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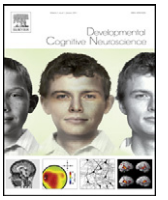

Foreword

There has been a revolution in cognitive neuroscience over the past two decades with the advent of functional neuroimaging, new directions in cognitive science, and the addition of a new generation of energetic young investigators. Subdisciplines, including social neuroscience, affective neuroscience, and aspects of behavioral neuroscience are now frequently subsumed under the general rubric of cognitive neuroscience. Across all of these areas of study, understanding the development of brain and cognition is now one of the great challenges facing neuroscience. It is a truism that development is the product of genes and environment. But understanding how genes and environment interact to specify neural circuits for memory or language or emotion regulation and understanding how emerging cognition influences those same circuits remains a great mystery.

Solving this mystery will be one of the most exciting challenges for this new journal, Developmental Cognitive Neuroscience. Do we really need another journal? With over 5000 journals indexed in PubMed, why create a new one? Contributors and readers will answer this question for themselves. This reader would note that there is a need for an intellectual forum for scientists interested in brain and cognition across development. Such a forum can entertain new theories, feature new technologies, and review recent progress. And this forum can foster work in two areas of great need.

First, the field can begin to bridge the rich tradition of developmental neuroscience with developmental psychology. A decade of arguments about being "brainless" or "mindless" can now be settled with a synergistic effort to understand how brain development, from transcription to circuit formation, permits the emergence of new cognitive functions. In this sense, development is a great natural experiment to inform systems neuroscience. What neural changes underlie the social smile of infancy, the emergence of empathy in toddlers, or the affective instability of adolescence? And how do each of these developmental cognitive changes alter subsequent brain development?

But beyond this inherently fascinating science, there is an urgent public health need. Mental disorders are the leading source of medical disability for people between ages 15 and 45 (Rodgers et al., 2004). Mood and anxiety disorders, schizophrenia, eating disorders, and most other severe mental illnesses are chronic diseases that start early in life, generally before or during adolescence. Data from a recent epidemiological study in the U.S. estimate that 50% of adults with mental disorders have onset by age 14, 75% by age 24 (Kessler et al., 2005). We do not know the cause of any of these disorders. Nor do we know why they emerge so early in life, at a time when the brain is still developing. But, for some childhood mental disorders, such as attention deficit hyperactivity disorder, there is now compelling evidence of abnormal patterns of cortical maturation (Shaw et al., 2007). Increasingly we view mental disorders as developmental brain disorders. It follows that the basic science for understanding mental disorders must include developmental cognitive neuroscience. As our understanding of normal patterns of development matures, we will need to translate these insights into new approaches to abnormal patterns of development.

An example might be helpful. The traditional view of schizophrenia holds that this disorder begins with psychosis, usually between ages 18 and 23. By taking a neurodevelopmental approach, schizophrenia can be defined by stages of a trajectory (McGorry, 2010). In this formulation, the psychosis of schizophrenia can be considered a late stage of schizophrenia, preceded by subtle cognitive deficits and social isolation of during adolescence, which in turn is preceded by pre-symptomatic risk earlier in childhood. The promise of this approach is that we may develop interventions focused on cognitive deficits in early stages of the illness that will forestall or preempt psychosis. This developmental formulation requires a deeper understanding of normal cognitive development and the neural changes that derail cognitive development in adolescents at risk for psychosis. Developmental Cognitive Neuroscience is thus not just a forum for fascinating science, it may yield the science that can alter the fate of millions of people at risk for our most disabling disorders.

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The need is urgent, the opportunity is great, and the time is right. All of us need Developmental Cognitive Neuroscience to be a great success. With all of our best ideas, it will be.

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