TEMPERAMENT, PERSONALITY, AND DEVELOPMENTAL PSYCHOPATHOLOGY AS CHILDHOOD ANTECEDENTS OF PERSONALITY DISORDERS

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To contribute to the case for a dimensional conceptualization of psychopathology in general and maladaptive personality or personality disorders in particular, the present paper reviews the evidence for a dimensional representation of childhood temperament and personality. The review of temperament and variable–centered as well as person–centered approaches to childhood personality leads us to propose five broadband dimensions that capture individual differences in children and adolescents: extraversion, emotional stability, agreeableness, conscientiousness, and openness/intellect. Our analysis of the CBCL (Achenbach, 1991) and the DIPSI (currently under development at Ghent University), two dimensional models for childhood psychopathology, suggests two common broadband factors, internalizing and externalizing. The relations between the dimensional representation of childhood temperament/personality and psychopathology are documented with data from general population and clinical samples of children and adolescents. The article concludes with a proposal on how the higher–order dimensions emerging from studies of adaptive and maladaptive individual differences in childhood could be integrated in a common dimensional model.

Although it is widely recognized that adult personality disorders have their roots in a variety of genetic, temperamental, and developmental factors, there has been remarkably little research examining the childhood and adolescent antecedents of personality disorders across more than one personal-

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ity disorder. Several factors contribute to this lack of research on childhood antecedents of personality disorders.

The categorical conceptualization of personality disorders as adopted in the DSM–IV and its predecessors is one of the major factors that impedes research on broadband childhood and adolescent antecedents of these disorders. Finding clear and unambiguous antecedents for the overly specific personality disorders is elusive because the effects of classic antecedents such as genetic (Coolidge, Thede, & Jang, 2001) and temperamental factors (Joyce et al., 2003; Warner et al., 2004) as well the impact of environmental factors such as parental neglect and emotional and sexual abuse (Battle et al., 2004; Johnson, Bromley, & McGeoch, in press; Johnson et al., 2001; Johnson, Smailes, Cohen, Brown, & Bernstein, 2000) are nonspecific and hence related to several personality disorders.

The DSM–IV classification of disorders in childhood and adolescence is restricted to Axis I psychopathology and therefore it is not surprising that disruptive behavior disorders such as conduct disorder and oppositional defiant disorder (Dowson, Sussams, Grounds, & Taylor, 2001), mood disorders (Kasen et al., 2001; Yen et al., 2003), anxiety disorders (Bienvenu & Stein, 2003) and attention–deficit disorders (Young, Gudjonsson, Ball, & Lam, 2003), have been targeted as antecedents of adult psychopathology. However, the Axis I childhood and adolescence disorders are primarily related to their adult Axis I counterparts and to a lesser extent to adult personality disorders.

Childhood and adolescent temperament and personality are probably among the best candidates as general broadband developmental antecedents for adult personality disorders (Krueger & Tackett, 2003; Shiner & Caspi, 2003; Warner et al., 2004). According to Krueger and Tackett (2003):

> Our field is currently enjoying a renaissance of research linking personality and psychopathology. During much of the recent past, the personality and psychopathology literatures proceeded mostly in parallel. (. . .) Current research might therefore be conceptualized as a rapprochement of the personality and psychopathology literature (...). Nevertheless the specialized focus of much current research is naturally accompanied by the risk of neglecting the bigger picture.

The temperament literature, and to a far lesser extent the recent personality literature, tend to focus on narrowband traits and therefore there is a need for models that are more comprehensive and attend to the bigger picture by emphasizing broadband conceptualizations of temperament/personality and psychopathology in childhood and adolescence. Therefore, the goal of this article is to search for broad and common dimensions that represent individual differences in childhood and adolescent models of temperament, personality, and psychopathology, and to present some recent research data linking adolescent personality and personality disorders as categorized in the DSM.

TEMPERAMENT MODELS

Researchers interested in individual differences among children and especially among young children have conceived these differences in terms of temperamental characteristics. Temperament is traditionally distinguished from personality because it refers to stable individual differences that appear from birth onward and that presumably have a strong genetic or neurobiological basis. Theorists differ in their emphasis on the role of emotional processes, stylistic components, and attentional processes as the core of temperament. Although a consensus on the nature of temperament has not yet been reached, Rothbart and Bates (1998) provide a useful qualification of temperamental individual differences among children in terms of the "3A": Individual differences in the affective, activational, and attentional core of personality.

THOMAS AND CHESS MODEL

The New York Longitudinal Study (NYLS) was a milestone for introducing the concept of individual differences in developmental psychology and pediatrics (Chess & Thomas, 1996; Thomas & Chess, 1977). Based on a content analysis of a small sample of interviews of parents with young children, Thomas and Chess developed a system of nine categories to classify behaviors that are relevant for child development: activity–level, rhythmicity, approach–withdrawal, adaptability, threshold of responsiveness, intensity of reaction, quality of mood, distractibility, attention span, and persistence.

This system was further operationalized in several questionnaires and rating forms to be used by parents or teachers of infants, preschool, and school–age children (Presley & Martin, 1994). Although standard psychometric criteria were used to construct these instruments, small samples and the limited number of items prohibited a thorough analysis of the alleged nine–dimensional structure proposed by Thomas and Chess. Presley and Martin (1994) compared the dimensions recovered from item–level factor analysis of several instruments. They conclude that there is very little evidence for the Thomas and Chess nine–factor structure, although some of the original dimensions appear to be strongly represented.

THE BUSS AND PLOMIN EAS MODEL

Buss and Plomin (1975) initially distinguished four temperamental dimensions: emotionality, activity, sociability, and impulsivity. Emotionality is roughly equivalent to distress. It involves intense activation of the sympathetic nervous system and hence high emotional arousal. The rate and amplitude of speech and movement, displacement of body movements, and duration of energetic behavior best measure activity, the second temperamental dimension. Sociability refers to the preference for being with others, the need to share activities and to receive rewarding attention as the result of social interaction. The original Buss–Plomin model also included

impulsivity as a temperamental dimension but this dimension was later dropped because the evidence for the heritability of impulsivity was mixed.

Several questionnaires were developed to measure the key constructs of the Buss and Plomin model with due concern for the factor–analytical structure. Buss and Plomin (1984) explicitly refer to "inherited traits" as defining characteristics of temperament. Questionnaires based on the Buss–Plomin model have been extensively used in behavior genetic studies with monozygotic (MZ) and dizygotic (DZ) twins aged from 1 to 9 years. A meta–analysis of eight of these studies by Goldsmith, Buss, and Lemery (1997) showed weighted intraclass correlations from .57 to .66 for monozygotic twins and below .15 intraclass correlations for dizygotic twins.

THE ROTHBART AND DERRYBERRY MODEL

The key concepts in the temperament model developed by Mary K. Rothbart and Douglas Derryberry are "reactivity" and "self–regulation." They assert that temperament models should be based on the assumption that personality differences arise in part from the reactivity of underlying neural systems (Derryberry & Rothbart, 1997). Behaviorally, temperament can be observed across all ages as differences in patterns of emotionality, activity, and attention. Motivational as well as attentional systems are considered to provide the link relating specific neural systems to the major dimensions of personality. In a recent formulation of their model, Derryberry and Rothbart (1997) discuss four motivational (the appetitive system, the defensive or fearful motivational system, the frustrative and aggressive behavior system, and the affiliative or nurturant system) and three attentional systems (a vigilance system and a posterior and anterior attentional system). To assess some of the behavioral and emotional indicators of the neurological systems, Rothbart and Ahadi (1994) constructed the Child Behavior Questionnaire (CBQ). Factor analysis of the 15 CBQ scales revealed 3 factors with some minor cross–cultural variations. The surgency factor groups are approach, high-intensity pleasure, smiling and laughter, activity level, impulsivity, and shyness. This factor can be identified as a positive emotionality/extraversion factor. The second factor, negative affectivity, loaded discomfort, fear, anger, sadness, and soothability/falling reactivity, and is clearly related to neuroticism or negative emotionality. The third factor, effortful control, combined inhibitory control, attentional focusing, low intensity pleasure, and perceptual sensitivity, and may be linked to the conscientiousness factor of the FFM.

THE GOLDSMITH AND CAMPOS MODEL

Goldsmith and Campos (1982) define temperament as individual differences in the probability of experiencing and expressing primary emotions and arousal. The basic emotions that form the content dimensions of this model are: anger, sadness, fear, joy and pleasure, disgust, interest, and surprise. Goldsmith constructed the Toddler Behavior Assessment Question-

TABLE 1. Comparison of Dimensions Emerging from Four Temperament Models[1]

	Emotionality	Extraversion	Activity	Persistence
Thomas–Chess	Negative Emotionality	Inhibition	Activity Level	Task Persistence
EAS–model	Emotionality	Sociability/Shyness	Activity	
Rothbart–Derryberry	Negative Affectivity	Surgency	Surgency	Effortful Control
Goldsmith–Campos	Distress–Anger	Fear (social)	Activity Level	
		Positive Emotionality		

[1]Based on Mervielde and Asendorpf (2000).

naire (TBAQ), a caregiver report with acceptable convergent and discriminant validity (Goldsmith et al., 1997; Lemery, Goldsmith, Klinnert, & Mrazek, 1999). It consists of five independent scales: activity level, pleasure, social fearfulness, anger proneness, and interest/persistence. The TBAQ is clearly related to Rothbart's CBQ. Thirteen of the 15 CBQ scales correlate from .34 to .68 with one of the five TBAQ scales (Goldsmith et al., 1997).

Recent research on the Goldsmith and Campos model is mainly confined to behavior genetic analyses. Goldsmith et al. (1997) present a classical ICR analysis for MZ and DZ twins, showing substantial monozygotic as well as dizygotic intra–class correlations for all five scales.

COMMON DIMENSIONS OF TEMPERAMENT

This brief review of temperament models shows that each model has a set of scales that partially overlap with those proposed by other theorists. Moreover, even within a single temperament model, it is often necessary to construct different, age–specific measures to cope with the expanding behavioral repertoire of the children. Part of the problem in comparing the temperament models is that Thomas and Chess, and Rothbart and Derryberry, developed many scales that are moderately correlated, while Buss and Plomin used fewer but independent scales and Goldsmith prefers to integrate scales from different questionnaires into independent composites.

Table 1, based on Mervielde and Asendorpf (2000), compares the relatively independent dimensions emerging from the four temperament models. Emotionality is clearly present in each of the four models as a higher–order dimension. Given the emphasis on distress and negative emotions, this dimension can also be labeled as negative emotionality. The second consistent dimension refers to sociability versus social inhibition or shyness and may be best captured with the more general label extraversion. Activity is also prominent as an independent dimension in three of the four models. Finally, persistence is present in two of the four models and hence might turn out to be a minor dimension at least for preschool and school children. Given the greater comparability of dimensions emerging from the use of broader, more

or less independent dimensions, future research might benefit from including higher–order factors or composite scores from at least two temperament models in studies of the structure, stability, and predictive validity of temperament.

PERSONALITY MODELS
THE PERSON–CENTERED APPROACH

The person–centered approach emphasizes the importance of the person as the major unit of analysis and the study of the structure of person profiles across variables and hence the resultant structure is a property of persons and not of the variables (Mervielde & Asendorpf, 2000).

The most popular person–centered approach to childhood personality is based on the Q–sort methodology developed by Jack and Jeanne Block (1980). Q–sorts are usually obtained from a parent who sorts a set of 100 trait descriptions in a rectangular distribution, according to how well they fit the child's personality. According to Block and Block (1980), the dimensions ego–control and ego–resiliency are important to distinguish among three person types: undercontrolled, overcontrolled, and resilient. Ego–control refers to the tendency to contain versus express emotional and motivational impulses. The endpoints of this dimension are labeled as overcontrol versus undercontrol. Both extremes of the ego–control dimensions can be considered as rather maladaptive. Ego–resiliency refers to the tendency to respond flexibly rather than rigidly to changing situational demands or particularly stressful situations and hence low ego–resiliency can be considered as a maladaptive person type.

Person–types can be obtained by Q–factor analysis of Q–sorts as shown by Robins et al. (Robins, John, Caspi, Moffitt, & StouthamerLoeber, 1996) and Hart, Hofmann, Edelstein, and Keller (1997). They found that only 3 Q–factors were replicable in their studies of 13–year–old North American boys and 7–year–old Icelandic children. The Q–factors were identified as: resilient, over-, and undercontrolled. Person types are also derived from grouping profiles on multiple traits by means of cluster analysis. Each cluster thus represents a personality type, and the average profile of the cluster members can be considered as a personality prototype. Caspi and Silva (1995) clustered profiles of factor scores derived from 22 observational ratings of 3–year–old New Zealand children and found evidence for 5 clusters that could be replicated in 2 random splits of the sample. Two of the clusters were interpreted as undercontrolled and overcontrolled whereas the remaining three were interpreted as subtypes of the resilient type.

Asendorpf, Borkenau, Ostendorf, and Van Aken (2001) show that the 3 personality types can also be recovered from replicated cluster analysis of Big Five ratings of 12–year-old children. Moreover in the same article, initial evidence for the three types, derived from adult Big Five ratings, is presented as well as evidence for the consistency of childhood and adult types, at least in terms of their Big Five profile. Each of the types has a distinct Big Five pro-

file. Resilients score above average on Agreeableness, Extraversion, Conscientiousness, and Openness and below average on Neuroticism. In other words, resilients are well adapted and have a desirable Big Five personality profile. Overcontrollers score more than half a standard deviation above the mean on Neuroticism and score substantially below the mean on Extraversion. Undercontrollers score substantially below the mean on Agreeableness and Conscientiousness and hence Over– and Undercontrolled types have a personality profile that is less desirable and rather maladaptive.

Recently the replicability of the three types, at least in adult and adolescent samples, has become a controversial issue as is evident from several contributions to a special issue of the *European Journal of Personality* (Costa, Herbst, McCrae, Samuels, & Ozer, 2002; De Fruyt, Mervielde, & Van Leeuwen, 2002). Moreover, head–to–head comparisons of the predictive validity of the person–centered versus the variable–centered approach show that types have no incremental validity beyond what can be predicted on the basis of a variable–centered approach (Asendorpf, 2003). Although the assessment of personality types is a clear example of a categorical approach to childhood and adolescent personality, it remains important to realize that the characteristic features of the three types can be captured and described in terms of dimensional models of personality (Van Leeuwen, Mervielde, Braet, & Bosmans, 2004). The renewed interest in the person–centered approach is not due to the failure of the variable–centered approach, but rather to the growing consensus about which types of variables are to be included in a person–centered approach in order to obtain replicable clusters of profiles.

THE VARIABLE–CENTERED APPROACH

Organizing personality traits as part of the Big Five or the Five–Factor Model is gradually recognized as the preferred strategy for representing the structure of adaptive or normal personality traits in adulthood (Costa & McCrae, 1992; Digman, 1990). Three lines of research have contributed to the emergent consensus about the comprehensiveness of the Big Five as a viable broadband model for representing individual differences: (1) lexical analyses of the structure of trait adjectives in various languages (Saucier, Hampson, & Goldberg, 2000), (2) factor analysis of the psychometric structure of various personality questionnaires (Costa & McCrae, 1997), and (3) analysis of free natural language descriptions of personality (Kohnstamm, Halverson, Mervielde, & Havill, 1998). The five broadband factors emerging from this research are commonly referred to as : Extraversion, Agreeableness, Conscientiousness, Emotional Stability or Neuroticism, and Intellect or Openness.

In the past decades, several types of research have shown that the Big Five can also be used as a model to represent individual differences in personality for children aged 3 to 12. Three lines of research provide evidence for the

validity of this approach: teacher and parental ratings, peer nominations, and natural language descriptions of children's personality.

Teacher and Parental Ratings. From 1959 to 1967 Digman collected on two Hawaiian Islands a very extensive set of teacher ratings of elementary school children. Although early in his career, influenced by Cattell, Digman was convinced that at least ten common factors could be extracted from teacher ratings of children on Cattell's scales; subsequent reanalysis (Digman & Inouye, 1986; Digman & Takemoto–Chock, 1981) recovered the Five–Factor Structure from teachers' nominations of sixth–grade children on the 43 Cattell scales. Recently, Goldberg (2001) provided significant new evidence for the Big Five structure of teacher–based assessments of child personality attributes, based on new analyses of the original Digman data.

Mervielde, Buyst, and De Fruyt (1995) confirmed the validity of the Big Five as a model for individual differences among school–age children with a different set of rating scales. They asked teachers to rate 2,240 children, aged 4 to 12 years, on a set of 25 bipolar scales, derived from Goldberg's (1990) markers for the Big Five. Principal component analysis of ratings of kindergarten children (aged 4 to 6 years) revealed 4 of the 5 factors, including a combined conscientiousness/intellect/openness factor. The complete Five–Factor structure emerged from the ratings of primary school children.

Several studies recovered the Big Five from scales or item sets that were *not* constructed as measures of the Big Five and hence provide evidence that "prestructuring" is not a prerequisite for the emergence of the Five–Factor structure. Digman and Shmelyov (1996) recovered the Big Five from teacher ratings of 8 to 10-year-old Russian children on 60 temperament and personality scales. Van Lieshout and Haselager (1994) showed that the structure of the Dutch version of the California Child Q–set (CCQ) is similar to the Big Five structure, and John, Caspi, Robins, Moffitt, and Stouthamer–Loeber (1994) confirmed the Big Five-related content of the CCQ with Q–sorts of 350 ethnically diverse 12- to 13-year–old boys. Moreover, they showed significant relationships of the CCQ Big Five with socially important criteria such as child psychopathology, juvenile delinquency, school performance, and intelligence.

Peer Nominations. In most studies of infant and childhood temperament or personality, personality structure is derived from ratings of children by teachers or parents. Therefore, the consistent emergence of a given personality structure can be attributed to the cognitive structure of the adult perceivers. Finding out when and how children's perceptions of each other develop is not only relevant from a developmental point of view, but could also provide knowledge on the developmental roots of adult personality models such as the Five–Factor Model and its generalizability across the life span. To facilitate this sort of research Mervielde and De Fruyt (2000) adapted and extended the peer nomination methodology to assess childhood personality as perceived by peers (aged 9–12 years) and showed that the Big Five, as represented in the set of peer nomination scales, are important dimensions to structure children's perception of each other. Although

the full–fledged adult Big Five structure could not be recovered in a factor analysis of the nomination data, a less elaborate structure combining markers of pairs of dimensions (agreeableness, extraversion–emotional instability, conscientiousness–intellect) was identified and replicated in an independent sample. Clearly, this adaptation and extension of the classic sociometric methodology shows that aggregating peer nominations can be an effective strategy to collect informant data from primary school children and to increase the psychometric qualities of this type of peer rating data.

Natural Language Personality Descriptions. Building on the success of the Five–Factor Model and the lexical approach to detect broad and cross–culturally replicable dimensions of adult personality, Kohnstamm et al. (1998) collected oral parental personality descriptions of 2,416 children aged 2 to 12 years as part of a collaborative international research project conducted in Belgium, China, Germany, Greece, Holland, Poland, and the U.S. A literal transcription of each oral interview was segmented in small units that described individual differences and assigned to 14 major categories, including the Big Five. Across countries, 76 to 85% of the parental descriptors were classified as indicators of the Big Five. The most frequently used category in each of the seven countries was extraversion, whereas agreeableness was the second most frequently used category for five of the seven countries. Conscientiousness and emotional stability attracted on average slightly less than 10% of the descriptors with a significant exception for the Chinese sample, scoring close to 20% for conscientiousness. The percentage of descriptors coded as indicating openness/intellect varied from 11% in Greece to more than 21% in the U.S. These findings should be contrasted with the absence of markers for openness and intellect in the traditional temperament literature. On average about one-third of the descriptors provided by the parents were classified as instances of the less desirable poles of the Big Five. European parents provided between 32 and 33% negative descriptors, Chinese parents 42%, and U.S. parents 21%, indicating possible cross–cultural differences in the salience of the negative poles of the Big Five or in the willingness to report the less desirable aspects of the child's behavior.

To check the content validity at the level of the individual parent, the sampling frequency for the Big Five categories was assessed for each of the parents. Analysis of the combined dataset from the 7 countries showed that 31% of the parents used descriptors referring to *each* of the Big Five to freely describe their own child, 37% used 4, and 24% sampled 3 of the Big Five categories, whereas only 1% of the parents sampled a single Big Five category to describe their own child. The fact that almost 68% of the parents refer to at least four of the Big Five to describe their child indicates that these dimensions represent salient person description categories not only at the group level but also when protocols of individual parents are analyzed. Taking into account the fact that parents are a primary source of information for psychiatric assessment of psychopathology in children, this analysis of natural language descriptions indicates that the Big Five could offer a comprehen-

sive and useful framework to structure the way parents naturally describe their child's personality traits.

The Hierarchical Personality Inventory for Children (HiPIC). The construction of the Hierarchical Personality Inventory for Children (HiPIC) is based on the Flemish data collected as part of the international research program on parental descriptions of child personality (Kohnstamm et al., 1998). The set of more than 9,000 Flemish parental descriptions was organized in to 100 clusters, covering three age groups: 5 to 7, 8 to 10 and 11 to 13 years. Three age–specific item sets were developed by writing 2 to 4 items per cluster resulting in 3 preliminary inventories with 234 to 282 items, which were used to determine the structure of childhood personality. Principal component analyses at the item level indicated that, for each age level, the first five principal components tended to group items according to the Big Five. Because of the substantial overlap in content, the three age-specific item sets were integrated into one instrument measuring individual differences in personality of primary school children (Mervielde & De Fruyt, 1999, 2002). The HiPIC groups 144 items at the highest level into five domains: Conscientiousness, Benevolence, Extraversion, Imagination, and Emotional Stability. The 5 broad domains were further subdivided into facets each measured by 8 items rated on a 5–point Likert scale.

The factor structure of the 18 facets was cross–validated on a sample of 719 twins and siblings rated by both parents (Mervielde & Asendorpf, 2000). The four conscientiousness facets (achievement motivation, concentration, perseverance, and orderliness) are relatively pure markers of the first principal component. Egocentrism and irritability are the highest loading facets and the purest markers for the benevolence factor, whereas compliance operates more like a blend of benevolence and conscientiousness. Dominance and altruism combine a primary loading on benevolence with a substantial secondary loading on extraversion. Shyness is the highest loading facet of extraversion with a moderate loading on emotional stability. Two extraversion facets, optimism and expressiveness, broaden the scope of this factor and can be considered as indicators of positive emotionality. Although activity is a separate dimension in several temperament models, the related energy facet did not acquire the status of a separate factor in the item set derived from free parental descriptions. Creativity and curiosity are the defining facets of the imagination factor together with intellect. Finally, emotional stability turns out to be the smallest HiPIC component that is subdivided in an anxiety facet and one that measures self–confidence.[1]

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1. Recently a related instrument, the Inventory of Child Individual Differences (Halverson et al., 2003), was developed mainly based on the free parental descriptions collected from a U.S. sample and items imported from similar instruments constructed in the Netherlands, Greece, and China. The structure of 144 ICID items was tested on a large predominantly African American sample and although the factor structure globally resembles the traditional Big Five, it nevertheless shows some deviations such as a restricted intellect factor; a broadened extraversion factor, including openness and considerate as facets; as well as a neuroticism factor loading shyness.

It should be acknowledged that some adult personality models have been adapted for younger-age groups (e.g., Cloninger's TCI model [Constantino, Cloninger, Clarke, Hashemi, & Przybeck, 2002]). However, a full discussion of these extended adult models is beyond the scope of this article.

Although the broadband factors emerging from the several types of variable–centered studies of children are comparable to the Big Five typically appearing in studies of adult personality, the study of natural parental descriptions and in particular the construction of the HiPIC reveal a rather broad Agreeableness factor that was labeled "Benevolence" to mark this difference. The Benevolence factor combines facets such as egocentrism and compliance that are comparable to typical adult Agreeableness facets but also the dominance facet that is related to the assertiveness facet marking the Extraversion factor in the NEO–PI–R. Finally, irritability is a facet of Benevolence, whereas the related facet of angry hostility is part of the Neuroticism factor in the adult NEO–PI–R.

A COMMON TAXONOMY OF TEMPERAMENT AND PERSONALITY TRAITS

Based on an extensive review of the literature, Shiner (1998), Shiner and Caspi (2003), and Caspi, Roberts, and Shiner (2005) proposed a preliminary taxonomy of personality differences in childhood and adolescence. Given the rather diverse theoretical frameworks that inspired the different temperament and personality models, the development of such taxonomy serves several purposes. It improves communication among researchers using different concepts to refer to related phenomena and helps to integrate research findings stemming from different research traditions and disciplines such as personality and developmental psychology. Moreover, it guides the evaluation of the status of time–honored and newly developed instruments by locating their position in the hierarchical taxonomy and relating them to the variables postulated at the different levels of the taxonomy. As is evident from the wealth of research that was generated by the growing consensus on the Five–Factor Model, the development of a taxonomy not only enables integration of diverse research findings but is also a major source for generating new hypotheses and exciting new research about individual differences.

The latest version of this taxonomy (Caspi et al., 2005) has two levels. The highest level postulates five higher–order traits: Extraversion/Positive emotionality, Neuroticism/Negative emotionality, Conscientiousness/Constraint, Agreeableness, and Openness–to–Experience/Intellect. As is evident from the labels for the higher traits, they combine the major dimensions emerging from the study of temperament and the adult Big Five.

Both the temperament and the Big Five studies show consistent evidence for individual differences in Extraversion/Positive Emotionality. This superfactor encompasses several lower–order traits. Social inhibition or shyness refers to feelings of discomfort in the presence of strangers and gradually over the course of development becomes differentiated from shyness with known others. Sociability refers to the preference to be with others

and should not be considered as the opposite of shyness but rather as a distinct lower–order trait that correlates with the expression of positive emotions. The taxonomy also emphasizes Dominance as a distinct lower–order trait for Extraversion/Positive emotionality. This corresponds with the location of assertiveness, as a facet of Extraversion in the Five–Factor Model, as well as with the positioning of this lower–order trait in several lexical studies. In the empirically derived HiPIC taxonomy, dominance is located as a facet of Agreeableness, loading items such as "acting as the boss," presumably reflecting the salient negative connotation of dominance at least in the eyes of most parents. The final lower–order trait of the first factor of this taxonomy is labeled Energy/Activity Level. Although this lower–order trait is clearly a major dimension in most temperament models, its designation as a lower–order trait is warranted because over the course of development the salient motor activity of infants is gradually transformed in social activity indicative of the broad Extraversion trait.

The Neuroticism/Negative Emotionality higher–order trait refers to emotional reactions and in particular to negative emotionally. As is evident from our review, negative emotionality is a prominent dimension in each of the four reviewed temperament models. It is also an important factor in adult personality models such as the Five–Factor Model and is related to virtually every personality disorder (Widiger, Trull, Clarkin, Sanderson, & Costa, 2002). This superfactor is further subdivided into anxious distress, a tendency to experience negative emotions that are mainly targeted at the self, such as anxiety, guilt, and fear. This lower–order trait seems to match the anxiety facet of the higher–order Emotional Stability factor in the HiPIC. The lower–order trait irritable distress, refers to distress that is directed toward others such as anger, frustration, hostility, and irritability. As mentioned before, in the HiPIC model, derived from parental descriptions of children, this other–directed form of distress primarily loads the Benevolence factor and is best captured by the irritability facet. Early in development, the two forms of distress may be difficult to distinguish and hence both forms of distress may follow different pathways whereby anxious distress eventually leads to internalizing disorders, and irritable distress to externalizing disorders.

The third higher–order trait of the taxonomy, labeled as Conscientiousness/Constraint, taps individual differences in self–control versus behavioral impulsivity, attention, achievement motivation, orderliness, responsibility, and conventionality. In the Thomas and Chess temperament model, this factor is referred to as persistence, whereas in the Rothbart–Derryberry model its central role is emphasized by labeling it as effortful control. It should be noted, however, that it does not emerge as a major higher–order dimension, nor in the EAS–model and neither in the Goldsmith–Campos, but is clearly present in all HiPIC–based analyses of the structure of individual differences in children and adolescents. Hence, once again this may suggest that Conscientiousness/Constraint is less well differentiated from other higher–order dimensions at an early age. The analysis of parental descriptions in different countries showed that the fre-

quency of parental descriptions indicating Conscientiousness dramatically increases when children enter primary education (Kohnstamm et al., 1998). The third higher–order personality trait is further subdivided in to six lower–order traits. Attention is a prominent lower–order trait in many temperament models and low scores on this trait could be regarded as a step in the developmental pathway toward ADHD. Self–control versus behavioral impulsivity is a major trait that marks the development of externalizing problem behavior. Achievement motivation, and in particular the lack of it, may contribute to various educational problems such as lack of interest in formal education, skipping school, and eventually to dropout. Orderliness reflects a propensity to be neat, clean, and organized versus sloppy and disorderly, and forms the empirical core of most factor–analytically derived models of conscientiousness including the HiPIC model. Responsibility reflects a blend of conscientiousness and agreeableness and ranges from the tendency to be reliable and dependable to being undependable (Roberts, Bogg, Walton, Chernyshenko, & Stark, 2004). Finally, conventionality taps the tendency to uphold traditions and societal norms and serves as one of the strongest predictors of avoiding risky behaviors such as excessive drug and alcohol consumption (Bogg & Roberts, 2004).

The fourth dimension of this taxonomy, Agreeableness, is not present as a major dimension in any of the reviewed temperament models but it is a prominent dimension in Big Five-inspired research both for adults and children. Children high on Agreeableness are cooperative, kind, compliant and considerate whereas, those scoring low on this higher–order trait tend to be egocentric, aggressive, rude, and antagonistic. This factor is the broadest and largest dimension emerging from the research on parental descriptions; it presumably reflects the parental concern with managing the child's behavior and parent–child conflict. According to Burt, Krueger, McGue, and Iacono (2003) parent–child conflict appears to act as a common vulnerability factor that increases the risk for multiple childhood disorders such as ADHD, ODD, and CD. They show, with a genetically informative design, that comorbidity among these disorders partially reflects core psychopathological processes in the family environment that link separate psychiatric disorders. Shiner & Caspi (2003) distinguish Antagonism and Prosocial tendencies as lower–order traits but emphasize that altruistic or prosocial tendencies do not necessarily constitute the opposite pole of antagonism. Krueger, Hicks, and McGue (2001) argue that altruism is linked primarily to shared environments, unique environments, and positive emotionality, whereas antisocial behavior is linked primarily to genes, unique environments, and negative emotionality as well as to a lack of constraint.

Caspi, Roberts, and Shiner (2005) include Openness–to–Experience/Intellect as the fifth higher–order trait in the most recent proposal for the taxonomy. This brings the taxonomy fully in line with the Big Five factors emerging from lexical research with the Five–Factor Model (Costa & Widiger, 2002) and with the previously presented and empirically derived HiPIC model. Openness refers to imaginative, creative, and aesthetically sensitive behavior while Intellect taps features such as quick to learn, clever, and in-

sightful. Both aspects are clearly represented in the HiPIC Imagination factor that has three facets: creativity, curiosity, and intellect. As previously noted the Intellect component may be difficult to distinguish from Openness and from Conscientiousness, particularly at younger ages (Mervielde et al., 1995; Mervielde, De Fruyt, & Jarmuz, 1998).

This overview of temperament and personality models of individual differences in childhood reveals that the apparent gap between the temperament models and the Big Five-inspired personality models is more apparent than real. Three major temperament dimensions—Emotionality, Extraversion, and Persistence—have clear counterparts both in the Big Five research conducted with children and adults. Although Agreeableness is not a prominent dimension in the temperament models, it is an important superfactor in the personality literature both for children and adults. Openness is the most controversial dimension because it is entirely ignored by temperament models, but still emerges as a significant but narrow dimension describing differences among children as assessed by the cross–cultural study on parental descriptions and the Big Five-inspired research with children and adolescents. As suggested by the analysis of teacher ratings of children aged 3 to 12 (Mervielde et al., 1995), creativity and curiosity may only be readily distinguished from educational achievement by the end of primary school and hence emerge as a definite separate dimension during adolescence (McCrae et al., 2002).

DIMENSIONAL PSYCHOPATHOLOGY MODELS

The study of psychopathology in childhood and adolescence has been largely inspired by the success of the DSM as a system for classification of adult psychopathology. While there is little doubt that school-age children and adolescents can suffer from psychiatric impairments, the debate about the validity of the diagnosis of these disorders in preschool children and infants is not closed. A Task Force on Research Diagnostic Criteria has recently proposed research diagnostic criteria for infants and preschool children for various disorders such as Attention-Deficit/Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), Major Depressive Disorder (MDD), Posttraumatic Stress Disorder (PTSD), Reactive Attachment Disorder (RAD), sleep disorders, and feeding disorders (Scheeringa et al., 2003). Critics of this approach would argue that this categorical conceptualization of psychopathology for children suffers from the same problems that are typical for the diagnosis of adult Axis II disorders such as high rates of comorbidity, heterogeneity within disorder categories, arbitrary thresholds, and lack of clear boundaries between Axis I and II disorders as well as between maladaptive and normal personality (Clark, Watson, & Reynolds, 1995; Regier et al., 1998; Sher & Trull, 1996; Widiger & Clark, 2000). Finally, as recently noted by Kupfer, First, and Regier (2002) the goal of validating these syndromes and discovering common etiologies has remained elusive, and the high rates of comorbidities among the disorders undermine the hypothesis that the syndromes represent distinct etiol-

ogies. These problems might even become more important when a categorical approach is adopted to study psychopathology in childhood because (a) there is a tendency to take adult syndromes as targets and to stretch the criteria for younger ages; (b) the limited language and cognitive abilities of developing children prohibit the use of extensive structured interviews and necessitates the reliance on parents and teachers as informants; (c) the restricted behavioral repertoire of children results in broader or more overlapping categories; (d) developmental changes, and in particular heterotypical developmental patterns, change the significance and meaning of behavioral indicators and symptoms over the course of development; and (e) it is difficult to distinguish between young children's stable symptoms and transient responses to environmental adversity. Finally, most models for individual differences in temperament and personality are clearly dimensional models. Furthermore, as has been reported in a previous section, the type–approach to individual differences remains controversial and therefore it seems appropriate to concentrate on dimensional models for psychopathology in childhood and adolescence. Two dimensional models will be discussed: the Achenbach system of empirically based assessment (ASEBA) and the Dimensional Personality Symptom Item pool (DIPSI), a new dimensional model for the assessment of maladaptive traits in children and young adolescents that is currently being constructed at Ghent University.

THE ACHENBACH SYSTEM

One of the most widely used instruments for the broadband screening of children's and adolescents' emotional and behavioral problems is Achenbach's empirically based assessment system (Achenbach, 1991), consisting of the Child Behavior Checklist (CBCL), the Teacher Report Form (TRF), and the Youth Self Report (YSR). Achenbach developed syndromal constructs by conducting principal components analyses on a rating instrument that included a variety of items tapping emotional and behavioral problems described in the literature and in patient files. Special care was given to develop constructs that are common across different informants (parents, teachers and self–reports of adolescents), resulting in cross–informant syndrome constructs, comprising items that co–occur across gender, age, and informant. The syndromes were labeled Anxious/Depressed, Withdrawn, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior (rule–breaking behavior), and Aggressive Behavior. The quantitative scores on these scales provide information about the severity of problems by comparing them with scores from clinical or normative samples. Two second–order scales were derived: Internalizing, grouping the syndrome scales Anxious/Depressed, Withdrawn, and Somatic Complaints; and Externalizing, grouping the syndrome scales Delinquent Behavior and Aggressive Behavior. The Internalizing and Externalizing scales are often used in research and provide measures of emotional symptoms and antisocial/conduct problems respectively.

The CBCL is a typical example of a *bottom–up* approach in which taxonomic constructs are derived from multivariate analyses of large samples. The term "syndrome" in this assessment system refers to concurrent and associated problems that are reported for children and adolescents. This inductive approach stands in contrast to the *top–down* or deductive approach adopted for the construction of the DSM (Achenbach, 1995).

Although the empirically based taxonomies and the DSM nosology adopt a different scientific methodology, the resulting taxonomies are clearly related (Ferdinand et al., 2004; Lengua, Sadowski, Friedrich, & Fisher, 2001). The latest version of Achenbach's empirically based assessment system further elaborates and strengthens this link by complementing the syndrome scales with a new set of DSM–oriented scales derived from items of the revised preschool (ages 1–5) and school–age (ages 6–18) CBCL instruments (Achenbach, Dumenci, & Rescorla, 2003). Expert child psychiatrists and psychologists from different cultures rated the degree to which CBCL problem items matched particular DSM–IV diagnostic categories. Next, scales were constructed comprising the items that a substantial majority rated as very consistent with particular DSM–IV categories. This procedure led to the following DSM–oriented scales for both preschool and school–age instruments: (a) affective problems, based on ratings of dysthimia and major depressive disorder; (b) anxiety problems, based on ratings of generalized anxiety disorder, separation anxiety disorder, and specific phobia; (c) ADH problems, based on ratings of hyperactive–impulsive and inattentive types of ADHD; and (d) oppositional defiant problems, based on ratings of ODD. Consistent findings showed the warrant of a scale for Pervasive developmental problems, based on ratings of Asperger's and autistic disorders, for the preschool instrument, whereas for the school–aged instrument there was evidence for a Conduct problems scale based on ratings of conduct disorder as well as a Somatic problems scale, based on ratings of somatization and somatoform disorders (Achenbach & Dumenci, 2001). Both the DSM–oriented scales and the empirically based scales show significant associations with DSM–IV clinical diagnoses and other standardized rating scales (Achenbach et al., 2003). The new DSM–oriented scales are an improvement over the original CBCL syndrome scales because they better correspond to current conceptualizations of dimensions of child psychopathology and include items that reflect more closely the DSM–IV criteria. This extension of the classical CBCL with DSM-oriented scales not only documents the overlap between both systems but bridges the gap between the bottom–up and the top–down approaches and in addition opens new perspectives to search for a set of common dimensions that adequately represent both systems in an integrated and comprehensive model for childhood psychopathology (Achenbach et al., 2003).

THE DIPSI TAXONOMY OF CHILDHOOD PERSONALITY SYMPTOMS

Although it is widely acknowledged that personality disorders as conceptualized in the DSM–IV may have antecedents in childhood temperament and

personality, most research on the antecedents of adult psychopathology focuses on the relationship between childhood emotional and behavioral problems and Axis I psychopathology (Roza, Hofstra, van der Ende, & Verhulst, 2003). The previously described construction of DSM–oriented scales for the Achenbach system is a clear example of the primary focus on Axis I pathology. However there is a growing interest for research on the developmental antecedents of Axis II personality disorders (Bernstein, Cohen, Skodol, Bezirganian, & Brook, 1996; Kasen, Cohen, Skodol, Johnson, & Brook, 1999; Kasen et al., 2001; Ramklint, von Knorring, von Knorring, & Ekselius, 2003). Although adherents of the spectrum hypothesis such as Widiger and Clark (2000) suggest that personality disorders are extreme variants of normal adaptive personality traits, the current version of the DSM only provides specific categories and criteria for the diagnosis of these disorders in adulthood. This is remarkable because the stability of personality across the life span has now been well documented (Caspi et al., 2003; Caspi et al., 2005; Roberts, Caspi, & Moffitt, 2001; Roberts & DelVecchio, 2000) and hence it is reasonable to propose that the extreme manifestations of personality traits in adulthood should have clear counterparts at earlier stages in development.

Assembling the DIPSI Item Pool. Taking into account recent formulations of the spectrum hypothesis as well as the growing evidence on the stability of personality across the life span, our research group (De Clercq, De Fruyt, Mervielde, 2003) set out to fill in this gap by constructing an item pool with personality symptoms targeted at school-age children (aged 6-14). In line with the spectrum hypothesis, 333 extreme variants (maladaptive items) were written covering both poles of the 144 items from the previously described HiPIC. Although initially we planned to produce extreme variants for all items, we soon realized that it was difficult to produce suitable bipolar maladaptive variants for curiosity, creativity, and intellect, the facets of the fifth HiPIC factor "Imagination." Given that the fifth factor remains the most controversial because it is hard to replicate in cross–cultural lexical research (Saucier et al., 2000), is absent from the entire temperament literature, and only plays a minor role in predicting adult psychopathology, we decided not to include maladaptive variants for items primarily loading this factor.

Those who advocate to replace the DSM–IV classification with an alternative system based on the Five–Factor Model are often countered with the criticism that this model is not clinically relevant because it reduces personality description to concepts derived from factor–analysis of self– and peer ratings provided by laypersons lacking exposure to the kind of personality pathology that professionals encounter in their daily practice (Shedler & Westen, 2004). Given that the HiPIC is based on parental description of child personality, our approach is surely liable to be criticized for the same reasons. Therefore, it was decided to screen two instruments that assess the DSM–IV criteria for personality disorders in adulthood, for child–relevant items: The Structured Clinical Interview for DSM–IV Axis II Personality Dis-

orders– (SCID–II; First, Gibbon, Spitzer, & Williams, 1997) and the Assessment of DSM–IV Personality Disorders (ADP–IV; Schotte, de Doncker, Vankerckhoven, Vertommen, & Cosyns, 1998). As a result of this screening, 83 ADP–IV items and 90 SCID–II items were added as potential descriptors of child personality symptoms, bringing the total number of DIPSI descriptors to 503. This total set of items was subsequently classified by the authors in to 44 categories and 4 to 6 items for each category were written, resulting in the first version of the DIPSI containing 256 items. All items are formulated in the third-person verb form, avoiding negations.

Psychometric Properties of the DIPSI Item Pool. The reliability of the DIPSI categories was determined with a sample of 205 children referred for psychosocial problems[2] (118 boys, 87 girls; mean age = 118.92 months; age range from 5.5–14 years). The initial alpha coefficients for the 44 categories were improved by reassigning the DIPSI items, based upon the correlations between the items and the categories. The revised version of the DIPSI item pool included 222 items, organized in 40 trait–pathology categories, with alpha coefficients ranging from .57 (Social avoidance) to .89 (Depressive traits), and with a median value of .82.

An exploratory factor analysis of the 40 categories (De Clercq, De Fruyt, Van Leeuwen, Mervielde, & De Medts, 2004) suggested either a 2– or 4–factor solution, explaining 44.4% and 57.6% of the total variance, respectively. In decreasing order of explained variance, the 2–factor solution represented an Externalizing (23.5%) and an Internalizing (20.9%) trait factor, whereas the 4 factors were labeled as Disagreeableness (22.7%), Emotional Instability (18.3%), Introversion (9.0%) and Compulsivity (7.6%).

Content Validity. To examine the comprehensiveness of the 40 DIPSI categories they were compared with Livesley's DAPP–BQ scales (Livesley, 1990), a dimensional instrument for adult personality pathology. This comparison showed a striking correspondence between the DIPSI categories and the DAPP–BQ scales. For all DAPP–BQ scales, the DIPSI provides parallel categories, except for Intimacy problems and Self–harming behaviors. In the DIPSI, Intimacy problems are partly assigned to Social avoidance. The lack of a self–harm category is due to the fact that such items were intentionally excluded from the item pool, given the young age of the primary target group

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2. The period of psychological treatment ranged from 0 to 56 months, with a mean period of 10 months (*SD* = 10.13). Children's initial reason of counseling included a variety of behavioral and emotional problems. Anxiety and depression were the primary intake problem for 21.0% of the children; 24.9% presented externalizing problem behavior like lying, aggression, and temper tantrums; 15.6% of the children exhibited enduring behavioral and emotional difficulties related to major stress events (divorce or death of the parents); 6.8% struggled with psychosomatic complaints (pain without physical cause, eating and sleeping problems); 9.3% suffered from attention and concentration problems without neurological dysfunction; 11.2% demonstrated behavioral problems due to developmental disorders like ADHD, Tourette syndrome, and autism spectrum disorder; 8.3% of the children showed withdrawn behavior or defective social skills; 1% demonstrated obsessive–compulsive behavior; and 0.5% had symptoms of auto-mutilation and suicidal thoughts. For 1.5% of the children the reason for psychological counseling was not disclosed.

(early and middle childhood). In addition to analogues of the DAPP–BQ, the DIPSI item pool contains supplementary categories grouping Hyper–active traits, Impatience, Distraction, Hyper–expressivity, Depressive traits, Obsessive traits and Unforgivingness.

Concurrent Validity. As a dimensional measure of childhood psychopathology, the DIPSI is expected to share common variance with the Dutch CBCL (Verhulst, Van der Ende, & Koot, 1996), the most widely used instrument for screening children for psychopathology. The Disagreeableness factor of the four–factor solution is strongly related to the CBCL syndromes Aggressive behavior (.83), Delinquent behavior (.61) and Attention problems (.55), and has a moderate correlation with Social problems (.24). Emotional Instability is positively related to all of the CBCL syndromes, except Delinquent and Aggressive behavior. Introversion shows a strong positive correlation with Withdrawn behavior (.52) and is also correlated with Delinquent behavior (.28) and Anxious/depressed (.27). Compulsivity is positively correlated with Somatic complaints (.24) and Anxious/depressed (.22), and negatively correlated with Attention problems (–.20). The higher–order DIPSI Internalizing factor correlates with CBCL Withdrawn behavior, Somatic complaints, Anxious/depressed, and Social and Thought problems, whereas the DIPSI Externalizing factor significantly predicts Attention problems, Delinquent and Aggressive behavior. The DIPSI two–factor solution shows a .84 correlation between the higher–order DIPSI Externalizing factor and CBCL Externalizing problems and a .73 correlation between DIPSI Internalizing and CBCL Internalizing problems. These results support the concurrent validity of the higher–order DIPSI factors and suggest that maladaptive child personality dimensions are differentially related to symptomatic behavior as captured by the CBCL syndromes. Although three-quarters of the DIPSI categories and items are based on extreme variants of HiPIC adaptive traits, the present analysis shows a high degree of overlap between the two higher–order DIPSI factors and the broadband Internalizing and Externalizing factors of the CBCL. This corroborates the spectrum hypothesis that childhood psychopathology can be conceptualized as a manifestation of extreme variants of individual differences in temperament/personality as measured with the HiPIC, a comprehensive measure of adaptive individual differences in children.

THE RELATIONSHIP BETWEEN PERSONALITY AND PSYCHOPATHOLOGY

The review of the temperament/personality literature showed that five higher–order traits postulated in a common taxonomy are viable candidates to be included in any comprehensive model of individual differences in childhood/adolescence. Our limited review of dimensional psychopathology models for the same age group showed that at the highest level two very comparable dimensions emerged from both the CBCL re-

search and from the research leading to the construction of the DIPSI: Externalizing and Internalizing. It should be emphasized that at a lower level both systems diverge with the CBCL postulating eight syndromes loading on one or both higher–order factor swhereas the DIPSI postulates four lower–order dimensions.

In line with our aim to pay sufficient attention to the broader picture, we conclude this review by presenting data gathered by our research group that shows relationships between personality in childhood and adolescence measured with instruments such as the HiPIC and the NEO–PI–R capturing adaptive or normal in personality on the one hand, and the two dimensional psychopathology models and DSM–IV-based instruments measuring personality disorders on the other.

THE RELATIONSHIPS BETWEEN THE HIPIC, THE CBCL, AND THE DIPSI

In line with the spectrum hypothesis, one would expect substantial correlations between the HiPIC, a measure of adaptive personality differences, and the CBCL and the DIPSI measuring child problem behavior and maladaptive traits. Moreover, the pattern of correlations is expected to be similar in a nonreferred sample of children and in a clinic-referred sample, although mean level differences in correlations between referred and nonreferred children can be expected. These relationships were investigated in two samples: (1) The nonreferred general population sample of children (276 boys and 320 girls, mean age-10.9 years, range-7–15), rated by their mothers, is part of a longitudinal study investigating parenting, personality characteristics, and children's problem behavior (Van Leeuwen, Mervielde et al., 2004); and (2) The clinic-referred sample consisting of 205 mothers and children (118 boys and 87 girls, mean age = 9.9, range = 5 to 14) recruited from various ambulant mental health services.[3]

The top part of Table 2 reports the correlations between HiPIC domain scores and CBCL total scores on Internalizing and Externalizing problems for both samples. This part of the table suggests substantial negative correlations between CBCL Externalizing and HiPIC Benevolence and Conscientiousness for both samples, and negative correlations between CBCL Internalizing and HiPIC Emotional stability and extraversion. In the general population sample (top two rows), the HiPIC domains are differentially related to the higher–order CBCL dimensions but the discrimination is not clear–cut because both higher–order factors show moderate correlations with the other HiPIC domains. However, the next two rows of Table 2 show a much more differentiated pattern of correlations because for the clinic-referred sample, CBCL Internalizing is clearly and exclusively related to Emotional stability and Extraversion, whereas Externalizing shares substantial variance with Benevolence and Conscientiousness and has a minor positive

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3. See footnote 2.

TABLE 2. The Relationships between the HiPIC Domains and the CBCL and DIPSI Higher–Order dimensions

	HiPIC Domain Scores[1]				
	BEN	**CON**	**EMO**	**EXT**	**IMA**
General population sample[2]					
CBCL Internalizing	–.26***	–.24***	–.53***	–.32***	–.22***
CBCL Externalizing	–.63***	–.40***	–.12***	.06	–.13***
Clinic–referred sample[3]					
CBCL Internalizing	–.08	.03	–.61***	–.39***	–.06
CBCL Externalizing	–.70***	–.36***	–.01	.16*	–.14*
DIPSI Introversion	–.10	–.08	–.07	–.51***	–.19*
DIPSI Emotional Instability	.10	.08	–.69***	–.20*	–.16*
DIPSI Disagreeableness	–.77***	–.56***	.16*	.38*	–.14*
DIPSI Compulsivity	.04	.58***	–.03	.12	.45***
DIPSI Internalizing	.09	.21**	–.67***	–.34***	–.10
DIPSI Externalizing	–.78***	–.56***	.16*	.31***	–.15

Note. [1]BEN = Benevolence, CON = Conscientiousness, EMO = Emotional Stability, EXT = Extraversion and IMA = Imagination. [2]General population sample; mean maternal ratings; $N = 578$. [3]Clinic referred sample; maternal ratings; $N = 205$. $*p < .05$; $**p < .01$; $***p < .001$

correlation with Extraversion and a negative one with Imagination. Apparently, the same basic pattern is present in both types of samples but the relationships are stronger and more specific in the clinical sample. From the perspective of the spectrum hypothesis one would expect clear mean-level differences between a general population and a clinical sample (on both personality and psychopathology measures) but what is observed here is that the strength of the personality–psychopathology relationships depends on the nature of the sample. Although in a strict sense, this pattern represents a deviation from the spectrum hypothesis, this is not a qualitative difference but a quantitative difference regarding the strength of the personality–psychopathology relationships. It remains to be seen to what extent this effect can be generalized to other samples and different measures of personality and psychopathology.

The bottom part of Table 2 reports the relationships between the HiPIC domain scores and the DIPSI factor scores for the four– and the two–factor solution extracted from maternal ratings of children in the clinical sample. The HiPIC domain Extraversion is negatively correlated with DIPSI Introversion and Emotional Instability, and positively with DIPSI Disagreeableness. HiPIC Benevolence is strongly and negatively related to DIPSI Disagreeableness, whereas HiPIC Emotional stability is strongly and negatively related to Emotional Instability and moderately to Disagreeableness. Conscientiousness is positively related to Compulsivity and negatively to Disagreeableness. Imagination is negatively related to each DIPSI factor, except Compulsivity. Overall, this pattern of correlations reflects what is to be ex-

pected given that three-fourths of the DIPSI items are extreme variants of HiPIC items.

The pattern of correlations between the HiPIC and the two-factor DIPSI scores (Internalizing and Externalizing) reported in the last two rows of the table is rather similar to the pattern observed in the top four rows. The DIPSI Externalizing trait factor is strongly and negatively related to HiPIC Benevolence and Conscientiousness and moderately to Extraversion. The Internalizing DIPSI trait factor is as expected, highly and negatively related to HiPIC Emotional stability and Extraversion but shows an unexpected but moderate correlation with Conscientiousness. These results support the validity of the higher–order DIPSI factors and suggest not only that maladaptive child personality dimensions are differentially related to HiPIC personality dimensions but also that the higher–order factors extracted from the DIPSI show a rather similar pattern of correlations with HiPIC personality as the one observed for the CBCL Internalizing and Externalizing factors.

RELATIONSHIP BETWEEN FFM–PERSONALITY AND PERSONALITY DISORDERS IN ADOLESCENCE

We conclude this section on the relationships between personality and psychopathology with a review of two recent studies on the pattern of relationships between the Five–factor Model of Personality and personality disorders in two samples of adolescents, and a comparison of these relationships with those emerging from a recent meta–analysis of 15 adult samples.

Saulsman and Page (2004a) conducted a meta–analysis (MA) of FFM domain and personality disorder relationships in adults. Five main conclusions are drawn from this meta–analysis: (1) Neuroticism and Agreeableness are most consistently related, in terms of sign and magnitude of the correlation, to personality disorders; (2) Extraversion and Conscientiousness are also substantially related to disorders, but the sign of the correlation is disorder–dependent; (3) Openness to Experience is not prominently associated with PD variance; (4) domain–disorder relationships are similar across clinical and nonclinical samples and relatively independent of the measures used to assess traits and personality disorders; and (5) FFM traits demonstrate both statistical significance and practical usefulness to describe personality disorder variance, despite their aclinical item content.

De Clercq and De Fruyt (2003) and De Clercq, De Fruyt, and Van Leeuwen (2004) recently examined self–rated FFM–personality/personality disorder relationships in two independent samples of adolescents. The 2003 study was conducted with a sample of 212 adolescent boys and 207 girls (mean age = 16, range = 13–19), whereas the 2004 study is based on data obtained from 174 adolescent boys and 280 girls (mean age = 16.5, range = 11–19). Moreover both studies adopt a different measure to assess personality in adolescents, using the NEO–PI–R and the previously described HiPIC. The ADP–IV (Schotte et al., 1998) was used in both studies to assess Axis II per-

TABLE 3. Comparison of FFM–Personality Disorder Correlations in Adulthood and Adolescence

Five–Factor Model Personality Dimensions

	N^1			E			O			A			C		
	MA	DC2003	DC2004	MA	DC2003	DC2004	MA	DC2003	DC2004	MA	DC2003	DC2004	MA	DC2003	DC2004
PAR	.28**	.34**	.30**	-.12**	-.24**	-.27**	-.04**	-.08	.07	-.34**	-.24**	-.39**	-.07**	-.16**	-.11*
SZD	.13**	.19**	-.06	-.43**	-.35**	-.37**	-.12**	-.19**	-.03	-.17**	-.16**	-.12**	-.03*	-.12*	-.10*
SZT	.36**	.31**	.22**	-.28**	-.18**	-.23**	-.01	.08	.18**	-.21**	-.20**	-.31**	-.13**	-.21**	-.16**
ANT	.09**	.25**	-.10*	.04	-.03	-.01	.05**	-.10*	.08	-.35**	-.32**	-.42**	-.26**	-.46**	-.44**
BDL	.49**	.44**	.42**	-.09**	-.14**	-.12**	.02	.00	.10*	-.23**	-.21**	-.46**	-.23**	-.23**	-.22**
HIS	.02	.32**	.27**	.42**	-.02	.11*	.15**	.06	.06	-.06**	-.23**	-.47**	-.09**	-.20**	-.16**
NAR	.04	.22**	.05	.20**	-.09	-.02	.11**	-.09	.10*	-.27**	-.30**	-.50**	-.05*	-.18**	-.05
AVD	.48**	.31**	.37**	-.44**	-.47**	-.54**	-.09**	-.20**	-.05	-.11**	-.12*	-.20**	-.10**	-.08	-.12*
DEP	.41**	.40**	.51**	-.13**	-.32**	-.26**	-.11**	-.18**	-.17**	.05**	-.10*	-.21**	-.14**	-.17**	-.13**
OBC	.08**	.27**	.31**	-.12**	-.26**	-.18**	-.07**	-.07	.07	-.04	-.05	-.25**	.23**	.03	.14**

Note. PAR = Paranoid, SZD = Schizoid, SZT = Schizotypal, ANT = Antisocial, BRD = Borderline, HIS = Histrionic, NAR = Narcissistic, AVD = Avoidant, DEP = Dependent, OBC = Obsessive–Compulsive. $p \leq .05$, $p \leq .01$.; MA: Meta–analytic estimates provided by Saulsman and Page (2004a), including the errata described in Saulsman and Page (2004b); DC2003: Correlations provided by De Clercq and De Fruyt (2003); DC2004: Correlations provided by De Clercq, De Fruyt, and Van Leeuwen (2004); N^1 correlations for Emotional Stability of the HiPIC were reverse signed to put them in line with the Neuroticism dimension.

193

sonality disorders. The patterns of personality/PD correlations observed in both studies will be compared with the personality disorder patterns emerging from the Saulsman and Page (2004a; 2004b) meta–analysis for adults. Hence the present comparison provides evidence on the generalizability of the personality/PD patterns across adults and adolescents and across two Five–Factor inventories.

Table 3 lists the personality–PD correlations culled from the three studies. An indication of the similarity of personality–PD correlations across the three studies was obtained by correlating MA results with the 2003 and 2004 results across disorders and the five domains. This analysis reveals a .83 ($p <$ .001) correlation between MA results and the NEO–PI–R study, a .84 ($p < .001$) correlation between MA patterns and the HiPIC study as well as a .86 ($p <$ .001) correlation between the personality–PD pattern observed in both studies with adolescents or between HiPIC- and NEO–PI–R-based personality–PD correlations. Overall, this suggests that the personality–PD correlations observed in the three studies are remarkably similar. A fine–grained analysis per personality factor shows the highest PD–personality correspondence across the three studies for Extraversion and Conscientiousness.

A row-wise inspection of Table 3 shows that all significant FFM trait–disorder correlations have an identical sign across studies, except for Antisocial/Openness and Dependent/Agreeableness. There are some discrepancies between the MA estimates for adults and those culled from both adolescent samples in particular for Narcissistic, Obsessive–Compulsive, and especially Histrionic Disorder. Neuroticism seems to have a stronger association with the Histrionic and Obsessive–Compulsive Disorders in adolescents. Extraversion is more strongly associated with Histrionic and the Narcissistic Disorders in adults, whereas Histrionic Disorder is more strongly (negatively) related to Agreeableness (Benevolence) in adolescence.

In sum, the conclusions of Saulsman and Page (2004a) are thus to a large extent applicable to adolescence: (1) Agreeableness and Neuroticism show respectively uniformly negative and positive associations with disorders; (2) Conscientiousness shows negative correlations with some disorders, but a positive correlation with Obsessive–Compulsive Disorder; and (3) Openness to experience does not substantially contribute to explaining disorder variance. The major discrepancy from the adult association patterns was found for Extraversion, which was positively related to Histrionic and Narcissistic disorders in adults, but did not show similar associations in adolescents.

THE BROAD PERSPECTIVE

This review of studies on personality, psychopathology, and personality–psychopathology relationships in childhood and adolescence is of course preliminary because the number of studies covered is limited. However, the data reported on personality–psychopathology relationships covers both general population samples of children, a clinic-referred sample, and two independent samples of adolescents. Although different FFM measures and psychopathology measures are used in the studies that were discussed, a

FIGURE 1. Linking Person– and Variable–Centered Approaches with Psychopathology Models

Adaptive Personality Traits				Maladaptive Traits	
Types	FFM/Big Five		Types	DIPSI-4	CBCL-2/DIPSI-2
Resilients	Emotional Stability	High			
	Extraversion	High			
	Openness	High			
	Agreeableness	High			
	Conscientiousness	High			
		Low	Overcontrollers	Emotional Instability	Internalizing
		Low		Introversion	
		Low	Undercontrollers	Disagreeableness	Externalizing
		Low		Compulsivity	

general pattern of association between personality and psychopathology emerges. ==Two broad dimensions can perhaps best represent the highest–level psychopathology: Internalizing and Externalizing. Individual differences in personality and temperament can be reasonably well covered by the five higher–order traits proposed in the common taxonomy that are clearly related to the factors of the Five–Factor Model (e.g., Neuroticism, Extraversion, Agreeableness, Conscientiousness, and Openness). Figure 1 provides a bold proposal of how personality and psychopathology are related at the highest level, particularly in studies of children and adolescents.== The left part of the figure illustrates the ties between the variable–centered and the person–centered approaches to the study of individual differences. Overcontrollers can be profiled as subjects who score low on Emotional stability and Extraversion. Undercontrollers on the other hand tend to score low on Agreeableness and Conscientiousness. Both types are less well adapted and show more problem behavior than the resilient children (Van Leeuwen, De Fruyt, & Mervielde, 2004). As was evident from our studies on Five–Factor Model of personality, the four dimensions are clearly related to dimensions emerging from psychopathology studies. At the highest level, A and C are clearly related to Externalizing either as measured with the CBCL or with the DIPSI, whereas high N and low E are the typical correlates of Internalizing problem behavior. The lower–order four DIPSI dimensions listed in the right section of the figure provide a bridge between the highest–level psychopathology dimensions and the four Five–Factor dimensions. Moreover, the four DIPSI dimensions are strikingly similar to the dimensions proposed by Livesley (1990) and by Livesley, Schroeder, and Jackson (1992) to organize the scales and subcategories of the DAPP–BQ, a dimensional psychopathology system mainly validated on adult samples. This correspondence between dimensions of childhood and adult psychopathology is of course a big step toward an even broader, across-the-life span perspective on the relationships between both disciplines.

The task we set out to accomplish was to show evidence for a dimensional conceptualization of personality/temperament and psychopathology in childhood. The higher–order dimensions Internalizing and Externalizing are familiar to child psychologists because of their prominent role in the CBCL and hence critics of this approach could argue that these dimensions may be suitable for the conceptualization of childhood psychopathology but not for adult psychopathology. However a number of recent studies, mainly published in psychiatric journals, by Kreuger and his Minnesota Twin study group (Krueger, 1999; Krueger, Caspi, Moffitt, & Silva, 1998; Krueger, McGue, & Iacono, 2001; Tackett, Krueger, Sawyer, & Graetz, 2003) have precisely argued that the same two broad dimensions can be used to organize not only Axis II personality disorders but that these two dimensions are the primary contenders for organizing Axis I pathology. These studies once again broaden the perspective not only by emphasizing the utility of both dimensions to organize relatively stable personality-related psychopathology across the life span but also because of their potential as higher–order dimensions for organizing the more transient Axis I psychopathology.

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