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Evaluating models of the personality–psychopathology relationship in children and adolescents ☆

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Abstract

Connections between personality traits and psychopathology in children and adolescents have frequently been reported in research studies. However, despite the occurrence of significant and systematic relationships between personality and mental disorders in childhood, a thorough understanding of the cause, nature, and implications of these relationships is lacking. In this paper, a comprehensive taxonomy of childhood personality is used to link research on children with that on adults, as well as provide a framework for discussing the personality–psychopathology relationship. Next, research on children and adolescents is integrated into various proposed models of the personality–psychopathology relationship. Finally, clinical implications and future directions are proposed for research on personality and psychopathology in children.

Hypotheses regarding connections between personality and psychopathology have a long-standing history, although ideas about the nature of these connections have changed over time (Maher & Maher, 1994). At the root of most of these hypotheses is the idea that psychopathology occurs in individuals within the context of premorbid personality, and understanding the connections between personality and psychopathology can lead to increased understanding of the individual's functioning. Over the last two decades, a growing body of research has attempted to explain the nature of these relationships (see Krueger & Tackett, 2003; Widiger, Verheul, & van den Brink, 1999 for reviews), building on current research investigating the etiology and structure of both personality and psychopathology. However, this work has primarily focused on adult populations, despite the growing evidence for robust associations between personality traits and mental disorders in children and adolescents. In order to promote understanding and further investigation of the relationship between personality and psychopathology, existing work with children and adolescents must be integrated into research on adults to create a broader developmental picture. In addition, use of a common language regarding personality structure and models of personality–psychopathology relationships across various ages will facilitate ultimate understanding of these relationships across the lifespan.

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The goal of the present paper is to review evidence for various proposed models of the relationship between personality and psychopathology in children and adolescents. Before specifically discussing the personality–psychopathology relationship, it is necessary to clarify the personality constructs discussed here. In particular, some continuity in discussion of personality and temperament constructs and structure across ages is necessary to understand and integrate research extending from childhood to adulthood. Questions of personality stability are also discussed as they relate to this issue. Thus, I begin by defining personality and the framework that will be used to organize the personality–psychopathology literature reviewed here.

1. Defining personality in childhood and adolescence

1.1. Temperament versus personality

In adults, individual differences in one's characteristic ways of behaving, thinking, and feeling are typically defined as *personality*. However, in children, characteristic individual differences may be described as *temperament* traits as well as *personality* traits. The study of temperament typically refers to traits or characteristics that are biological in nature and appear very early in life (Frick, 2004; Goldsmith et al., 1987; Rothbart & Bates, 1998). Temperament is often described as a subset of personality, with personality referring to a broader realm of individual characteristics (Rothbart, Ahadi, & Evans, 2000; Rothbart & Bates, 1998; Shiner & Caspi, 2003). Furthermore, temperament is thought to be most directly observable during infancy and toddlerhood (Goldsmith et al., 1987) and to make up the entirety of personality during these early years (Shiner & Caspi, 2003).

As children develop, it is likely that early temperamental traits develop into broader, more inclusive higher-order personality traits as well as increasingly differentiated lower-order traits (Buss & Finn, 1987; Caspi, Roberts, & Shiner, 2005; Lahey, 2004; Rothbart & Ahadi, 1994; Shiner, 1998). Specifically, personality develops as children progress through various cognitive and emotional stages that increasingly allow them to interact with, experience, and respond to the world in more complex ways (Caspi, 2000; Rothbart & Ahadi, 1994). Thus, the structure of personality may change as children gain new skills (e.g., motor or language), the capacity to regulate emotions (e.g., ability to inhibit antisocial responses), and a sense of self (Rothbart & Ahadi, 1994; Shiner, 1998; Shiner, Masten, & Tellegen, 2002).

However, despite growing consensus that temperamental traits make up the core of later personality, a clear understanding of the developmental relationship between temperament and personality is lacking (Halverson et al., 2003; Shiner & Caspi, 2003). One recent study investigated the relationship of an early temperamental trait (inhibition to novelty) to a later personality trait (inhibitory control) over infancy to early childhood, which is considered a key developmental period for later personality traits (Aksan & Kochanska, 2004). Similar work is needed regarding other temperament and personality traits in order to understand the nature of development for important individual differences.

1.2. Measurement of temperament and personality

The work of Thomas and Chess (1977) is considered the pioneering effort in measuring temperamental characteristics in infancy and childhood. Thomas and Chess defined a model of temperament based on an inductive content analysis of parent interviews about their infant's behavior. The resulting model was made up of nine dimensions that had been identified as behaviors with potential significance for psychological development. While this work was greatly influential in current conceptualizations of temperament measurement, psychometric limitations of the model have since been identified (e.g., Halverson et al., 2003). These limitations (such as a lack of discriminant validity among the dimensions) and debate over the appropriate number of dimensions led researchers to develop alternative models (Rothbart, 2004; Rothbart & Bates, 1998).

Presently, numerous frameworks exist for the structure of temperament and childhood personality, with researchers using various measures of temperament constructs. While research on temperament has increased since the work of Thomas and Chess, there remains a lack of consensus regarding the best framework (Goldsmith et al., 1987; Rothbart & Bates, 1998), which has resulted in a somewhat fragmented literature. However, the apparent fragmentation of temperament research may to some extent reflect a tendency for researchers to give similar constructs different names between models more than it reflects a lack of agreement over the primary constructs to study (Rothbart et al., 2000). Nevertheless, the field of temperament and childhood personality needs a unifying framework to allow organization and integration of

empirical findings and facilitate communication among researchers within the field, as well as with researchers in other disciplines (Halverson et al., 2003; Lonigan, Vasey, Phillips, & Hazen, 2004; Shiner & Caspi, 2003).

The adult personality literature has largely converged on the Five Factor Model (FFM) as an integrating framework. The factors in the FFM are: Extraversion, Agreeableness, Neuroticism, Conscientiousness, and Openness to Experience. Extraversion is a trait indexed by characteristics such as sociability, positive energy, and gregariousness. Agreeableness is represented by characteristics such as empathy and warmth toward others. Neuroticism is related to an individual's tendency to experience feelings of anxiety, irritability, and depression. Conscientiousness reflects characteristics of organization and self-discipline. Finally, Openness to Experience is represented by tendencies such as having an interest in cultural events, being creative, and holding nontraditional beliefs.

Convergence between the FFM and other major adult personality models has been well-documented (e.g., John & Srivastava, 1999; Markon, Krueger, & Watson, 2005), allowing greater understanding of how various models relate to one another. However, as noted above, the field of temperament and childhood personality has been lacking similar integration. Toward this end, recent attempts have offered potential frameworks to integrate various models of childhood personality (Halverson et al., 2003; Shiner & Caspi, 2003).

The popularity of the FFM in adult personality research has contributed to a growing body of literature documenting investigations of the five factor structure in children and adolescents (e.g., Digman, 1990; Graziano & Ward, 1992; John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994; Lamb, Chuang, Wessels, Broberg, & Hwang, 2002; Martin, Wisenbaker, & Huttunen, 1994). These studies tend to find evidence for the five factor structure, although there is some indication that Openness to Experience may not emerge until adolescence (Lamb et al., 2002). Halverson et al. (2003) took a "bottom-up" approach to the structural debate by attempting to construct a cross-cultural, cross-age measure of childhood personality. They collected parental descriptors of children (ages 3–12) across eight countries and, using a combination of rational (sorting done by focus groups) and empirical (factor analytic) techniques, derived a robust model of childhood personality. The resulting model consists of 15 "midlevel" scales that fit into a five factor structure similar to the FFM, although Openness to Experience was marked only by the single "Intellect" scale, which reflects characteristics such as precociousness, intelligence, and quickness in comprehension. Overall, the authors concluded that the results of their efforts produced a preliminary comprehensive taxonomy of childhood personality.

Shiner and Caspi (2003) also proposed a preliminary comprehensive taxonomy for childhood personality, which the authors recently extended (Caspi et al., 2005; Caspi & Shiner, 2006). They formulated their proposed taxonomy based on a review of the literature on childhood and adolescent personality, and also integrated existing and emerging work on the structure of adult personality. They initially defined a classification system consisting of four higher-order traits and eleven lower-order traits (Shiner & Caspi, 2003), recently extending the taxonomy to include a fifth higher-order trait (Caspi et al., 2005; Caspi & Shiner, 2006). The higher-order traits map onto the five factors in the FFM. Questions remain over whether the fifth factor in the FFM, Openness to Experience, has a direct analog in childhood (Shiner, 2006) and whether it emerges later in development (Caspi & Shiner, 2006).

These two recent attempts to provide a preliminary classification system for childhood and adolescent personality virtually agreed on the relevant higher-order traits. This convergence on a higher-order structure is particularly compelling given the different approaches to constructing a taxonomy that were taken by the authors. Halverson et al. (2003) employed a bottom-up scale construction approach to produce scales that were robust cross-culturally and cross-age (within childhood). Alternately, Shiner and Caspi (2003) constructed a taxonomy based on reviewing and integrating literature to date on childhood and adolescent personality. In addition, both of these works compared their proposed scales/traits with variables identified in other measures of childhood personality or temperament, allowing better understanding of how particular personality or temperament traits might be compared across studies.

For example, some other models of higher-order personality factors posit three instead of five factors (e.g., Rothbart, Ahadi, Hershey, & Fisher, 2001), and may be related to the FFM in a hierarchical manner with the three factors found in these models occupying a level of the hierarchy above the five factors of the FFM, as has been demonstrated with adult samples (Markon et al., 2005). In a rigorous investigation, Markon et al. (2005) demonstrated that three-factor models (including traits roughly capturing positive emotionality, negative emotionality, and disinhibition) can be broken down hierarchically into a four-factor model (with disinhibition splitting into *disagreeable* disinhibition and *unconscientious* disinhibition). Further, at a lower level of the hierarchy, a fifth factor, roughly representing openness to experience, splits off from positive emotionality. Such an investigation has not been conducted with children, and it may well be that the hierarchical nature of higher-order personality traits differs by age. Nonetheless, this work offers some insight into potential relationships at the higher-order personality trait level between measures.

Taken together, these studies provide a good starting point for discussing childhood personality within a comprehensive framework. Moreover, the framework put forth will allow for greater communication within the area of childhood personality, as well as linking the areas of childhood and adult personality (Caspi & Shiner, 2006).

1.3. Defining personality in the present review

The proposed taxonomies for childhood personality (Halverson et al., 2003; Shiner & Caspi, 2003) discussed above will provide the guiding framework for conceptualizing childhood and adolescent personality at the higher-order trait level in the present review. Thus, research on childhood and adolescent personality which utilizes other measures or variables (including relevant traits typically defined as "temperament") will be discussed as it relates to these taxonomies. In other words, discussion through the remainder of this review will not strictly differentiate studies that refer to temperament traits versus personality traits for the purpose of maintaining a common language and integrating this body of work. In some cases, personality traits or variables that do not have a direct correlate in the proposed taxonomies will be included if deemed particularly relevant.

In addition, this review will primarily focus on personality and psychopathology in children and adolescents. Thus, research on infants and toddlers will not be included. There are several reasons for making this distinction in the present review. First, as noted previously, the developmental relationships between specific temperament traits and later personality traits have not yet been fully elucidated, particularly to the extent that we do not currently have an empirical understanding of how traits in major temperament models may develop into traits in major models of personality (although this concern is somewhat informed by recent advances in extending temperament approaches into childhood and adolescence). Therefore, it is not yet clear how temperament research on infants and toddlers might be integrated with research on childhood and adolescent personality. Secondly, there is evidence to suggest that personality traits can be identified and reliably measured in early to middle childhood. Halverson et al. (2003) found that the personality variables identified in their study could be reliably measured as early as 3 years of age. Similarly, a recent meta-analysis found that rank-order consistency of personality traits increased substantially from the infancy and toddler years to the 3 to 6 year period (Roberts & DelVecchio, 2000). In addition, this meta-analysis suggested that, starting at a 3 to 6 year age range, rank-order consistency largely leveled off through childhood and adolescence (and remained in the .45 to .52 consistency range). Other research has shown that personality traits measured at age 3 were significantly linked to personality traits at age 18, suggesting that there is continuity in personality even over the range of middle childhood and adolescence (Caspi, 2000; Caspi & Silva, 1995). It is important to interpret the magnitude of stability coefficients over longer periods of time with the understanding that while many important developmental processes and interactions with the environment also play a role in the developing personality, a significant portion of the variance (particularly relative to others in an age-specific population, i.e., rank-order consistency) appears to be stable across childhood and adolescence.

2. Modeling the relationship between personality and psychopathology

Investigating the relationship of temperament or personality traits to types of psychopathology in children and adolescents is not uncommon. However, the majority of research in this area to date has been purely correlational, seeking to *identify* relationships between personality traits and types of psychopathology but not necessarily to *understand* and *explain* them. In addition, much of this work has focused on how a particular personality trait (e.g., disinhibition) is related to a particular form of psychopathology (e.g., attention-deficit/hyperactivity disorder), rather than employing a multivariate perspective of the personality–psychopathology relationship in children. Thus, most studies have offered specific findings rather than aiming for a more comprehensive understanding of these relationships.

There are likely multiple reasons why more effort has not been devoted to understanding relationships between personality and psychopathology in children at a theoretical level. Problematic issues that interfere with relating these disciplines include defining the boundaries between personality and psychopathology in children, a lack of understanding regarding points of convergence and divergence between constructs in each area, and measurement problems such as item overlap or confounding personality and psychopathology concepts in the same measure (Frick, 2004; Lahey, 2004). However, attempts to resolve these issues will likely be unfruitful or conflicting as long as an understanding of the personality–psychopathology relationship remains unclear. For example, the measurement problem of item overlap might

be tackled in different ways depending on whether one conceptualizes personality traits and psychopathology characteristics as discrete constructs or as varying manifestations of a unified underlying dimension (Lemery, Essex, & Smider, 2002; Lengua, West, & Sandler, 1998). In the first case, a researcher might design measures of personality and psychopathology to contain no overlapping items, while in the second case they might design a unified measure that taps into both areas simultaneously. While it is promising that researchers are highlighting the need for more research targeting both personality and psychopathology (e.g., the recent special section in *Journal of Clinical Child and Adolescent Psychology*, 2004), a more comprehensive understanding of the underlying personality–psychopathology relationships is needed in order to frame new research on this intersection of disciplines.

2.1. Proposed models

Various models have been proposed to explain the relationship between personality and psychopathology, with four models in particular gaining acceptance as potential explanations for the personality–psychopathology relationship: the complication/scar model, the pathoplasty/exacerbation model, the vulnerability/predisposition model, and the spectrum model. According to the *complication*, or *scar* model, the development of psychopathology (in particular, Axis I disorders) changes an individual's premorbid personality. For example, the occurrence of multiple major depressive episodes may increase an individual's neuroticism relative to their premorbid level. The *pathoplasty*, or *exacerbation* model hypothesizes that an individual's pre-existing personality characteristics may influence the manifestation of an Axis I disorder in course, severity, presentation, or prognosis. An example might be an individual showing high inhibition who develops a substance dependence problem, and the substance dependence is exacerbated by the secondary "coping" effects achieved by the substance in social settings. The *vulnerability*, or *predisposition* model proposes that certain personality traits may place an individual at greater risk to develop a particular form of psychopathology. An example of the vulnerability model would be an individual who is very low in the personality trait of Conscientiousness, or Constraint, who is at higher risk for developing Conduct Disorder *because* they are less inhibited. Finally, the *spectrum* model states that personality traits and manifestations of psychopathology lie on a continuum (or, continua) such that the relationship between personality and psychopathology is dimensional. A common example of this model is the "schizophrenia spectrum" of disorders: Schizophrenia, Schizotypal Personality Disorder, and Paranoid Personality Disorder, which are often described as differing manifestations of a common etiology (e.g., Nicolson et al., 2003).

Tests of these four models have primarily appeared in the adult literature, with comprehensive reviews found elsewhere (Krueger & Tackett, 2003; Widiger et al., 1999). No clear consensus exists for which model provides the best explanation in children or adults, partially due to a lack of studies utilizing appropriate methodology to test most of these models (e.g., including premorbid measures of personality or measuring potential common causes of personality and psychopathology; Krueger & Tackett, 2003). In addition, it is unlikely that one distinct model will prevail as the only explanation for the personality–psychopathology relationship. Rather, future research may establish that more than one model may explain different aspects of this relationship (Millon & Davis, 1996; Dolan-Sewell, Krueger, & Shea, 2001) and various explanations may have differential importance for different types of psychopathology.

Differentiating between these models will likely be difficult and benefit from a priori hypotheses about how a particular disorder might relate to personality. For example, one way to differentiate a spectrum explanation from the other models is to include measures of potential common causes for the personality traits and disorders of interest in longitudinal studies. To provide another example, elucidating complication/scar explanations requires gathering measures of personality *before* onset of the disorder, so researchers might assess personality traits related to depression (such as Neuroticism and Extraversion) in a sample of young children whose mothers have a history of depression and follow the children over time to see if trait levels change after experiencing depressive episodes.

2.2. The present review

The aim of the present review is to integrate and summarize research on personality and psychopathology in children and adolescents. While these models have been reviewed fairly extensively in adults (Krueger & Tackett, 2003; Widiger et al., 1999), they have not been reviewed in depth within the developmental literature (however, see Shiner & Caspi, 2003; Caspi & Shiner, 2006 for brief reviews). It is also important to note that relationships between

temperament and psychopathology have been broadly reviewed elsewhere (e.g., Rothbart & Bates, 1998). The goal of this paper is to provide an updated comprehensive review of the literature within the framework of the four models described above while utilizing a more integrative taxonomy of childhood personality. In addition, suggestions are made for future research to specifically test these models in multivariate longitudinal samples.

3. Complication/scar and pathoplasty/exacerbation models

Research speaking to the complication/scar and pathoplasty/exacerbation models is scarce. Both models are particularly difficult to test methodologically, as they require assessment of an individual's personality *before* the onset of an Axis I disorder, as well as additional assessments of personality traits and psychopathology at later points in time in the same individuals. The complication/scar model, in which a change in premorbid personality following an Axis I disorder is hypothesized, may gain some support from longitudinal studies suggesting that early childhood disorders, both externalizing and internalizing, increase the likelihood of developing a variety of personality disorders in adulthood (e.g., Fischer, Barkley, Smallish, & Fletcher, 2002; Hill, 2003; Kasen et al., 2001; Modestin, Matutat, & Würmle, 2001). One longitudinal study found that childhood antisocial behavior problems predicted an increase in Neuroticism, or Negative Emotionality, in adulthood even after controlling for the level of Neuroticism in childhood (Shiner et al., 2002). Taken together, these studies suggest that childhood psychopathology may cause changes in personality later in life. However, without a measurement of personality before the onset of the Axis I pathology, one cannot infer whether these changes in personality traits were a result of the Axis I disorder.

Research is also limited in evaluating the pathoplasty/exacerbation model, which posits that an individual's premorbid personality may alter the manifestation of an Axis I disorder. One area of study has concentrated on comorbidity between anxiety disorders and conduct disorder in children. This literature has largely found that disruptive children with high levels of inhibition/shyness, which would be related to the higher-order factor of Neuroticism, result in less severe manifestations of conduct disorder and better prognosis as compared to those with low levels of inhibition (Kerr, Tremblay, Pagani, & Vitaro, 1997; Walker et al., 1991). However, a potential difficulty in interpreting this work within the present context is a lack of clarification of boundaries between personality and psychopathology (e.g., when inhibition is measured by anxiety disorder characteristics). More thorough investigations of the pathoplasty/exacerbation model would measure premorbid personality traits such as those captured in the taxonomies guiding this review and aim to understand how they influence the presentation, course, or prognosis of later-developing psychopathology.

4. Vulnerability/predisposition model

4.1. Externalizing psychopathology

Several types of childhood and adolescent problem behaviors are typically categorized as "externalizing" pathology, such as oppositional/defiant behaviors, conduct problems (which includes both aggressive and rule-breaking behaviors), symptoms of attention deficit/hyperactivity, and substance use (Achenbach & McConaughy, 1997). Disorders characterized by antisocial behaviors, such as Oppositional Defiant Disorder and Conduct Disorder, have received the greatest attention from a vulnerability perspective. In general, this literature has primarily identified Conscientious and Neuroticism as potentially relevant personality risk factors for the development of later psychopathology.

A number of studies have found that characteristics related to impulsivity (which may be related to low Conscientiousness) were significantly related to antisocial behaviors throughout childhood (Hirshfeld et al., 1992; Raine, Reynolds, Venables, Mednick, & Farrington, 1998; Tremblay, Pihl, Vitaro, & Dobkin, 1994) and adolescence (Lynam et al., 2000). Some longitudinal studies which follow individuals into adulthood have also showed strong relationships between early characteristics of impulsivity and antisocial behavior as adults. Specifically, this finding has been substantiated by studies with measurements of impulsivity in adolescence (Sigvardsson, Bohman, & Cloninger, 1987; White, Bates, & Buyske, 2001), middle childhood (Farrington & West, 1993), and as early as 3 years of age (Caspi, 2000; Caspi, Moffitt, Newman, & Silva, 1996; Henry, Caspi, Moffitt, & Silva, 1996). In addition to the numerous findings related to low Conscientiousness, early observations of negative affect have been connected with antisocial behaviors in middle childhood (Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989).

Supplementing this work on general antisocial behavior, other specific lines of research have focused on relationships across time between personality traits and specific subtypes of antisocial behavior. Subtypes of antisocial behavior which differentiate between early-onset, chronic offenders (labeled *life-course persistent*) and adolescent-onset, desisting offenders (labeled *adolescent-limited*) have shown differential relationships with earlier personality traits. Specifically, individuals in the life-course persistent group have shown greater levels of negative emotionality (similar to Neuroticism) in childhood and lower levels of disinhibition in adolescence than their adolescent-limited counterparts (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; White et al., 2001). Another line of research has measured personality traits related to the construct of psychopathy, such as callousness and impulsivity, and found them to predict antisocial behavior across childhood (Frick, Cornell, Barry, Bodin, & Dane, 2003; Lynam, 1997; Tremblay et al., 1994).

In addition to this body of work on antisocial behavior, some studies have investigated relationships between personality traits and substance use problems. A number of studies have found that characteristics reflecting disinhibition as well as negative emotionality, or Neuroticism, measured in childhood show prospective relationships with problematic substance use in adolescence (Block, 1993; Block, Block, & Keyes, 1988; Masse & Tremblay, 1997; Shedler & Block, 1990) and early adulthood (Cloninger, Sigvardsson, & Bohman, 1988). Low agreeableness measured in childhood has also shown a significant relationship with substance use problems in adulthood (Pulkkinen & Pitkanen, 1994).

While the studies reviewed thus far have primarily focused on specific disorders or types of behavior problems, other work has investigated the prospective relationship between personality traits and externalizing pathology in general. Characteristics reflecting negative emotionality, or Neuroticism, predicted externalizing behaviors across childhood and into adolescence (Gjone & Stevenson, 1997). A larger body of work has demonstrated that measures of disinhibition predict externalizing pathology in early and middle childhood (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Eisenberg et al., 2000, 2004; Mun, Fitzgerald, Von Eye, Puttler, & Zucker, 2001; Rende, 1993; Rubin, Burgess, Dwyer, & Hastings, 2003; Silverman & Ragusa, 1992) and into adolescence (Olson, Schilling, & Bates, 1999). Related to these results, other studies have reported that *high* levels of inhibition predicted *lower* levels of externalizing pathology in childhood and adolescence (Schwartz, Snidman, & Kagan, 1996; Sigvardsson et al., 1987; Tremblay et al., 1994).

4.2. "Difficult" temperament

In addition to the studies already reviewed, a large body of research has examined a personality or temperament characteristic often described as "difficult," "resistant," or "hard to manage." The "difficult temperament" variables used in these studies sometimes measure characteristics which resemble aspects of Neuroticism, or negative affect. Commensurate with the findings reviewed previously, measurements of "difficult temperament" variables which reflect Neuroticism-like characteristics showed a prospective relationship with externalizing pathology in early and middle childhood (Bates, Pettit, Dodge, & Ridge, 1998; Campbell & Ewing, 1990; Deater-Deckard, Dodge, Bates, & Pettit, 1998; Olson, Bates, Sandy, & Schilling, 2002) and adolescence (Olson, Bates, Sandy, & Lanthier, 2000).

Other studies have also included conceptualizations of "difficult" temperament as a potential predictor of later behavioral problems (e.g., Boudreault & Thivierge, 1986; Coon, Carey, Corley, & Fulker, 1992; Davies & Windle, 2001; Garrison, Earls, & Kindlon, 1984; Giancola & Mezzich, 2003; Maziade et al., 1985, 1990). A review of this work suggests that many studies employ different definitions of "difficult" temperament, which makes the construct a difficult one to interpret across studies (Rothbart, 2004). In most cases, studies define "difficult" temperament as a construct including some characteristics of Neuroticism, as well as physiological functions, such as eating and sleeping patterns, and measures of disinhibition (e.g., Thomas, Chess, & Birch, 1968). Defining the concept of "difficult" temperament within a structural model of personality would facilitate integration of this literature with other work on the personality–psychopathology relationship.

4.3. Internalizing psychopathology

In contrast to disorders characterized as "externalizing" pathology, another major domain of disorders, typically referred to as "internalizing" pathology, consists primarily of problems with anxiety and depression (Achenbach & McConaughy, 1997). One personality construct that has received a great deal of attention regarding its connection with anxiety disorders is often called Behavioral Inhibition (BI; although it is important to note that BI is typically described as a *temperament*

trait). Typically, the construct of BI is defined as both fearful-anxious behaviors and shy-withdrawn behaviors (Kagan, 1994). Thus, if the BI construct was placed in context of the taxonomies of childhood personality outlined above, it may represent some combination of high Neuroticism and low Extraversion. Differentiating fearful-anxious behaviors from shy-withdrawn behaviors may be useful in identifying specific relationships between these constructs and individual disorders (Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004). Particularly given the expanse of research utilizing measurements of BI, future work may empirically examine where the construct of BI is located within a broad taxonomy of childhood personality. In particular, BI is defined as a categorical construct rather than a dimensional one (Kagan, 1994), unlike the other personality characteristics found in the guiding framework used in this paper.

A substantial literature has reported a significant relationship between BI and later internalizing psychopathology (for a review, see Hirshfeld-Becker et al., 2003). Measurements of BI in toddlerhood and early childhood predicted anxiety disorders in early and middle childhood (Biederman et al., 1993, 1990; Hirshfeld et al., 1992; Rosenbaum et al., 1993) and adolescence (Hayward, Killen, Kraemer, & Taylor, 1998; Schwartz, Snidman, & Kagan, 1999). In line with research measuring BI, similar traits related to Inhibited-Approach characteristics measured in early childhood were related to later anxiety problems (Caspi et al., 1995).

In addition to the growing number of studies investigating anxiety disorders, a smaller number of studies have investigated the relationship between personality characteristics and depression. Some evidence suggests that traits reflecting extreme inhibition in early childhood predict depression in adulthood and may show a significant relationship with suicide attempts when combined with traits marking low Conscientiousness (Caspi, 2000; Caspi et al., 1996). Similarly, another study reported that high levels of neuroticism and high levels of novelty-seeking in adolescence predicted later suicidal behavior (Fergusson, Beautrais, & Horwood, 2003). Other work has found potential for gender differences regarding early personality traits that may predict later depression. Specifically, risk for depression in late adolescence was strongly related to characteristics of disinhibition in childhood for boys, but for girls was primarily related to characteristics of extreme inhibition in childhood (Block, 1993; Block, Gjerde, & Block, 1991).

While many studies have investigated early personality traits as related to specific internalizing pathology, other work has investigated this relationship with regard to internalizing psychopathology in general. Features reflecting extreme withdrawal, related to inhibition, in early childhood showed a prospective relationship with internalizing problems in middle childhood (Young Mun, Fitzgerald, Von Eye, Puttler, & Zucker, 2001). In addition, other studies have measured characteristics related to Neuroticism, or Negative Emotionality, and reported that these characteristics predicted internalizing psychopathology in middle childhood and adolescence (Gjone & Stevenson, 1997; Mufson, Nomura, & Warner, 2002; Rende, 1993).

4.4. Resiliency

A related area of research has focused on individual factors that make some children more *resilient* to the development of psychopathology than others. In other words, this area of research centers on those factors that make children *less* vulnerable to developing psychopathology. This area has been receiving increasing attention recently as the research base has grown and the implications of this research for policy and practice have become more clear (Rutter, 2000). The area of resiliency research has identified a number of potential protective mechanisms besides personality traits, including other intraindividual variables such as IQ and social-cognitive processing skills as well as characteristics of the family environment and peer network (Rutter, 2000). Research that has measured personality traits has shown that decreased risk for psychopathology in addition to other adaptive outcomes can be predicted by earlier personality traits (e.g., Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000; Shiner, 2000, 2006; Shiner & Masten, 2002).This area of study has clear relevance for understanding risk factors for psychopathology, as it may represent the other side of a vulnerability perspective or perhaps a specific case of the pathoplasty model as conceptualized in adults. In addition, it is one potentially important component in delineating the personality–psychopathology relationship that has primarily emerged in research on children and adolescents but is relatively absent in research on adults. As research on resiliency factors develops, it will be important to integrate this new knowledge with a growing understanding of the personality–psychopathology relationship.

5. Spectrum model

The work reviewed in reference to the vulnerability/predisposition model, for the most part, has been interpreted as evidence that specific personality traits may be a risk factor for the development of later psychopathology. However,

research interpreted from a vulnerability perspective could also be explained by a spectrum model conceptualization of the personality/psychopathology relationship. That is, longitudinal research suggesting that early personality traits predict later psychopathology could also be evidence that some disorders lay on a similar dimension, or continuum, with personality characteristics. Specifically, the development of psychopathology out of personality does not necessarily indicate a mutually exclusive relationship between these constructs, but could instead indicate an individual's point on an underlying continuum changing over time.

The use of dimensional approaches in childhood psychopathology is not new. An example is the Child Behavior Checklist (CBCL; Achenbach, 1991), one of the most commonly used tools for assessing psychopathology in children and adolescents. The CBCL is an empirically-derived tool that groups behavior problems into dimensions based on the observed phenotypic covariation of the behaviors. It consists of two broad underlying behavioral dimensions (occupying the same level of the hierarchy), labeled Internalizing and Externalizing. In addition to the widespread use of the CBCL by researchers and clinicians, other researchers have called attention to the need to utilize a hierarchical perspective to categorize childhood psychopathology. Specifically, classification of childhood psychopathology could be improved by elucidating both common and specific factors to groups of disorders (Lilienfeld, 2003; Weiss, Susser, & Catron, 1998). Drawing from this discussion of a hierarchical approach to childhood psychopathology, personality traits may represent an important key to identifying such common and specific factors among disorders. That is, personality characteristics may help to explain comorbidity among childhood disorders, as well as clarify differentiating characteristics between disorders.

One hypothesis relevant to a spectrum model approach is that the distinction between personality (or, temperament) and psychopathology may be that psychopathology refers to a specific, more extreme set of behaviors that result in some impairment in functioning for the individual, whereas personality/temperament refers to a much broader, more normative set of behaviors (Lahey, 2004). Potential support for a spectrum model would include evidence suggesting common etiological influences (such as genetic factors) for personality characteristics and disorders hypothesized to lie on the same dimension. Despite the common acceptance of using a dimensional perspective in assessment of childhood psychopathology and childhood personality, little work has been done hypothesizing a spectrum model association between the two, particularly compared to the body of work investigating a vulnerability or risk factor relationship. However, some studies have begun to provide a base of evidence supporting such a dimensional relationship between personality and psychopathology in children and adolescents.

5.1. Externalizing psychopathology

Support for a dimensional conceptualization of externalizing disorders and personality has implicated the personality trait of Conscientiousness (in this case, referring to low Conscientiousness) or unconscientious disinhibition. The term "disinhibitory psychopathology" is often used to refer to externalizing disorders, based on the disinhibitory characteristics that manifest across different types of externalizing pathology.

One area of support for the spectrum model comes from psychobiological studies investigating externalizing disorders. Psychobiological correlates common to externalizing problems and personality suggest potential biological underlying influences common to both (or, a shared etiology). Researchers have found multiple psychobiological correlates (e.g., neurotransmitter functioning, psychophysiological measures) that show significant relationships with disinhibitory characteristics and externalizing psychopathology in children and adolescents (see Beauchaine, 2001; Beauchaine, Katkin, Strassberg, & Snarr, 2001; Iacono, Carlson, Malone, & McGue, 2002; Iacono, Carlson, Taylor, Elkins, & McGue, 1999; Nigg, 2000; Quay, 1993).

In addition to psychobiological variables that provide some evidence for a common etiology, other support for the spectrum model includes results from genetically-informative studies. Specifically, common genetic influences on externalizing psychopathology and personality provide further support for a dimensional conceptualization of these constructs. Genetically-informative studies have suggested that a highly heritable "externalizing" or "behavioral disinhibition" dimension may underlie different types of externalizing pathology and disinhibited personality characteristics (Krueger et al., 2002; Young, Stallings, Corley, Krauter, & Hewitt, 2000). Longitudinal twin studies have assessed CBCL-defined externalizing behaviors and characteristics related to Neuroticism, or Negative Emotionality (referred to as "Emotionality") in toddlerhood, childhood, and early adolescence (Gjone & Stevenson, 1997; Schmitz et al., 1999). The results of these studies implicate common underlying genetic influences in accounting for the phenotypic correlations between externalizing problems and Emotionality over time.

5.2. Internalizing psychopathology

The predominant dimensional model linking internalizing disorders to personality traits is the tripartite model, which has more recently been applied to children and adolescents. The tripartite model developed out of work on adults and offers a hierarchical organization of internalizing disorders and personality traits (Clark & Watson, 1991; Clark, Watson, & Mineka, 1994). This hierarchical organization, as mentioned previously, seeks to identify common factors that may explain issues of comorbidity as well as specific factors that differentiate disorders. This model has focused on the broad internalizing problems of depression and anxiety, which are highly comorbid. The tripartite model posits the common factor of Negative Affect, or Neuroticism, as a potential explanation for this high comorbidity, as well as specific factors of low Positive Affect, or low Extraversion and somatic symptoms of hyperarousal differentiating between depression and anxiety, respectively.

A substantial body of research has sought to apply the tripartite model to samples of children and adolescents and has largely found support for the model in these younger age groups (Anthony, Lonigan, Hooe, & Phillips, 2002; Chorpita, Plummer, & Moffitt, 2000; Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Joiner, Catanzaro, & Laurent, 1996; Joiner & Lonigan, 2000; Laurent & Ettelson, 2001; Lonigan, Carey, & Finch, 1994; Lonigan, Hooe, David, & Kistner, 1999; Lonigan, Phillips, & Hooe, 2003; Phillips, Lonigan, Driscoll, & Hooe, 2002). A recent study has extended this work and suggested that high Neuroticism and low Conscientiousness may be a common personality profile in children with both depression and anxiety (Lonigan et al., 2004).

While researchers have hypothesized that the tripartite model should be supported by genetically-informative studies investigating common genetic influences on anxiety, depression, and Neuroticism, there is little related research in studies of children and adolescents (Axelson & Birmaher, 2001; Kovacs & Devlin, 1998). However, one longitudinal twin study reviewed earlier found that phenotypic correlations between CBCL-defined internalizing behavior problems and characteristics of Shyness (likely similar to BI) and Emotionality were largely explained by common genetic influences on the personality and psychopathology variables in early childhood (Schmitz et al., 1999). However, another twin study examined the relationship between Internalizing problems and Emotionality across middle childhood and early adolescence did not find similar evidence for common genetic influences (Gjone & Stevenson, 1997).

6. Summary

In summary, the research reviewed here provides preliminary support for both a vulnerability and spectrum approach to conceptualizing the personality–psychopathology relationship in children and adolescents, with the vulnerability, or risk-factor, approach receiving the greatest research attention. Specifically, Neuroticism and Conscientiousness have been implicated as particularly relevant in the development of later psychopathology. There is less support for alternative conceptualizations, such as the complication/scar and pathoplasty/exacerbation model, due to a lack of research. While the spectrum model has not been a driving hypothesis to the extent that the vulnerability model has, it is difficult to disentangle evidence for these two approaches. Indeed, research supporting a vulnerability explanation for the personality–psychopathology relationship may also support a dimensional conceptualization, and these two approaches may ultimately work in concert to provide the best explanation. More direct tests of the complication/scar, pathoplasty/exacerbation and spectrum models will help elucidate a comprehensive approach to conceptualizing the personality–psychopathology relationship. Ultimately, we may find that all models are necessary to create such a comprehensive picture, possibly differing for various types of psychopathology or various individuals.

It is important to highlight the important contributions that have been made in the literature regarding the existence of robust relationships between personality and psychopathology in children (e.g., studies presenting correlations between concurrent measures). A review of this work was not the focus of the present paper, as conclusions from correlational work relying on concurrent measures are severely limited in how they might inform the hypotheses described here in that they often do not provide information about the directionality or common causes that might be driving the relationship. Future work on modeling the personality–psychopathology relationship should draw on existing knowledge regarding the strength and stability of such connections, while still moving toward hypothesis-driven investigations of various explanations of the personality–psychopathology relationships.

Understanding the extent to which personality traits or “profiles” (i.e., specific configurations of traits) predispose an individual to later psychopathology is an important key to developing effective, targeted prevention efforts (Frick, 2004). In addition, clarifying the personality–psychopathology relationship has important etiological implications that may serve to

identify specific causal influences on the development of psychopathology. Recently, interest has been growing in the phenomenon of equifinality, or different developmental pathways which result in a similar (e.g., psychopathological) outcome (Harrington, 2001). Personality may be an important factor in identifying distinct pathways to certain disorders and guide treatment research for these potential subgroups (Caspi & Shiner, 2006; Frick, 2004). For example, early identification of personality profiles that put children at risk for different types of psychopathology may lead to interventions targeted at modifying the personality characteristics themselves or at modifying particular environmental risk factors that interact with or exacerbate the underlying personality before the onset of the pathology (Frick & Sheffield-Morris, 2004).

Future work should test the validity of these theoretical models in multivariate studies utilizing longitudinal and genetically-informative designs. Specifically, longitudinal, genetically-informative designs afford a valuable opportunity to test both the vulnerability and spectrum models in the same sample (and in some cases, the complication/scar and pathoplasty/exacerbation models as well). Posing the question of whether the vulnerability model *or* the spectrum model provides an adequate explanation of the relationship between psychopathology and personality (or whether both could be used) will help researchers understand the relationships between the various models. Certainly, conducting longitudinal studies that are genetically-informative requires substantial resources and may not be feasible to implement for many researchers. Two other options for researchers to consider are taking better advantage of existing longitudinal, genetically-informative datasets and making concerted efforts to inform at least one of these models in their ongoing research, which can contribute to a richer analysis of personality–psychopathology connections.

Studies that assess a range of personality traits and disorders are particularly useful to elucidating explanatory models. Multi-trait, multi-disorder studies allow researchers to integrate different types of psychopathology into current structural models of personality, often with little added effort (e.g., by using comprehensive measures such as the CBCL). As mentioned previously, creating a comprehensive, hierarchical model can help rectify problematic issues such as comorbidity, as well as aid in the organization and classification of these constructs (Watson, Clark, & Harkness, 1994), all potential advantages of a spectrum model conceptualization. In a hierarchical conceptualization, co-occurrence of specific disorders might be easily explained by a common connection between the disorders at a higher level of the hierarchy. Certainly, future studies have the opportunity to build these features into their design, but it is also imperative to capitalize on archival data with specific questions in mind.

A related point involves the need to incorporate the hierarchical aspects of personality and psychopathology structure in future designs. In order to utilize personality information for developing targeted clinical interventions, it will be necessary to understand which personality traits are related to psychopathology on a broad level (i.e., Internalizing and Externalizing) as well as on a narrow level (i.e., specific disorders). Similarly, the ability to identify personality correlates at both broad and narrow levels of psychopathology will be promoted (or perhaps, limited) by progress on the hierarchical structure of childhood personality. Researchers have written about potential connections between established temperament and personality traits (e.g., Rothbart & Ahadi, 1994; Rothbart et al., 2000), however, researchers should now turn to establishing such connections empirically. Including measures of both temperament and personality constructs in research studies would provide one step toward empirically integrating the two languages. Cross-sectional integration can provide an important (and tractable) first step toward understanding these relationships within a developmental framework. Examining relationships between temperament and personality constructs at different ages should result in testable hypotheses regarding developmental connections between earlier individual differences (i.e., temperament) and more complex, differentiated individual differences (i.e., personality).

In future research, it will be important to identify specific lower-order personality factors within a broader taxonomy of childhood personality. Such efforts may build on previous work differentiating between specific personality constructs in children (e.g., Eisenberg et al., 2004) by placing them in a broader context (e.g., including more comprehensive measure of personality). For example, Neuroticism has been implicated in virtually all of the common disorders discussed in the present review. An important question is whether Neuroticism has clinical utility as a personality construct or basically represents a general psychopathology factor. Researchers utilizing a comprehensive hierarchical approach could identify which (if any) lower-order personality traits predict the development of a disorder above and beyond that variance accounted for by Neuroticism. Accounting for Neuroticism in this way clarifies (and ideally, increases) the clinical utility of personality information. Again, it will be important to link this work with the extensive literature on temperament, with the goal of understanding how early temperamental traits develop into specific lower-order personality traits later in life. As future research on childhood personality structure seeks to elucidate lower-order personality factors in children, these may prove to be a particularly informative vehicle for identifying specific disorders or subtypes of psychopathology (Paunonen & Ashton, 2001).

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