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Parenting: Science and Practice

Publication details, including instructions for authors and subscription information:

http://www.tandfonline.com/loi/hpar20

A Naturalistic Approach to the Study of Parenting

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Available online: 14 Jun 2012

To cite this article: Rena L. Repetti, Theodore F. Robles, Bridget M. Reynolds & Meredith S. Sears (2012): A Naturalistic Approach to the Study of Parenting, Parenting: Science and Practice, 12:2-3, 165-174

To link to this article: http://dx.doi.org/10.1080/15295192.2012.683343

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ISSN: 1529-5192 print / 1532-7922 online DOI: 10.1080/15295192.2012.683343

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SYNOPSIS

We study parenting within the context of the family—its natural environment—using direct observations and repeated sampling, to describe the real-time unfolding of situations and responses to them. Longitudinal studies attempt to model the long-term impact that different styles of parenting have on the psychological and physical development of offspring. But behavioral, emotional, and biological responses to parenting occur in the moment, with an immediate impact on the child. We are interested in how those short-term responses come to influence developmental and health processes that play out over longer time spans. Our approach, which integrates measures of neuroendocrine and immune system function, has implications for researchers and practitioners.

INTRODUCTION

Psychologists approach the study of parenting in different ways: Experimental and correlational designs are conducted in the laboratory and in natural settings. Each set of procedures has its own strengths and weaknesses, and each provides a necessary but insufficient piece of the parenting puzzle. This paper describes our strategy of studying everyday events and social interactions as they naturally unfold within and outside the family. We use a mixture of naturalistic methods to understand how parent and child responses to the immediate demands of daily life contribute to physical, psychological, and social development in offspring; an overview of the model underlying this research is presented in Figure 1.

Urie Bronfenbrenner was an early champion of ecological validity in the field of developmental psychology. His acerbic description of developmental research was that it represented "the science of the strange behavior of children in strange situations with strange adults for the briefest possible periods of time" (Bronfenbrenner, 1977, p. 513). This criticism was aimed at rigorous but poorly generalizing experimental studies that removed children and parents from their natural contexts and called for behaviors that may not actually have occurred outside the laboratory. By studying parenting inside the family social environment, naturalistic studies gain ecological validity. There are an infinite number of variables that cannot be approximated in studies applying the standard setting of one parent and one child in a laboratory environment. For instance, according to the 2010 U.S. Census, 69% of children have two adults living at home, and 79% of families have two or more children living in the household. The separation of one child and

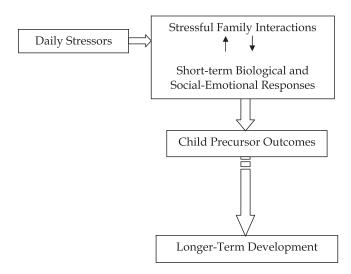


FIGURE 1
Conceptual model underlying our research.

one parent from the rest of the family in pursuit of understanding parenting strategies fails to reflect the environment in which the vast majority of parenting occurs. Studies typically focus on mother-child relationships despite evidence supporting the father's not only substantial but *different* role from the mother's in shaping children's development. This approach also fails to take into account a wide variety of cultural practices, such as the involvement of grandparents and extended family in childrearing.

Naturalistic studies capture the full range of variability in the full range of variables typically present in a home setting, such as daily activities, the involvement of other family members in parenting, and contextual factors that affect parents' and children's behaviors (e.g., a stressful day at work or school, or marital interactions). Of course, the major strength of descriptive, naturalistic studies is also its greatest weakness: every possible confound associated with the construct under investigation is present. Thus, external validity may be gained at the expense of reliability and causal inference. That is why laboratory and naturalistic research studies complement and inform each other, together enhancing our overall understanding of parenting and its consequences.

A detailed picture of everyday life as it is lived by parents and children allows us to observe short-term responses to family stressors, such as episodes of conflict, anger, and hostility. The term "risky families" describes chronically stressful rearing environments that influence health outcomes in adulthood through a cascade of biological and psychological processes (Repetti, Taylor, & Seeman, 2002). Among children growing up in these settings, systems designed to respond to immediate threats are repeatedly activated. Over time, repeated activations may disrupt the modulation of those response systems, particularly the regulation of reactivity and recovery processes, that is the mounting of arousal responses and a return to baseline levels of emotion and physiology following termination of the stressor. We classify early-developing response patterns that act as links to later developmental and health outcomes as "precursor outcomes" (Repetti, Robles, & Reynolds, 2011). For instance, one consequence of repeated

psychological responses to family conflict appears to be a heightened readiness to perceive and respond to threats, which may eventually contribute to problems with impulse control and emotion regulation. Repeated stressful interactions also lead to an accumulation of physiological "hits" that, according to the concept of allostatic load, exact a toll on biological systems, with ramifications for the regulation of hypothalamic-pituitaryadrenal (HPA) axis responses to stress and immune responses to infection. Emerging evidence points to a variety of biological precursor outcomes, including cortisol levels that are outside of normal ranges (either extremely low or extremely high), hyporesponsiveness to acute stressors, as well as enhanced inflammatory responses and impaired cellular immune responses to infectious antigens (Repetti et al., 2011). In short, we believe that children's short-term psychological and biological responses open a window onto the processes through which daily experiences in the family come to shape a child's development. The next three sections describe research that incorporates naturalistic methods, biological measures, and stressors outside the home into the study of parenting, followed by discussions of the implications of this approach for researchers and practitioners, and our group's future research directions.

NATURALISTIC RESEARCH METHODS

We use a mixture of different methods to describe families' daily lives and the behavior, emotions, thoughts, and biology of parents and children. Video offers one of the most direct means of documenting the ordinary lives of parents and children. For instance, the UCLA Center on the Everyday Life of Families (CELF) videotaped a sample of twoearner families as they went about their daily lives over the course of a week (Ochs, Graesch, Mittmann, Bradbury, & Repetti, 2006). The 40 hours of video recordings per household have revealed much about social and emotional family life. One example is the finding that, although there were infrequent expressions of negative emotion such as frowning, turning away, or using an angry voice, mothers generally displayed more of those behaviors than did fathers (Wang, Repetti, & Campos, 2011). The cameras also caught important markers in a family's day such as reunions after work and school. Mothers were more likely than fathers to be greeted with reports of information from their children, whereas fathers, who typically arrived home later than mothers, were often met by children who were already engaged in activities and were distracted (Campos, Graesch, Repetti, Bradbury, & Ochs, 2009). A researcher was also physically stationed in the home to systematically record the ordinary details of family life, noting where each person was and what he or she was doing every 10 min (e.g., reading mail, preparing dinner, working on homework, watching television, eating, napping). Parents divided their time in different ways. Fathers were more likely than mothers to be involved in leisure activities, and mothers, who spent more time overall at home, devoted a larger proportion of that time to housework and childcare activities (Saxbe, Repetti, & Graesch, 2011).

A less intrusive naturalistic method has individual family members repeatedly describe their experiences and behavior over relatively short periods of time, such as the past few hours or the past day. Information about internal states, such as thoughts, feelings, and perceptions of family life, offers unique advantages that complement direct observation. In addition, data collected once or more each day guard against biases and errors that come into play in most self-report measures, which ask children and parents

to generalize across multiple situations and over long time spans, such as the past week or month.

Just as social and psychological processes unfolding throughout the day can be described through video, independent observers, and self-reports, the natural course of physiological processes can be studied through repeated biological sampling. For instance, the hypothalamic-pituitary-adrenal (HPA) axis is one of the body's key systems for responding to stress and its hormone end-product, cortisol, is used as a marker of stress, challenge, or threat. Cortisol can be assayed from saliva sampled on multiple occasions throughout a day. Our use of biological and diary procedures to study parents and children is discussed in greater detail in the next two sections.

BIOLOGICAL MEASURES

Integrating biological measures into family research provides additional insight into the mental and physical consequences of parenting for both children and parents. The value of biological variables for understanding parenting rests on selecting measures that are meaningfully involved in responses to stressful circumstances and plausibly connected to physical health outcomes. Thus far, indicators of neuroendocrine and immune system function meet both criteria. One example of a way to evaluate neuroendocrine functioning is to measure levels of the hormone cortisol in saliva to gauge activity of the HPA axis. Cortisol has numerous effects on the body, ranging from increasing energy for use by the body to controlling inflammation. Our assessments of immune function include levels of a protein called immunoglobulin A in saliva, which provides a barrier of protection against infectious microorganisms in the oral mucosa, and several measures of inflammation, which is the body's immediate response to infection or injury. Rather than discuss specific biological measures (for reviews, see Miller, Chen, & Cole, 2009; Robles, Glaser, & Kiecolt-Glaser, 2005), here we discuss more broadly the additional insights gleaned from incorporating such methods into family research.

The neuroendocrine and immune systems are involved in responses to stress. The biological stress response is adaptive, mobilizing energy for use by the brain and body, and engaging other biological activities to help individuals adapt to the after-effects of difficult experiences. For parents, repeated exposure to stressful circumstances, and for children, exposure to adverse family environments, can lead to "dysregulation" of these biological activities. Dysregulation can manifest as overactivity (such as exaggerated immune responses that can damage cells and tissues and increase physical symptoms) or underactivity. One example of underactivity comes from children in risky family environments, who often show smaller cortisol responses to brief stressors in the laboratory compared to children in less risky family environments. Cortisol helps rein in inflammation, and diminished cortisol responses to stress may contribute to increased inflammation because the "reining in" function of cortisol is diminished. For both parents and children, disrupted regulation of the immune system by the neuroendocrine system may reflect chronic exposure to stressful events, including those inside the family, such as significant conflict between parents or conflict between parents and children, as well as events outside the family, such as financial or occupational stressors.

Dysregulation of stress-responsive biological systems like the neuroendocrine and immune systems has consequences for physical health. For example, in the short term, hyperactive immune responses contribute to more severe symptoms of upper respiratory infections (URIs), such as stuffy or runny nose. Over the long-term, the effects of stress on the neuroendocrine and immune system may work in concert with other biological processes (such as genetic predisposition) and behavioral risk factors (such as poor diet, sedentary lifestyle) to hasten the onset of chronic medical problems, such as obesity and cardiovascular disease. Research already points to the roots of chronic diseases of adulthood as emerging in childhood (Miller, Chen, & Parker, 2011), and while much of the attention is on behavioral factors like diet and nutrition, family environmental factors have also emerged as determinants of health in adulthood (Dong et al., 2004).

Finally, stress-induced alterations in neuroendocrine and immune function have consequences for behavior. During infection the immune system produces substances called proinflammatory cytokines as part of inflammation, which act directly on the brain, causing the psychological and behavioral symptoms associated with sickness, including irritability and other mood changes. In adults and children, greater production of proinflammatory cytokines during infectious illness (such as URIs) is related to greater physical symptoms. Moreover, inducing inflammation in adults leads to decreases in positive mood, increases in negative mood, and most relevant to family functioning, more self-reported social withdrawal (Eisenberger, Inagaki, Mashal, & Irwin, 2010). In addition, both acute and chronic stressors may increase the production of those same substances (Robles et al., 2005). Thus, for parents, acute and chronic stressors may exacerbate inflammatory responses that they already experience while sick. Subsequent behavioral effects may have negative consequences for parenting, including diminished emotion regulation and increased social withdrawal. Most research on the effects of biological responses to stress on interpersonal functioning has been restricted to adults, and understanding how these processes function in children and families is only just beginning. As we look "inside" parents and children, for example, by testing samples of their saliva and asking them to describe their recent perceptions, thoughts, and feelings, we also employ a wider research lens to encompass life beyond the boundaries of the home.

STRESSORS OUTSIDE THE HOME

The boundaries surrounding family life are porous. Parenting is shaped by daily life outside of the family, and children's perceptions of—and responses to—their parents are likewise influenced by events that take place separate from any family members. Stressful experiences in those settings, particularly the difficulties, demands, and conflicts that parents face at work and that children face with peers and at school have short-term and long-term consequences for families. We focus on short-term processes, describing how the residue of stressful experiences at work and at school are carried back home at the end of the day.

We have learned that parents tend to reduce their levels of social engagement and expression of emotion after a more demanding day at work. For example, there is a decrease in fathers' descriptions of their experience and expression of emotion with their children when they return home after such a day (Repetti, 1994). Video recordings of the daily reunions of employed mothers and their preschool children at a worksite daycare center over the course of a week similarly showed that mothers spoke less and were less emotionally engaged (e.g., there were fewer observations of caring and loving/warm behavior) following more stressful work days (Repetti &Wood, 1997). Social withdrawal

may act as a short-term coping response in which a reduction in the intensity of social exchanges promotes recovery from elevated levels of arousal and a return of negative mood back to baseline levels. There is also evidence for short-term increases in irritability, displays of anger, and the use of discipline with children after difficult work days (Repetti, 1994). However, these effects, which are mediated by negative mood generated at work, are not as common as social withdrawal responses. Minor stressful events at school similarly lead to short-term changes in children's mood which, in turn, influence their perceptions of subsequent parent–child interactions. When children report more academic or peer problems at school, their mood declines and they later describe more aversive interactions with their parents (Lehman & Repetti, 2007; Reynolds & Repetti, 2008).

The link between daily experiences that take place beyond the home and behavior at home may be mediated by biological, as well as psychological, processes. For instance, parents' cortisol levels while at home are linked with fluctuations in their anxious thoughts and worries about work (Slatcher, Robles, Repetti, & Fellows, 2010). In the CELF study, parents' diurnal cortisol rhythms were related to their earlier experiences at work; the fathers' cortisol levels were elevated at home on evenings that followed more stressful interactions with supervisors and with coworkers (Saxbe, Repetti, & Nishina, 2008). Moreover, the mothers with flatter diurnal cortisol slopes, an indicator of higher chronic stress, were less involved in social interactions at home compared to mothers with steeper cortisol slopes. The pattern was reversed among the fathers: those with flatter cortisol slopes were more engaged at home and their wives were also more socially active (Wang, Repetti, & Campos, 2012). Thus, it is only by both widening and focusing our research lens that we can begin to understand how *internal* physiological and psychological processes, *external* social behavior, and daily stressors *outside* of the home are connected with each other.

IMPLICATIONS OF OUR APPROACH FOR RESEARCHERS

While affording us comprehensive and externally valid data, the combination of daily diary, observational, and biological procedures that we use is expensive in terms of time, participant burden, and project overhead. Our studies require a substantial level of commitment from multiple family members, each of whom may not be equally motivated to participate. Moreover, some of our methods can be perceived as intrusive, awkward, and/or embarrassing (e.g., the collection of saliva and nasal fluids; interviewers, videographers, or observers entering the home, a normally private arena of life). In the case of daily diary studies, the time commitment required and the repetitiveness of answering the same questions on a daily basis often seem onerous.

Resources must also be budgeted for staff training and coordination, especially given the complexities involved in venturing outside the lab and entering a family's home turf. Whether to observe, record, interview, or gather biological samples, collecting data in a natural environment necessitates extra care in scheduling visits and preparing staff to be sensitive and discreet. Operating within another's space requires flexibility (e.g., room for individual interviews with multiple family members may seem inadequate; the presence of non-family members, babies, pets, etc. complicates data collection). Interviewers must have the tact and skills to develop the trust needed to discuss potentially sensitive topics with family members. Videographers are trained to keep a number of sometimes

conflicting goals in mind as they record family members moving fluidly in their environments. For example, all participants in a social transaction should be included within the frame, with the camera situated so that as many faces as possible are visible, and at the same time it is important to zoom in to document details about what participants are viewing, writing, or otherwise producing (Ochs et al., 2006). In addition, extra time is needed to attain inter-rater reliability when coding naturalistic video recordings. The codes must encompass the variety of behaviors that spontaneously occur in a family environment, and vocal and facial affect is more difficult to describe (e.g., interpreting words being spoken from another room; identifying expressions on faces that are turned partially away from the camera). Professional laboratory services are needed to perform biological assays, which can be costly. Electronic collection of daily data reduces data entry demands but requires specialized programming services or training up-front.

In sum, the mix of intensive naturalistic methods and biological measures that we use to study parenting is expensive. The costs are reflected in the time requirements for data collection from multiple members of each family, in participant burden, and in tall budgets for recruitment and specialized training required of research staff. A major consequence is that samples are typically small and not well suited to detect small effects or group differences. As discussed next, we believe the limitations of small samples with limited generalizability are offset by more dense information and greater precision of measurement, and that investments in externally valid assessments of short-term processes that underpin long-term developmental and health outcomes will ultimately prove profitable for parenting research.

IMPLICATIONS FOR PARENTS AND PARENTING INTERVENTIONS

Our research focuses on *how* and *how well* children are able to cope in the short-term with a range of daily stressors. Coping strategies include a wide variety of mechanisms, all interrelated: effective emotion regulation, appropriately applied social skills, and healthy physiological reactivity and recovery. The premises of our research are that these characteristics develop early in life within the family environment and are vital to the transition to a physically and emotionally healthy adulthood. Our work suggests that parents contribute to the development of biological, emotional, and social response patterns in their children and that they can foster better child self-regulation by minimizing chronic stress in the home and modeling effective social and emotional responses to daily stressors.

Risky family environments fall at the opposite end of the continuum. Daily episodes of arguments, hostility, and conflict act as sources of chronic stress in children's lives because they are situations to which children must repeatedly respond both emotionally and physiologically. Frequent challenges to stress-response systems also entail a need to continually recover from physiological arousal and negative emotion. Parent expressions of hostility, irritability, or aggression on a daily basis encourage vigilance and a heighted preparedness to respond to threats in children. At the same time, the children are observing parent behaviors that reflect ineffective regulation of responses to daily stressors. The repercussions for child development are reflected in precursor outcomes that include dysregulation of immune and neuroendocrine systems, and inadequate emotional and behavioral self-regulation. By adolescence, we begin to see increased rates of internalizing disorders, substance abuse, and risky sexual behavior.

In addition to arguing for parenting interventions that decrease chronic family stressors and help parents model effective social and emotional responses to daily stressors, the approach described here points to outcomes by which the effectiveness of those interventions can be measured. Hard health endpoints—indicators of both mental and physical health—typically do not appear until the adolescent and adult years. We have therefore highlighted the need to identify precursor outcomes reflecting early psychological and physiologic response patterns that can influence later health (Repetti, Robles, & Reynolds, 2011). Potential precursors to later psychological and social maladjustment include hypervigilance to threat, poor impulse control and emotion regulation, especially with respect to anger and aggressiveness, and cognitive processing biases (e.g., a tendency to make hostile attributions in ambiguous situations). Cumulative wear-and-tear on bodily systems might be reflected in higher basal cortisol levels and cortisol hyporesponsiveness to acute stress, both of which tend to characterize children from risky families.

As shown in Figure 1, patterns of short-term responses to environmental demands can serve as indicators of downstream precursor outcomes which, in turn, can lead to more entrenched long-term sequelae. Accordingly, parenting interventions should affect change in short-term and precursor outcomes *before* they result in significant mental and physical health problems. Therefore, a novel and effective means of measuring the success of an intervention would be to look for changes in children's emotional and physiological reactivity to and recovery from stressors in daily life, as well as precursor outcomes. These outcomes are applicable to children from diverse racial, ethnic, and SES groups, even though their family characteristics and experiences that are relevant to the model depicted in Figure 1 may differ (e.g., children may be responding to different types and frequencies of stressors). Our own priorities for future research, summarized next, aim to inform such efforts by identifying short-term psychological and biological response patterns and early biological indicators of HPA and immune function implicated in adult health outcomes.

FUTURE RESEARCH DIRECTIONS

Our current research tests how family stressors connect with short-term emotional and biological response patterns observed in children and their families over 56 consecutive days. In addition to diaries assessing daily stressors, emotion, and behavior, our ongoing study includes saliva sampling on eight days to assess diurnal cortisol and immunoglobulin A. Suspected URIs – a primary biological precursor outcome – are verified during home visits, which include nasal wash samples that are assayed for immune function biomarkers such as proinflammatory cytokines. In addition, we observe children's cardiovascular, neuroendocrine, and emotional response and recovery patterns in a controlled laboratory setting. Our next step is to embed these daily-report and biological sampling procedures within a prospective longitudinal design to capture variability in children's physiological, behavioral, and emotional stress-response profiles as they make the developmental transition into adolescence. Youth with precursor vulnerabilities arising in the context of a risky family likely encounter the stressors of puberty-especially when experienced at a young age-with inadequate coping resources and, thus, face greater susceptibility to risky adolescent health behaviors. We plan to examine puberty as a potential sensitive period in our model, by examining its role in predicting adolescent health outcomes like substance use, risky sexual behavior, and obesity.

This research prioritizes the identification of early biomarkers of risk, such as high cortisol levels or exaggerated immune responses to illness (Repetti et al., 2011). We are particularly interested in examining how biomarker assessments are linked with contemporaneous measures of psychological precursor outcomes like poor impulse control, an integration that addresses a critical gap in the research literature. We believe this approach, while remaining mindful of developmental changes in how children experience and respond to chronic family stress, will have implications for the design and appropriate evaluation of interventions targeting parenting practices and promoting healthy child development.

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ACKNOWLEDGEMENTS

The authors are grateful to the WT Grant Foundation and the Alfred P. Sloan Foundation for supporting much of the work described in this paper.

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