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Utilizing Biopsychosocial and Strengths-Based Approaches Within the Field of Child Health: What We Know and Where We Can Grow

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Abstract

We continue to increase our understanding of the experiences and settings that contribute to positive developmental outcomes in childhood, and those that confer greater risk. Although the mechanisms by which the risk and protective factors affect developmental outcomes need to be further elucidated through research, converging findings from the field of child health (spanning both physical and mental health) indicate that a biopsychosocial approach is useful. Here, we examine the evidence that early experiences confer both risk and protective processes on biopsychosocial development in childhood, and touch on some implications for the life course. Although this interdisciplinary field of research has already garnered substantial attention, here we aim to highlight the opportunity to use a strengths-based approach with the biopsychosocial model, with particular focus on children who experience prolonged stress. We close with consideration for future directions with an emphasis on policy and practice in clinical and educational settings to improve well-being in these early stages of the life course.

Introduction

Young children live in ecological systems, some of which may confer risk or aid in protecting healthy development. Increasingly research attention now uses an interdisciplinary model of development (hereafter referred to as the biopsychosocial model) including domains that are biological (brain, genetics, and endocrine functioning), psychological (both emotional and cognitive systems and responses), and social (spanning perceptions of self to social settings) in nature. There is growing interest in and ability to examine the ways in which these three domains interact with one another during the early years of the life course. Although the mechanisms by which the risk and protective factors actually act to affect developmental outcomes remain largely unknown and therefore constitute a growing area of research, converging findings in the field of child health (which includes both physical and mental health) indicate that a biopsychosocial lens is helpful in the measurement of developmental outcomes and the design of interventions. Here, we examine the evidence that early experiences confer both risk and protective processes on biopsychosocial development in childhood, and touch on some implications for the life course. We recognize that this interdisciplinary field of research has already garnered substantial attention including thorough review articles; however, here we aim to expand the

discussion to highlight the potential benefit of nesting such important biopsychosocial research within a strengths-based framework that is resource- rather than problem-focused (Saleebey, 2008).

We recognize that the following is not a comprehensive review, but rather serves as a concise point of reference that the field is growing in terms of the ability to measure, intervene, and develop programs and policies to enhance child well-being framed within a biopsychosocial lens. The example of this biopsychosocial model of development within the field of child health follows. Recent advancements in neuroimaging methodologies that allow for the measurement of brain function and structure have provided evidence of substantial brain growth and maturation over the first 25 years of life, with change even possible late in the life course (Giedd et al., 2009; Shonkoff, Boyce, & McEwen, 2009; Shonkoff & Garner, 2012). From this work, we have learned that the brains of fetuses and newborns, and to a lesser extent young children, are highly responsive (plastic) to experience from external settings and from internal activity. This plasticity means that during the early years there is both greater vulnerability to stressors and also an enhanced capacity for resilience when proper supports and intervention are in place (Shonkoff, 2011). Findings from neurobiology, most robustly with animal models and more recently with humans, have further elucidated the role of the environment on development, such as the harmful effects of prolonged activation of the stress response system on the brain (Sapolsky, 2004; Shonkoff & Garner, 2012) and on the genome (Shalev et al., 2013). These findings regarding the biological domain of development can begin to be translated into practice through the design of interventions and programs that are psychosocial in nature, such as ones developed to reduce stress through building the parent's capacity for sensitive and competent caregiving (Suchman, Decoste, Rosenberger, & McMahan, 2012). The brain and behavior can also be positively influenced later in the life course, and given that adults as parents and teachers form the most significant microsystems for the young brain, there is a need in practice to build skills in adults, and also a need in policy to support pathways to fund sustainable parent-child or parent-educator programs (Center on the Developing Child at Harvard University, 2014).

Biopsychosocial Model in Early Development With a Strengths-Based Approach

Here, we illustrate that one possible way to approach the building of positive biopsychosocial development in young children is through a strengths-based approach utilized primarily in the field of social work (Saleebey, 2008). Findings from studies of brain development in infants and young children have begun to shed light on our understanding of sensitive periods, windows of time when the brain is most plastic and responsive to experience. This plasticity includes both greater "blossoming" and subsequent "pruning" of synaptic connections, suggesting this developmental window is a time when interventions may carry increased potential for positive effects (Applegate & Shapiro, 2005; Badenoch, 2008; Giedd et al., 2009; Johnson, Blum, & Giedd, 2009; Marsh, Gerber, & Peterson, 2008). Although plasticity is relevant for all children, here we point to the importance of utilizing this biopsychosocial model within a strengths-based framework for children who experience

adversity and stress during their early years (Shonkoff et al., 2009). Chronic stress can have a detrimental effect on the stress response system involving the hypothalamic–pituitary–adrenal axis, in part because this axis releases a primary stress hormone, cortisol, the long-term exposure to which contributes to negative physical and mental health outcomes (Sapolsky, 2004). The young brain is very vulnerable to such experiences (Shonkoff & Garner, 2012), and children living in low socioeconomic status (SES) settings seem particularly, although not exclusively, at risk to such exposure (Hackman, Farah, & Meaney, 2010).

In the United States, 22% of children live in poverty (Addy, Engelhardt, & Skinner, 2013). Poverty increases risk for negative health and psychological outcomes throughout the lifespan (for review see Hackman et al., 2010). One possible avenue for these long-reaching effects is the role of toxic stress, as children in poverty are more often exposed to multiple stressors including increased family transitions, unresponsive caregiving, community violence, and lack of social support (Evans, 2004). The function and structure of the brain can be disrupted when the stress response system, which is intended for short-term activation to enhance chances of survival, remains engaged for long periods of time without the opportunity for a return to homeostatic balance (McEwen, 2012). In addition to the potential for increased exposure to toxic stress, lower SES is also associated with greater amygdala (detects threats and initiates the stress response system) volume (Noble, Houston, Kan, & Sowell, 2012) and greater pre-frontal function with increased accuracy in a cognitively demanding scan task (Sheridan, Sarsour, Jutte, D'Esposito, & Boyce, 2012). Prefrontal systems are important for executive function (decision making and behavioral regulation; Casey, Giedd, & Thomas, 2000) that is one potential contributor to school success. Programs that provide early intervention for children most at risk may be enhanced through a strengths-based approach.

This approach is a reaction to the deficit model of development and suggests that individuals have the ability to overcome adversity and to realize their hopes (Saleebey, 2008). According to Saleebey (2008), we can be most productive in achieving positive outcomes if practitioners (and we posit by extension researchers) realize that everyone has strengths that offer reserves of resilience and which those working with others facing adversity may know nothing about until the strengths are discovered through dialogue and connection. Further, by collaborating with individuals we must take care not to suppress their wisdom and knowledge that may be critical components of overcoming adversity. In addition, we must understand that every environment no matter how it may appear from an outsider's perspective has important resources. For many the family unit is that very source of strength, and the family is an important part of intervention to enhance biopsychosocial development. For example, although experiences and environments more commonly associated with living in low SES may confer greater risk to the developing brain, such as in the hippocampus (subserving memory and adversely influenced by toxic stress; Noble et al., 2012), early parental care that is warm and responsive appears important for hippocampal maturation (Rao et al., 2010). Recently, Neville and colleagues (2013) implemented a family-based training program for preschoolers in low SES families to improve brain function, cognition, and behavior. Children were part of Head Start preschool programs and were involved in an eight-week intervention to improve academic readiness and selective attention, while their

parents engaged in an intervention targeted to reduce family stress, improve discipline techniques, increase responsiveness and language usage, and improve children's selective attention (Neville et al., 2013). Results from the pre–post event-related potential showed that neural activation subserving selective attention in the children receiving the combined intervention (child and parent training) improved markedly compared to those who received either standard Head Start participation or Head Start with added academic support. The combined group also showed substantial increases in IQ and language performance, and behavior. Importantly, parents receiving the intervention reported greater decreases in parenting stress than the other control groups (Neville et al., 2013). One important component of the parent training was support around stress management and opportunities to increase family routines and sense of control in the children. We recognize that long-term follow-up and replication are needed, but point to the biopsychosocial and ecologically framed nature of the study as important next steps for research. At the same point, using a strengths-based approach we imagine there may be important and potentially underexplored and underutilized resources within these and other families experiencing adversity that could be explored collaboratively (with the participants themselves) in future studies. The efficacy of intervention studies aimed at improving biopsychosocial development in children may be enhanced if the target of the program actually identifies (and perhaps even participates in development of measures for) preexisting resources within families.

Implications and Future Direction

Understanding that the context of early adversity and stress impart risk, but that the family unit can make effective changes to enhance their own well-being speaks to the need to approach intervention with a strengths-based approach. For example, longitudinal studies of intervention to build parenting skills in mothers with risk for poor infant attachment due to stressors associated with low SES (Olds et al., 2010) and substance abuse (Suchman et al., 2012) have demonstrated significant gains in psychosocial child development and parenting efficacy. The importance of access to high-quality childcare is also of central concern for families of low SES (Ruzek, Burchinal, Farkas, & Duncan, 2014). Low-quality childcare can be substantially improved through funding that provides tools to underresourced teachers to help facilitate responsive caregiving and attunement in the student–teacher relationship (Landry et al., 2014).

Future avenues for research could examine more exhaustively what mechanisms within systems (from most proximal to more distal) better alleviate toxic stress in families, for parental stress can influence child health. Prenatal stress influences infant cognitive development (Davis & Sandman, 2010) and childhood brain volume (hippocampus and amygdala; Buss et al., 2012). Findings from a separate study indicate that telomere length, a DNA sequence that protects the ends of chromosomes from losing base pairs and from fusing, may shorten due in part to toxic stress and adversity, leading to the fraying of chromosomes and premature cellular aging (Shalev et al., 2013). Importantly, social support and other protective buffers seem to increase telomerase, an enzyme that repairs the shortened telomeres and can sustain healthy functioning (Epel, 2012; Ornish et al., 2013).

In sum, we contend that we are in an exciting position in the field of child health to more fully understand how biological (e.g., stress response and brain development), psychological (e.g., emotion regulation and cognition), and social (e.g., behavior regulation and functioning in families) development in young children unfolds in a systems context. By collaborating with families and communities with a strengths-based approach, we may improve our chances of developing programs and policies that are ecologically grounded and personally meaningful to those most directly influenced by the work.

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