

## EDITORIAL

# Multilevel perspectives on pathways to resilient functioning

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Throughout the course of the 20th century, increased attention was directed toward the importance of applying a multiple levels of analysis approach to the investigation of normal and atypical developmental processes (Cicchetti & Valentino, 2007). The movement toward a multiple levels of analysis perspective is exemplified by research conducted in the fields of contemporary neuroscience and developmental psychopathology (Cicchetti, 2002). Similar to the historical growth witnessed in neuroscience (Cowan, Harter, & Kandel, 2000), developmental psychopathology has evolved as a field that is the product of the integration of various disciplines (Cicchetti, 1990). The influence of diverse disciplines on developmental psychopathology illustrates the manner in which advances in our knowledge of the operation of developmental processes within particular scientific domains mutually inform each other. These multidisciplinary origins helped to facil-

itate and forge the emphasis that developmental psychopathologists have placed on the importance of investigating the processes and pathways to maladaptation, psychopathology, and resilience (Cicchetti, 1984, 1993; Cicchetti & Sroufe, 2000).

Despite the fact that it has become increasingly apparent that progress toward a process-level understanding of maladaptive, psychopathological, and resilient outcomes will necessitate the implementation of research designs and strategies that call for the simultaneous assessment of multiple domains of variables both within and outside the developing person, this interdisciplinary systems-level approach has yet to be brought to bear in the scientific study of resilience (Cicchetti & Blender, 2004, 2006; Curtis & Cicchetti, 2003; Luthar, Cicchetti, & Becker, 2000). Empirical investigations of resilience over the past 40 years have examined a wide range of psychosocial correlates of, and contributors to, the phenomenon (Luthar, 2006; Luthar & Brown, 2007; Masten, 2007; Masten & Obradović, 2006). In recent years, a number of scientists have urged researchers studying the determinants of resilience to incorporate neurobiological and molecular genetic measures into their investigations of the developmental pathways to resilient functioning (Charney, 2004; Cicchetti & Blender, 2006; Curtis & Cicchetti, 2003). Technological advances in neuroimaging, magnetoencephalography, electroencephalographic recording, neuroendocrinology, and molecular genetics have made it more feasible to conduct

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We are grateful to the National Institute of Drug Abuse (DA17741) and the Spunk Fund, Inc. for their support of our work on this project. This Special Issue is dedicated to Marianne Gerschel in recognition of both her longstanding support of research on the determinants of resilience and her passion and commitment to improving the lives of disenfranchised persons. Her ongoing efforts have made a major difference in the outcomes of many heretofore ignored children and families.

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research on the development of resilience from a multilevel perspective.

Contributors to this Special Issue, many of whom have not previously focused their research efforts on discovering the processes contributing to resilient functioning, were asked to examine their data from a multilevel perspective on resilience. Through stretching beyond their typical “comfort zones,” we thought that a fresh perspective could be brought to bear that would facilitate the understanding of resilient adaptation. Indeed, this Special Issue contains a number of the first empirical studies that have investigated the processes and pathways to resilience from a multilevel perspective.

Because the authors of the contributions in this Special Issue each have examined diverse levels of analysis and their relation to resilient outcomes, these and future studies that adopt a multiple levels of analysis approach should have important implications for resilience-promoting interventions (Luthar, 2006). Luthar and Cicchetti (2000) stated that such resilience-promoting interventions should target protective and vulnerability forces at multiple levels of influence.

The utilization of a neurobiological framework and the incorporation of genetically sensitive designs into interventions seeking to promote resilient functioning or to repair positive adaptations gone awry may contribute to the ability to design individualized interventions

that are based on knowledge gleaned from multiple biological and psychological levels of analysis. If assessments of biological systems are routinely incorporated into the psychological measurement batteries employed in resilience-promoting interventions, then we will be in a position to discover whether the nervous system, as well as psychological processes, have been modified by experience.

Future research on resilience should continue to integrate biological and psychological perspectives with the goals of translating this research into the design and implementation of preventive interventions that aim to facilitate the development of resilient functioning (Cicchetti & Toth, 2006; Curtis & Cicchetti, 2003; Luthar, 2006). A challenge that will need to be surmounted involves the determination of the mechanisms whereby different levels of analysis interact across developmental time. Furthermore, researchers conducting their work at each level will need to develop theories that are consistent across all levels of analysis. Although investigations that focus purely on the behavioral level of resilience remain valuable and worthwhile, it is now essential that researchers who examine the determinants of resilience integrate empirical work conducted on the behavioral level with the biological and genetic levels, examine their coactions, and investigate the relations among these mutually influencing systems.

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