerability to Harm or Illness	.35***	-.02
Enmeshment/Undeveloped Self	.30***	.05
Impaired Limits		
Entitlement/Grandiosity	.05	.23***
Insufficient Self-Control/Self-Discipline	.12	.16**
Other-Directedness		
Subjugation	.32***	.09
Self-Sacrifice	.25***	-.05
Overvigilance and Inhibition		
Emotional Inhibition	.30***	-.03
Unrelenting Standards/Hypercriticalness	.26***	-.08

Note. * = $p < .05$; ** = $p < .01$; *** = $p < .001$