

Thriving in the Face of Early Adversity



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Integrating theories drawn from biological, social, and developmental perspectives, Bugental's program of research tracked the outcomes experienced by children born with medical or physical disorders. At risk children who experienced harsh parenting manifested a low ability to cope with stress (e.g., they showed cortisol hyper-reactivity and low habituation). In contrast, at risk children who experienced supportive parenting showed adaptive hormonal responses and an exceptional ability to habituate to stress. Children who were not at risk manifested significantly less reactivity to their parenting history. Harsh parenting, in response to at risk children, was found to be moderated by parents' perceived powerlessness. A cognitively-based home visitation program yielded reductions in child maltreatment and the enhancement of health among infants born at medical risk.

Kurt Lewin was an important influence for a lot of us within our early professional lives. There was much appeal to the idea that the individual and the environment in which the individual is embedded operate as an interdependent system. Although we have moved to extend the parameters involved within such

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systems, the notion of interdependence is one that has been incorporated in many disciplines. Finally, the notion of integrating scientific theory, empirical research, and community action had enormous appeal then and it still does. The “story” that I will relate here suggests one such integrative effort.

History of Thought on Medical and Physical Disorders

The specific issue I will be talking about is one that was first introduced to social psychology by Roger Barker and others within the *Journal of Social Issues* (Barker, 1948). This set of papers was concerned with the life experiences of those born with or who later on experienced medical or physical disorders, disorders that often lead to negative life experiences.

In the 1940's, when social psychologists first came into the picture, the public and the sciences placed responsibility for these experiences within the individual's physical condition. The only hope of those with medical or physical disorders was to “accept their fate,” a fate that was implicitly inevitable and undesirable.

Countering these views, Barker suggested that we should apply what we know about prejudice and discrimination to this situation. He argued that those who experience medical and physical disorders are subject to the effects of social stigma. From this perspective, the problems experienced by such individuals are due more to the social reactions of others than to the physical disorder itself.

One of the most positive things that emerged from this dialogue was the commitment to reduce the barriers experienced by those with medical and physical disorders: the social barriers, the physical barriers, the educational barriers, and the occupational barriers. At the level of policy, this played out ultimately through the passage of the Americans with Disabilities Act (ADA; see Wellman, 1993 for a review). With this change came the creation of positive opportunities that might correct the problems historically experienced by those with medical and physical disorders.

In the intervening years, we have seen a new perspective on the possible outcomes of those who experience adversity. Several years ago (1998), a set of papers was presented in the *Journal of Social Issues* that put forth the notion of thriving in the face of adversity (e.g., Epel, McEwen, & Ickovics, 1998; Carver, 1998). That is, it may be that adversity, under some circumstances, promotes actual benefits. This notion is an extension of the general move within social psychology to consider the role of factors that buffer against the negative consequences of health problems or other negative life events. For example, we think here of evidence for the benefits of optimism or an optimistic explanatory style (Carver & Scheier, 1985; Buchanan & Seligman, 1995), hope (Snyder, Harris, Anderson, & Holleran, 1991), and positive illusions (Taylor, Kemeny, Reed, Bower, & Gruenwald, 2000).

In other words, there are two sides to the picture. Best known to us are those instances in which individuals born with medical or physical disorders experience later problems. Less known is the possibility that those with a similar history may

show high levels of thriving. The obvious question is, Is it just a popular myth that those who experience early adversity may show exceptional ability to lead productive, happy lives? Let's take a look at some of the evidence, both for the negative side and the positive possibilities of the picture. In short, the story has three parts:

- What is the nature of the pathway by which medical and physical disorders may lead to problems?
- What is the nature of the pathway by which medical and physical disorders may lead to thriving?
- How can one change pathways from problems to thriving?

In telling the story, the medical model was the starting point and the social model added in important ways. However, I am going to suggest, also, that we need to borrow from other disciplines to get the complete picture.

From the standpoint of socialization theory, the ways in which parents respond to children with medical and physical disorders (MPDs) act to moderate the outcomes those children experience. For example, the work of Masten and her colleagues (1999) has indicated that children who experience adversity are more likely to be resilient if they have parents who make use of an authoritative parenting style (a style that combines warmth and firmness). In addition, socialization theorists have given increasing attention to the role of parental beliefs as a moderator of their response to "difficult" caregiving experiences (e.g., as reviewed by Bugental & Johnston, 2000).

As another discipline that has shed light on this process, behavioral neuroscience has suggested that the neurohormonal responses shown by the young to parental care serve to mediate their long-term outcomes. For example, a high level of parental care in response to the distress of the young may facilitate an enhanced capacity of those offspring to cope with future stress (e.g., Meaney, Aitken, Bodnoff, Iny, & Tatarewicz, 1985). Within both socialization and behavioral neuroscience models, attention focuses on the effects of early experience.

Tracking the Life Outcomes of Children Born with MPDs: The Pathway to Problems

At the most immediate level, children who experience MPDs early in life are at risk for a variety of negative experiences with their parents. Sullivan and Knutson (2000), based upon evidence obtained in a large-scale epidemiological study, concluded that such children are much more likely to be maltreated than are other children. Maltreatment includes an increased risk for physical abuse, harsh parenting, and neglect. In addition, the parents of such children are more likely to divorce than are the parents of other children (Joesch & Smith, 1997).

Finally, such children are at risk for infanticide or abandonment. Although we think of such extreme reactions as something true in our distant history or in

“primitive” cultures, it has a modern counterpart also. For example, Weiss (1998) found that two-thirds of children who were born with some kind of external (i.e., visible) MPD were relinquished for adoption at birth by parents from diverse cultural, religious, and ethnic backgrounds living in Israel. At the same time, very few children (only 7%) with internal MPDs were relinquished by their parents. This discrepancy suggests that the rejection of children with MPDs rests with the visible cues to problems rather than the actual medical evidence of problems.

In addition, mothers of children with MPDs are more likely to show symptoms of depression early in the child’s life (e.g., Buist, 1998), as a result, such children are likely to experience emotional neglect, not by intent but simply as a function of the reduced responsiveness that is typically shown by mothers experiencing depression (e.g., Leiferman, 2002; Lovejoy, Graczyk, O’Hare, & Neuman, 2000).

However, certainly not all (indeed very few) parents maltreat or respond with depression or marital discord to a child with an MPD. This leads us to explore the possibility of moderating variables. In our own research, we have explored the role of caregiver cognitions in this response pattern (Bugental & Happaney, 2003).

When parents maltreat their child or fail to buffer the child against stress, the experience compounds the effects of other negative events (e.g., painful medical procedures) and fosters child stress. Stress, in turn, leads to risk for a variety of problems including: (a) social-emotional problems (including depression and social fearfulness), (b) cognitive problems (e.g., memory deficits), and (c) health problems (e.g., Bugental, 2003). Even when children experience MPDs that have no necessary implications for these outcomes, they are more likely to experience these kinds of problems.

How Do Parents Vary in Their Responses to Difficult Caregiving Experiences?

As our first question, we ask, What are some of the variations in parents that would lead to maltreatment in some cases and not in others?

Parental Perceptions of Power or Control in the Family

Concern with the characteristics of parents who show negative reactions to “difficult” children has led to an integration of theory and research drawn from the fields of social development and social cognition. That is, parents came to be understood as responding to their children, based upon their ways of thinking about the caregiving relationship—which, in turn, is strongly influenced by their own parenting history. The young form “internal working models” of caregiving relationships, which serve to organize their responses when they themselves become parents (e.g., Grusec, Adam, & Mammone, 1993; Grusec & Mammone, 1995).

In our research, we have focused particular attention on the perceived power of caregivers as a moderator of their differential reactions to children that pose

a potential threat to the caregiving system (e.g., Bugental & Happaney, 2003). If parents have acquired a view of parenting relationships that makes them vigilant for threat, they will easily access that negative schema when faced with a caregiving challenge. Thus, children who might pose a threat (e.g., a child who has a hearing impairment but *might* be ignoring the parent, an infant who is premature and who avoids social stimuli as a means of self-regulation but *might* be rejecting the parent, or a child with an orthopedic disability that impedes his or her ability to move but *might* be demanding or dependent) will easily be responded to in negative ways.

In our research we measure parental perceptions of power through our questionnaire, the Parent Attribution Test (PAT; Bugental, Blue, & Cruzcosa, 1989). On the PAT, we ask respondents for the attributions they would make about the causes of successful or unsuccessful interaction with a child. We found two orthogonal factors within the instrument: One factor reflects the extent to which the adult believes that negative caregiving outcomes can be controlled by him or her, the second factor reflects the extent to which the adult believes that negative outcomes can be controlled by the child. An adult with a low perceived balance of power is one who believes simultaneously that negative events are caused by factors that he or she cannot control (e.g., their current mood or health) and by factors that the child can control (e.g., the child's stubbornness or resistance).

For adults who score as having a low perceived balance of power (low attributed power to self, high attributed power to child), power ideation is chronically-accessible, that is, it comes to mind automatically and effortlessly. For example, we found that such adults make judgments about power relationships in the family just as quickly under conditions of cognitive load (holding a number string in memory) as in the absence of cognitive load, a pattern that is not true for other parents (Bugental, Lyon, Cortez, & Krantz, 1997). In other words, these parents automatically think in terms of their relationship with dependent children as a power contest. The child is a potential source of threat to their shaky sense of control.

In our initial research (Bugental, Blue, & Cruzcosa, 1989; Bugental, Blue, & Lewis, 1990), we found that parents who maltreat their children are more likely to have a low perceived balance of power. That is, they see their children as having the upper hand within the parent-child relationship. This pattern occurred reliably only when there was something different about the child (i.e., the child showed response patterns that seemed unresponsive or socially "odd;" that is, such children were "difficult.") Many mothers reported that the child had been different from birth and often reported birth complications. However, this evidence was retrospective and we could not be sure whether to trust these reports. In addition, we could not be sure of the extent to which their perceived power was a cause or an effect of parents' history with a particular child.

To allow the possibility of causal inference, we extended our research in two ways. First of all, we conducted a program of experimental research in which we systematically varied relevant adult and child characteristics. This allowed us to draw causal inferences about the resulting interaction pattern. Second, we

conducted a longitudinal study in which we tracked the early caregiving experiences of children born at medical risk as a function of the pre-birth attributions of their mothers. The combined research strategy allowed us to optimize both the internal and external validity of our findings.

Experimental Research

Within our experimental research, we conducted a series of investigations in which we paired adults (who differed in their perceptions of power) with unrelated children whose behavior was systematically controlled. The adults and children had no shared history. In many studies, the adults were not even parents. The settings were systematically varied to pose a potential source of challenge or difficulty; in particular, we posed settings in which the child might be interpreted as unresponsive to the adult's influence attempts; for example, we (a) showed adults a videotape of an unresponsive child with whom they believed they would interact (Bugental & Cortez, 1988), (b) involved them in an interactive "game" with a child depicted as unresponsive (Bugental et al. 1993; Bugental, Lewis, Lin, Lyon, & Kopeikin, 1999), (c) asked them to interact with children who were actually unresponsive or who were simulating unresponsive behavior as our confederates (Bugental & Shennum, 1984).

I will describe only one study here to give you a sense of the kinds of laboratory investigations we conducted. In one study (Bugental, Lewis, et al. 1999), we recorded the responses that adults showed to a computer game (with a child) in which the adult's control over the situation was ambiguous. Women with low perceived power responded with increases in their heart rate, which in turn mediated their responses to the child. At the end of the game, women were instructed to use a control device to display happy and mad faces to the child trainee (after the interaction had ended and, thus, were irrelevant to future interaction). The control device was actually a dynamometer, and we were able to see how much force they used in displaying mad faces. Although it took only one-third of a pound of pressure to make the device work, low power women, after aroused by the ambiguous threat, used an average of 12 lbs. of pressure—about twice as much as did other women. Because women's use of force neither acted to control the computer nor control anything about the child, it had to be considered as gratuitous (a pattern that is common for physical abuse).

Across the many studies conducted within this program, the observed pattern of moderating and mediating relationships can be depicted as shown in Figure 1. As indicated, the ways in which adults responded to children who posed an implicit challenge was moderated by their perceived power. For the dyadic combination that included caregiving challenge and low perceived caregiver power, increases were shown in the adult's use of "defensive" tactics. These responses, in turn, were mediated by adults' stress responses (e.g., their increases in heart rate or cortisol

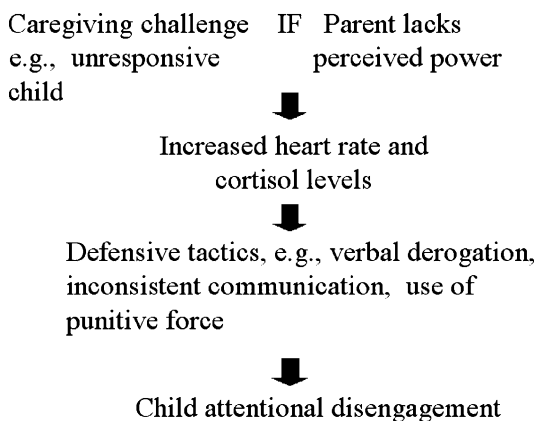


Fig. 1. Pathway to Problems: Experimental Evidence.

levels). When another set of children viewed videotapes of low power women (who had been confronted with a caregiving challenge), and believed that these women were talking to them, they responded with attentional disengagement; for example, they looked away a great deal (Bugental, Lyon, Lin, McGrath, & Bimbela, 1999). Such responses may be thought of as acting in a self-fulfilling fashion in real life. That is, a child's attentional disengagement (actually associated with stress) *could* be interpreted as an indication that they were ignoring the adult.

Longitudinal Research

Within our longitudinal research, we explored the long-term outcomes within families that included (a) a mother with high or low perceived power (as measured before the child's birth) and (b) an infant born with or without a mild or moderate medical disorder or birth complication (e.g., mildly premature or moderately low Apgar scores). At the end of one year, we measured mothers' use of harsh or abusive practices, along with their level of depression.

The two groupings of children we focused upon often show social response patterns that might appear to be unresponsive (Bugental & Happaney, 2003). That is, infants who are either premature or have low Apgar scores tend to have poor regulatory skills and are highly reactive to environmental stimuli. As part of this picture, such children are easily overwhelmed by social stimuli. Their way of handling excess stimulation is to withdraw attention; for example, they may stiffen or look away when touched. If parents' interpretive bias is to see threat in their relationships with the young, then this behavior pattern, on the part of the infant, is easily seen as rejecting.

Our prediction was, then, that such children would be at elevated risk for maltreatment when born to parents with low perceived power. The patterns shown (in

terms of either prevalence of abuse or frequency of usage of any type of physically harsh parenting) confirmed our expectations (see Figures 2 and 3). That is, the only parent-child pairing that was reliably associated with unusually high levels of abusive or harsh parenting was the one that included an at risk infant and a mother with low perceived power (Bugental & Happaney, 2003). In addition, it was the only combination that was reliably associated with maternal depression.

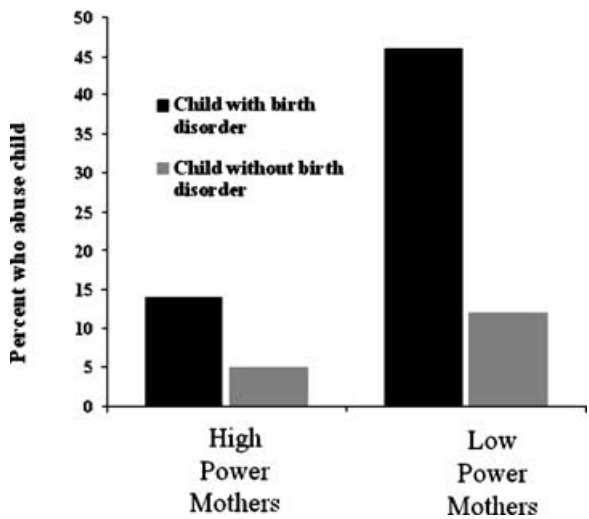


Fig. 2. Prevalence of Abuse of Children with and Without Birth Disorders (BDs).

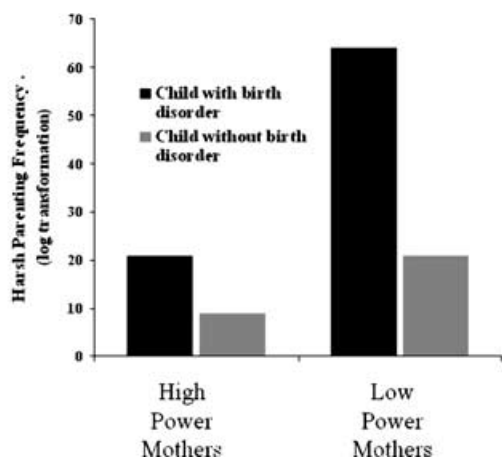


Fig. 3. Frequency of Harsh Parenting for Children with and Without Birth Disorders (BDs).

What Is the Effect of Parental Maltreatment (or Depression) on Infants' Neurohormonal Responses?

Now let's return to our general model and focus our attention on the events that follow children's early experiences within the caregiving relationship (as depicted in Figure 4). What happens when children experience a high level of stress, either as a function of parental harshness or maltreatment, or as a function of the parents' inability to buffer their children against the effects of early stress (as a result of their depressed state). There is an emerging picture suggesting that the long-term problems experienced by such children often lead to dysregulation of their stress response systems (Bremner & Narayan, 1998; Gunnar, 2000).

This brings us to specific concern with the functioning of stress response systems, a subject of increasing interest to social psychologists. Many of us have come to appreciate the work of biopsychologists such as Bruce McEwen and Michael Meaney (and their colleagues) who have been specifically concerned with the implications of stress responses for the life outcomes of humans as well as non-humans (e.g., McEwen, 2001; Meaney et al., 1985; Liu et al., 1997). In particular, attention has turned to the role of the hypothalamic-pituitary-adrenal (HPA) axis, an integrated system that is critically involved in managing stress.

Under ordinary circumstances, this system is extremely adaptive. That is, the perception of a potential threat activates a cascade of hormonal responses that serve to prepare the individual for coping with that threat. For example, glucose and other nutrients are released into the blood stream as fuels for actions, non-essential systems such as growth or reproduction are temporarily shut down, inflammation and pain perception are suppressed, cortisol (the end product of the cascade) crosses the blood-brain barrier to influence the hippocampus (an important center

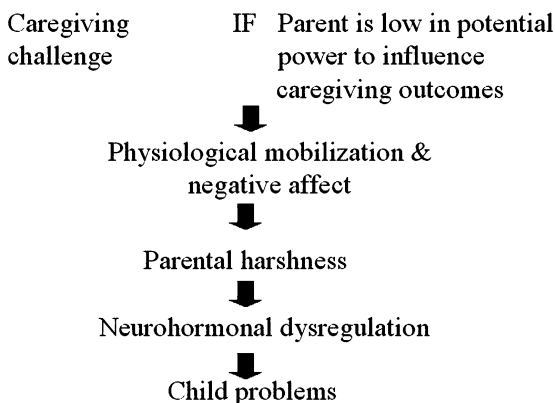


Fig. 4. Pathway to Problems: Longitudinal Evidence.

of memory and learning), and ultimately, when functioning well, the system is self-terminating. However, under some circumstances the system is over-activated and fails to show adaptive self-termination.

Within our research, we explored the possibility that there are disruptions in the functioning of “emergency” response systems when children are exposed to high and unabated stress early in life. When such systems are continuously activated, they become less functional, and ultimately there are even deficits in brain development. The term that has come to be used (McEwen, 2001) for this process is “allostatic load.” Allostatic load can be thought of as the destructive wear and tear on the body’s emergency response systems when they are activated too long, too frequently, and without recovery.

In a demonstration of this process (Bugental, Martorell, & Barraza, 2003), we observed that children who are treated harshly in infancy (e.g., they are spanked or physically abused in the first year of life) are hyper-reactive to stress (separation from their mothers). When stressed, they show increases in the production of cortisol that are twice as high as those shown by other children. As another type of dysregulation, infants whose mothers show depressive symptoms show baseline levels of cortisol that are significantly higher than those shown by other children. In short, children are more likely to show dysregulation of the HPA axis when their parents are either harsh or emotionally unavailable. In the first case, parents are themselves a source of stress. In the second case, parents fail to buffer their children against the effects of stress.

The picture that is emerging is comparable across nonhumans (in which animals are exposed to experimental stress) and humans (in which children experience trauma as a result of naturally-occurring experiences; Bremner & Narayan, 1998). In both cases, we see long-term effects on brain development (e.g., decreases in dendritic branching and adaptive neuronal pruning within the hippocampus).

In sum, the pathway by which early medical and physical disorders may lead to problems not only needs to include the social story, it needs to include, also, the ways in which neurohormonal patterns (and resultant changes in brain development) are affected by early caregiving experiences. That is, behavioral neuroscience informs our understanding of the deficits that are often experienced by children with MPDs—if their mothers are physically harsh (and frightening) and/or emotionally unavailable.

Tracking the Life Outcomes of Children Born with MPDS: The Pathway to Thriving

Now let’s turn to the positive possibilities for children born with MPDs. As we did in considering the pathway to problems, let’s consider ideas from different theoretical and disciplinary perspectives. As a starting point, we anticipated that the positive outcomes of such children would be moderated by the cognitions that

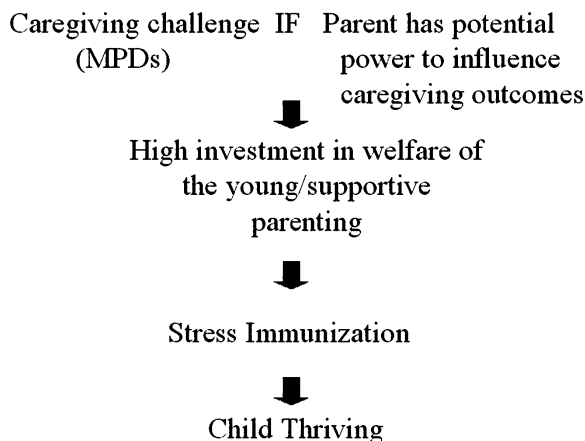


Fig. 5. Pathway to Thriving.

parents bring to the relationship, along with the resources that they have available to them. When parents of such children have high perceived power within the caregiving relationship and have access to both social and tangible resources, they are more likely to invest in the provision of supportive care. Here we are adding a concept—the idea that it is not just parental cognitions (the power they believe they have) but their actual resources (the power that parents actually have). The notion of “resources” is used in many theoretical approaches but has possibly been best developed within evolutionary psychology. The predicted pathway can be depicted as follows (see Figure 5).

Next we turn to the contributions of parental investment theory (as drawn from evolutionary theory, Trivers, 1974). Children with MPDs pose a potential cost to parents, and a potential constraint on their ability to care for other offspring. As anticipated from parental investment theory, parents show variations in the care they provide for young based upon the reproductive risk those children pose. As noted earlier, parents are more likely to maltreat or neglect/abandon children who show visible signs of medical risk. Ordinarily, we think of the negative predictions of parental investment theory. That is, central attention has been given to lack of parental investment when either (a) parents lack resources, and/or (b) children are a reproductive risk. However, there is an implicit prediction of parental investment theory that only recently has begun attracting attention (Bugental & Beaulieu, 2003; Davis & Todd, 1999; Mann, 1992). That is, not only can it be predicted that the greatest problems in parental care will occur when parents have low resources and a high risk child, but it can also be predicted that the greatest investment in parental care will occur when parents have high resources and a high risk child.

Evidence for the negative side of the picture is an easy one to see among both humans and nonhumans. For example, birds that have low access to food resources are likely to feed the largest chick in the brood first. Among humans, parents within areas that are poverty stricken (e.g. the shantytowns of Brazil) are more likely to neglect children who are at medical risk and describe such children as “wanting to die” (Scheper-Hughes, 1985).

At the same time, there is also evidence for added investment in high risk offspring if parents have high resources (Maestriperi & Carroll, 1998; Gottlander, 1987). Among birds, mothers feed the smallest chick first if there are high food resources. When food is easily available, her initial attention to the smallest chick does not constrain her ability to provide for the larger chicks; however, it does increase the chances that the smallest chick will survive, thus optimizing the mother’s reproductive success (Davis & Todd, 1999). In the same way, human parents and the general community within advantaged countries such as the United States often show exceptionally high and expensive care for the infants born at medical risk.

The final question then becomes, What is the route by which parental investment fosters thriving (actual advantage) among high-risk offspring? It can be predicted that the parents’ level of care fosters the child’s ultimate welfare as a function of changes in children’s resultant ability to manage stress.

What Is the Evidence for This Pathway?

In considering the role of the child’s regulatory systems, we want to return to the concept of stress—only this time the ways in which stress can be managed so as to produce long-term benefits. McEwen (building upon earlier work in the field) has brought in the concept of allostasis (e.g., Epel, McEwen & Ickovics, 1998; McEwen, 2001). Allostasis refers to the capacity of regulatory systems to become increasingly adaptive through repeated activation, a process that follows when activation is followed by recovery. One might think of this as a “toughening” process or “stress immunization.”

Most of the existing research comes from animal models. A number of biopsychologists have conducted research on non-humans but have been concerned with the implications of their research for the early experiences of children. Meaney and his colleagues (see also, Meaney et al., 1985; Liu et al., 1997), following up on earlier research by Levine (1957), demonstrated the ways in which a stressed young animal, when given added care by mothers, becomes better able to manage later stress (and could be thought of as demonstrating the process of allostasis). The early stressor within this line of work typically involves handling by humans. After these experiences, the young were returned to the litter and were typically the recipients of extra care (licking and grooming) by their mothers in response to their distress calls. Ultimately, such young animals showed better brain development and better habituation to future sources of stress. As another way of

describing this process, these young animals may be thought of as experiencing stress immunization.

However, a question can reasonably be raised as to the applicability of findings with non-humans in understanding human relationships. To answer this question, we studied young adults (beginning college or university life) who had experienced some type of medical disorder at birth versus those who lacked this experience (Bugental, Beaulieu et al., 2003). In testing the predicted outcomes of such individuals, we measured habituation in response to a frequently used laboratory stressor: an adaptation of the Trier Test (a stressor that includes both public speaking and mental arithmetic, Kirschbaum, Pirke, & Hellhammer, 1993). We measured habituation in two different ways: (a) reduced blood pressure elevations when the stressor was repeated (one week later), and (b) reduced cortisol elevations when the stressor was repeated. Also, we took measures that have implications for health: (a) the number of reported illnesses during the last year, and (b) resting levels of blood pressure (with low blood pressure levels serving as a predictor of health).

We found that those individuals who had experienced birth complications (whether or not they experienced later disabilities) showed the highest levels of thriving—but only if they reported positive parenting histories. That is, the highest levels of habituation were shown by those individuals who had experienced early problems, but experienced in combination with a supportive parenting history. However, the predicted effects were found only for habituation in blood pressure responses. Unexpectedly, all children who had experienced medical or physical disorders at birth show higher levels of habituation in terms of their cortisol responses. Although self-presentation biases could predict main effects for reported parental care or early medical history, it is unlikely that such biases would yield the observed interaction pattern.

Support was found, also, for our predictions regarding physical health. As anticipated, the highest indicators of health were shown by those who had experienced birth disorders but were the recipients of supportive parenting. In contrast, the greatest indicators of poor health were shown by those who had experienced birth disorders and had experienced harsh parenting.

How to Shift Pathways from Problems to Thriving

As the final step in the story, the question then becomes, Can we design a program that will facilitate the possibility that children with MPDs can move from the negative pathway (problems) to the positive pathway (thriving)? In order to test this possibility, we conducted a community-based study in which we introduced an intervention that was based upon the theoretical and empirical perspectives obtained in our previous research (Bugental et al., 2002).

The population we studied was at elevated risk for child maltreatment, as a result of parents' own history and their current lack of social and economic

resources. The children themselves varied in the extent to which they were at risk as a result of birth complications or other medical or physical disorders.

Families recruited for the study were randomly assigned to one of three conditions. The C-Condition may be thought of as a pure control condition, in that we provided access only to existing community services. The B-Condition provided home visitation of a type model modeled after the Healthy Start Program (e.g., Breakey & Pratt, 1991; Duggan et al., 1999). This program focuses on provision of social support and parent education. The A-Condition (a cognitively-enhanced home visitation condition) attempted to increase the “cognitive resources” available to parents. It was designed to facilitate parents’ ability to re-frame and resolve caregiving challenges. As the first step, it assisted parents in re-interpreting caregiving problems in ways that did not involve blame or feelings of powerlessness. As the second step, it facilitated parents’ consideration of alternative ways that caregiving challenges might be resolved. At both steps, parents were encouraged to observe the visible cues shown by infants when they are experiencing different states. As the final step, parents reported on their level of success in trying out a possible resolution for a problem. The program continued for a year, with a retention rate of 75% across conditions.

Outcome measures were obtained at the end of one year. Our findings revealed that the cognitively-enhanced home visitation condition (Condition A) led to reductions in both (a) physical abuse (as legally defined) and (b) use of physically harsh but (legally) non-abusive tactics (e.g., spanking and slapping). The prevalence of physical abuse during the first year of the child’s life was high in both the C-Condition (26%) and the B-Condition (23%). It was significantly lower in the A-Condition (4%). In similar fashion, the prevalence of infant spanking/slapping was higher in both the C-Condition (47%) and the B-Condition (38%) than in the A-Condition (18%).

We were also interested in the factors that mediated the observed relationship between participation in different programs and the benefits and reductions in harsh parenting. The strongest support was found for reductions in maternal depression as a result of participation in the A-Condition (with comparable trends in the reductions found in increases in maternal perceptions of control).

Now let’s return to our prediction that children most in need (children with MPDs) will benefit the most from a program that implicitly fosters parenting resources (i.e., it fosters the problem-solving abilities of parents in managing caregiving challenges). Our expectation was that the highest benefits would be shown for families that included a child with birth disorders. That is, if such children are at greatest risk for maltreatment, the A-Condition should produce the greatest reductions in maltreatment.

Our observed findings confirmed predictions. That is, children with birth disorders in either the B- or C-Condition were subject to the highest level of

maltreatment. In the A-Condition (cognitively-enhanced home visitation), infants with disorders (like infants without birth disorders) experienced a consistently low level of physical abuse and harsh parenting.

However, we also hoped to show that the A-Condition fostered positive benefits as well as prevented problems in the life of infants with birth disorders. To this end, we measured (a) parental investment, and (b) the child's physical health (Bugental & Beaulieu, 2003). We measured parental investment on the basis of parents' willingness to come to the University to obtain further information on their child. In doing so, it was necessary for parents to drive to a location that was about 80 miles distant from their home, and, thus, made it an investment of time and effort. Finally, we obtained measures of children's health during the first year of life. This, in essence, provided our measure of "thriving." Confirming our predictions, the highest levels of parental investment and child health were found for infants with birth disorders whose mothers had participated in the A-Condition. In contrast, the lowest levels of parental investment and child health were found for infants with birth disorders whose mothers participated in the B- or C-Conditions.

In our ongoing research, we are tracking the long-term social, cognitive, health outcomes of children whose mothers participated in the program. This will allow us to learn something about the long-term benefits to children in terms of their cognitive and social responses.

Conclusions

Within this article, I hope to have demonstrated the route by which early medical adversity leads either to problems or thriving. I have attempted to show how the social cognitions of parents serve as moderators of these alternative tracks. In addition, I have shown the utility of considering intervening emotional and neurohormonal responses as mediators within each of these pathways. Finally, I considered the possible ways in which the life course of such children may shift from the pathway of problems to the pathway of positive possibilities.

Lewin's ideas account very well for the unfolding story I have been relating. The life outcomes of children born at medical risk are determined by the interdependent forces that involve not only the child, but also their parents and the larger community environment.

In all of this, theory has proven to be extremely practical. To this notion, I would add that, also, we need interdependence in our theoretical formulations. Theory and research drawn from behavioral neuroscience complement our social cognitive perspectives. In short, theories do not necessarily compete with each other. In many cases—and certainly in this one—they work together to account not only for the processes that lead to problems but also for the processes that will

reduce those problems and promote the ability for children to thrive in the face of early adversity.

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