

Short-term predictive validity of cluster analytic and dimensional classification of child behavioral adjustment in school

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Abstract

A constructive debate over the classification of child psychopathology can be stimulated by investigating the validity of different classification approaches. We examined and compared the short-term predictive validity of cluster analytic and dimensional classifications of child behavioral adjustment in school using the Behavior Assessment System for Children (BASC; [Reynolds, C. R., and Kamphaus, R. W. (1992). *Behavior Assessment System for Children (BASC)*. Circle Pines, MN: AGS.] Teacher Rating Scales for Children (TRS-C). We cluster analyzed 14 dimensional scores of children's behavior in first grade and identified seven clusters. Then we examined the predictive power of the dimensions and the clusters using a variety of school outcomes in second grade, including academic achievement scores in reading and math, absenteeism, discipline reports, and participation rates in pre-referral intervention. Both methods significantly predicted all school outcomes with similar magnitudes of effect sizes, but the dimensional approach was more powerful in predicting the outcomes except pre-referral intervention. Moreover, coherent group differences in the clusters were identified with respect to the school outcomes. This latter finding may suggest differentiated prognoses of cluster membership. The implications for future validation studies of alternative classification systems of child behavioral adjustment are discussed. © 2006 Society for the Study of School Psychology. Published by Elsevier Ltd. All rights reserved.

Keywords: Classification; Cluster analysis; Validity; Psychopathology; BASC

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Diagnostic classification in psychopathology has five uses including: (1) creation of a common professional nomenclature; (2) organization of information; (3) clinical description; (4) prediction of outcomes and treatment utility; and (5) the development of concepts upon which theories may be based (Blashfield, 1998). The Diagnostic and Statistical Manual of Mental Disorders (e.g., DSM-IV; APA, 1994) diagnostic classification scheme attempts to provide a common nomenclature, organize information, and clinically describe syndromes or patterns of behavior. On the other hand, the limitations of current diagnostic classification systems such as the DSM have been well documented in the literature (Schmidt, Kotov, & Joiner, 2004). The DSM system is inadequate, for example, for classifying comorbidity (Caron & Rutter, 1991), and for subthreshold “psychopathology” or symptoms (Cantwell, 1996; Hinshaw, Lahey, & Hart, 1993). Although diagnostic classification is imperfect, the majority of mental health professionals support the idea that it should be continued and further developed because it serves basic purposes and has inherent communicative advantages (Cantwell, 1996). It has been pointed out that a clear line of research that links diagnoses to treatment and theory development is still lacking for many disorders of childhood and adolescence, and there are continuing questions about the validity of those disorders (Schmidt et al., 2004). The most promising way to make progress in developing classification systems of child psychopathology is to compare the validity of different classification approaches (Cronbach & Meehl, 1955).

In the absence of clear criterion variables such as morbidity or etiology it is therefore important to assess the construct validity of any behavioral or mental health classification system (Schmidt et al., 2004; Skinner, 1981). Skinner provided a useful framework for such research by proposing that validity research integrate theory formation, internal validity, and external validity. His integrative concept of classification validation is comparable to Messick’s (1989) comprehensive notion of construct validity that refers to “an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of inferences and actions based on test scores or other modes of assessment.” (p. 13). Given this rubric, one way to further develop the classification of child psychopathology is to examine and compare the validity of different classification approaches (Blashfield & Draguns, 1976). Unfortunately, only a few studies have directly compared the validity of different classification systems (Schmidt et al., 2004).

In a well-cited study, Fergusson and Horwood (1995) compared the predictive validity of the DSM system with that of a dimensional (i.e., continuous variable) approach for adolescents’ disruptive behaviors. They found that the dimensional approach was more predictive of behavioral outcomes including substance abuse, juvenile offending, and school dropout than the DSM system. Fergusson and Horwood concluded that dichotomizing symptoms for the purpose of using the DSM system causes a loss of information in the form of restriction of variable range, which, in turn, results in a corresponding loss of predictive power. In another study, Haapasalo, Tremblay, Boulerice, and Vitaro (2000) compared the predictive power of cluster analysis to that of dimensions in predicting child problem behaviors. They used teacher ratings of five variables (physical aggression, anxiety, inattention, hyperactivity, and prosocial behavior), for which they identified eight clusters. They reported that both variable oriented and cluster analytic

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