Latent Profiles of Temperament and Their Relations to Psychopathology and Wellness

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ABSTRACT

Objective: To test for empirically defined temperament phenotypes and to investigate their associations with psychopathology and wellness. **Method:** The sample included 447 children (259 boys, 188 girls; mean age 11.0 years) recruited for a family study in the northeastern United States. Temperament was measured with the Juvenile Temperament and Character Inventory, and indicators of wellness and psychopathology were assessed with the Child Behavior Checklist from both parents and the Teacher Report Form. Latent profiles analysis was performed with the resulting class membership serving as the dependent variables for multinomial regression analyses. **Results:** Latent profiles analysis identified three classes as the best fitting solution consisting of a moderate class that had average levels of all four traits, a steady class that had low novelty seeking and high persistence and a disengaged class that had higher novelty seeking and harm avoidance but lower reward dependence and persistence. Regressions demonstrated strong links between the steady class, higher functioning, and lower levels of psychopathology, whereas the disengaged class showed the opposite associations. These findings held across informants of psychopathology and wellness. **Conclusions:** Profile analyses of temperament may be illuminative in identifying children with similar constellations of traits across many dimensions. Membership in these groups appears to be strongly related to both positive and negative outcomes. *J. Am. Acad. Child Adolesc. Psychiatry,* 2008;47(3):273–281. **Key Words:** temperament, personality, latent class.

Research on child temperament and personality breaks down the overall construct into a number of specific higher order dimensions such as extraversion, neuroticism, and novelty seeking.[1,2] The traits themselves are typically derived from theory and previous research and then tested with factor analytic procedures to establish the taxonomy as reliable and valid.[3,4] Individual traits are designed to be relatively independent, although modest correlations are generally found between dimensions.[5,6] Mean scores for these dimensions, in turn, often serve as the main outcome measures when compared between various predefined groups such as between men and women or between patients and controls.

A growing literature of this type has developed revealing strong associations between various temperament dimensions and nearly all types of psychopathology. High levels of neuroticism or negative affectivity, for example, have been found to predict later internalizing and externalizing disorders.[7] Some researchers have demonstrated that certain dimensions such as low effortful control or persistence may reflect a general vulnerability to many behavioral disorders,[8] whereas others relate more to the direction of symptoms such as the link between early social inhibition and later social anxiety disorder.[9] Furthermore, the relations between temperament and psychopathology are mediated and moderated through a number of other factors including attachment, cognitive styles, and environmental selection, among others.[10,11]

Although there is little doubt that these techniques have contributed to an explosion of important findings regarding the link between temperament and psychopathology,[11–13] there remain limitations to the variable-centered approach. Specifically, these techniques impose both theoretical and statistical constraints by assuming that the effect of a particular temperament dimension operates independently from the effects of other dimensions.[14] Previous results have suggested that the association between one temperament dimension and a corresponding area of psychopathology depends in part on other temperament dimensions in both the child and the parent.[8,15] These methods also give no information about how levels of multiple dimensions tend to cluster naturally within a population.

An alternative approach that can address some of these limitations is to combine variable-centered approaches with individual-centered approaches.[11] One specific technique that has been applied successfully in the psychiatric literature is latent class analysis (LCA) or latent profiles analysis (LPA).[16,17] With these procedures, responses to items of interest such as criteria for different psychiatric diagnoses, individual questionnaire items, or even quantitative scores for several subscales are examined with the goal of identifying classes of individuals with a similar underlying response profile.

Latent class techniques have been applied to psychiatric diagnoses such as alcoholism, attention-deficit/hyperactivity disorder, obsessive-compulsive disorder, and eating disorders. Results of these investigations have pointed to the existence of categories and subtypes substantially different from current *DSM*-based conceptualizations.[18–20] These differences are not just of academic interest to methodologists. Subsequent analyses have found that clusters identified through LCA and other techniques may be more informative than the existing typology as measured through other external validators such as prognosis or underlying genetics.[21–23] Thus, this work represents an exciting advance to clinicians and clinical researchers who rely on a valid classification system as a vital prerequisite to all of their subsequent investigations and interventions.[22,24]

Although application of these methods is relatively new, its conceptual antecedents in modern temperament research can be traced to the seminal work of Thomas and Chess[2] in their attempts to develop a working classification system. In addition to the nine basic dimensions (mood, distractibility, persistence, activity, rhythmicity, adaptability, approach/withdrawal, threshold, and intensity), Thomas and Chess also advanced the well-known person-centered "constellations" of traits that combined into classes termed easy, slow to warm up, and, most famously, difficult.[25] The difficult category described a temperamental profile of children who were easily frustrated and poorly regulated, required prolonged adjustment to new routines or situations, and had relatively frequent and loud periods of crying and/or tantruming. It was individuals this category who were deemed most susceptible to psychopathology in certain environmental contexts.[25] This category continues to be a cornerstone of modern temperamental research and teaching despite little empirical replication for this framework or others. One attempt using inverse factor analysis in adolescent boys found three main personality types labeled resilient, overcontrolled, and undercontrolled.[26,27] The resilient group was found to have low levels of psychopathology and high academic achievement, overcontrollers had high levels of internalizing problems, and undercontrollers had high levels of externalizing problems or comorbid internalizing and externalizing problems.

Caspi and Silva[28] used factor and cluster analyses to describe five classes of 3-year-old children as part of the Dunedin Study. Their groups were labeled as well-adjusted (40%), undercontrolled (10%), confident (27%), inhibited (8%), and reserved (15%) based on observer ratings. Prospective studies have revealed significant predictive relationships between age 3 temperament categories and later psychopathology and achievement.[29,30]

In applying LCA techniques to more recent temperament constructs, we have previously reported an LCA of questionnaire items related to the temperamental trait of behavioral inhibition.[31] This study found evidence not only of a class of children who were fearful and reticent to social and nonsocial novelty, as defined by the construct, but also classes fearful only to social or nonsocial novelty.[32] We are not aware, however, of LCA or LPA being applied to any of the most widely used temperament instruments.

To these ends, we attempted to apply LPA to a group of children and adolescents whose temperament was assessed with the Junior Temperament and Character Inventory (JTCI).[33] We hypothesized that the technique would identify a relatively small number of clusters of individuals with distinguishing profiles. We further