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Editorial: Experiments of nature: Contributions to developmental theory

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One of the distinguishing principles that has guided research conducted within a developmental psychopathology perspective is that knowledge of normal development is necessary to comprehend psychopathology and that, conversely, the examination of maladaptive and psychopathological development can elucidate the normal functioning of individuals (Cicchetti, 1984, 1990a, 1990b, 1993; Rutter, 1986; Sroufe, 1990; Werner, 1948). Because all pathology can be conceived as a disturbance, distortion, or degeneration of normal functioning, in order to understand psychopathology it is essential that the normal functioning with which psychopathology is compared be fully grasped (Cicchetti, 1984, 1990a; Kaplan, 1967; Rutter & Garmezy, 1983). Likewise, understanding how mental disorders evolve and how aberrations in the organization of component developmental systems that exist among disturbed individuals eventuate may be informative for elucidating critical components of normal development.

Unfortunately, despite the fact that developmental psychopathologists emphasize the mutual interplay between normal and atypical development, most contemporary theory and research has focused on the contributions that normal development can make to advancing our knowledge of psychopathological processes. There has been significantly less recognition that the investigation of high-risk conditions and mental disorders can affirm, challenge, and/or expand developmental theory. The contributions to this Special Issue address the minimized half of the normal–abnormal equation.

Often, the examination of a system in its smoothly operating normal or healthy state does not afford us the opportunity to comprehend the interrelations among its component subsystems. In usual circumstances, the integration of component developmental systems may be so well established that it is difficult to determine how normal functioning is dependent on this integration (Cicchetti & Sroufe, 1976). Chomsky (1968) commented upon this state of affairs, asserting that "One difficulty in the psychological sciences lies in the familiarity of the phenomena with which they deal . . . One is inclined to take them for granted as necessary or somehow 'natural'" (p. 21). Chomsky (1968) further reflected that "We also lose sight of the need for explanation when phenomena are too familiar and 'obvious.' We tend too easily to assume that explanations must be transparent and close to the surface" (p. 22).

When there is a clear perturbation or deficit in a component system within a "high-risk" or mentally disordered population, examination of how that atypicality relates to the organization of other component systems can reveal important information regarding

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the interdependence of components not apparent under normal conditions. Because "experiments of nature" such as being raised in an institutional environment or in a maltreating home enable us to isolate the components of the integrated system, investigation of these "natural experiments" sheds light on the normal structure of the system and prevents us from falling prey to the problem identified by Chomsky. If we choose to ignore or bypass the investigation of these experiments of nature, then a likely outcome is the construction of theories that will eventually be contradicted by critical discoveries in research on psychopathology (Lenneberg, 1967).

Historically, experiments of nature have been utilized by scientists in a variety of disciplines in order to contribute to the normal understanding of the phenomena under investigation (Cicchetti, 1990a). For example, theoreticians and researchers in a number of fields, including genetics, embryology, neurology, neuropsychology, psychiatry, and clinical and developmental psychology, have examined experiments of nature in order to elucidate theory and research in their respective disciplines (Goldstein, 1939; Inhelder, 1943/1968; Jackson, 1884/1958; Lenneberg, 1967; Luria, 1966/1980; Meyer, 1934, 1957; Shakow, 1967; Tizard & Hodges, 1978; Tizard & Tizard, 1971; Weiss, 1939, 1961). In recent decades, Rutter (1994, 2000; Rutter, Pickles, Murray, & Eaves, 2001) has eloquently articulated ways in which natural experiments are useful for the testing of causal hypotheses on the causes and courses of psychopathology. Increasingly, developmentalists are employing designs that focus on natural experiments in order to provide insight into pressing theoretical questions.

In the current Special Issue, a variety of experiments of nature have been investigated. The utilization of a diversity of natural experiments is critical because, when extrapolating from nonnormal populations with the goal of informing developmental theory, it is important that a range of populations and conditions be considered. In order to make generalizations beyond the risk process or mental disorder being investigated, it is necessary to examine an entire spectrum of disordered modifications. As continued research utilizing experiments of nature is achieved, and as multiple investigators examine the same natural experiments from similar and diverse perspectives, then the field of developmental psychopathology will be better positioned to provide significant insights into processes of development not generally achieved through sole reliance on studies of relatively homogenous nondisordered populations. Findings proffered by examinations of experiments of nature also hold considerable promise for informing preventive and intervention strategies (see Cicchetti & Hinshaw, 2002).

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